STORM WATER SOLUTIONS







STORM WATER... A problem resource!

As a consequence of climate change, erosion of rivers and streams increases, and volume of water increases, putting an additional burden on existing infrastructure that is barely managing.

When it rains, surface runoff carries suspended solids (SS), pollutants and hydrocarbons, which degrade the quality of the receiving environment. We must now focus on optimal management of this resource by attempting to reproduce as much as possible the hydrological context that existed prior to urbanization.



MASTERING STORM WATER

Retention and replenishment of groundwater by infiltration of surface runoff represents a significant change from the traditional approach. Simply collecting and disposing of storm water is no longer enough!

Since the beginning, Soleno has developed expertise and comprehensive solutions that fully meet current objectives with regard to **collecting**, **conveying**, **treating and storage** of storm water. With our well-established environmental approach, we at Soleno can assist you in designing, selecting, and implementing effective solutions for the sustainable management of storm water.

SOLENO

THE MOST EFFECTIVE APPROACH FOR MANAGING STORM WATER

THE COMPANY FOCUSED ON PERFORMANCE

Soleno is headquartered in Saint-Jean-sur-Richelieu, Quebec. Led by a visionary team, Soleno's mission is to design, manufacture and distribute high quality—primarily HDPE—products for controlling and mastering storm water.

Our highly competent team supports clients in solving problems related to collecting, conveying, treating and storing storm water efficiently, ecologically and sustainably.

The company operates several manufacturing and distribution facilities in Quebec and the Maritimes, and can quickly serve markets in eastern Canada and the northeastern United States.

THE TEAM

At Soleno, the excellence of our solutions is based on our **specialized consulting services** and our expertise developed over the years with designers, network managers and contractors responsible for the installation and maintenance of civil infrastructure.

Our engineers are available to help you identify and implement the best management practices for protecting water resources that may be adversely affected by surface runoff in rural or urban environments.

Our customer service team, supported by very efficient logistics management, ensures the smooth running of all projects.



THE KNOW-HOW born of a proud heritage

Soleno was founded in the late 1970s by Germain and Roger Lazure. Soleno Inc. was founded in 1989 by the merger of two family businesses (Soleno and SPD) recognized for their expertise in agricultural drainage. It has built its expertise around this legacy and today remains **the only Guebec-based company that manufactures HDPE pipes**.

Today, Soleno offers comprehensive, effective solutions and cutting-edge products for managing storm water, while continuing to serve its traditional markets.



INFRASTRUCTURE

COMMERCIAL INSTITUTIONAL



A MATERIAL

High density polyethylene (HDPE) is an extremely heavy-duty and durable material, with a service life that can exceed 100 years!! It is the most environmentally-friendly choice for managing storm water, and it ensures perfect watertightness when used for urban drainage systems. HDPE is resistant to corrosion, abrasion, de-icing salts and vibration, thus ensuring a long life for the infrastructure. This material is a better choice than concrete, thanks to its cost and reduced impact on the environment¹.

LEED[®] we contribute!

As a corporate member of the Canada Green Building Council, Soleno offers a set of solutions for managing storm water that meet LEED® requirements and help toward obtaining LEED® Canada-NC certification for new construction and major renovations.

Credits and qualifications that include LEED® Canada assessment systems are grouped into six categories. The solutions offered by Soleno can contribute to obtaining direct, related or indirect credits in the following categories:

- 1. Sustainable Sites (SS) Credits 6.1 and 6.2
- 2. Water Efficiency (WE) Credits 1.1 and 1.2
- 3. Materials and Resources (MR) Credits 4.1, 4.2, 5.1 and 5.2

¹Energy resources required for manufacturing, transporting and installing HDPE pipes are much lower than those for concrete pipes.

MASTERING STORM WATER HAS NEVER BEEN THIS EASY.





Soleno is ISO 9001-2008 certified

Our HDPE products and solutions are designed and manufactured according to the most rigourous standards:



Soleno is a member of these agencies:



C-S-





COMPREHENSIVE CUSTOMIZED SOLUTIONS

FOR COMPLETE AND SUSTAINABLE MASTERY OF STORM WATER

- High-density polyethylene solutions for collecting water
- High-density polyethylene pipes for conveying water

years a

- Quality control solutions for treating water
- Permanent or temporary storage systems for replenishing ground water
- Standard or customized high-density polyethylene accessories
- Corrugated steel pipes
- Non-woven geotextiles, agrotextiles, smart textiles

同時時期

OUR SOLUTIONS

COLLECTING

SUSTAINABLE AND CUSTOMIZED COLLECTION SYSTEMS

V	Surface drainage	5	Trench drain
7	Agricultural subsurface drainage	Б	Turf and recreation drainage
7	Foundation and basement drainage	V	Percolation well
4	Road and highway drainage	B	Water level control

CONVEYING

HIGH-STRENGTH PIPES WITH DEPENDABLE CONNECTIONS

V	Storm water sewer	👿 Driveway culvert
5	Ditch piping	V Culvert lining
V	HDPE culvert	🐺 Drain collector and outlet
V	Steel culvert	😻 Beaver Barrier

TREATING EFFECTIVE AND EASILY MAINTAINED TREATMENT SOLUTIONS

V	Control of TSS, oils and floating debris by hydrodynamic separation	
2	Control of TSS, oils and floating debris by settling and separation	
3	Control of TSS, nutrients, heavy metals and hydrocarbons	
V	Control of sediments and floating debris	

STORAGE

EASY-TO-INSTALL AND ECONOMICAL STORAGE SYSTEMS

V	Detention system		
2	Retention system		
V	Flow control		
4	High volume storage		





SUSTAINABLE AND CUSTOMIZED COLLECTION SYSTEMS

Mass soil waterproofing in urban areas, increasing surface runoff in rural areas and the proximity of ground water forces network designers to review the design criteria for collection systems.

Due to the increase 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.

STORM WATER COLLECTION

Soleno's collection systems are **durable** and can be easily tailored to existing network pipes. Our products are perfectly tailored to these functions, combining the mechanical properties of HDPE with resistance to heaving due to freezing and de-icing salts, and superior performance in extreme temperature fluctuations. 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 objectives.

TABLE OF CONTENTS







LINEAR COLLECTION



- Linear manhole



AGRICULTURAL SUBSURFACE DRAINAGE

- Corrugated catch basin - Vertical drain (Hickenbottom)

- Perforated and filtered drain (Type 2)
- Perforated drain (Type 2)
- Perforated and filtered drain (Type 3)



FOUNDATION AND BASEMENT DRAINAGE



- Perforated drain (Type 2)
- Perforated and filtered drain (Type 2)
- Perforated drain (Type 3)
- Perforated drain (Type 4)



ROAD AND HIGHWAY DRAINAGE

- Perforated and filtered Solflo (R300) - Perforated and filtered Solflo Max



TRENCH DRAIN



- Perforated drain
- Perforated and filtered drain (Type 2)
- Perforated Solflo
- Perforated and filtered Solflo
- Perforated Solflo Max
- Perforated and filtered Solflo Max



TURF AND RECREATION DRAINAGE

- Perforated drain (Type 2)
- Perforated and filtered drain (Type 2)
- Perforated Solflo
- Perforated and filtered Solflo
- Perforated Solflo Max
- Perforated and filtered Solflo Max



PERCOLATION WELL



- Catch basin with perforated smooth exterior wall
- Perforated catch basin



••

- Water level control - Leachate collection



COUPLERS AND ACCESSORIES





SURFACE COLLECTION

Intercepts and channels storm water to appropriate conveyance pipes.



SS Prerequisite 1

Our surface collection solutions help meet Prerequisite 1 requirements when used in an overall erosion and sediment control plan.

SS 6.1

We can directly contribute to obtaining Storm Water Management: Rate and Quantity credits. MR 4.1/4.2/5.1/5.2

All our solutions qualify for credit points related to the Materials and Resources category.



CATCH BASIN WITH SMOOTH EXTERIOR WALL

WITHSTANDS CL-625 HIGHWAY LOADS.

CORRUGATED CATCH BASIN

ECONOMICAL SOLUTION FOR NON-ROADWAY COLLECTION.



The catch basin with smooth exterior wall is selected based on either roadway or non-roadway use, whereas a corrugated manhole/catch basin must be selected for non-roadway use.

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.



- 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 snap (DBIGS).

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 the technical catalogue.

Ŧ



Several couplers and accessories are available. See pages 22 and 23 of this brochure.



SURFACE COLLECTION, PRIMARILY SERVING TO COLLECT WATER RETAINED IN LOW-LYING AGRICULTURAL LAND.

• The vertical drain's bright colour makes it easy to locate when installed in a field.



CUSTOMIZED DESIGN CATCH BASIN WITH SMOOTH EXTERIOR WALL

Soleno's catch basins with smooth exterior walls can be perfectly adapted to repair work for infrastructure at the end of its service life. 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 to complement the Soleno catch basin with 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.** 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-metre height. An easy-to-install, practical riser system 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 harming 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.



FLOW REGULATION

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

LINEAR COLLECTION

Perpendicular collection in the direction of drainage across the full width of the drainage surface, such as a parking deck, street or sloped residential driveway.

