



**SOLENO**

Mastering Storm Water

# COLLECTING

**SUSTAINABLE AND CUSTOMIZED COLLECTION SYSTEMS**





## SUSTAINABLE AND CUSTOMIZED COLLECTION SYSTEMS

Impervious surfaces in urban areas, increased surface runoff in rural areas and close proximity to ground water force network designers to review the design criteria for collection systems.

Due to the increasing trends in water volumes and rainfall events, it is essential to effectively channel storm water, surface runoff and snow melt to prevent backflow, flooding and erosion.

### COLLECTING STORM WATER

Soleno's collection systems are **sustainable** and easily fitted to existing networks of pipes.

Our products are perfectly tailored to their functions, combining the mechanical properties of HDPE with resistance to heaving caused by freezing and de-icing salts and superior performance in fluctuating temperatures. Soleno's catch basins and perforated pipes are practical, economical alternatives for intercepting surface runoff.

Soleno provides assistance in designing **customized** solutions to meet your specific needs.

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## SURFACE COLLECTION

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Intercepts and channels storm water to appropriate conveyance pipes.

### LEED®

For several years in Quebec and elsewhere in Canada, it has been possible to obtain environmental certifications for the design and construction of sustainable buildings. Businesses and organizations use the LEED<sup>1</sup> certification program or other certification systems, to develop the necessary tools that have an immediate and measurable impact on their buildings' performance.

Some solutions available from Soleno are eligible for the obtainment of credits leading to certification. Whether for the Sustainable Sites (SS), Water Efficiency (WE) or credits relating to Materials and Resources (MR) under the LEED program, or for other opportunities for certification, please contact the Soleno team to learn more about how our solutions can positively contribute to your obtainment of a certification for your project.

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<sup>1</sup> Canada Green Building Council's Leadership in Energy and Environmental Design



## CATCH BASIN WITH SMOOTH EXTERIOR WALL

WITHSTANDS CL-625, H-25 AND HS-25 HIGHWAY LOADS



- Designed to adapt perfectly to any type of pipe while maintaining network watertightness.
- It is easy to install on site, as it is much lighter than traditional catch basins.
- Use in either roadway or non-roadway applications.
- Eliminates the need for frost-resistant geocomposite, as it is not affected by soil movement thanks to its smooth exterior wall.
- As it is made from HDPE, it has excellent resistance to de-icing salts, abrasives, chemicals and vibration.

### MODEL SHOWN:

Catch basin with rectangular cast iron adjustable frame and grate, gasket-type multiaxial outlet (GM).

## CORRUGATED CATCH BASIN

ECONOMICAL SOLUTION FOR NON-ROADWAY COLLECTION



- Use in non-roadway applications.
- Easy to handle.
- Available with a polyethylene or cast iron grate.
- As it is made from HDPE, it has excellent resistance to de-icing salts, abrasives, chemicals and vibration.

### MODEL SHOWN:

Corrugated catch basin with S Series cast iron grate, double bell outlet with integrated gasket and clips (DBIGC).

### COUPLERS AND ACCESSORIES

Several couplers and accessories are available. Consult « Couplers and Accessories » section of this brochure.



### OPTIONS

Several options are available: riser, ladder, lift eyelet, flow regulator, hooking system for cast iron bell/catch basin hatch: hook or eyelet. For more information on these options, please consult the next page of this brochure and Soleno's technical catalogue.

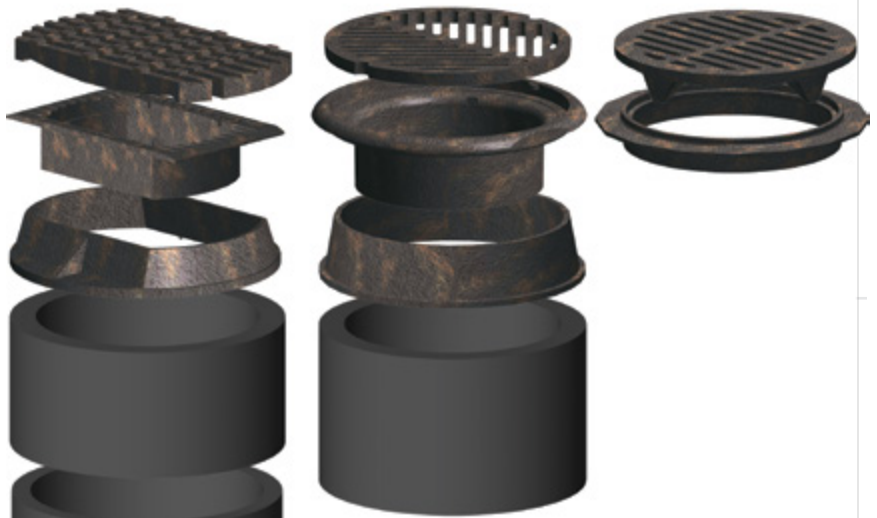
# CUSTOMIZED DESIGN

## CATCH BASIN WITH SMOOTH EXTERIOR WALL

Soleno's catch basins with smooth exterior walls can be perfectly adapted to infrastructure repair work. In new installations they are designed according to your specific requirements. They are excellent replacements for traditional catch basins in most applications.

### CAST IRON ROADWORK

A wide range of standard cast iron roadwork products for storm water collection is available at specialty retailers to complement the Soleno catch basin with a smooth exterior wall. Using a circular or rectangular adjustable frame, frame guide and grate **permits a roadway application encountering structural resistance to meet CL-625 highway loading requirements as defined in standard CAN/CSA-S6-06, and H-25 or HS-25 as defined in standard AASHTO.** S Series frames and grates, available at Soleno, allow the non-roadway use of catch basins with smooth exterior walls.



### CATCH BASIN

Durable, light and custom-made from HDPE, our catch basins provide excellent resistance to de-icing salts, abrasives, chemicals and vibration. Soleno catch basins with smooth exterior walls are available in a standard 2-meter (6.56 ft) height. **An easy-to-install, practical riser system (optional) helps to adjust the final height of the catch basin to the constraints of the site, any unexpected changes in elevation, and if required, to finalize these adjustments after installing a concrete curb.**

### MULTIAXIAL GASKET

A catch basin outlet equipped with the new multiaxial gasket greatly facilitates installation of a PVC connecting pipe between the catch basin and the main storm water sewer. With the exclusive multiaxial gasket system, the pipe can be slid into the catch basin and removed to complete the connection without affecting watertightness. Furthermore, the connection angle can be varied by more than 15 degrees using the multiaxial gasket for perfect onsite adjustment.

### OPTIONS

Riser, ladder, lift eyelet, hooking system for cast iron bell/catch basin hatch: hook or eyelet. These options are available for manufacturing customized catch basins.

### Options



### FLOW REGULATION

Soleno offers a complete line of **orifice** or **vortex flow regulators**. Plug style or plate regulators help regulate flow at the source and promote surface retention. With vortex flow regulators, small flows can be managed while maintaining large diameter openings, thereby reducing clogging risks. All these products can be perfectly tailored to the connecting pipes. Consult our Storage brochure to obtain more information about Soleno's flow regulators.





# PUISTAR

## SYSTEM OF FULLY ADJUSTABLE INLET GRATE AND FRAME FOR CATCH BASINS THAT ELIMINATES INFILTRATIONS AROUND STRUCTURES

To stop water infiltration problems that cause frequent breakage of the traditional catch basin structures, the Puistar is a new, more efficient alternative.

THE GRATE ENSURES MAXIMUM INFLOW OF SURFACE RUNOFF. A DUAL SAFETY LOCK SECURELY KEEPS THE GRATE IN PLACE.

THE SEAT FRAME (40 mm (1.5 in) 50 mm (1.9 in) OR 60 mm (2.4 in)) SUPPORTS THE GRATE AND IS INSTALLED BELOW THE ROAD SURFACE.

THE FLANGE ALLOWS HEIGHT ADJUSTMENT AND INCORPORATES ANY VERTICAL DISPLACEMENT DUE TO FREEZE/THAW CYCLES. IT ALSO PROVIDES A SEAL BETWEEN THE COLLECTOR FRAME AND CATCH BASIN HEAD.

DUE TO ITS CIRCULAR DESIGN, THE CATCH BASIN HEAD (600 mm (24 in), 750 mm (30 in) OR 900 mm (36 in)) ALLOWS A PRECISE ADJUSTMENT OF THE COLLECTOR FRAME AND GRATE WITH RESPECT TO THE ROAD OR SIDEWALK CURB.

THE COLLECTOR FRAME ALLOWS YOU TO CHOOSE THE PERFECT POSITIONING OF THE GRATE ACCORDING TO THE SLOPE, THE ELEVATION AND THE REQUIRED DISTANCE TO THE CURB, IN ADDITION TO COLLECTING WATER INFILTRATION BETWEEN THE SEAT FRAME AND THE ROAD.

The ideal alternative solution for catch basin rehabilitation.

### ADVANTAGES AND BENEFITS

- The flexibility of the HDPE flange **greatly reduces the transmission of impact loads** on the collector frame to the catch basin structure.
- The Puistar system **fits all existing circular bases** in HDPE or concrete.
- The Puistar system makes life easier for contractors by its **multiple adjustments** that can be done on site.
- Withstands **CL-625, H-25 and HS-25** road loads.
- **Redistributes loads** in the ground.
- A **double safety lock** securely holds the grate in place.

