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CHOOSE THE RIGHT WATERSTOP

WATERSTOP BASIC USE

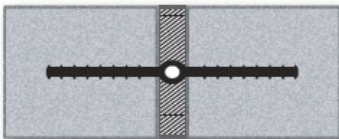
Embedded in concrete, across and/or along the joint, waterstops form a watertight diaphragm that prevents the passage of liquid through the joint.

Suggested Waterstop Design Checklist

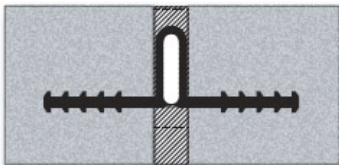
- Verify chemical containment requirements, if any
- Verify hydrostatic head pressure requirements
- Determine joint type and joint movement requirements
- Specify material type for best water sealing performance
- Specify profile and size (by product number, if possible)
- Verify joinery details of dissimilar or asymmetric waterstop profiles, if any (consider using one profile throughout to simplify intersections)
- Specify factory fabrications and fittings for transitions and intersections
- Specify appropriate method for securing waterstop in position
 (see Greenstreak CSI-formatted product specifications for additional guidance)

Selecting a Waterstop Shape

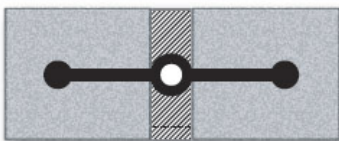
MOVEMENT JOINTS are typically designed to accommodate significant movement due to drying shrinkage, temperature changes, settlement, creep, or live load deflections. The waterstop profile selected must have the ability to accommodate expected joint movement, typically achieved through the use of a centerbulb, tear web, or other suitable waterstop geometry designed to accommodate joint movement. Movement joints typically include contraction joints, expansion joints, and isolation joints. The following profiles are suitable for Movement joints:



Ribbed with Centerbulb shapes are the most versatile type of waterstops available. The centerbulb accommodates lateral, transverse, and shear movement. Larger centerbulbs will accommodate greater movement.

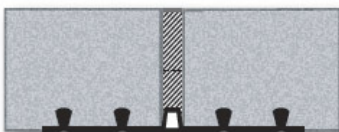


Tear Web shapes accommodate large movements. When joint movement occurs, the tear web ruptures and allows the U-bulb to deform without putting the material in tension.



Dumbbell with Centerbulb shapes accommodate lateral, transverse, and shear movement. Larger centerbulbs will accommodate greater movement.

Consider using Ribbed with Centerbulb for better sealing characteristics.



Base Seal with Tear Web shapes accommodate lateral, transverse, and shear movement. Larger centerbulbs will accommodate greater movement. Base Seal waterstops have some limitations with transitions and intersections.



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PVC WATERSTOP

Greenstreak PVC Waterstops are the benchmark for the industry and exceed standard specifications. The versatility of PVC has made these waterstops popular with specifiers and engineers. Outstanding physical properties, excellent inherent elasticity and resistance to many waterborne chemicals has made it the most widely specified waterstop material.

PVC waterstops are available in several styles and sizes. Choosing the correct waterstop begins with determining whether the joint is moving or non-moving.

Typical Applications For PVC Waterstops Include:

- Water and waste water treatment facilities
- Dams, lock, canals, water reservoirs and aqueducts
- Tunnels and culverts
- Foundations
- Primary and secondary containment structures



Property	Test *ASTM	Nominal Value
Water absorption	ASTM D570	0.15% max
Tear resistance	ASTM D624	300 lb./in. min.
Ultimate Elongation	ASTM D638	350% min.
Tensile strength	ASTM D638	2000 psi min.
Low temperature brittleness	ASTM D746	Passes @ -35°F / -37°C
Stiffness in flexure	ASTM D747	700 psi min.
Specific gravity	ASTM D792	1.38 max.
Hardness Shore A15	ASTM D2240	79±3
Accelerated extraction	Corps of Engineers	
• Tensile strength		
• Elongation		1600 psi min.
		300% min.
Effect of Alkali	CRD-C 572	
• weight change		+0.25% -0.10%
• hardness change		+/- 5 points

PennDOT Approved

Greenstreak conducts regular tests of material physical properties. Refer to the suggested master specification for current values.



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PVC WATERSTOPS

PVC Split Profiles

PennDOT Approved

Eliminates split formwork in long straight runs. Do not use where design of the forms or locations of reinforcing prohibit opening of the split flange.

Quality splicing is extremely difficult at intersections and changes in direction.

Style Number: 723

Application: Special

Width: 6" (152 mm)

Thickness: 3/16" (4.7 mm)



Style Number: 724

Application: Special

Width: 6" (152.4 mm)

Thickness: 3/8" (9.5 mm)



PVC Ribbed with Centerbulb Profiles

The most versatile design available. The centerbulb accommodates transverse, lateral and shear movements. Larger centerbulbs will accommodate greater movements mechanically without significantly stressing the material. Ribbed styles have superior sealing capabilities over dumbbell style waterstops.