- Withstands CL-625 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).

MODEL SHOWN:

Linear manhole connected with double bell outlet with integrated gasket and snap (DBIGS).



SS Prerequisite 1

Our linear-collection solution helps meet Prerequisite 1 requirements when used in an overall erosion and sediment control plan.

SS 6.1

We can directly contribute to obtaining Storm Water Management: Rate and Quantity credits.



MR 4.1/4.2/5.1/5.2

All our solutions qualify for credit points related to the Materials and Resources category.



AGRICULTURAL SUBSURFACE DRAINAGE

Promotes gravitational evacuation of water in agricultural land following precipitation and helps to control the ground water level.



PERFORATED AND FILTERED DRAIN (TYPE 2)

Intended for installation in sandy or silty soil when filtered with TXC-10.

MODEL SHOWN:

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

Especially recommended for installation in sandy soil when filtered with a knitted textile.

MODEL SHOWN: Drain filtered with woven polyester with 450-micron openings (knitted).

PERFORATED DRAIN (TYPE 2)

Intended for installation in **clay soil.**

PERFORATED AND FILTERED DRAIN (TYPE 3)

Designed for draining soil **containing iron ochre**. The Type 3 drain must always be filtered when installed in agricultural land, as there is no gravel backfill.

MODEL SHOWN:

Drain filtered with woven polyester with 450-micron openings (knitted).

PERFORATION

Consult the perforation diagram at the end of this brochure.



COUPLERS AND ACCESSORIES

Several couplers and accessories are available. See pages 22 and 23 of this brochure.

GEOTEXTILE

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

TXC-10

FILTER SHEATH FOR PERFORATED AND FILTERED DRAIN (TYPE 2) WITH 110-MICRON OPENINGS.

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

KNITTED

FILTER SHEATH FOR PERFORATED AND FILTERED DRAIN (TYPE 3) WITH 450-MICRON OPENINGS.

When combined with a Type 3 drain, the knitted filter sheath promotes quicker drainage with its wide openings.





FOUNDATION AND BASEMENT DRAINAGE

Subsurface collection at a building's foundation footings to collect surplus water in 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.



SS 6.1

Our foundation and basement drainage solutions can contribute directly to obtaining Storm Water Management: Rate and Quantity credits when connected to a residential storage basin. **MR 4.1/4.2/5.1/5.2** All our solutions qualify for credit points related to the Materials and Resources category.



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 110-micron openings (TXC-10) with double bell snap coupler (DBS).

PERFORATED DRAIN (TYPE 3)

Designed for draining soil containing iron ochre.

PERFORATED DRAIN (TYPE 4)

Designed for draining soil with a high iron ochre concentration.

COMMENT FOR PERFORATED DRAINS (FOR FOUNDATION AND BASEMENT DRAINAGE): When installed with gravel backfill, Type 2, 3, or 4 drains must never be filtered.

See page 21 for more advice on installing drainage systems in the presence of iron ochre.

PERFORATION Consult the perforation diagram at the end of this brochure. COUPLERS AND ACCESSORIES

Several couplers and accessories are available. See pages 22 and 23 of this brochure.

GEOTEXTILE

TXC-10

FILTER SHEATH FOR PERFORATED AND FILTERED DRAIN (TYPE 2) WITH 110-MICRON OPENINGS.

Nonwoven textiles provide greater tearing resistance and superior durability than knitted filter sheaths. Its smaller openings are better at filtering small particles. Naturally resists UV rays.



6



ROAD AND HIGHWAY DRAINAGE

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

LEED[®] CANADA-NC:

SS 6.1

When connected to a storm water sewer system that promotes infiltration or permanent storage for reuse of the resource, our road and highway drainage solutions can contribute directly to obtaining Storm Water Management: Rate and Quantity credits. MR 4.1/4.2/5.1/5.2

All our solutions qualify for credit points related to the Materials and Resources category.





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 have high loading capacity; however, Solflo Max promotes higher drainage flow because of its smooth interior walls.

PERFORATED AND FILTERED SOLFLO (R300)

MODEL SHOWN:

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

PERFORATED AND FILTERED SOLFLO MAX

MODEL SHOWN:

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

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



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.
- Diminishes the phenomenon of small particle migration.
- Increases the service life of roads and highways.





COUPLERS AND ACCESSORIES Several couplers and accessories are available. See pages 22 and 23 of this brochure.

ROUTEX III - 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 III & IV.

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



TRENCH DRAIN

For collecting surface water runoff and then evacuating it to an outlet or reintroducing the water to the soil via exfiltration. Replenishes ground water using a perforated pipe while providing temporary storage capacity.



SS Prerequisite 1

Our trench drain solutions help meet Prerequisite 1 requirements when used in an overall erosion and sediment control plan.

SS 6.1

Our solutions contribute directly to obtaining Storm Water Management: Rate and Quantity credits when used in a system to help limit disturbances and pollution from natural surface runoff and storm water drainage. **MR 4.1/4.2/5.1/5.2** All our solutions qualify for credit points related to the Materials and Resources category.



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 SOLFLO

PERFORATED AND FILTERED SOLFLO*

- 1

MODEL SHOWN: Solflo filtered with a Routex III - IV nonwoven geotextile with double bell snap coupler (DBS).

PERFORATED SOLFLO MAX

PERFORATED AND FILTERED SOLFLO MAX*

MODEL SHOWN:

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



COUPLERS AND ACCESSORIES Several couplers and accessories are available. See pages 22 and 23 of this brochure.

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

GEOTEXTILE

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

TXC-10

FILTER SHEATH FOR PERFORATED AND FILTERED DRAIN (TYPE 2) WITH 110-MICRON OPENINGS.

Nonwoven textiles provide greater tearing resistance and superior durability than knitted filter sheaths. Its smaller openings are better at

filtering small particles. Naturally resists UV rays.

ROUTEX III - 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 III & IV.

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





TURF AND RECREATION DRAINAGE

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

LEED® CANADA-NC:

SS 6.1

Our turf and recreation drainage solutions can contribute directly to obtaining Storm Water Management: Rate and Quantity credits when they facilitate the reuse of storm water for purposes that do not require potable water. MR 4.1/4.2/5.1/5.2

All our solutions qualify for credit points related to the Materials and Resources category.



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)

HDPE pipe filtered with TXC-10 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:

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

PERFORATED SOLFLO

PERFORATED AND FILTERED SOLFLO

MODEL SHOWN:

Soflo filtered with nonwoven geotextile (Routex III-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:

Soflo Max filtered with nonwoven geotextile (Routex III-IV)

GEOTEXTILE

TXC-10

FILTER SHEATH FOR PERFORATED AND FILTERED DRAIN (TYPE 2) WITH 110-MICRON OPENINGS.

Nonwoven textiles provide greater tearing resistance and superior durability than knitted filter sheaths. Its smaller openings are better at filtering small particles. Naturally resists UV rays.

ROUTEX III - 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 III & IV.

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



COUPLERS AND ACCESSORIES

Several couplers and accessories are available. See pages 22 and 23 of this brochure.



PERCOLATION WELL

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



SS Prerequisite 1

Our percolation wells help meet Prerequisite 1 requirements when used as temporary sediment traps during construction.

SS 6.1

Our percolation wells contribute directly to obtaining Storm Water Management: Rate and Quantity credits by maintaining natural water drainage and encouraging its infiltration. **MR 4.1/4.2/5.1/5.2** All our solutions qualify for credit points related to the Materials and Resources category.



CATCH BASIN WITH PERFORATED SMOOTH EXTERIOR WALL

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 nonroadway installation, whereas a catch basin with 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. See pages 22 and 23 of this brochure.

GEUTEATILE

TX-80 OR TX-90

MADE FROM NEEDLE PUNCHED POLYPROPYLENE FIBRES.

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.



Ŧ

ILLUSTRATION OF A SPILLWAY FOR WATER-LEVEL CONTROL

WATER LEVEL CONTROL

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.

LEED[®] canada-nc:

SS 6.1

A level-control solution can contribute directly to obtaining Storm Water Management: Rate and Quantity credits when integrated into a system that promotes natural water drainage and encourages infiltration.

MR 4.1/4.2/5.1/5.2

All our solutions qualify for credit points related to the Materials and Resources category.

LEACHATE COLLECTION

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.



IRON OCHRE

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 PHENOMENON

Iron ochre is 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.



Reference:

Technical reference manual for preventing French drain clogging in the residential sector, APCHQ, 2007. Régie du bâtiment du Québec.

DRAINAGE ACCESS CHIMNEY

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.



COUPLERS AND ACCESSORIES Soleno manufactures a complete line of couplers and accessories that can be tailored to site requirements and network design.

COUPLERS



INTERNAL COUPLER



DOUBLE BELL SNAP



SPLIT COUPLER

ACCESSORIES



Internal end cap 75 mm (3")



NEW! Internal reducer 150 mm (6") to 100 mm (4")



Tee-Y 100 mm (4")



Internal end cap 100 mm (4")



External reducer 100 mm (4") to 75 mm (3") 150 mm (6") to 100 mm (4")



NEW! Tee-Y 150 mm (6")



Internal end cap 150 mm (6")



External reducer



Y-Reducer



External end cap



Tee



Υ



90-degree elbow



Reducing tee



Down spout adapter

ACCESSORIES (CONT.)