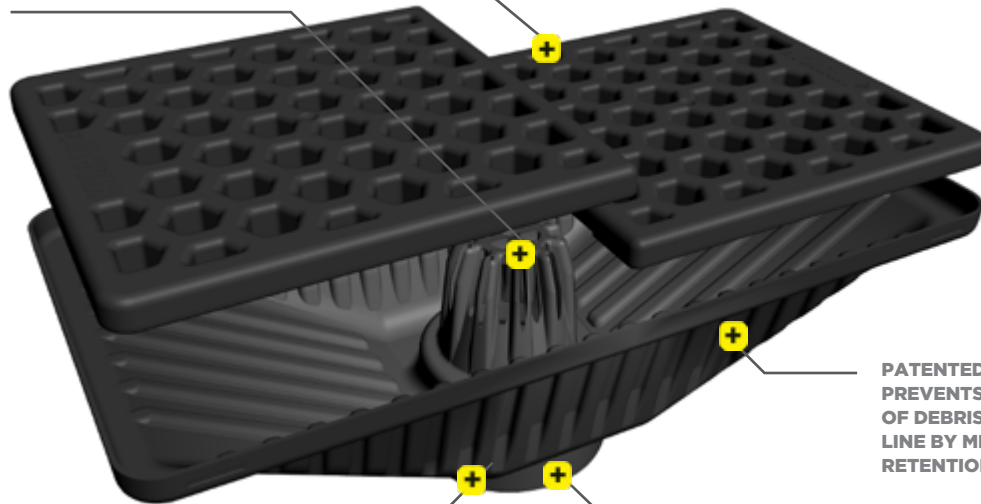
# HYDRAIN SYSTEM®

## AN ESTHETIC AND EFFICIENT SURFACE DRAINAGE SYSTEM FOR WINDOW WELLS AND GUTTER DOWNSPOUT OUTLETS.

The Hydrain system is the only solution that ensures effective surface drainage and prevents water accumulation in window wells and downspout outlets during heavy rains.

FIRST FILTRATION STAGE: RESISTANT HONEYCOMB GRIDS FILTER COARSE DEBRIS.

SECOND FILTRATION STAGE: HYDRAIN STRAINER PREVENTS CLOGGING OF THE DRAINAGE PIPE.



PATENTED SYSTEM THAT PREVENTS THE DISPERSION OF DEBRIS IN THE DISCHARGE LINE BY MEANS OF A LARGE RETENTION AREA.

SIMPLE CONNECTION, THANKS TO THE DECREASING INTERNAL SIZE ALLOWING FOR AN EASY INSTALLATION.

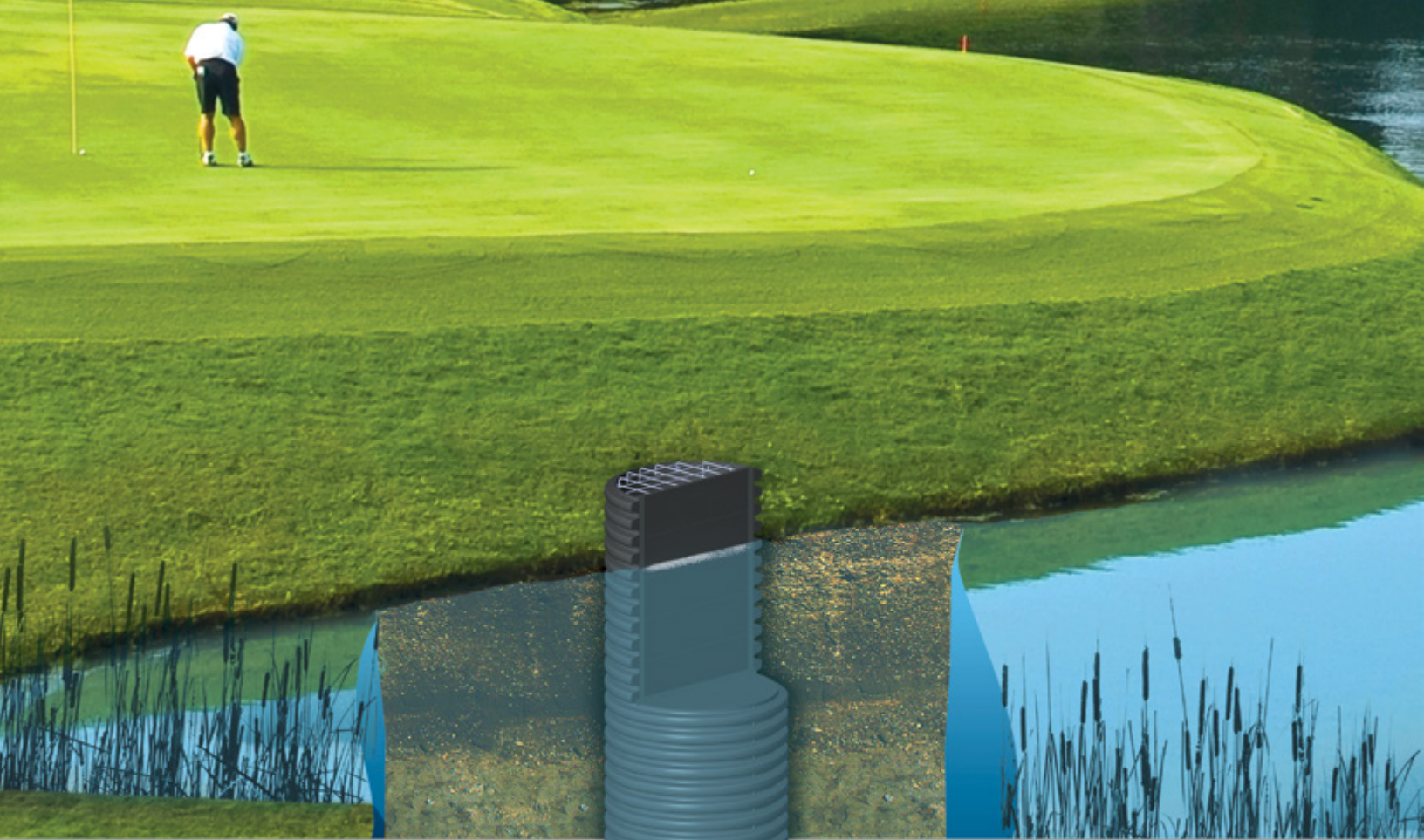
UNIVERSAL CONNECTION: ADAPTS PERFECTLY TO ALL TYPES OF 100 mm (4 in) DRAINAGE PIPES.

## FEATURES AND BENEFITS

- The Hydrain system collects rainwater runoff from a window well or from a gutter down spout to an outlet and recovers coarse debris.
- **Prevents water infiltration** into residential foundation and basement.
- **Large surface area** that maximizes rainwater collection and minimizes the possibility of overflows.
- **Easy maintenance** without risk of clogging.
- **Ribbed design** offers excellent resistance to harsh climatic conditions







**ILLUSTRATION OF A SPILLWAY  
FOR WATER-LEVEL CONTROL**

## WATER-LEVEL CONTROL

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For controlling the water level in an open-air retention basin, lake or pond.

Custom manufactured based on the hydrological conditions and water levels to master.

## LEACHATE COLLECTION

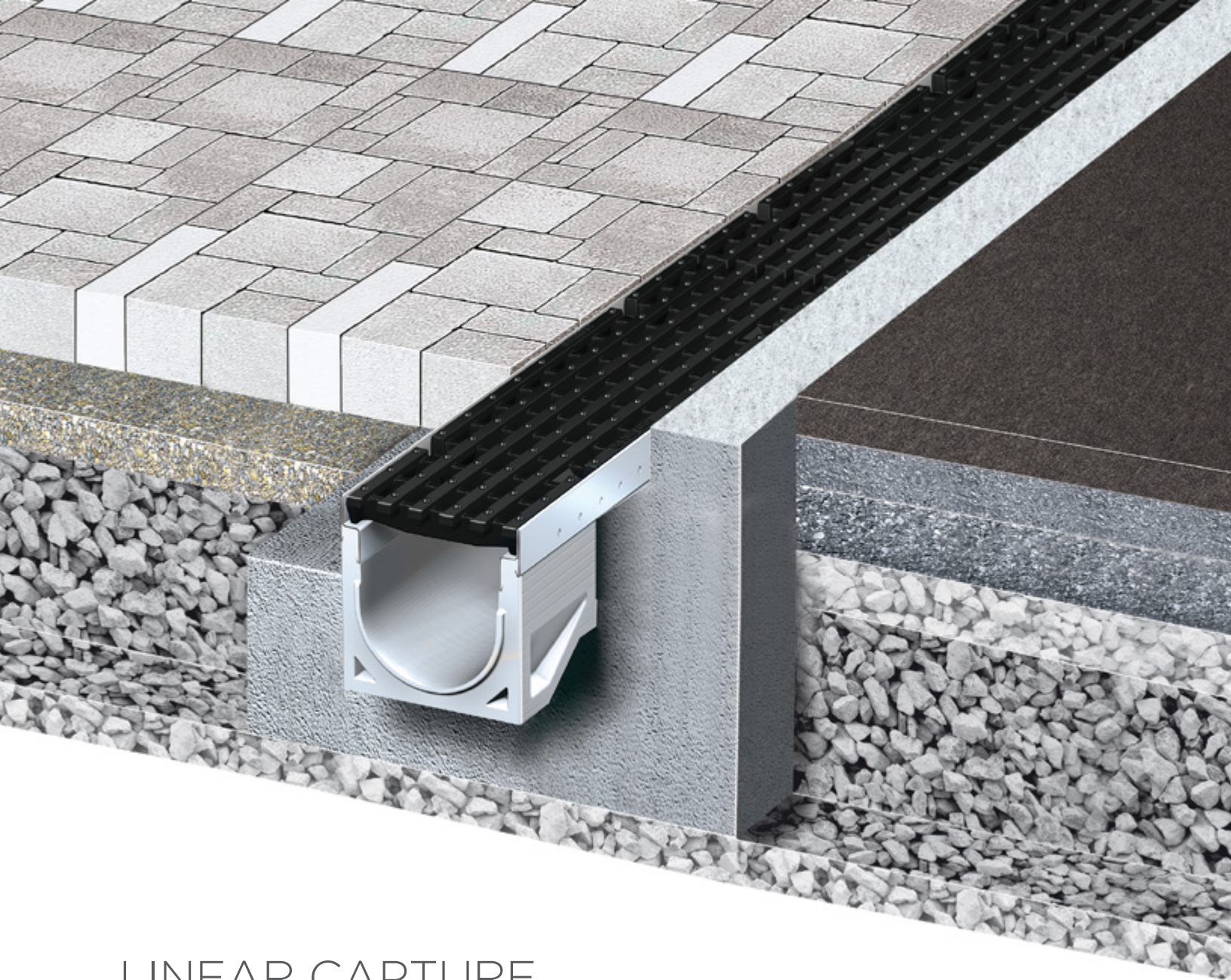
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Collecting residual liquids coming from storm water and surface runoff percolating through waste in disposal sites and storage centers.