Style Number: 735

Application: Moving

Width: 9" (228.6 mm)

Thickness: 3/8" (9.5 mm)



Style Number: 703

Application: Moving

Width: 6" (152 mm)

Thickness: 3/16" (4.7 mm)



Style Number: 701

Application: Moving

Width: 4" (101.6 mm)

Thickness: 3/16" (4.7 mm)



Style Number: 705

Application: Moving

Width: 6" (152 mm)

Thickness: 3/8" (9.5 mm)



PennDOT Approved models:

698, 701, 703, 705, 709, 748

Models 723 and 724

are not currently approved

PVC Tear Web Profiles

Use where large movements are expected. The tear web keeps concrete from entering the bulb during concrete placement. When joint movement occurs, the web ruptures allowing substantial mechanical deformation of the bulb without stressing the material.

Style Number: 698

Application: Moving

Width: 6" (152 mm)

Thickness: 1/8" (3.2 mm)





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HYDROTITE WATERSTOP

Hydrotite Waterstop Physical Properties

Hydrotite is a state-of-the-art hydrophilic waterstop with unmatched durability and watersealing capacity. Comprised of Non-Bentonite, modified chloroprene rubber, Hydrotite expands up to EIGHT TIMES its original volume when exposed to water. This expansion creates an effective compression seal-within joints of limited movement.

Recognized worldwide, Hydrotite has a proven track record as a high quality and cost effective solution to your water containment needs.



Leakmaster LV-1

Leakmaster LV-1 is a single component water-swelling sealant with excellent and unique properties. Leakmaster may be applied in locations where conventional solid sealants cannot be easily applied.

Typical structures utilizing hydrotite include:

- Water and waste water treatment facilities
- Primary and secondary containment structures
- Tunnels and culverts
- Dams, locks, canals, water reservoirs and aqueducts
- Pipe penetrations
- Swimming pools
- Storage tanks
- Retaining walls
- Foundations
- Slabs on grade





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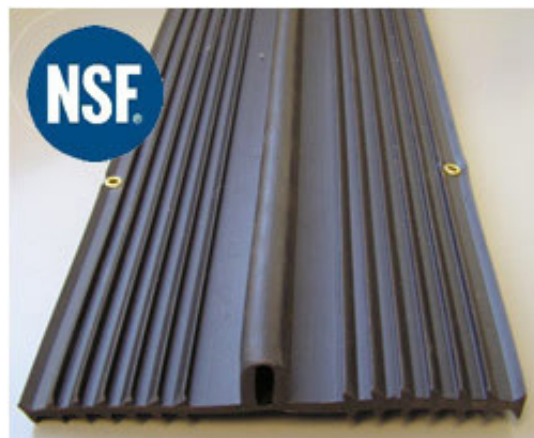
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WESTEC TPE-R WATERSTOPS

Synthetic Rubber Highly Resistant to Oils, Solvents, and Aggressive Chemicals.

Not Readily Soluble in Common Solvents.

Certified to NSF/ANSI Standard 61 for Drinking Water System Components.



WESTEC's Envirostop™ TPE-R (Thermoplastic Elastomeric Rubber) 600 Series Waterstops resist a wide range of oils, solvents and aggressive chemicals and are not readily soluble in any common solvent. Alcohols, ketones, glycols, esters and aqueous solutions of acids, bases and salts have little effect on WESTEC TPE-R Waterstop. TPE-R will swell in aromatic solvents, halogenated organic solvents and hot petroleum oils. Featuring excellent ozone resistance, low temperature flexibility and excellent high temperature (up to 257° F) performance. Our synthetic rubber is heat weldable for easier and higher quality field splicing.

Westec Envirostop TPE-R waterstop has been tested and certified by NSF to NSF/ANSI Standard 61. NSF/ANSI Standard 61 establishes minimum health effects requirements for the chemical contaminants and impurities that may be indirectly imparted to drinking water. Although more commonly known for its use in chemical containment applications, TPE-R waterstop is now widely used as an effective alternative to stainless steel waterstop for ozone contact structures in the water treatment industry. In addition to ozone contact structures, Westec TPE-R waterstop can be specified for any drinking water containment structure where NSF/ANSI Standard 61 certification is required for joint sealing materials.