PE Adapter for PVC



Plastic grate disc



Drainage access chimney



Таре



Plastic grate with large holes, reinforced with stainless steel inserts



Floor drain



Sump well



Stainless steel interior fork grate



Vertical drain (Hickenbottom)



Sump well cover





Stainless steel grate

Stainless steel grate



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 in the Type 2 drain and more than 2 mm in the Type 3 drain.



COMMENTS:

- All products manufactured by Soleno meet or exceed specifications of applicable BNQ, CSA and AASHTO standards.
- 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 Canadian Green building Council. Please refer to Soleno for US Green building council requirements.




Soleno is ISO 9001-2008 certified

Our HDPE products and solutions are designed and manufactured according to the most rigourous standards:





Soleno is a member of these agencies:











HIGH-STRENGTH PIPES WITH DEPENDABLE CONNECTIONS

Pipe maintenance problems, combined with premature deterioration of concrete infrastructure, impose a heavy burden on network managers. The impact of rapid building development puts pressure on systems that are already inadequate. When we add climate change, it becomes necessary to re-evaluate underground pipe design parameters.

CONVEYING STORM WATER

Soleno specializes in designing and manufacturing products for moving, channeling and conveying storm water. Corrugated HDPE pipes are **strong** and adequately meet the loads and multiple conditions to which they are subjected. **Dependable connections** are available, including a patent pending bell outlet with integrated gasket (BIG).

Soleno is also an distributor of Weholite large-diameter HDPE pipes. These pipes with smooth exterior and interior walls are highly recommended for rehabilitating pipes at the end of their service life.

Soleno also manufactures in Quebec a complete line of corrugated steel pipes for specific applications in rural and forested areas.

Our solutions meet all storm water network managers requirements and ensure longevity of installations.

TABLE OF CONTENTS



STORM WATER SEWER



- Watertight non-perforated Solflo Max
- Soil tight non-perforated Solflo Max
- Manhole with smooth exterior wall



DITCH PIPING

- Perforated and filtered Solflo Max
- Watertight non-perforated Solflo Max
- Soil tight non-perforated Solflo Max
- Corrugated manhole/catch basin



HDPE CULVERTS

Non-perforated Solflo MaxWeholite pipes



STEEL CULVERT

- Steel pipes



DRIVEWAY CULVERT

Non-perforated Solflo Max
Steel pipes



- Weholite pipes

- Pipes with smooth exterior wall



COLLECTOR AND DRAINAGE OUTLET

- Collector non-perforated drain (Type 1)
- Collector perforated drain (Type 2)
- Collector perforated and filtered drain (Type 2)
- Collector perforated and filtered drain (Type 3)
- Drainage outlet non-perforated Solflo Max

OTHER APPLICATIONS

- Beaver Barrier
- Ventilation pipes aerial and subsurface

0

- Pumping Station



FABRICATED FITTINGS AND ACCESSORIES



16



SURFACE

- Scupper

EVACUATION

STORM WATER SEWER

Water pipe network distinct from sanitary sewers, specifically for conveying storm water, surface runoff and snow melt.



SS Prerequisite 1

Our storm water sewer solutions help meet Prerequisite 1 requirements when used in an overall erosion and sediment control plan.

SS 6.1

a cather ada

Our solutions contribute directly to obtaining StormWater Management: Rate and Quantity credits, when related to a retention system or a storm water settling tank.

MR 4.1/4.2/5.1/5.2

All our solutions qualify for credit points related to the Materials and Resources category.



WATERTIGHT NON-PERFORATED SOLFLO MAX (R320)

When regulations in effect require **perfect tightness** from water and sediment infiltration and conveyed water exfiltration.

- Soleno's exclusive patent pending bell with integrated gasket (BIG) ensures perfect watertightness. The fixed thermofused gasket simplifies installation, and with its locks, considerably facilitates work supervision.
- The depth of the interlocked overlap of the gasket over two corrugations ensures watertightness for most diameters.
- Available in Quebec in 4 m (13.12') lengths for 100 mm (4 in.) to 900 mm (36 in.) diameters. Using Solflo Max watertight pipes minimizes flats and facilitates work progress in deep and multiple trench installations.
- Available in Atlantic Canada and the USA in 6m (19.68') lengths

MODEL SHOWN:

Watertight non-perforated Solflo Max with integrated gasket bell and locks (LBIG).

SOIL TIGHT NON-PERFORATED SOLFLO MAX (R320)

When the regulations in effect require only tightness from sediment infiltration.

 The depth of the interlocked overlap of the locking bell used on Solflo Max soil tight pipes wrapped with geotextile eliminates any risk of sediment infiltration.

MODEL SHOWN: Soil tight non-perforated Solflo Max with locking bell (LB).



MANHOLE WITH SMOOTH EXTERIOR WALL WITHSTANDS CL-625 HIGHWAY LOADS.

Limits vertical structural displacement due to freeze-thaw cycles.

- Soleno's manholes with smooth exterior walls can be perfectly tailored to all types of pipe while maintaining network watertightness.
- In most cases, their diameter can be the same as that of the connections, which
 prevents oversizing the manhole, at the same time lowering the cost of the whole
 system.
- · Much lighter than traditional manholes, they facilitate on-site installation.
- Manholes with smooth exterior walls eliminate the need for frost-resistant geocomposite. As they are made from HDPE, they provide **excellent resistance to de-icing salts, abrasives, chemicals and vibration.**

MODEL SHOWN:

Manhole with smooth exterior walls with adjustable cast iron grate and lid, and double bell outlets with integrated gasket and locks (LDBIG).

FABRICATED FITTINGS

Several watertight and soil tight fabricated fittings are available. See the Fabricated Fittings section at the end of this brochure.

ACCESSORIES

Soleno manufactures a complete line of accessories that can be tailored to site requirements and network design. Consult the Accessories section at the end of this brochure.

OPTIONS

Several options are available: riser, ladder, lift eyelet, safety platform, special grate and lids. For more information on these options, consult the next page of this brochure and the technical catalogue.

Ŧ

THE SUSTAINABLE ALTERNATIVE THE MANHOLE WITH SMOOTH EXTERIOR WALL

Soleno's manhole with smooth exterior wall can be perfectly tailored for infrastructure repair work or designed according to your specific requirements for new installations. For most applications, it is an excellent replacement for traditional concrete manholes.

CAST IRON ROAD WORK

A wide range of standard cast iron roadwork products is available to complement the Soleno manhole with smooth exterior wall. Using an adjustable frame, frame guide and circular lid permits its use under a roadway encountering structural resistance to meet CL-625 highway loading requirements as defined in standard CAN/CSA-S6-06

MANHOLE

As it is made from HDPE, the Soleno manhole with smooth exterior wall has excellent resistance to deicing salts, abrasives, chemicals and vibration caused by vehicular traffic.

Available in customized heights for diameters of 600 mm (24 in.) to 3,350 mm (132 in.). Practical and easyto-install risers help to adjust the final height of the manhole.

Manholes larger than 1,050 mm (42 in.) are manufactured with a reduced-diameter upper section. allowing use of a 900 mm (36 in.) cast iron crown. The upper section is equipped with angled structural reinforcements and a base plate facilitating anchoring and stabilization. A manhole can also be used as a pumping station since it is completely watertight.

ENTRIES AND OUTLETS

The welded HDPE design helps to assemble entries and outlets with diameters equivalent to the nominal exterior diameter of the manhole. It is therefore possible to connect a 900 mm (36 in.) pipe (entry and outlet) to a 900 mm (36 in.) manhole. HDPE manholes provide substantial savings in purchasing, excavation and installation costs. Oversizing is not required, as opposed to traditional concrete installations.

Soleno also provides all the basic connections for integrating the HDPE manhole to existing networks and connections for HDPE, PVC, concrete and TTOG pipes.

OPTIONS

Elevation, ladder, eyelet lift and safety stop. These options complete the creation of a customized manhole

FLOW REGULATION

Soleno offers a line of high-quality flow regulators. Vortex and centrifugal flow regulators are often used in manholes, in temporary storage system outlets or directly in the storm water sewer network. Consult our Storage brochure to obtain more information about Soleno's flow regulators.







DEPENDABLE CONNECTIONS

With Soleno's watertight and soil tight connectors, joining HDPE pipes is simple, in any situation.

BELL WITH INTEGRATED GASKET THE WATERTIGHT SOLUTION

For gravity networks requiring **perfect watertightness from ground water infiltration and conveyed water exfiltration**, the patent pending bell with integrated gasket is the best solution.

With the depth of its interlocked overlap, the unique integrated gasket design ensures two permanent points of contact on the crest of the corrugations*, ensuring watertight connections.

FIXED THERMOFUSED GASKET

This unique property ensures the quality of every joint on the site by guaranteeing the presence and position of every gasket during installation.

BELL WITH INTEGRATED GASKET

Protects the gasket from friction, displacement and inversed installation, while greatly facilitating the insertion of pipes.