Soleno's leachate collection systems are custom designed and manufactured according to the specific conditions of each site.







## LINEAR CAPTURE

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Perpendicular collection across the full width of a drainage surface such as a parking deck, street or sloped residential driveway. Excavation area and depth are less than for conventional drainage systems.





# SOLFLO MAX LINEAR COLLECTION

Linear catch basin connected with double bell outlet with integrated gasket and clips (DBIGC)

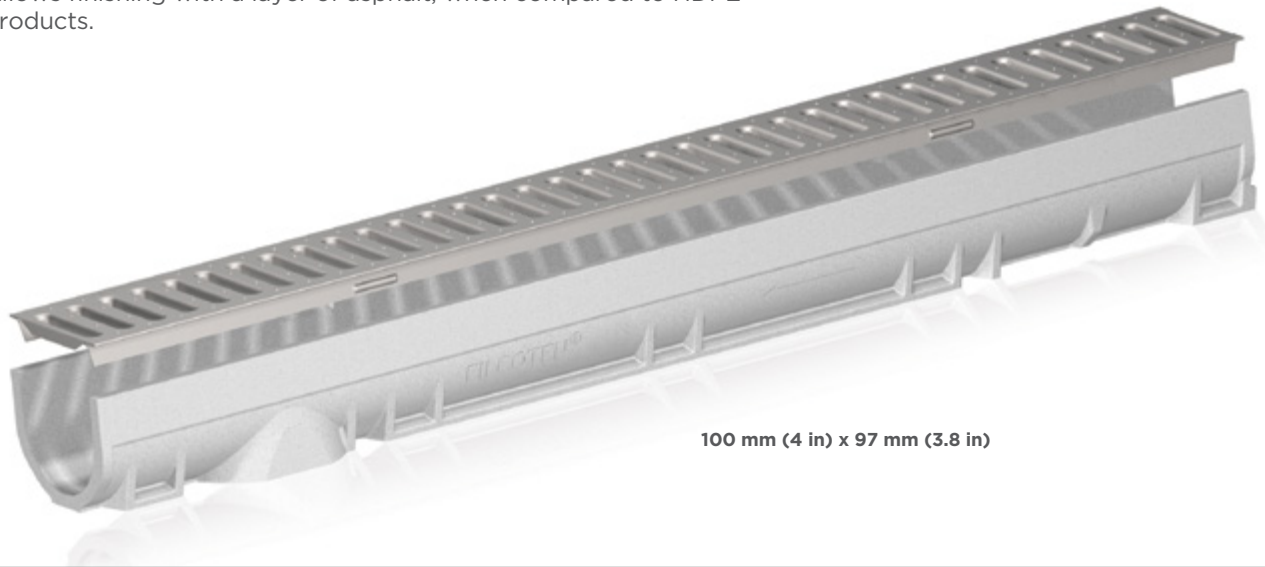
- Withstands CL-625, H-25 and HS-25 highway loads.
- Collection and rapid evacuation of storm water.
- Manufactured in galvanized or stainless steel as well as HDPE, it guarantees optimum resistance to corrosion and abrasion compared to traditional solutions (steel/concrete/galvanized steel).



- Withstands intense residential loads.
- Galvanized steel grate included.
- Channel made of fiber-reinforced concrete.
- Allows finishing with a layer of asphalt, when compared to HDPE products.



Load class

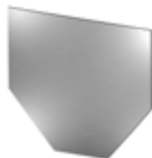


100 mm (4 in) x 97 mm (3.8 in)

## FILCOTEN ROBUST ACCESSORIES



Vertical channel outlet



Channel end plate without outlet



Channel end plate with outlet



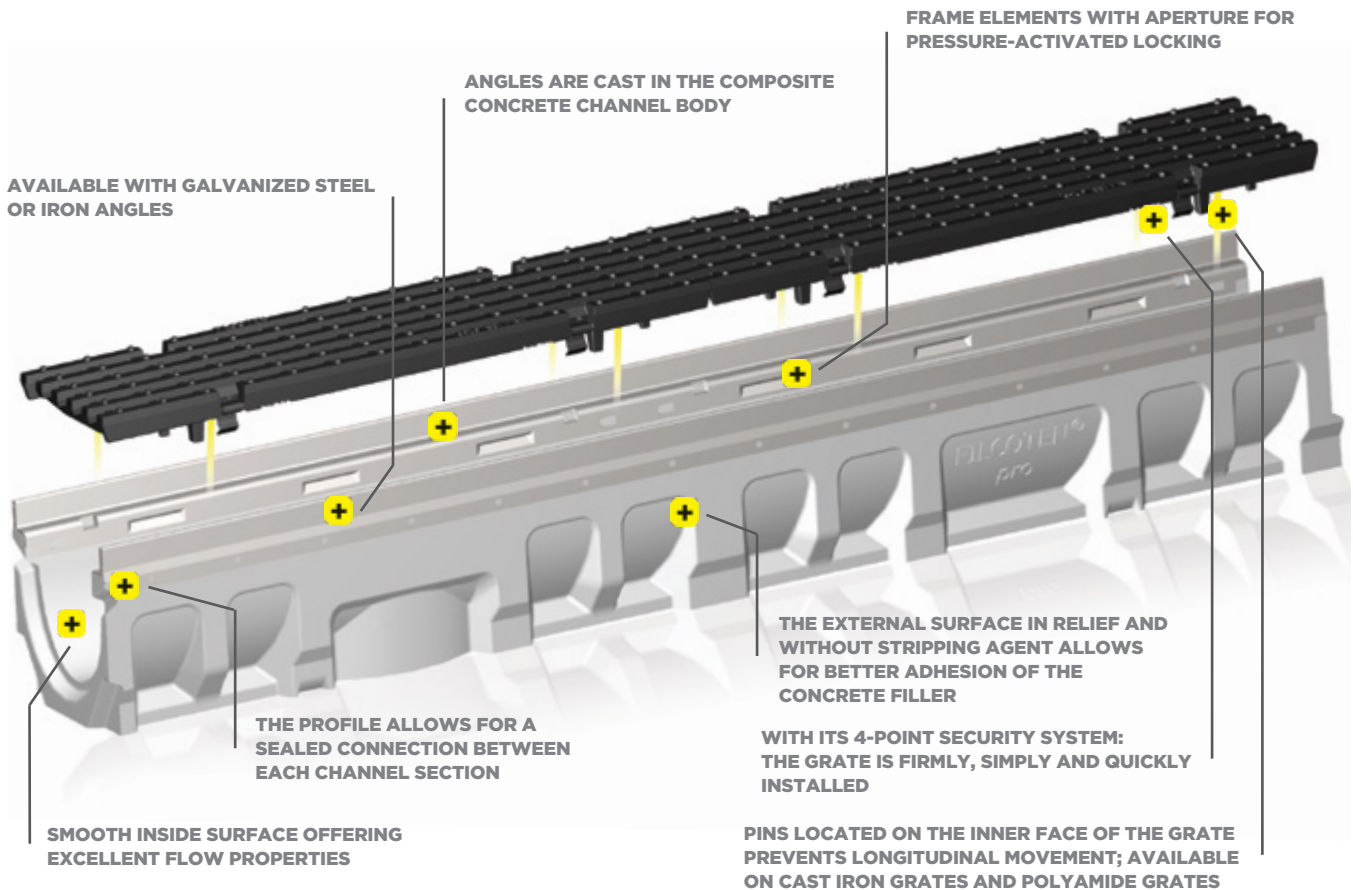
Side connection well (well bucket included)



Well bucket

Note 1 : Compatible with PVC and HDPE pipe\* of 100 mm (4 in) diameter. \*An HDPE adaptor for PVC is required.