Physical Properties

Tensile Strength	ASTM D-638	2000 psi (13.8 MPa)
Ultimate Elongation	ASTM D-638	450%
100% Modulus	ASTM D-638	1000 psi (6.9 MPa)
Shore A Hardness	ASTM D-2240	85 Units +/- 5 units
Brittle Point	ASTM D-746	-70° F (-57° C)
Ozone Resistance*	ASTM D-1171	Passed 450 pphm
Peel Strength @ 23° C	ASTM D-816 mod.	22 pli



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WATERSTOP RX-101 RX-102



Expanding Concrete Joint Waterstop

Waterstop-RX is a sodium bentonite based waterstop designed to stop water infiltration through cast-in-place concrete construction joints by expanding upon contact with water to form a positive seal against the concrete. The key to Waterstop-RX's effectiveness is its high sodium bentonite content which provides superior expansion to seal and fill voids and cracks in the concrete. Waterstop-RX

is an active bentonite/butyl-rubber based waterstop that is designed to replace passive PVC/Rubber dumbbell waterstops, thereby eliminating the requirement of special pieces, split-forming and seam welding.

Waterstop-RX has been successfully tested by independent testing firms to over 200 feet (60 meters) of hydrostatic water pressure, under both continuous immersion and wet/dry cycling.

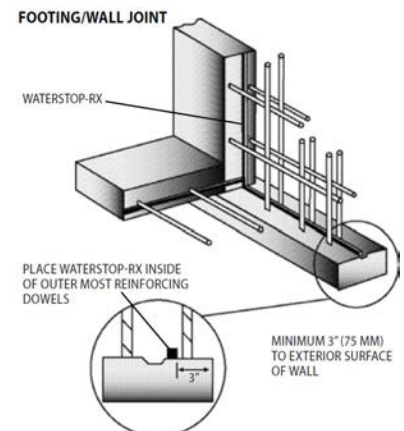
Waterstop-RX 101 is produced in a rectangular shape measuring 1" x 3/4".

The patented trapezoidal shape distributes the expansive force over a greater area and allows the concrete to flow more readily over the product during placement. Waterstop-RX

102 is produced in a half-circle (Crescent) shape measuring 3/4" x 3/8" (Though Waterstop-RX possesses good resistance to many chemicals, the waterstop is not intended to be used as the primary joint sealant for chemical containment vessels. Consult manufacturer for guidance regarding chemical compatibility for secondary chemical containment applications. Additionally, Waterstop-RX is not an expansion joint sealant. Expansion joints require an expansion joint product provided by others.



Waterstop-RX is a reliable, cost-effective means to stop water infiltration through concrete cold joints. It can also be used around pipe and structural penetrations.





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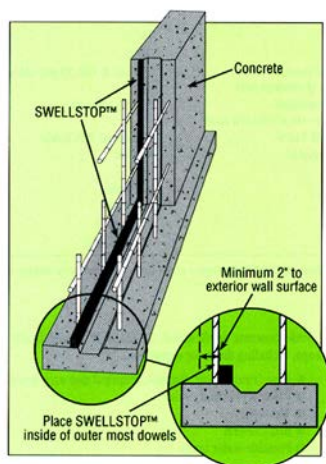
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SWELLSTOP™

Waterstop For Concrete Construction



Concrete structures are only as watertight as the waterstops that join them. SWELLSTOP™ waterstop helps contain the problem of below grade moisture penetration in NON-MOVING joints.

Fast and easy to install, even by a single, unskilled laborer. SWELLSTOP™ keeps construction costs down by eliminating the need for split-forming and fabricated splices.

SWELLSTOP is a flexible, coiled strip of butyl rubber and swellable clay waterproofing joint compound that swells upon contact with water to form a long lasting compression seal.

- SWELLSTOP can be applied by one person without split forming or splicing.
- SWELLSTOP remains flexible under most temperature conditions for all seasons applications.
- SWELLSTOP is non-toxic and requires no special handling.
- SWELLSTOP has excellent adhesion to SWELLSTOP Primer/Adhesive over clean dry concrete.

SWELLSTOP™ Technical Data Physical Properties

PROPERTY	TEST METHOD	SWELLSTOP RESULTS
Specific Gravity at 77°F	ASTM-D-71	1.26
Penetration	ASTM-D-217 150 GTL 300 GTL	53 83
Penetration After Aging 21 days at 130°F Unrestricted Swell	ASTM-D-217 300 GTL	75 300%
Head Pressure Resistance	Greenstreak's Hydrostatic Pressure Test* in actual field simulation of concrete joint.	139-162 ft. (60-70 psi) ultimate
Head Pressure Resistance	Competitor's material penetration Hydrostatic Pressure Test-not in concrete joint.	231 ft. (100 psi)
Accelerated Aging	Mechanical Oven 4 hrs. @ 212°F	Maintained 99% solids
Flow Resistance	3/4" Overhead Joint Exposed to 135°F for 7 days.	No Flow

NOTE: SWELLSTOP is NOT an expansion joint material and SHOULD NOT be used as one. Expansion joints MUST be sealed with a conventional waterstop. For additional information on waterstop for expansion or moving joints, contact GREENSTREAK at 800-325-9504.