SLIGHTLY OVERSIZED BELL

Makes it possible to cut the pipe being inserted to the required length. The bell outlet with integrated gasket accepts full diameter pipes.

LOCKS

Every bell is provided with locks that help validate the quality of the installation and the depth of the interlocked overlap, while preventing movement during backfill.

* For most diameters

LOCKING BELL THE QUICK SOLUTION

For networks requiring protection from coarse sediment infiltration, a locking bell system without gaskets is highly recommended. Soleno's locking bells interlock quickly with their integrated locks to prevent joint movement during installation.





SPLIT COUPLERS THE ECONOMICAL SOLUTION

Split couplers help join pipes with plain ends, by wrapping the junction with a moulded strip which perfectly matches the pipe contour. This is a simple and economical system that prevents infiltration by coarse sand.

Soleno connectors meet the requirements of NQ, CSA and AASHTO standards.



DITCH PIPING

Water pipe network for storm water and non-roadway surface runoff that can lower or replenish ground water by infiltration and exfiltration or direct it towards an outlet.



SOIL TIGHT NON-PERFORATED SOLFLO MAX (R320 AND R210)

When regulations in effect require only tightness from sediment infiltration.

 The depth of the interlocked overlap of the locking bell wrapped with geotextile eliminates any risk of sediment infiltration.

MODEL SHOWN: Non-perforated Solflo Max with locking bell (LB).

WATERTIGHT NON-PERFORATED SOLFLO MAX (R320)

When regulations in effect require **perfect tightness** from water and sediment infiltration and conveyed water exfiltration.

- Soleno's exclusive patent pending bell with integrated gasket (BIG) ensures perfect watertightness. The fixed thermofused gasket simplifies installation, and with its locks, considerably facilitates work supervision.
- The depth of the interlocked overlap of the gasket over two corrugations ensures watertightness for most diameters.
- Available in Quebec in 4 m lengths for 4 in. to 36 in. diameters.
- Available in Atlantic Canada and the USA in 6m (19.68') lengths
- Also available in diameters of 1,050 mm (42 in.), 1,200 mm (48 in.) and 1,500 mm (60 in.), watertight or soil tight.
- Using Solflo Max watertight pipes minimizes deflection and facilitates work progress in deep and multiple trench installations.

MODEL SHOWN:

Non-perforated Solflo Max with locking bell and integrated gasket (LBIG).

PERFORATED AND FILTERED SOLFLO MAX (R320 AND R210)

To allow water infiltration while limiting small particle migration.Routex

• Soleno offers a complete line of connectors equipped with the exclusive locking bell technology, ensuring quality installation.

MODEL SHOWN:

Soflo Max filtered with a (Routex III-IV) nonwoven geotextile with locking bell (LB).



CORRUGATED MANHOLE/CATCH BASIN

An economical and sustainable solution for non-roadway use.

- As they are made from HDPE, our corrugated manhole/catch basins provide excellent resistance to de-icing salts, abrasives and chemicals.
- Easy to handle.
 - Available with a cast iron or plastic grate.

MODEL SHOWN:

Corrugated manhole/catch basin with plastic lid and locking double bell with integrated gasket (LDBIG).

ROUTEX III - IV FILTER SHEATH FOR PERFORATED SOLFLO AND SOLFLO MAX

FILTERED 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 III & IV. Certified by the BNQ according to standard GCTTG 3001-06 and comply with MTQ standards.

ACCESSORIES

Soleno manufactures a complete line of accessories that can be tailored to site requirements and network design. Consult the Accessories section at the end of this brochure.

OPTIONS

Several options are available: ladder, hooking system: hook or eyelet, special grates and lids and safety stop.

For more information about these options, consult the previous pages and Soleno's technical catalogue.





HDPE CULVERTS

An engineered structure in a water course intended to allow crossing while ensuring the free flow of water and unrestricted movement of aquatic fauna. HDPE pipes are mostly used for roadway infrastructure

Product selection depends on the specified service life. HDPE should be favoured when infrastructure longevity is the primary consideration. Availability of various diameters and hydraulic capacity (Manning roughness coefficient, diameter and slope) must also be taken into account.



NON-PERFORATED SOLFLO MAX

- WIth an exceptional service life, Solflo Max pipes are strong, and their dependable connections eliminate the stack effect risk normally associated with traditional culverts, which easily disconnect due to the freeze-thaw cycle.
- Because of the length of the pipes, installation time is reduced and there are fewer joints compared to concrete pipes.
- Soleno's exclusive patent pending bell with integrated gasket (BIG) ensures perfect watertightness. The fixed thermofused gasket simplifies installation, and with its locks, considerably facilitates work supervision. The depth of the interlocked overlap of the gasket over two corrugations ensures watertightness for most diameters.
- Diameters of 1,050 mm (42 in.), 1,200 mm (48 in.) and 1,500 mm (60 in.) are supplied with an O-ring bell gasket.

MODEL SHOWN:

Non-perforated Solflo Max with locking bell and integrated gasket (LBIG).

WEHOLITE PIPES

We holite pipes should be favoured for large and very large diameters of 1,500 mm (60 in.) and over.

- Joints can be screwed or thermally fused to create a perfectly tight connection.
- Available in long sections with **perfectly smooth interior** walls, regardless of diameter.
- Perfectly withstands corrosion, tubers and biological growth.
- Inert to chemicals.

MODEL SHOWN: Weholite pipe with threaded joint (male side)

GEOTEXTILE

ROUTEX V

ROUTEX V PROVIDES EXCELLENT RESISTANCE TO PUNCTURING AND OTHER LOCALIZED PHYSICAL AGGRESSIONS.

Function: reinforcement, filtration and separation

ROUTEX V was especially designed to play a role in filtration and reinforcement for protecting embankments and ditches beneath rockfills. Installed between soil and rockfill, it helps prevents leaching of small underlying material. It also prevents scouring at the base of the structure.

ROUTEX V is also used to reinforce roadways lying over soil with a low carrying capacity. It also performs a separation function by limiting interpenetration of other sizes of material.

Certified by the BNQ according to standard GCTTG 3001-06. Complies with MTQ Type V geotextiles.







STEEL CULVERT

An engineered structure in a water course intended to allow crossing while ensuring the free flow of water and unrestricted movement of aquatic fauna. Steel pipes are mainly used in rural, forestry and mining sectors.



STEEL PIPES

- Customized non-standard lengths up to 18 m (60 ft.).
- An **economical** solution for large diameter pipes providing conveyance savings due to optimization of the loading space.
- The pipe ends are adjusted to provide annular re-rolled corrugations, which allow couplings to be used to assemble successive lengths on a project.
- Arch pipes are also available by special order. With their arched shape, they help minimize depth of the backfill while conveying additional water volume at a low rate.
- Lightweight compared to traditional materials.



MODEL SHOWN:

Spiral steel pipes with corrugated and bevel cut ends with split collar connector.

ACCESSORIES

Soleno manufactures split collars for steel pipes. Consult the Fabricated Fittings and Accessories section at the end of this brochure.

BEVEL CUT

Allows an increase in the rate of water flow in the culvert during a storm.

OPTIONS

Spiral ends and bevel cut are available upon request. For more information about these options, consult Soleno's technical catalogue.

GEOTEXTILE

TX-F

FUNCTION: SEPARATION AND REINFORCEMENT

Manufactured exclusively for Soleno, non-woven TX-F textile is the ideal solution for ballasting at the ends of culverts and for developing forestry roads.

Its superior strength (1,000 Newtons) and its machined side result in a first class material to improve mechanical properties of soil and maintain integrity of underlying foundation materials.



TX-170

FUNCTION: SEPARATION AND STABILIZATION

For applications requiring tearing resistance of less than 1,000 Newtons, the TX-170 helps increase soil carrying capacity and reduce rut formation.





DRIVEWAY CULVERT

Engineered structure in a ditch to allow crossing between a public roadway and adjacent land while ensuring the free flow of water.

Pipe choice depends on several factors: specified service life, structural capacity (strength under compression in kPa), pipe length, diameter availability and hydraulic capacity (roughness coefficient, diameter and slope). **HDPE is the logical choice when infrastructure longevity is the primary consideration.**



NON-PERFORATED SOLFLO MAX (R210 AND R320)

- Sustainable solution resistant to de-icing salts.
- Solflo Max R210 pipes are available in 6 m (20'), 9 m (30'), 12 m (36') m lengths, minimizing the number of joints compared to traditional pipes.
- Additional lengths available upon request
- Optional bevel cut.
- Easy to handle without heavy equipment.

MODEL SHOWN:

Solflo Max pipe with locking bell and integrated gasket (LBIG) and bevel cut.

STEEL PIPES

- Customized non-standard lengths up to 18 m (60 ft.).
- An economical solution for large diameter pipes.
- Lightweight compared to traditional materials.
- Optional bevel cut.

MODEL SHOWN: Spiral steel pipe with corrugated ends.

GEOTEXTILE

ROUTEX V

ROUTEX V PROVIDES EXCELLENT RESISTANCE TO PUNCTURING AND OTHER LOCALIZED PHYSICAL AGGRESSIONS.