The channel system is compliant with the EN 1433 standard, and resists freeze and thaw cycles and road salt down to minus 40 °C.



**VANDAL-PROOF LOCK (OPTIONAL)**









**COMPATIBLE WITH GALVANIZED STEEL GRATING AND BOLTLESS CAST IRON GRATES.**



# LOAD CLASSES

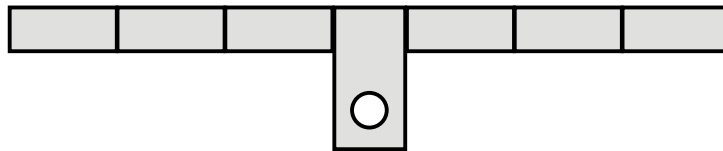
According to EN 1433 standard

A	B	C	D	E	F
					
<ul style="list-style-type: none"> <li>• Bicycle paths</li> <li>• Residential</li> <li>• Private pedestrian areas</li> </ul>	<ul style="list-style-type: none"> <li>• Parks</li> <li>• Private parking</li> <li>• Public pedestrian areas</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial development</li> <li>• Indoor and outdoor public parking</li> </ul>	<ul style="list-style-type: none"> <li>• Traffic</li> <li>• Highways</li> </ul>	<ul style="list-style-type: none"> <li>• Industrial areas</li> <li>• Roads and highways (heavy-duty loads)</li> <li>• Industrial traffic</li> </ul>	<ul style="list-style-type: none"> <li>• Air strips</li> <li>• Heavy wheel loads</li> <li>• Military bases and naval ports</li> </ul>
3,372 lb	28,100 lb	56,200 lb	89,920 lb	134,800 lb	202,320 lb
15 kN	125 kN	250 kN	400 kN	600 kN	900 kN

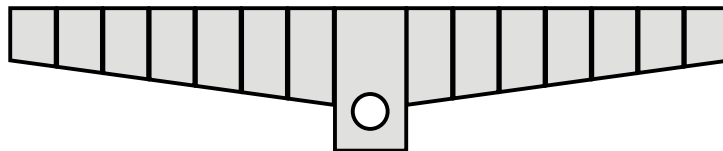
## PRODUCT AVAILABILITY

This brochure shows the Filcoten products normally in stock at Soleno. However, several other products and sizes, including systems with slopes, architectural or slotted grates, and products that meet the Class F requirements (airports) are available upon request and for specifications. Talk to your Soleno representative.

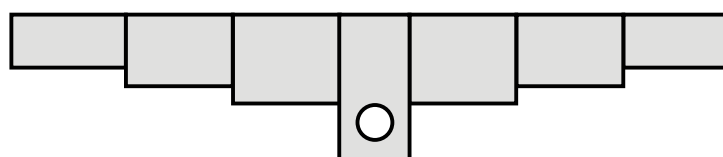
Example of a system without slope



Example of a system with slope



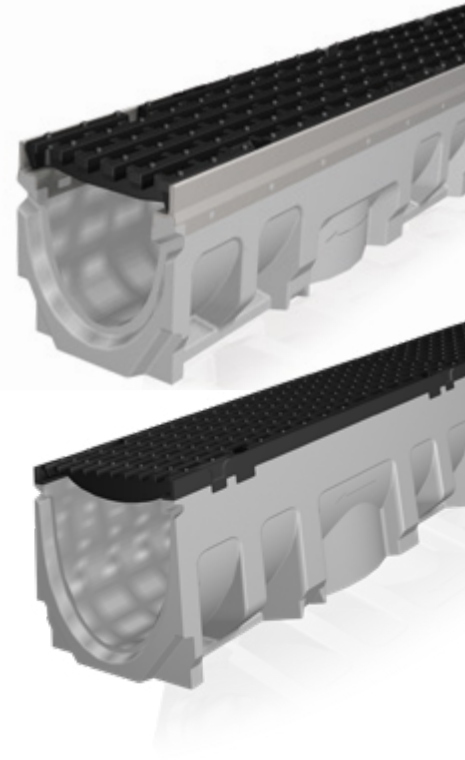
Example of a cascade system



## CHANNELS WITH 4 mm GALVANIZED STEEL AND 5 mm CAST IRON ANGLE BRACKETS

Filcoten Infra channels are available in widths of **100 mm** (4 in) **150 mm** (6 in), **200 mm** (8 in) and **300 mm** (12 in) and in varied depths from 142 mm (5,6 in) and 360 mm (14,2 in).

Several factors, such as load class, flow rates, the width and the depth of the channel required, influence the selection of the channel and the grate to use. For additional information, consult the technical documentation available on our website or contact your Soleno representative.

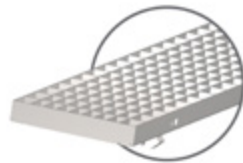


## GRATES FOR FILCOTEN INFRA CHANNELS AND WELLS

- Our range of grates covers average to heavy traffic loads requirements.
- Depending on the choice of grates, this professional range is designed for pedestrian areas, private and public parking areas, industrial areas, and roads and highways.
- The grates for channels are available in lengths of one meter or half a meter and those for side connection well are available in half a meter.
- Grates availability will vary depending on the selected channel. For more information, consult the technical documentation available on our website.



**A** Slotted galvanized steel grate



**B** ADA galvanized steel grating



**C** ADA perforated galvanized steel grate\*



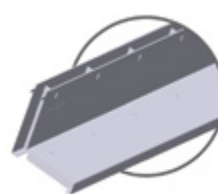
**C** ADA perforated polyamide grate\* (2)



**C** ADA cast iron grate\* (2)



**D** ADA cast iron grate (2)



**C** ADA galvanized steel slot top



**E** Cast iron grate with bolts\*\* (2)  
(bolts not included)

ADA: Americans with disabilities Act  
\* Heelproof grate

\*\* Compatible with drainage channels with cast iron angle brackets only  
(2) Available in section of half a meter



## FILCOTEN INFRA WELLS

- The Filcoten Infra lineup offers two types of angle brackets for its wells; in 4 mm **galvanized steel** or 5 mm **cast iron**.
- Filcoten Infra wells are available in widths of **100 mm** (4 in), **150 mm** (6 in), **200 mm** (8 in) and **300 mm** (12 in)
- Silt bucket included in well.
- See section of the connections and adapters for outlet details.
- For more information, consult the technical documentation available on our website.

### Galvanized steel angles



Model of 100 mm (4 in) or 150 mm (6 in) width



Model of 200 mm (8 in) width



Model of 100 mm (4 in) or 150 mm (6 in) width



Model of 200 mm (8 in) width



Model of 300 mm (12 in) width

### Cast iron angles

## ACCESSORIES FOR FILCOTEN INFRA CHANNELS



Vertical channel outlet



Channel end plate without outlet



Channel end plate with outlet<sup>(1)</sup>



HDPE adaptor for PVC for 100 mm (4 in) diameter



Manhole adaptor PVC DR35 Format for 150 mm (6 in) and 200 mm (8 in) diameter



Vandal-proof lock<sup>(2)</sup>



Nuts and bolts for cast iron grate with bolts

## ACCESSORIES FOR FILCOTEN INFRA WELLS



End plate



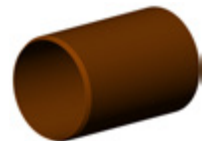
Riser 415 mm (16,3 in) for 300 mm (12 in)



