



CONCRETE ACCESSORIES

Sika[®] Southern Metal

WATERSTOPS

BUILDING TRUST
CONSTRUIRE LA CONFIANCE



Sika® Southern Metal WATERSTOPS

Offering a variety of solutions across all categories of waterstops, Sika has the knowledge and time tested products to meet the most demanding applications.

- Water/Waste Water Treatment Plants
- Lock and Dam Systems
- Reservoirs and Aqueducts
- Flood Walls
- Retaining Walls
- Foundations
- Tunnels and Culverts
- Bridge Abutments
- Containment Structures and Tanks
- Slabs-on-Ground

When you specify Sika, you are specifying THE first name in waterstops and the trusted source for superior technical and customer service.

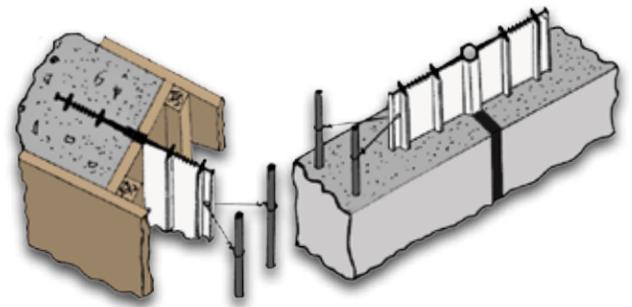
CHOOSING THE RIGHT WATERSTOP

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. Sika® Southern Metal Waterstops are precision engineered for vertical and horizontal expansion joints between cast-in-place concrete units where conditions may subject the concrete to hydro-static pressure or moisture seepage...they are manufactured with the highest quality PVC to provide the strongest tensile strength and elongation capabilities possible with a superior resistance to alkalis, acids, ozone and waterborne chemicals.

Sika® Southern Metal's complete line of shapes and sizes assures a long, lasting, watertight seal for every above or below grade concrete structure...they do not discolor concrete, nor do they produce or support electrolytic action with metal structures nearby or with embedded rebar steel.

Sika® Southern Metal Waterstops maintain their integrity indefinitely...they are the premium choice for strength, impermeability and elongation.



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 Sika® Southern Metal CSI-formatted product specifications for additional guidance)

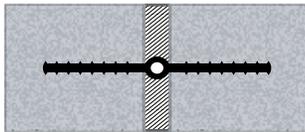


Photo courtesy of Paul C. Rizzo Associates, Inc.

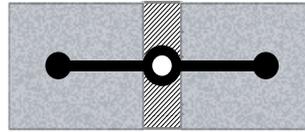
MOVEMENT JOINTS

SELECTING A WATERSTOP SHAPE

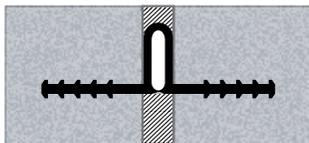
MOVEMENT JOINTS are typically designed to accommodate significant movement due to drying shrinkage, temperature changes, settlement, creep, or live load deflections. The waterstop profile selected must have the ability to accommodate expected joint movement, typically achieved through the use of a centerbulb, 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:



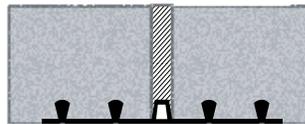
Ribbed with Centerbulb shapes are the most versatile type of waterstops available. The centerbulb accommodates lateral, transverse, and shear movement. Larger centerbulbs will accommodate greater movement.



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.



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



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

PRODUCT AND MATERIAL OPTIONS

Sika has the industry's most comprehensive collection of waterstop products and solutions to meet the most demanding applications. This catalogue is primarily dedicated to PVC (polyvinyl chloride) waterstops, but general information is included for chemical resistant waterstops (TPE-R, PE, Stainless Steel), strip-applied waterstops (Hydrotite, SikaSwell[®]-A, Sika[®] Swellstop[®], Lockstop) and for SikaFuko[®] Injection Hose Systems. Complete catalogues and technical data for each of these products are available in print or online.



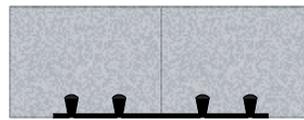
NONMOVING JOINTS

SELECTING A WATERSTOP SHAPE

NONMOVING JOINTS typically have 100% of the bonded steel reinforcement continuous through the joint, and expose the waterstop to negligible or no movement. Flat waterstop profiles without a centerbulb or tear web are suitable for nonmoving joints. Other waterstop materials may be considered for nonmoving joints as well, such as strip-applied or injectable hose waterstops. Examples of waterstop profiles suitable for nonmoving joints are as follows:



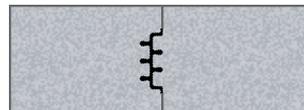
Flat Ribbed shapes are preferred for nonmoving joints and provide the best sealing characteristics.



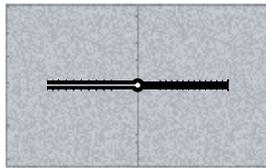
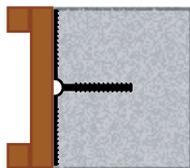
Base Seal is ideal for slab-on-grade joints or backfilled walls and are easy to form. Base Seal waterstops have some limitations with transitions and intersections.



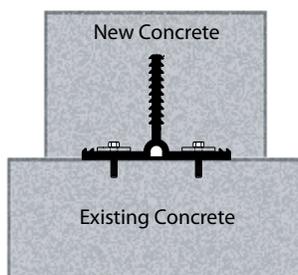
Dumbbell shapes are an alternate profile for nonmoving joints. Consider ribbed shapes for better sealing characteristics.