Function: reinforcement, filtration and separation

ROUTEX V was especially designed to play a role in filtration and reinforcement for protecting embankments and ditches beneath rockfills. Installed between soil and rockfill, it prevents leaching of small underlying material. It also prevents scouring at the base of the structure.

ROUTEX V is also used to reinforce roadways lying over soil with a low carrying capacity. It also performs a separation function by limiting interpenetration of other sizes of material.

Certified by the BNQ according to standard GCTTG 3001-06. Complies with MTQ Type V geotextiles.

TX-80 AND TX-90

MADE FROM NEEDLE PUNCHED POLYPROPYLENE FIBRES.

Function: filtration, separation and drainage

The **TX-80** and the **TX-90** serve as drainage and filtration geotextiles when applied as filters around percolation wells 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.







CULVERT LINING

Renewal of a culvert with defects or nearing the end of its service life, by inserting an HDPE pipe with smooth interior and exterior walls.



LINING INSERTION

Currently, various levels of government are extremely concerned about infrastructure rehabilitation. Rehabilitation may appear to be a huge project. To reduce costs and inconvenience, Soleno offers rehabilitation by insertion.

Pipe choice should be based on diameter availability, the exterior diameter of the pipe being inserted and space available in the preparation area.

WEHOLITE PIPE

- Weholite pipes with threaded joints are available in lengths of 5 m (5.16 ft.), 7.6 m (25 ft.) and 15.2 m (50 ft.).
- Diameter of 460 mm (18 in.) to 3,350 mm (132 in.).
- Pipes with smooth interiors and exteriors are extremely resistant to de-icing salts, abrasives, chemicals and vibration.
- Comply with standard F894.

PIPE WITH SMOOTH EXTERIOR WALL

- Ideal for installation in tight spaces where the preparation area is less than 4 m (13') to 5 m (16').
- 42" and 48" diameter pipes with smooth exterior wall and watertight joints are available in 3.08 m (10') lengths.
- Diameter of 450 mm (18 in.) to 1,500 mm (60 in.).

OPTIONS

Steel crosses and sacrificial pipes are available to facilitate pipe rehabilitation.



COLLECTOR AND DRAINAGE OUTLET

A collector is an underground pipe that collects water from several drainage lines to divert it towards a drainage outlet.



COLLECTORS

NON-PERFORATED DRAIN (TYPE 1)

Serves to convey water in order to minimize erosion on an extreme slope.

At the edge of a forest, a non-perforated (Type 1) drain is ideal, as it prevents roots from penetrating the drainage collector.

PERFORATED DRAIN (TYPE 2)

Recommended for **clay** soil installation

PERFORATED AND FILTERED DRAIN (TYPE 2)

Recommended for installation in sandy or silty soil when filtered with TXC-10

MODEL SHOWN:

Perforated drain filtered with nonwoven polyester with 110-micron openings (TXC-10)

Especially recommended for installation in sandy soil when filtered with a knitted textile.

MODEL SHOWN:

Perforated drain filtered with woven (knitted) polyester with 450-micron openings

PERFORATED AND FILTERED DRAIN (TYPE 3)

For agricultural drainage in the **presence of iron ochre**, we recommend installing a perforated (Type 3) drain filtered with a knitted textile.

MODEL SHOWN:

Perforated drain filtered with woven (knitted) polyester with 450-micron openings

- Available diameter: 100 mm (4 in.).
- Available in 1,200 m (3,337'), 600 m (1,968'), 75 m (246') and 45m (147') lengths.
- Fits all 100 mm (4 in.) high-density plastic injection molded smooth interior walls fittings.

DRAINAGE OUTLET NON-PERFORATED SOLFLO MAX (R320)

- Optimal stiffness and flow allowing drainage water to evacuate
- An optional stainless steel grate is available to prevent fauna and flora from settling in the pipe.





Đ

ACCESSORIES

Soleno offers a complete line of heavy-duty accessories with injected plastic smooth interior walls that can be tailored to site requirements and network design. These accessories have cut grooves, allowing the accessory to be installed directly over an existing pipe.

Various grates are also available. Our accessories are available in bags or cases. For more information, consult the Fabricated Fittings and Accessories section found in the Collection brochure or Soleno's technical catalogue.

TXC-10

FILTER SHEATH FOR PERFORATED AND FILTERED DRAIN (TYPE 2) WITH 110-MICRON OPENINGS.

Nonwoven textiles provide excellent resistance to tearing. Its smaller openings are better at filtering small particles. Naturally resists UV rays.

KNITTED TEXTILES

Filter sheath for perforated and filtered drain (Type 3) with 450-micron openings.



SURFACE EVACUATION

For conveying surface water towards an outlet.

- No risk of clogging.
- Direct access for visual inspections.
- Resistant to abrasion and de-icing salts.
- Prevents erosion of embankments.

MODEL SHOWN: HDPE scupper and galvanized steel anchors



ROUTEX V

ROUTEX V PROVIDES EXCELLENT RESISTANCE TO PUNCTURING AND OTHER LOCALIZED PHYSICAL AGGRESSIONS.

Function: reinforcement, filtration and separation

ROUTEX V was especially designed to play a role in filtration and reinforcement for protecting embankments and ditches beneath rockfills. Installed between soil and rockfill, it prevents leaching of small underlying material. It also prevents scouring at the base of the structure.

ROUTEX V is also used to reinforce roadways lying over soil with a low carrying capacity. It also performs a separation function by limiting interpenetration of other sizes of material.

Certified by the BNQ according to standard GCTTG 3001-06. Complies with MTQ Type V geotextiles.



OTHER APPLICATIONS

BEAVER BARRIER

Maintains water flow continuity in culverts in spite of beaver dams.

- Sustainable permanent solution for water flow problems related to beaver dam obstructions in culverts.
- Can also be installed as an overflow in an existing beaver dam
- Available in 300 mm (12 in.) and 450 mm (18 in.) diameters
- Easy to ship, handle and install.

VENTILATION PIPES AERIAL AND SUBSURFACE

Underground heat exchanger:

surface geothermal system that allows preheating or refreshing air from outside a building before distributing it in the inhabited space.

Aerial ventilation:

pipe used to suck up and evacuate stale air from a building.

Hay dryer and pig farm ventilation:

pipe network used to control product humidity or mechanically evacuate odors from a farm building.







PUMPING STATION

With Soleno's extensive pipe selection, it is now possible to **custom** design large format deep pumping stations.

Weholite pipes are available in continuous lengths up to 15 metres (50 ft.) and in diameters up to 3,350 mm (132 in.). When combined with Soleno's expertise in manufacturing complex customized

parts, these pipes ensure watertightness and resistance to local constraints for any installation.

Soleno provides design assistance for building special projects.

FABRICATED FITTINGS AND ACCESSORIES Soleno manufactures a complete line of fabricated fittings and accessories that can be tailored to site requirements and network

design.

FABRICATED FITTINGS



SPLIT COUPLER



SOIL TIGHT LOCKINGDOUBLE BELL



WATERTIGHT LOCKING DOUBLE BELL WITH INTEGRATED GASKET

ACCESSORIES



ACCESSORIES (CONT.)



O-ring gasket



PVC transition O-ring gasket



Beveled pipe



Beveled ends



Steel cross



Sacrificial pipe

COMMENTS:

- All products manufactured by Soleno meet or exceed specifications of applicable BNQ, CSA and AASHTO standards.
- 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 Canadian Green building Council. Please refer to Soleno for US Green building council requirements.





Soleno is ISO 9001-2008 certified

Our HDPE products and solutions are designed and manufactured according to the most rigourous standards:





Soleno is a member of these agencies:









0002.2010.08.12







EFFECTIVE AND EASILY MAINTAINED TREATMENT SOLUTIONS

When it rains, surface runoff carries pollutants, suspended solids and hydrocarbons. Floating debris is swept through collection systems in subsurface networks. Degradation of the receiving environment is becoming a routine environmental issue, forcing network managers to modify their approach and to implement best management practices.

TREATING STORM WATER

Soleno offers effective solutions for meeting surface runoff quality control objectives. Our perfectly watertight HDPE solutions, without moving parts, can be used alone or together to create an **effective and easily maintained** treatment train. Settling, hydrodynamic separation, filtration and infiltration are among the solutions available for eliminating more than 80% of suspended solids.

Soleno's solutions come with complete technical documentation to ensure that system administrators can effectively control what is being directed to receiving environments.

TABLE OF CONTENTS



CONTROL OF TOTAL SUSPENDED SOLIDS (TSS), OILS AND FLOATING DEBRIS USING HYDRODYNAMIC SEPARATION



- Operation
- Advantages and benefits



CONTROL OF TOTAL SUSPENDED SOLIDS (TSS), OILS AND FLOATING DEBRIS USING SETTLING AND SEPARATION

- Storm water settling tank
- Operation
- Advantages and benefits



CONTROL OF TOTAL SUSPENDED SOLIDS (TSS), NUTRIENTS, HEAVY METALS AND HYDROCARBONS

- Aqua-Filter Storm water treatment system
- Operation
- Advantages and benefits



CONTROL OF SEDIMENTS AND FLOATING DEBRIS

- Treatment catch basin with smooth exterior wall
- Operation
- Advantages and benefits







HYDRODYNAMIC SEPARATION Control of Total Suspended Solids (TSS), oils and floating debris by hydrodynamic separation.