HDPE adaptor for PVC for 100 mm (4 in) and 150 mm (6 in) diameter



Manhole adaptor PVC DR35 Format for 150 mm (6 in) diameter

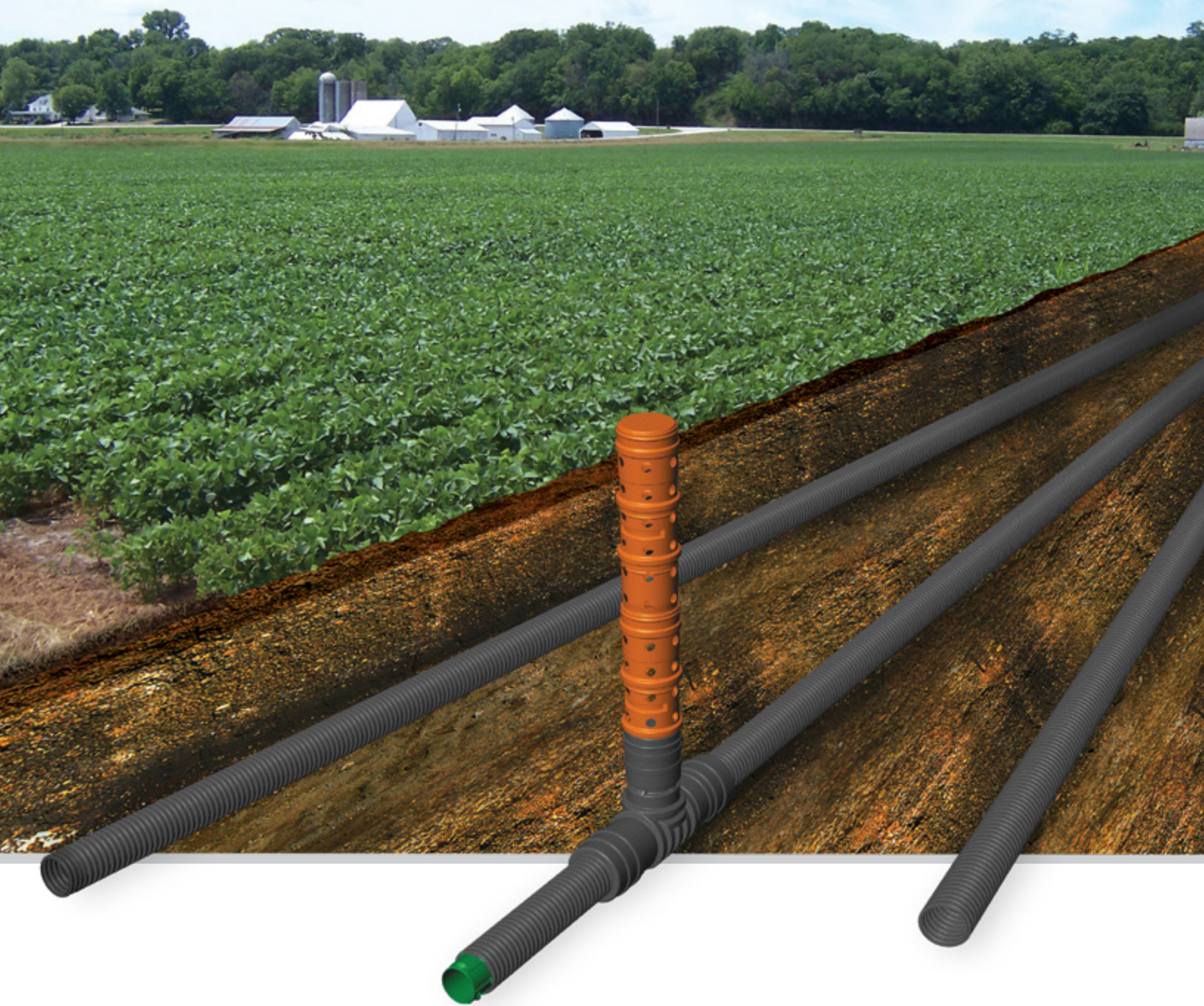


Side connection adaptor 200 mm (8 po)

Note 1 : Compatible with PVC and HDPE pipe of 100 mm\* (4 in), 150 mm\*\* (6 in) and 300 mm\*\* (12 in) diameter.

\*An HDPE adaptor for PVC is required. \*\*A manhole adaptor, PVC DR35 format is required.

Note 2 : Compatible with galvanized steel grating, perforated galvanized steel grate and boltless cast iron grates (optional).



## AGRICULTURAL SUBSURFACE DRAINAGE

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Promotes gravitational drainage of water in agricultural land after precipitation and helps control the ground water level.





## PERFORATED DRAIN (TYPE 2)

### PERFORATED AND FILTERED DRAIN (TYPE 2)

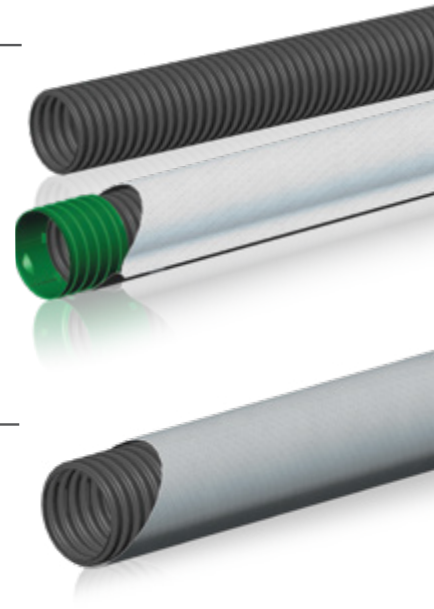
The perforated drain **Type 2** is intended for installation in **clay soil**.

The perforated and filtered drain **Type 2 with 100-micron** openings is intended for installation in **sandy or silty soil**, with a **D85 between 21 and 120**.

The perforated and filtered drain **Type 2 with 250-micron** openings is intended for installation in **sandy or silty soil**, with a **D85 between 121 and 400**.

**MODEL SHOWN:**  
Perforated drain Type 2.

**MODEL SHOWN:**  
Perforated drain Type 2 filtered with nonwoven polyester with 100-micron openings with double bell snap coupler (DBS).



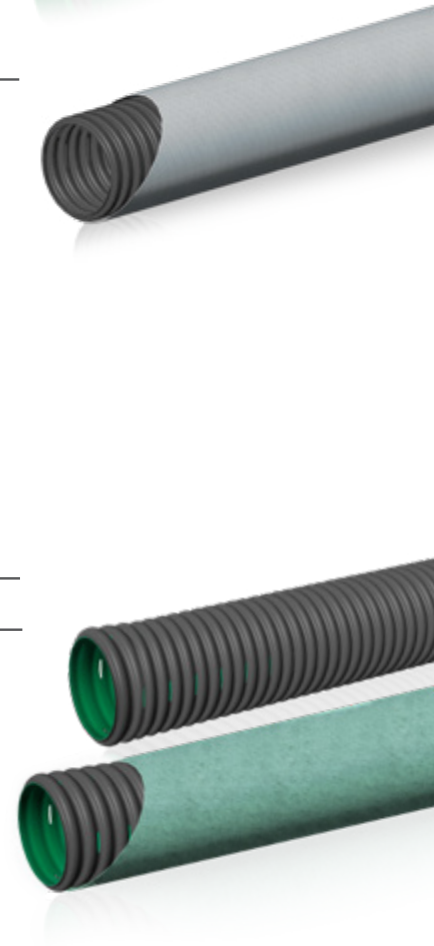
### PERFORATED AND FILTERED DRAIN MEGA 3 (TYPE 3)

The perforated and filtered drain **Mega 3 (Type 3) with 100-micron** openings is recommended for installation in **loamy soil with fine loam to very fine sand** with a **D85 between 21 and 120**. Or, when the analysis shows the **presence of iron ochre**.

The perforated and filtered drain **Mega 3 (Type 3) with 250-micron** openings is recommended for installation in **soil rich in fine and medium sand** with a **D85 between 121 and 400**. Or, when the analysis shows the **presence of iron ochre**.

The perforated and filtered drain **Mega 3 (Type 3) with 450-micron** openings is recommended for installation in **soil containing coarse sand to gravel** with a **D85 over 400**.

**MODEL SHOWN:**  
Perforated drain Mega 3 (Type 3) filtered with nonwoven polypropylene with 450-micron openings.



## PERFORATED SOLIFLEX (TYPE 3)

### PERFORATED AND FILTERED SOLIFLEX (TYPE 3)

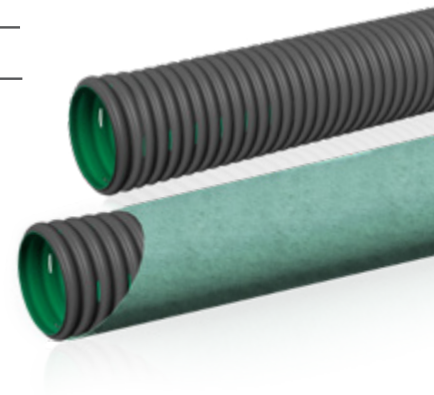
- Flexible drain whose smooth interior minimizes sediment accumulation, while greatly facilitating cleaning.
- Provides a better Manning's value (0.012) than the standard corrugated drain, to promote rapid water evacuation.

The **perforated SoliFlex Type 3** is recommended in presence of **iron ochre** or when it is installed with a **clean stone backfill**.

The **perforated SoliFlex Type 3-250 microns** is recommended when soil test clearly indicates a soil **rich in fine and medium sand**.

**MODEL SHOWN:**  
Perforated SoliFlex (Type 3).

**MODEL SHOWN:**  
Perforated SoliFlex (Type 3) filtered with nonwoven polypropylene with 250-micron openings.



#### PERFORATION

Consult the perforation diagram at the end of this brochure.

#### COUPLERS AND ACCESSORIES

Several couplers and accessories are available. Consult « Couplers and Accessories » section of this brochure.

#### FILTERING POCKET

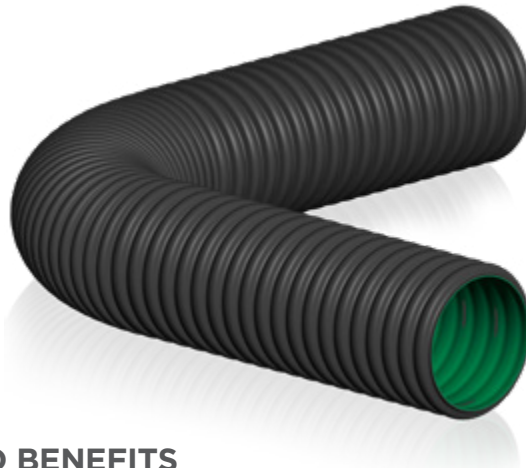
The filtering pocket plays an important part in keeping fine particles from penetrating the interior of the perforated drainage pipe and causing drain obstructions. Consult « Choosing the right filtering pocket » section of this brochure.

# SOLIFLEX®

## FLEXIBLE CORRUGATED DRAIN WITH SMOOTH INTERIOR WALL THAT FACILITATES CLEANING AND PROMOTES RAPID EVACUATION

PROVIDES A BETTER MANNING'S VALUE (0.012) THAN THE STANDARD CORRUGATED DRAIN, TO PROMOTE RAPID WATER EVACUATION.

ITS SMOOTH INTERIOR WALL MINIMIZES SEDIMENT ACCUMULATION, WHILE GREATLY FACILITATING CLEANING.



THANKS TO ITS FLEXIBILITY, THIS CORRUGATED DRAIN WITH SMOOTH INTERIOR WALL REQUIRES FEWER CONNECTIONS THAN RIGID PIPES.

TYPE 3 PERFORATIONS REDUCE THE PROLIFERATION OF IRON OCHRE.

IT FITS PERFECTLY WITH THE SOLENO STANDARD RANGE OF DRAINAGE ACCESSORIES WITH EXTERNAL CONNECTIONS, ENSURING THAT THE ASSEMBLY WILL BE HIGH-PERFORMING AND RESISTANT.

### ADVANTAGES AND BENEFITS

- Being a flexible HDPE pipe that's **lightweight and durable**, it is easy to install and handle.
- Its **green-coloured interior wall** distinguishes it from other standard corrugated drains and facilitates its inspection with a camera.
- Its **flexibility** allows 90° turns with a tight radius of curvature.
- Thanks to its corrugated exterior wall and smooth interior wall, this drain retains the **flexibility** of corrugated drains and the **discharge speed** of a rigid pipe.

Standard drain profile



Interior hollow approximately 7.5 mm deep

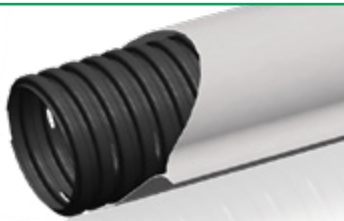
SoliFlex drain profile



Interior hollow approximately 2 mm deep

The slight depression of the interior wall between two rings allows the optimization of the flexibility and finish of the pipe, while ensuring adequate cohesion between the interior wall and the outer wall.

## CHOOSING THE RIGHT FILTERING POCKET



**NONWOVEN POLYESTER**  
100 MICRONS

**Filter sheath for perforated and filtered drain with 100-micron openings**

Nonwoven textiles provide excellent tearing resistance. Its smaller openings prevent infiltration by fine particles. Naturally resists UV rays.



**NONWOVEN POLYPROPYLENE**  
250 MICRONS

**Filter sheath for perforated and filtered drain with 250-micron openings**

The nonwoven filter sheath is recommended when the soil test clearly indicates a soil rich in fine and medium sand.



**WOVEN POLYESTER**  
450 MICRONS

**Filter sheath for perforated and filtered drain with 450-micron openings**

When combined with a Mega 3 drain (Type 3), the nonwoven filter sheath is recommended when the soil test clearly indicates a soil rich in fine and medium sand.

# IRON OCHRE

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## THE PROBLEM

Builders of new homes and owners of existing homes are now concerned about a phenomenon that was relatively unknown until recently: iron ochre.

The problem of clogged foundation drains and the ensuing headaches are nothing new. However, in the last few years, research has shown that a significant number of problems related to clogged French drains are caused in part by iron ochre in aerated soils.

## THE IRON OCHRE

Iron ochre comes from a biochemical phenomenon. When exposed to oxygen and water, iron in the soil and iron-oxidizing bacteria in ground water produce a gelatinous mass of ferric hydroxide called iron ochre. Gradually, this gelatinous mud attaches itself to the walls of the drain surrounding the foundation and can block the drainage pipes.

The vast majority of soils contain iron, but not all are equally affected by iron ochre. Several factors influence the progression of this phenomenon. Iron ochre usually develops more quickly in fine sand, silty sand, organic soils and soils containing minerals.

Iron ochre deposits are identifiable by their ochre or orange colour.



# DRAINAGE ACCESS CHIMNEY

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## ACCESSING THE DRAINAGE SYSTEM

Installing a drainage system in **soil favorable to iron clogging** is always risky.

To reduce this risk, an excellent precaution is to install access chimneys connected to the French drain. As required, a visual examination with a camera and cleaning with pressurized water will dilute iron deposits that may be found in the drainage system. Soleno's drainage access chimneys manufactured out of high-density polyethylene are pre-assembled in the factory, which lowers their installation costs and ensures the quality of the drainage system. Access chimneys must be installed at opposite corners of the building. They must be accessible from the surface and have capped ends.

Note: In addition to the usual precautions, comprehensive soil tests must always be performed before building a new home.

**An access chimney has two main functions:**

1. Allows a camera to be inserted to inspect pipes and detect iron deposits.
2. Provides access to the foundation drainage system for cleaning with pressurized water during periodic maintenance.







## FOUNDATION AND BASEMENT DRAINAGE

Subsurface collection at a building's foundation footings to collect surplus water from the soil. The water collected is disposed of either by gravity or by pumping to a storm water sewer, an exfiltration basin or other outlets.



## PERFORATED DRAIN (TYPE 2)

When **clean stone** is used as backfill around a drain.

## PERFORATED AND FILTERED DRAIN (TYPE 2)

When **drainage sand** is used as backfill around a drain.

### MODEL SHOWN:

Drain filtered with nonwoven polyester with 100-micron openings with double bell snap coupler (DBS).

## PERFORATED DRAIN (TYPE 3)

Designed for draining soil **containing iron ochre**.

### COMMENT FOR PERFORATED DRAINS (FOR FOUNDATION AND BASEMENT DRAINAGE):

When installed with gravel backfill, Type 2 or Mega 3 (Type 3) drains must never be filtered.

See page 19 for more advice on installing drainage systems in the presence of iron ochre.

## PERFORATED SOLIFLEX (TYPE 3)

The **Type 3 perforated SoliFlex** is recommended in **presence of iron ochre** or when it is **installed with a clean stone backfill**.

- Flexible drain whose smooth interior minimizes sediment accumulation, while greatly facilitating cleaning.
- Provides a better Manning's value (0.012) than the standard corrugated drain, to promote rapid water evacuation.
- Its green-coloured interior wall facilitates its inspection with a camera.
- Thanks to its flexibility, this corrugated drain with smooth interior wall requires fewer connections than rigid pipes and allows 90° turns with a tight radius of curvature.

### MODEL SHOWN :

Perforated SoliFlex (Type 3).

### PERFORATION

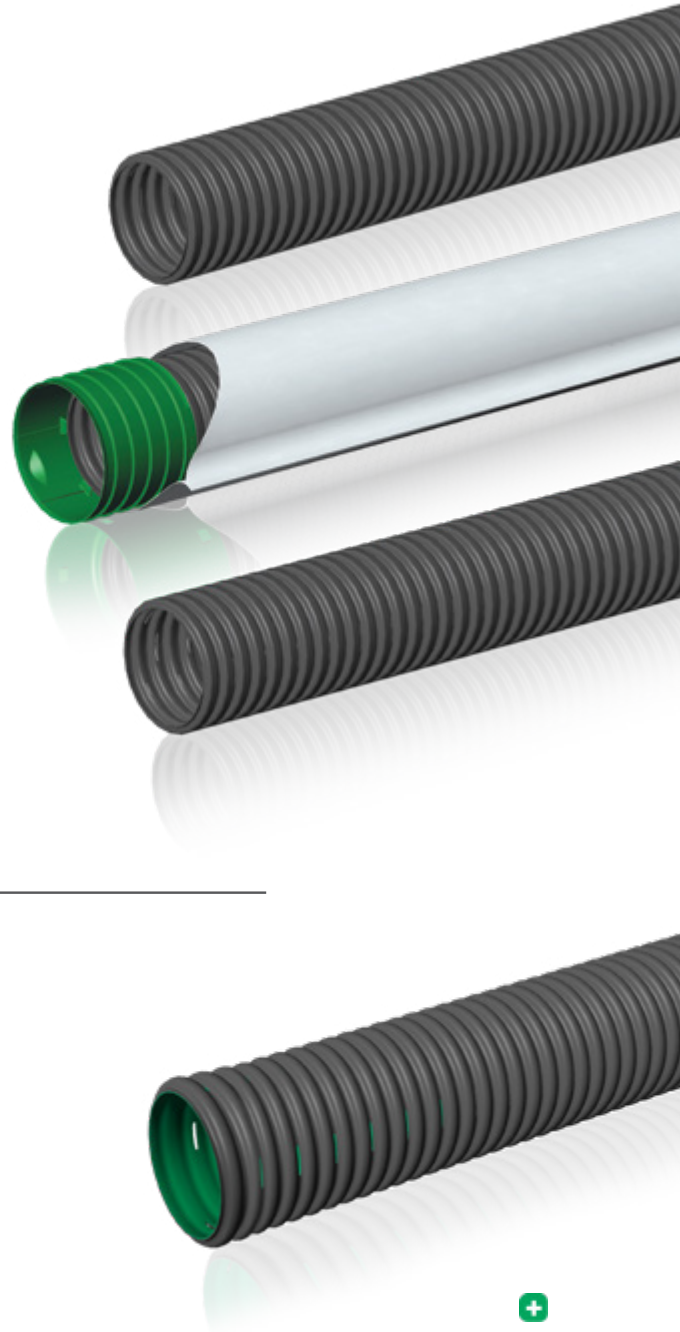
Consult the perforation diagram at the end of this brochure.

### COUPLERS AND ACCESSORIES

Several couplers and accessories are available. Consult « Couplers and Accessories » section of this brochure.