This system maximizes removal of Total Suspended Solids (TSS), hydrocarbons and floating debris from surface runoff before it is conveyed to an outlet.

SS Prerequisite 1

Aqua-Swirl meets Prerequisite 1 requirements when used temporarily during construction and site development phases.

SS 6.2

Aqua-Swirl meets requirements for obtaining Storm Water Management Treatment credits, by maximizing contaminant reduction while minimizing dispersion.

MR 5.1/5.2

These solutions qualify for credit points related to the Materials and Resources category.



AQUA-SWIRL® STORM WATER TREATMENT SYSTEM

Size of particles to control: **from coarse silt to very coarse sand (60 microns and over).** In addition to recovering oils and floating debris, it helps to effectively eliminate more than 80% of TSS for a maximum treatment rate of 715 I/s.

OPERATION



Installation: Quick and easy, providing significant savings in project costs. Withstands CL-625 and H-20 loads. Its volume reduces excavation costs. Lightweight and sustainable construction. Lift eyelets and cables provided.

ADVANTAGES AND BENEFITS

- 1
- Aqua-Swirl is available in a range of diameters for removing sediments at greater treatment rates than competing systems.
- Simple system without interior moving parts.
- The hydrodynamic separator is easy to maintain because it provides **direct surface access** to the sediment pyramid accumulated in the reservoir.
- This system eliminates work in confined spaces.
- Aqua-Swirl is made from durable, lightweight and corrosion-resistant high density polyethylene (HDPE).

SETTLING AND SEPARATION

Control of suspended solids (TSS), oils and floating debris using settling and separation

System that helps remove suspended solids (TSS), oils and floating debris from surface runoff before it is conveyed to an outlet.



SS Prerequisite 1

The storm water settling tank meets Prerequisite 1 requirements when used temporarily during construction and site development phases.

SS 6.2

The storm water settling tank meets requirements for obtaining Storm Water Management Treatment credits, by maximizing contaminant reduction while minimizing dispersion.

MR 4.1/4.2

All our solutions smaller than 1,200 mm (48 in.) qualify for credit points related to the Materials and Resources category.

MR 5.1/5.2

These solutions qualify for credit points related to the Materials and Resources category.



SETTLING AND SEPARATION TANK FOR STORM WATER

Size of particles to control: from very fine sand to very coarse sand (100 microns and over) It helps to effectively eliminate more than 80% of TSS for a maximum treatment rate of 550 l/s (145 gallons/sec) in a 3,350 mm/15 m (132''/49') tank.

OPERATION

Mhen it rains, surface runoff carries suspended sediments, oils and floating debris. Collection systems direct water to a storm water sewer which channels it to a settling tank.

- 2 When water carrying suspended pollutants enters the tank, its velocity is reduced to begin the settling process.
- 3 Suspended solids are deposited through settling upstream from the first vertical plate. Oils and floating debris is retained by the second plate.



Installation: quick and easy, providing significant savings in project costs. Withstands CL-625 and H-20 loads. Its volume reduces excavation costs. Lightweight and durable construction.

ADVANTAGES AND BENEFITS

- An economical solution in a range of diameters up to 3,350 mm (132 in.), allowing for very high treatment rates.
- An ideal solution for removing sand particles.
- · Simple system without interior moving parts.

solids and oils.

Treating capacity: Soleno's settling tank treats up to 550 I/s (145 gallons/sec) and helps eliminate sediments and suspended solids greater than 100 µm.

- The storm water settling tank is made from durable, lightweight and corrosion-resistant high density polyethylene (HDPE).
- Monolithic solution up to 15.24 m (50 ft.) in length.
- · This system eliminates work in confined spaces.



FILTRATION Control of suspended solids (TSS), nutrients, heavy metals and hydrocarbons.

System that maximizes the removal of suspended solids (TSS), nutrients, heavy metals and hydrocarbons from surface runoff before it is conveyed to an outlet.



SS Prerequisite 1

Aqua-Filter meets Prerequisite 1 requirements when used temporarily during construction and site development phases.

MR 5.1/5.2

These solutions qualify for credit points related to the Materials and Resources category.

SS 6.2

Aqua-Filter meets requirements for obtaining Storm Water Management Treatment credits, helping to eliminate 80% of total suspended solids and 40% of total phosphorus, thereby maximizing contaminant reduction while minimizing dispersion.



AQUA-FILTERTM

Size of particles to control: from clay to medium silt (20 microns and over).

It helps to effectively eliminate more than 80% of TSS for a maximum treatment rate of more than 200 l/s (53 gallons/sec).

OPERATION

Fine sediments and oils are trapped by the storm water sewer.

The Aqua-Swirl vortex hydrodynamic separator recovers oils and floating debris.

The Aqua-Filter eliminates fine sediments, nutrients and oils.

Filtration elements are accessible by two maintenance access chimneys. Independent laboratory analysis confirms treatment train performance.





Filter cartridges: Filter cartridges eliminate small suspended particles, nutrients, heavy metals and hydrocarbons. Various types of filtration media are available.

ADVANTAGES AND BENEFITS

- · Specifically designed for every treatment rate.
- Filtration media are available for each type of pollutant to be eliminated. They are easy to remove during maintenance.
- Withstands CL-625 and H-20 loads.

- Lightweight HDPE construction.
- Aqua-Filter is equipped with an internal diversion system able to control peak flows.



CONTROL

of sediments and floating debris

Structure that helps maximize removal of sediments and floating debris from surface runoff at the source to prevent it from dispersing through the whole network.



TREATMENT CATCH BASIN

Particles to control: Sediments and floating debris.

OPERATION

- ▲ During rainfall events, surface runoff carries sediments and floating debris. Collection systems direct water to the storm water sewer system.
- Part of the suspended sediments is deposited at the bottom of the catch basin.
- Because of its permanently submerged water intake, the treatment catch basin ensures retention and accumulation of floating pollutants.
- The treatment catch basin acts directly at the source to prevent pollutants dispersing through the whole storm water sewer network.

Inspection and maintenance: As with conventional catch basins, inspection and maintenance are performed from the surface. Sediments and floating debris are pumped out with equipment used for cleaning conventional catch basins.

Pipe connections: Soleno offers dependable connections, compatible with all materials usually used for construction of storm water sewers (HDPE, PVC, concrete and TTOG).

Separation by settling: Suspended solids and small particles are separated in a mechanical separation operation using gravity.

Retention capacity: The volume of contaminants retained by the treatment catch basin is related to the diameter and height of the unit. Larger catch basins retain a higher volume of contaminants.



ADVANTAGES AND BENEFITS

- Can easily replace a standard catch basins from our collecting solutions while helping to control the quality of surface runoff in urban areas.
- An economical solution for upstream treatment of some types of pollutants.
- Soleno's treatment catch basins can be perfectly adapted to all types of pipe while maintaining network watertightness.
- It is easy to install on site, as it is much lighter than traditional catch basins.
- It helps eliminate the need for frost-resistant geocomposite.
- As it is made from HDPE, it provides excellent resistance to de-icing salts, abrasives, chemicals and vibration.

All references to LEED in our brochures correspond to Canadian Green building Council. Please refer to Soleno for US Green building council requirements.




Soleno is ISO 9001-2008 certified

Our HDPE products and solutions are designed and manufactured according to the most rigourous standards:





Soleno is a member of these agencies:



C-S-









EASY-TO-INSTALL AND ECONOMICALSTORAGE SYSTEMS

With the increase in frequency and magnitude of rainfall events, the acceleration and growth of peak flow significantly accentuate erosion of embankments and overloading of already inadequate existing networks. The traditional approach favouring quick and efficient evacuation of surface runoff to receiving environments is no longer enough.

We must now favour storm water infiltration to reproduce the hydrological conditions that existed prior to urbanization.

STORM WATER STORAGE

Soleno's **easy-to-install and economical** storage solutions effectively meet the demands of increased surface runoff volume and are safe because they are subsurface. Soleno's retention chambers, which allow temporary storage and replenishment of ground water, are unique in their class because they allow multi-level installations, which ensure a site's development potential is maximized due to their minimum surface footprint.

For very large volumes, watertight detention systems made from Solflo Max or Weholite pipes with flow regulators permit temporary storage of a significant amount of water in order to minimize the load on municipal storm water sewer systems during peak periods.

These HDPE systems consistently prevent the oversizing of storm water sewer pipes and absorb downpours while preventing sudden surges.

TABLE OF CONTENTS



DETENTION SYSTEM

- Non-perforated Solflo Max detention system
- StormChamber detention system with watertight geomembrane
- Weholite detention system



RETENTION SYSTEM

- StormChamber retention system
- Perforated Solflo Max detention system

FLOW REGULATION

- CEV centrifugal flow regulators
- CY cyclonic flow regulators
- Connector regulators
- Disc regulators



OTHER APPLICATIONS

- High-volume storage
- Residential storage











DETENTION SYSTEM

Subsurface storage zone allowing quality control of surface runoff before it is evacuated to an outlet. Water volume can be evacuated with or without flow control.