### FILTERING POCKET

The filtering pocket plays an important part in keeping fine particles from penetrating the interior of the perforated drainage pipe and causing drain obstructions







## ROAD AND HIGHWAY DRAINAGE

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Helps to lower the ground water level or to drain infiltration water into a ditch, culvert or storm water sewer.





# CHOOSING THE RIGHT PIPE

## PIPE CHOICE IS BASED ON TWO FACTORS

Structural capacity (strength under compression in kPa) and hydraulic capacity (Manning roughness coefficient, diameter and slope). Both products available, Solflo and Solflo Max, have high loading capacity. However, Solflo Max promotes higher drainage flow because of its smooth interior wall.

## PERFORATED AND FILTERED SOLFLO (R300)

### MODEL SHOWN:

Solflo filtered with a Routex IV nonwoven geotextile with double bell snap coupler (DBS).

## PERFORATED AND FILTERED SOLFLO MAX

### MODEL SHOWN:

Solflo Max filtered with a Routex IV nonwoven geotextile with double bell snap coupler (DBS).

Soleno offers a complete line of couplers equipped with exclusive double bell snap (DBS) technology, ensuring quality installation.



## COUPLERS AND ACCESSORIES

Several couplers and accessories are available. Consult « Couplers and Accessories » section of this brochure.

# GEOTEXTILE

## DRAINCOTEX/DRAINATEX

DRAINATEX geocomposites eliminate hydrostatic suppression beneath the road surface and accelerate the evacuation of infiltrated water towards the DRAINCOTEX vertical drainage elements.

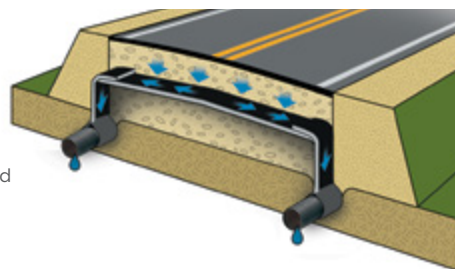
DRAINATEX maintains much higher hydraulic transmissivity than the in situ soil, even with the weight of the roadway, due to its durable composition and high mechanical strength.

DRAINCOTEX geocomposites were especially designed to direct water vertically towards a collecting pipe. DRAINCOTEX is composed of two nonwoven textiles wrapped around

a geotextile core whose permeability is 1,000 to 10,000 times greater than that of the surrounding soil. A filtering pocket is provided for inserting a perforated pipe at the base. A nylon cord inside the pocket facilitates insertion of the pipe.

The DRAINCOTEX system also separates the foundation from the shoulder soil and protects the soil from the margin effect. It may be used alone or with the DRAINATEX horizontal drainage system.

- Helps to significantly reduce pavement water retention.
- Provides superior mechanical strength and flexibility.
- Reduces small particle migration
- Increases the service life of roads and highways.



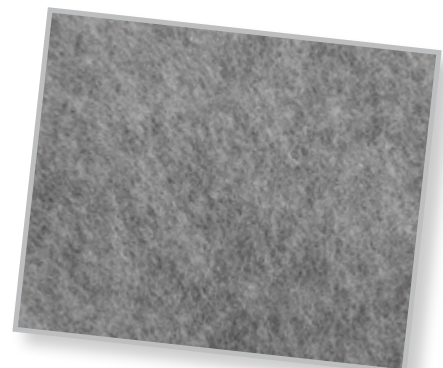
## ROUTEX IV

### FILTER SHEATH FOR PERFORATED AND FILTERED SOLFLO AND SOLFLO MAX WITH 110-MICRON OPENINGS

Needle punched nonwoven geotextile.

Function: filtration, separation and drainage. Treated to resist UV rays. Physical and mechanical properties correspond to MTQ geotextiles Types IV.

Certified by the BNQ according to standard GCTTG 3001-06 and complies with MTQ standards.





## TRENCH DRAIN

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For collecting surface water runoff and evacuating it to an outlet or reintroducing it into the soil via exfiltration.





# CHOOSING THE RIGHT PIPE

## PIPE CHOICE IS BASED ON TWO FACTORS

Structural capacity (strength under compression in kPa) and hydraulic capacity (Manning roughness coefficient, diameter and slope). Solflo supports a greater load than the drain, whereas Solflo Max facilitates higher flow.

## PERFORATED DRAIN

### PERFORATED AND FILTERED DRAIN (TYPE 2)\*

#### MODEL SHOWN:

Drain filtered with nonwoven polyester with 110-micron openings (TXC-10) with double bell snap coupler (DBS).

## PERFORATED SOLIFLEX (TYPE 3)

### PERFORATED AND FILTERED SOLIFLEX (TYPE 3)

- Flexible drain whose smooth interior minimizes sediment accumulation, while greatly facilitating cleaning.
- Provides a better Manning's value (0.012) than the standard corrugated drain, to promote rapid water evacuation.

The **perforated SoliFlex Type 3** perforated drain is recommended in **presence of iron ochre** or when it is **installed with a clean stone backfill**.

The **perforated SoliFlex Type 3-250 microns** perforated drain is recommended when soil test clearly indicates a soil **rich in fine and medium sand**.

#### MODEL SHOWN :

Perforated SoliFlex (Type 3) filtered with nonwoven polypropylene with 250-micron openings.

## PERFORATED SOLFLO

### PERFORATED AND FILTERED SOLFLO\*

#### MODEL SHOWN :

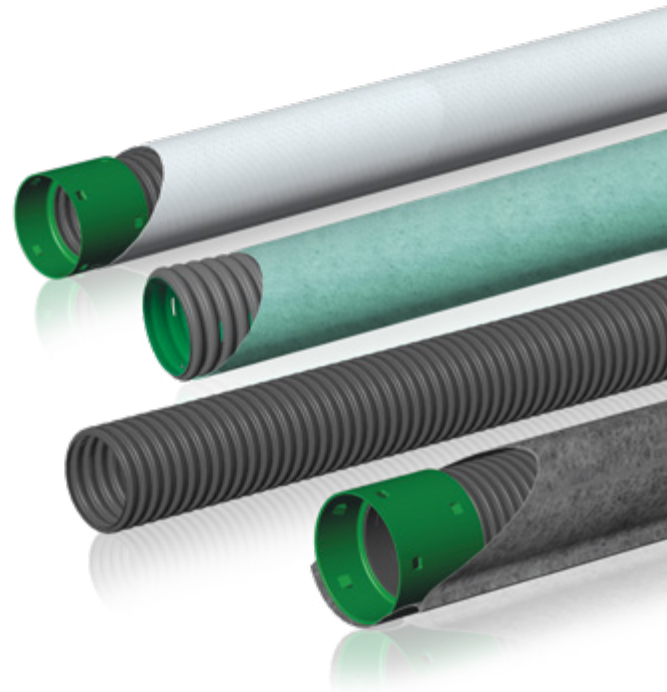
Perforated Solflo.

## PERFORATED SOLFLO MAX

### PERFORATED AND FILTERED SOLFLO MAX\*

#### MODEL SHOWN:

Solflo Max filtered with a Routex IV nonwoven geotextile with double bell snap coupler (DBS).



#### COUPLERS AND ACCESSORIES

Several couplers and accessories are available. Consult « Couplers and Accessories » section of this brochure.

#### FILTERING POCKET

The filtering pocket plays an important part in keeping fine particles from penetrating the interior of the perforated drainage pipe and causing drain obstructions.

Consult « Choosing the right filtering pocket » section of this brochure.

\*You can build a trench drain using a perforated and filtered pipe in sand drainage.



## TURF AND RECREATION DRAINAGE

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For collecting infiltrated surface runoff or lowering the ground water level, then evacuating the water to an outlet (a ditch, peripheral collector, storm water sewer) or to a permanent storage reservoir for reuse.





# CHOOSING THE RIGHT PIPE

## PIPE CHOICE IS BASED ON TWO FACTORS

Structural capacity (strength under compression in kPa) and hydraulic capacity (roughness coefficient, diameter and slope). Solflo supports a greater load than the drain, whereas Solflo Max facilitates higher flow.

## PERFORATED DRAIN (TYPE 2)

### PERFORATED AND FILTERED DRAIN (TYPE 2)

The perforated and filtered drain Type 2 with 100-micron openings must be used when the backfill material is composed of small particles that may obstruct the pipe.

- Soleno is the only manufacturer to provide 38 mm (1.5 in) diameter pipes for these specific applications. Only available with Type 2 drain.

#### MODEL SHOWN:

Perforated drain Type 2 filtered with nonwoven polyester with 100-micron openings with double bell snap coupler (DBS).

## PERFORATED SOLIFLEX (TYPE 3)

### PERFORATED AND FILTERED SOLIFLEX (TYPE 3)

- Flexible drain whose smooth interior minimizes sediment accumulation, while greatly facilitating cleaning.
- Provides a better Manning's value (0.012) than the standard corrugated drain, to promote rapid water evacuation.

The **perforated SoliFlex Type 3** perforated drain is recommended in **presence of iron ochre** or when it is **installed with a clean stone backfill**.

The **perforated SoliFlex Type 3-250 microns** perforated drain is recommended when soil test clearly indicates a **soil rich in fine and medium sand**.

#### MODEL SHOWN :

Perforated SoliFlex (Type 3) filtered with nonwoven polypropylene with 250-micron openings.

## PERFORATED SOLFLO

### PERFORATED AND FILTERED SOLFLO

#### MODEL SHOWN:

Soflo filtered with nonwoven geotextile (Routex IV).