LEED[®] canada-nc:

SS Prerequisite 1

Our detention systems can contribute directly to obtaining Storm Water Management: Rate and Quantity credits, as they facilitate the reuse of storm water for purposes that do not require potable water such as: landscaping irrigation and building and automobile maintenance.

MR 4.1/4.2

Our solutions made with StormChambers qualify for credit points related to the Materials and Resources category.

MR 5.1/5.2

Our detention systems qualify for credit points related to the Materials and Resources category.



CHOOSING THE RIGHT SOLUTION

Product selection is based on the volume of water to store while taking into account the constraints of the site: excavation depth and available surface area.

NON-PERFORATED SOLFLO MAX DETENTION SYSTEM

With a design developed for every project and a specifically defined assembly sequence, **quick component installation** provides managers with guaranteed results.

WEHOLITE DETENTION SYSTEM HIGH VOLUME

Weholite should be favoured when the basin requires installation of large or very large diameters from 1,500 mm (60 in.) to **3,350 mm (132 in.)**.

CHAMBER WITH WATERTIGHT GEOMEMBRANE ECONOMICAL

For construction of a large or very large basin, StormChamber with a watertight membrane is very **economical, simple and quick to install.**

ADVANTAGES AND BENEFITS

- I
- The subsurface detention system helps maximize a site's potential for development.
- All HDPE solutions offered by Soleno are economical and durable.
- The **modular design** makes installation easy while significantly reducing shipping costs.



- On-site equipment for unloading and handling is minimized.
- Compared to open pounds, subsurface storage systems are safe and require little maintenance.



RETENTION SYSTEM

Based on the percolation properties of the soil, a subsurface storage zone that allows previously collected and treated surface runoff to be returned to the ground water to reproduce hydrological conditions that existed prior to urbanization.

LEED[®] CANADA-NC:

SS 6.1

Our retention systems can contribute directly to obtaining Storm Water Management: Rate and Quantity credits when integrated into a management plan promoting the free flow of water and boosting its infiltration.

MR 4.1/4.2/5.1/5.2

All our solutions qualify for credit points related to the Materials and Resources category.



CHOOSING THE RIGHT SOLUTION

Product selection is based on the volume of water to store while taking into account the constraints of the site: excavation depth and available surface area. If recovery of sediments is required, the StormChamber system using our unique sediment trap helps recover TSS.

STORMCHAMBER RETENTION SYSTEM

- StormChamber systems for replenishing ground water offer the best ratio of cost/cubic meter (cubic foot) of water stored.
- SOLENO offers the largest HPDE chamber and the only one on the market that allows installation on multiple levels.
- The depth of the backfill can reach **9 m (29.5'), or 4 times** more than allowed by injected polypropylene chambers.
- HDPE is much more resistant to the temperature fluctuations of a northern climate than polypropylene.
- Installing without a geotextile reduces the long-term chances of clogging while promoting bioremediation.



The sediment trap reduces the clogging risks of the subsurface storage system by recuperating suspended solids. Easy, direct access to the sediment trap for maintenance.



- Pipe diameters and perforation plans can be adapted to the specifics of every site based on the soil percolation properties.
- A customized retention system design conforming exactly to the topography of the terrain is possible when using secure subsurface perforated Solflo Max.
- Modular in-factory construction facilitates installation while minimizing project implementation time.
- Use of a buried basin maximizes a site's potential for surface development.



VORTEX FLOW REGULATORS

Vortex device to control the flow and velocity of water

CEV CENTRIFUGAL FLOW REGULATORS

Centrifugal flow regulators are **ideal if the outlet can accept small or moderate evacuation rates**. Available for flows varying from 0.2 to 80 litres (0.05 gal. to 21 gal.) per second, they are usually used directly in a catch basin and are fitted with a mounting plate to permit quick installation. They can also be installed at the outlet of a retention system.

ADVANTAGES AND BENEFITS:

OPTION

pipe (optional).

- Clogging risks are eliminated due to entry and outlet orifice diameters larger than those for **disc or connector regulators.**
- In the event of a toxic spill, pollutant propagation can be limited, as the reversible design makes it possible to block off the link between the catch basin and the storm water sewer network.
- Flow can be adjusted (up to 25% more or less than initial values) using the **adjustable obturator at the entry.**
- Centrifugal flow regulators offered by Soleno are made of stainless steel or aluminum for **extra strength**.
- When installed in a catch basin, a centrifugal flow regulator whose input orifice is always submerged ensures storm water containing hydrocarbons and floating debris is pretreated within the catch basin.

As regulator can also be directly inserted onto the evacuation



Note: Soleno offers CYE vortex flow regulators for specific applications.

CY CYCLONIC FLOW REGULATORS



Cyclonic flow regulators can **control larger water volumes than centrifugal models.**

Available for flows up to 600 litres (158 gal.) per second, they can be used in a catch basin or a permanently submerged adjoining structure. They can also be installed at the outlet of a retention system to reduce pressure on existing installations and meet output volume objectives for the municipal storm water sewer.

ADVANTAGES AND BENEFITS:

- CY cyclonic flow regulators are available with an **adjustment plate** to modify the size of the entry orifice and adjust the flow even after installation.
- Custom design based on the angle of the supply pipe.
- Outlet orifice diameters can be specified to adjust to existing pipes.
- Regulators can be built with a deflection system to eliminate any clogging risks.
- Soleno's cyclonic flow regulators are made of stainless steel or aluminum for extra strength.

ORIFICE FLOW REGULATORS

Orifice device to control the flow and velocity of water

CONNECTOR REGULATORS

Connector regulators are usually used to regulate storm water at the source. They are generally **installed directly in the catch basins** and are kept in position by their slightly conic shape and by hydrostatic pressure. Connector regulators allow storm water storage in catch basins and create surface accumulation during downpours.

Connector regulators allow economical control of the maximum peak flows authorized by many municipalities.

ADVANTAGES AND BENEFITS:

- Made of thermoplastic, they are **economical** and **easy to install** (without tools or mounting hardware).
- They can adapt to an existing installation.
- Can be adapted to PVC, HDPE and concrete pipes.
- They allow municipalities to regulate the flow entering the pipes.



DISC REGULATORS



Disc regulators are usually used to regulate storm water at the source. They are generally installed directly in the catch basins and are kept in position by a grooved framing system bolted to the catch basin. **The removable plate can be replaced to optimize flow.** Disc regulators allow storage of storm water in catch basins and create surface accumulation during downpours.

Disc regulators allow economical control of the maximum peak flows authorized by many municipalities.

ADVANTAGES AND BENEFITS:

- Made of thermoplastic, they are **economical** and **easy to install.**
- They can adapt to an existing installation.
- They can be adapted to rectangular concrete catch basins.
- They allow municipalities to regulate the flow entering the pipes.

OTHER APPLICATIONS

HIGH-VOLUME STORAGE

Permanent subsurface reservoir serving as a water supply.

System allowing potable water savings by creating a reserve fed by surface runoff or natural source. The Weholite stores up to 8.8 cubic meters (29 cubic feet) of water per linear metre. Save on installation costs by using lighter equipment.



SS 6.1

Our high volume and residential storage systems can contribute directly to obtaining Storm Water Management: Rate and Quantity credits, as they facilitate the reuse of storm water for purposes that do not require potable water such as: landscaping irrigation and building and automobile maintenance.

RESIDENTIAL STORAGE

Subsurface storm water reservoir for domestic or exterior garden use.



MR 4.1/4.2

Our solutions made with Solflo Max pipes qualify for credit points related to the Materials and Resources category.

MR 5.1/5.2

All our solutions qualify for credit points related to the Materials and Resources category.

THE MOST EFFECTIVE APPROACH DESIGN AND TECHNICAL SERVICES

RECOMMENDATIONS

Soleno has recognized expertise in implementing comprehensive storm water management solutions. Our representatives and engineers can advise you in selecting

and designing the most appropriate solution for your project and assist you during its installation. Our solutions are supported by customized, detailed technical documentation.



COMPLETE SYSTEM

Expertise developed with network managers enables us to suggest comprehensive solutions integrating all the elements related to collecting, conveying, treating and storage of storm water. Water collected at the source is returned to the receiving environment at an established rate and flow, minimizing environmental impact.

CUSTOMIZED SOLUTIONS

A retention/detention system must meet several quantitative and qualitative criteria and be designed based on the site specifics. Many of Soleno's solutions allow you to configure watertight or soil tight basins of various sizes and volumes, allowing replenishment of ground water as needed.

OPTIONS

Soleno's storage systems can be enhanced with several options: access pits, stainless steel ladders, multiple outlets with watertight and soil tight connectors and, of course, flow regulators to control input to existing infrastructure.

If you are concerned about storage of surface runoff, our HDPE solutions can perfectly meet your needs while ensuring the longevity of your installations and protecting receiving environments.

All references to LEED in our brochures correspond to Canadian Green building Council. Please refer to Soleno for US Green building council requirements.





APPLICATIONS FOR



GENERAL APPLICATIONS:

- STORM SEWER
- CULVERTS
- **RETENTION SYSTEMS**
- REHABILITATION OF
 - CULVERTS
- OTHERS...





			D.					
		-0.D.						
NOMINAL	1.0).	O.	D.	PIT	СН	BNQ-	CSA
DIAMETER	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	210 kPa	320 kPa
100 mm (4")	101	4,0	120	4,7	17	0,7		Х
150 mm (6")	150	5,9	176	6,9	20	0,8		х
200 mm (8")	205	8,1	236	9,3	25	1,0		х
250 mm (10")	251	9,9	296	11,7	33	1,3		х
300 mm (12")	303	11,9	363	14,3	50	2,0	х	х
375 mm (15")	380	15,0	450	17,7	67	2,6	х	х
450 mm (18")	457	18,0	544	21,4	68	2,7	х	х
525 mm (21")	533	21,0	635	25,0	76	3,0	х	Х
600 mm (24")	611	24,0	737	29,0	100	4,0	х	х
750 mm (30")	753	29,6	889	35,0	100	3,9	х	х
900 mm (36")	904	35,6	1044	41,1	102	4,0	х	X
1050 mm (42")	1067	42,0	1224	48,2	102	4,0	AASHTO	140 kPa
1200 mm (48")	1220	48,0	1377	54,2	148	5,8	AASHTO	125 kPa
1500 mm (60")	1520	59,8	1682	66,2	152	6,0	AASHTO	90 kPa







PERFORATIONS FOR





DIAMETER	CORRUGATIONS PER METER	ROWS OF PERF.*	PERF. / METER	TYPE OF PERF, SLIT/CIRC.	
100 mm (4")	60	4	236	25 mm x 3mm (MAX)	
150 mm (6")	50	4	196	25 mm x 3mm (MAX)	
200 mm (8")	39	4	152	30 mm x 3mm (MAX)	
250 mm (10")	30	4	116	30 mm x 3mm (MAX)	
300 mm (12")	20	4	76		
375 mm (15")	15	4	56		
450 mm (18")	15	4	56		
525 mm (21")	13	6	72	CIRCUI AR Ø <10 mm	
600 mm (24")	10	8	72		
750 mm (30")	10	8	72		
900 mm (36")	10	8	72		
1200 mm (48")	6	12	60		

*THE NUMBER OF ROWS CAN VARY ACCORDING TO THE FACTORY AND THE AVAILABILITY OF THE PUNCHERS

NOTE: THE MINIMUM PERFORATED AREA MUST BE AT LEAST 20 cm²/m FOR 100 mm (4") TO 250 mm (10") (AASHTO), 30 cm²/m FOR 300 mm (12") TO 450 mm (18") (AASHTO) AND 40 cm²/m FOR 525 mm (21") TO 1200 mm (48") (AASHTO)









BELL IN-LINE 1050 mm (42") 1200 mm (48") 1500 mm (60")

SILT TIGHT (O-RING GASKET)













PRODUCT CODES FOR

SOLFLOMA

B



		SO	LFLO MAX			
DIAMETER	DECODIDITION	210 kPa PLAIN END	320 kPa P. END	210 kPa	320 kPa	320 kPa
DIAMETER	DESCRIPTION	6M / 9M / 12M	6M	SNAP 6M	SNAP 6M	GASKET 4M / 6M
	NON-PERFORATED				320420C	320404CGI / 320420CGI
100 mm (4")	PERFORATED	-	080	i i i i i i	320415C	-
	FILTERED				320417C	÷
	NON-PERFORATED			6	320620C	320604CGI / 320620CGI
150 mm (6")	PERFORATED		0. 0 .1	-	320615C	2 - 1
	FILTERED				320617C	a second to be a second to be
	NON-PERFORATED				320820C	320804CGI / 320820CGI
200 mm (8")	PERFORATED			i i i i i i	320815C	5-x
. ,	FILTERED			A	320817C	÷
2	NON-PERFORATED			1	321020C	321004CGI / 321020CGI
250 mm (10")	PERFORATED		1	 (a) (b) 	321015C	· ·
	FILTERED				321017C	
	NON-PERFORATED	211224 / 64 / 96		211224C	321220C	331204CGI / 321220CGI
300 mm (12")	PERFORATED	211220 / 60 / ND		211220C	321215C	
	FILTERED	211223 / ND / 26		211223C	321217C	
	NON-PERFORATED	211524 / 64 / 96		211524C	321520C	331504CGI / 321520CGI
375 mm (15")	PERFORATED	211520 / ND / ND	1	211520C	321515C	1
	FILTERED	211523 / ND / ND		211523C	331217C	
	NON-PERFORATED	211824 / 64 / 94		211824C	321820C	331804CGI / 321820CGI
450 mm (18")	PERFORATED	211820 / ND / ND	10 million 10	211820C	321815C	
	FILTERED	211823 / ND / ND	and the second s	211823C	331517C	
	NON-PERFORATED	212124 / 64 / ND	322120			332104CG / NA
525 mm (21")	PERFORATED	212120 / ND / ND		244		(
	FILTERED	212123 / ND / ND	have a second second			
	NON-PERFORATED	212424 / 64 / 96	322420	212424C	322420C	332004CGI / 322420CGI
600 mm (24")	PERFORATED	212420 / ND / ND		212420C	332415C	and the second
	FILTERED	212423 / ND / ND		212423C	332417C	-
	NON-PERFORATED	213024 / 64 / ND	323020	213024C	333020C	333004CGI / NA
750 mm (30")	PERFORATED	213020 / ND / ND	1 1 1 1 1 1	213020C	333015C	· · · ·
	FILTERED	213023 / ND / ND		213023C	333017C	
-	NON-PERFORATED	213624 / 64 / ND	323620	213624C	333620C	333604CGI / NA
900 mm (36")	PERFORATED	213620 / ND / ND		313620C	333615C	
	FILTERED	213623 / ND / ND		213623C	333617C	÷
	SOLFLO MA	X AASHTO 1050 m	nm (42") (R-12	5) - 1200 m	m (48") (R-	140)
1050 mm (42")		•		1 (a) (a)	10-12-1	*314210CG
1200 mm (48")	NON-PERFORATED	· · · · · · · · · · · · · · · · · · ·			5	*314810CG
*NOMINAL LENG	STH: 3m BELL IN-LIN	E WITH O-RING GASK	ET			
**NOMINAL LEN	GTH: 6m BELL IN-LIN	NE WITH O-RING GAS	KET			

Note : Other lengths are available on orders; example 7.3 m for Mc Adam







SOLFLOMAX[®]









UNIVERSAL SOLTEE	PRODUCT CODE
100 mm (4")	SM0004
150 mm (6")	SM0006
200 mm (8")	SM0008

BITS

LUBRICANT				
PRODUCT CODE				
LUBI01 (1 Kg.)				
LUBI04 (4 Kg.)				



THIS DOCUMENT IS THE PROPERTY OF SOLENO. IT SHOULD NOT BE REPRODUCED OR TRANSMITTED WITHOUT WRITTEN CONSCENT. INFORMATION CONTAINED CAN BE SUBJECT TO IMPROVEMENTS OR UPDATES WITHOUT NOTICE. OUR TECHNICAL DEPARTMENT STAFF IS AT YOUR DISPOSAL FOR ALL INFORMATION.

SECTION 1 83



THE LATERAL CONNECTION SOLUTION®

WATER TIGHT • AIR TESTABLE*

EVERYTHING IN THE WORLD SHOULD BE MADE THIS WELL

INSERTA TEE DESCRIPTION[®]INSERTA TEE is a three piece service connection consisting of a PVC Hub, Rubber Sleeve and Stainless Steel Band. INSERTA TEE is compression fit into the cored wall of a mainline and requires no special tooling. INSERTA TEEs are designed to connect 4" (100mm) through 15" (375mm) services to every type of wastewater or storm water pipe currently made in North America.

INSERTA TEE for NEW & REHAB installations allows:

- · Greater safety less time in the ditch
- Reduction in labor hours
- Services to be connected where needed
- Easier grading of mainline

INSERTA TEE for TAPPING EXISTING LINES without disturbing the bedding while eliminating:

- · Glues, epoxies and grout
- Tightening and retightening of bands around mainline
- · Easier grading of mainline
- Awkward gaskets

INSERTA TEE for LINING, BURSTING, and SLIPLINING eliminates:

- Ground water intrusion
- Root intrusion
- Expensive and leaking saddles

***SOME STORM DRAINAGE PIPES ARE DIFFICULT TO AIR TEST**

SPECIFICATIONS

PVC Hub Rubber Sleeve Band Screw Housing Gasket D 3034, SDR 35 & SDR 26 ASTM F477 301 SS 305 SS 301 SS ASTM F477

INSERTA FITTINGS Co.

phone 503.357.2110 fax 503.359.5417 email martyt@insertatee.com









Soleno is ISO 9001-2008 certified

Our HDPE products and solutions are designed and manufactured according to the most rigourous standards:



Soleno is a member of these agencies:









RESEAU environnement