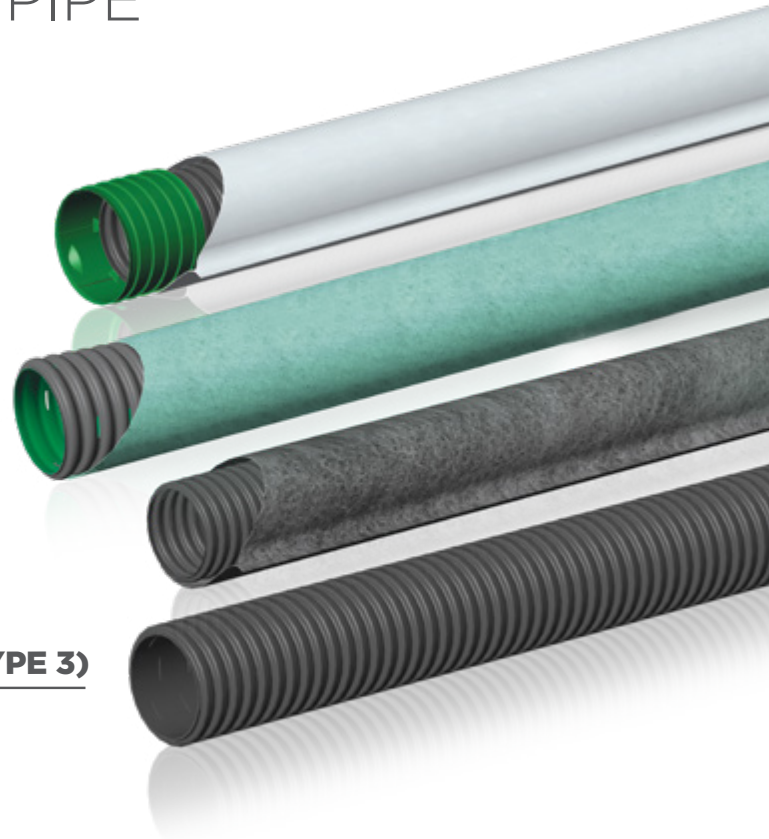
## PERFORATED SOLFLO MAX

### PERFORATED AND FILTERED SOLFLO MAX

Solflo Max is highly recommended for collectors since its roughness (Manning) coefficient is lower than that of pipes with corrugated interior walls.

#### MODEL SHOWN:

Perforated Solflo Max.



#### COUPLERS AND ACCESSORIES

Several couplers and accessories are available. Consult « Couplers and Accessories » section of this brochure.

#### FILTERING POCKET

The filtering pocket plays an important part in keeping fine particles from penetrating the interior of the perforated drainage pipe and causing drain obstructions.

Consult « Choosing the right filtering pocket » section of this brochure.



## PERCOLATION WELL

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Percolation wells are used to collect and reintroduce surface water into the ground through exfiltration.





## PERCOLATION CATCH BASIN

### MODEL SHOWN:

Catch basin with smooth exterior wall and cast iron frame and grate.



## CORRUGATED PERFORATED CATCH BASIN

### MODEL SHOWN:

Corrugated catch basin with polyethylene grate.

## CHOOSING THE RIGHT PERCOLATION WELL

Corrugated perforated catch basins must be selected based on a non-roadway installation, whereas a catch basin with a perforated smooth exterior wall can be installed in either roadway or non-roadway applications. The risk of heaving due to the freeze-thaw cycle must be taken into account. Soil movement will not affect a catch basin with smooth exterior wall. Precautions must be taken and the flows must be calculated to ensure that water returned to the soil does not weaken surrounding structures.

- The perforation plan can be designed based on the percolation properties of the in situ soil.



### COUPLERS AND ACCESSORIES

Several couplers and accessories are available. Consult « Couplers and Accessories » section of this brochure.

## GEOTEXTILE

### TX-80 OR TX-90

MADE FROM NEEDLE PUNCHED POLYPROPYLENE FIBERS

**Function: filtration, separation and drainage**

The **TX-80** serves as a drainage and filtration geotextile when applied as a filter around a percolation well or between clean stone and in situ soil.

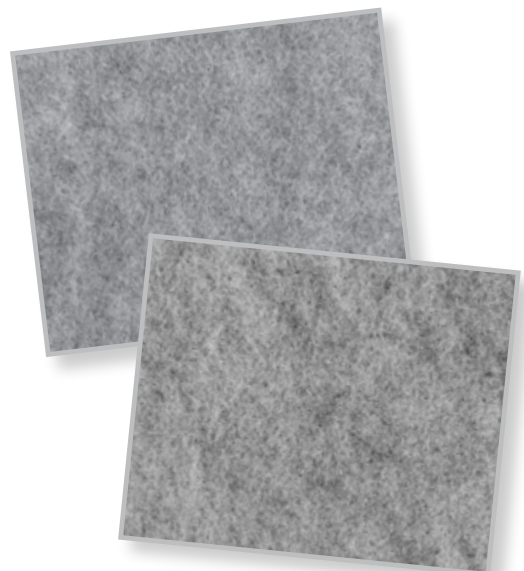
The **TX-90** is used for the same applications as the **TX-80**. As it is thicker, it is more resistant to bursting and tearing.

The **TX-90** is mostly used in civil engineering work.

- Certified by the BNQ according to standard GCTTG 3001-06.

TX-80: 100-micron openings.

TX-90: 90-micron openings.





# COUPLERS AND ACCESSORIES

Soleno offers a complete line of couplers and accessories that can be tailored to site requirements and network design. Our accessories are available in bags or cases.

## COUPLERS



**\*Improved!**

**INTERNAL COUPLER**  
100 mm (4 in)\* to 200 mm (8 in)



**DOUBLE BELL SNAP**  
100 mm (4 in) to 250 mm (10 in)



**\*Improved!**

**SPLIT COUPLING**  
100 mm (4 in)\* to 250 mm (10 in)

## ACCESSORIES



Internal end cap  
75 mm (3 in)



**\*Improved!**

Internal end cap  
100 mm (4 in)\*



Internal end cap  
150 mm (6 in)



**\*Improved!**

External end cap  
100 mm (4 in)\* and 150 mm (6 in)\*



**\*Improved!**

90-degree elbow  
100 mm (4 in)\*



External reducer  
100 mm (4 in) to 75 mm (3 in)



**\*Improved!**

External reducer  
150 mm (6 in) to 100 mm (4 in)\*



Tee



**\*Improved!**

Reducing tee  
100 mm (4 in) to 150 mm (6 in)\*



**\*Improved!**

Tee-Y  
100 mm (4 in)\*



Tee-Y  
150 mm (6 in)



Y-Reducer



Wye



Down spout adapter  
Also available in white



HDPE Adaptor for PVC



Sump well cover



Sump well

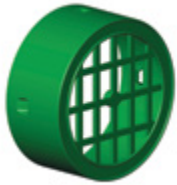


Radon sump basin



Cover for radon sump basin

## ACCESSORIES (CONT.)



Plastic grate with small holes



Plastic grate disc



Plastic grate with large holes, reinforced with stainless steel inserts



Stainless steel fork grate



Extensible black tape  
Also available in white



Stainless steel inside grate



Stainless steel grate



Drainage access chimney



Floor drain with cover  
(Radon sealing also available)



Vertical drain  
(Hickenbottom)



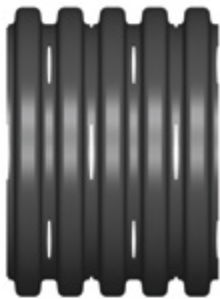
Vertical drain tee



Vertical drain reducer

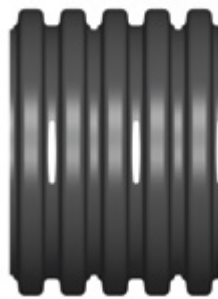
## PERFORATIONS

The main difference between perforated drain (Type 2) and perforated drain (Type 3) is that the sluice is less than 2 mm (0.079 in) in the Type 2 drain and more than 2 mm (0.079 in) in the Type 3 drain.



### TYPE 2

The Type 2 perforated drain has a 1.8 mm (0.071 in) sluice.



### TYPE 3

The Type 3 perforated drain has a 3 mm (0.12 in) sluice.



### MEGA 3 (TYPE 3)

The Type 3 perforated drain has more than 3 mm (0.12 in) sluice.

## COMMENTS:

- Every precaution has been taken to ensure the accuracy of facts and dimensions. We do not accept any liability for any possible errors or omissions. We are constantly improving, and the indicated specifications may be subject to change without prior notice. This documentation cancels and replaces all earlier documentation.
- All references to LEED in our brochures correspond to the Canadian Green Building Council requirements. Please consult Soleno for information on the U.S. Green Building Council requirements.





**SOLENO OBTAINED**

its **ECORESPONSIBLE** Certification - level **2. Performance** in sustainable development from the Council for sustainable industries (CSI) **ECORESPONSIBLE™** Program.

(Solenó plant located at 1160, route 133, Saint-Jean-sur-Richelieu only)



**SOLENO IS ISO 9001 CERTIFIED**

(Saint-Jean-sur-Richelieu plant only)

**SOLENO IS A MEMBER OF THESE AGENCIES:**



**OUR HDPE PRODUCTS AND SOLUTIONS ARE DESIGNED AND MANUFACTURED ACCORDING TO THE MOST RIGOROUS STANDARDS.**