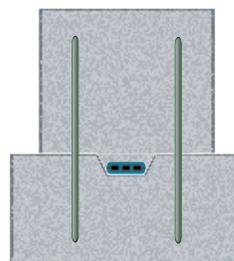
Labyrinth is primarily used in vertical joints. Labyrinth shapes create a keyed joint and do not require split bulkheads. Labyrinth can be difficult to use in horizontal joints and there are some limitations with transitions and intersections.



Split Flange shapes can simplify forming. The split flange is opened and attached to the bulkhead for placement of the first concrete element. After stripping the bulkhead, the flange is closed and anchored for placement of the adjoining element. Split waterstops are suitable for straight runs only. Transitions and intersections are not practical with these profiles.



Waterstops for Retrofit Applications seal joints where new construction meets an existing structure and can be suitable for moving joints. Systems include stainless steel batten bars and fasteners for anchoring to the existing structure with the aid of an epoxy gel.



Strip-applied Waterstops are adhered along concrete joints or penetrations and encapsulated by a subsequent concrete placement. **Hydrotite** is the state of the art for hydrophilic waterstop and is a high-performance, chloroprene rubber material that expands when exposed to moisture to create a compression seal within and along the joint. For less critical applications, Sika also offers SikaSwell®-A and Sika® Swellstop® expanding waterstops.

Sika® Southern Metal PVC WATERSTOPS

Sika® Southern Metal, one of the first manufacturers of polyvinyl chloride (PVC) waterstop, has formulated, compounded and manufactured PVC waterstop for years. Sika® Southern Metal has the knowledge, experience and desire to provide the highest quality joint sealing solutions and services available.

PVC is the industry standard for flexible waterstops, which are typically embedded across and along the joint. PVC is the most versatile waterstop material, offering the broadest design selection and is accepted under the ACI 350 "Code Requirements for Environmental Engineering Concrete Structures". It has great inherent elasticity and is resistant to many waterborne chemicals. It will not discolour concrete or produce electrolytic action.

Sika® Southern Metal offers the industry's widest array of PVC waterstop designs, typically ranging in widths from 100 to 300 mm (4 to 12 in) and thicknesses from 3 to 12 mm (1/8 to 1/2 in). Depending on size, most waterstop shapes are provided in 15 or 30 m (50 or 100 ft) coils. Please contact Sika Canada Inc. for further information or if you need assistance in selecting a waterstop.

PHYSICAL PROPERTIES

All Sika® Southern Metal PVC waterstops are specially formulated and manufactured to meet or exceed industry standard product specifications.

Sika® Southern Metal PVC Waterstops		
Property	Test	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		
-Tensile strength	Corps of Engineers	1600 psi min.
-Elongation		300% min.
Effect of Alkali		
-Weight change	CRD-C 572	+0.25% -0.10%
-Hardness change		+/-5 points

SIKA CONDUCTS REGULAR TESTING OF MATERIALS.

Independent laboratory tests are available for the following applicable standards:

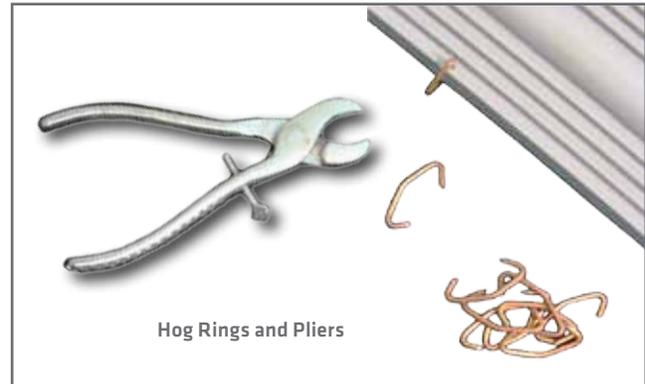
- Corps of Engineers CRD-C 572-74
- Bureau of Reclamation
- CH2M HILL
- MWH
- Various State Highway and/or Public Works Department Standards

Test results conducted using British Standards are also available. Consult a Sika Canada representative for more information.

INSTALLATION AIDS AND FABRICATIONS

PVC waterstops must be securely positioned in the forms to prevent deflection or misalignment during concrete placement. This is achieved by tying off the outer edge of the waterstop to adjacent reinforcing steel. Sika offers options to properly anchor PVC waterstop, including:

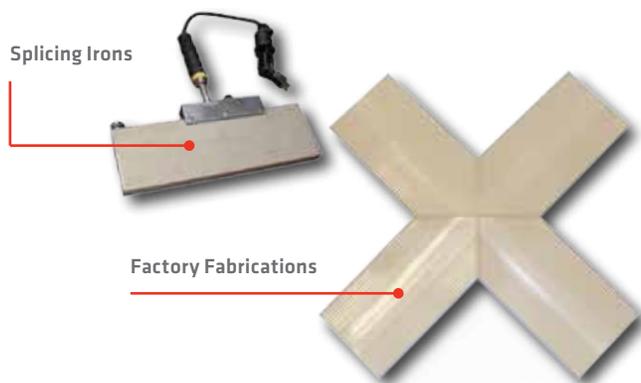
- **PUNCHED FLANGES** - most ribbed shapes can be provided with punched flanges
- **GROMMETS** - select shapes can be provided with brass grommets
- **HOG RINGS AND PLIERS** - available for field application and suitable for most shapes



Virtually every concrete structure requiring a PVC waterstop is going to encounter a joint that will change direction or intersect with another joint. One of the benefits PVC offers is the ability to heat weld the material to create a continuous sealing diaphragm within the joints of a concrete structure.

Waterstop failures are often the result of improper field fabricated transitions and intersections. To avoid potential problems, **Sika strongly recommends FACTORY FABRICATIONS** and maintains an inventory of the most common fabrications to meet the demands of a construction schedule.

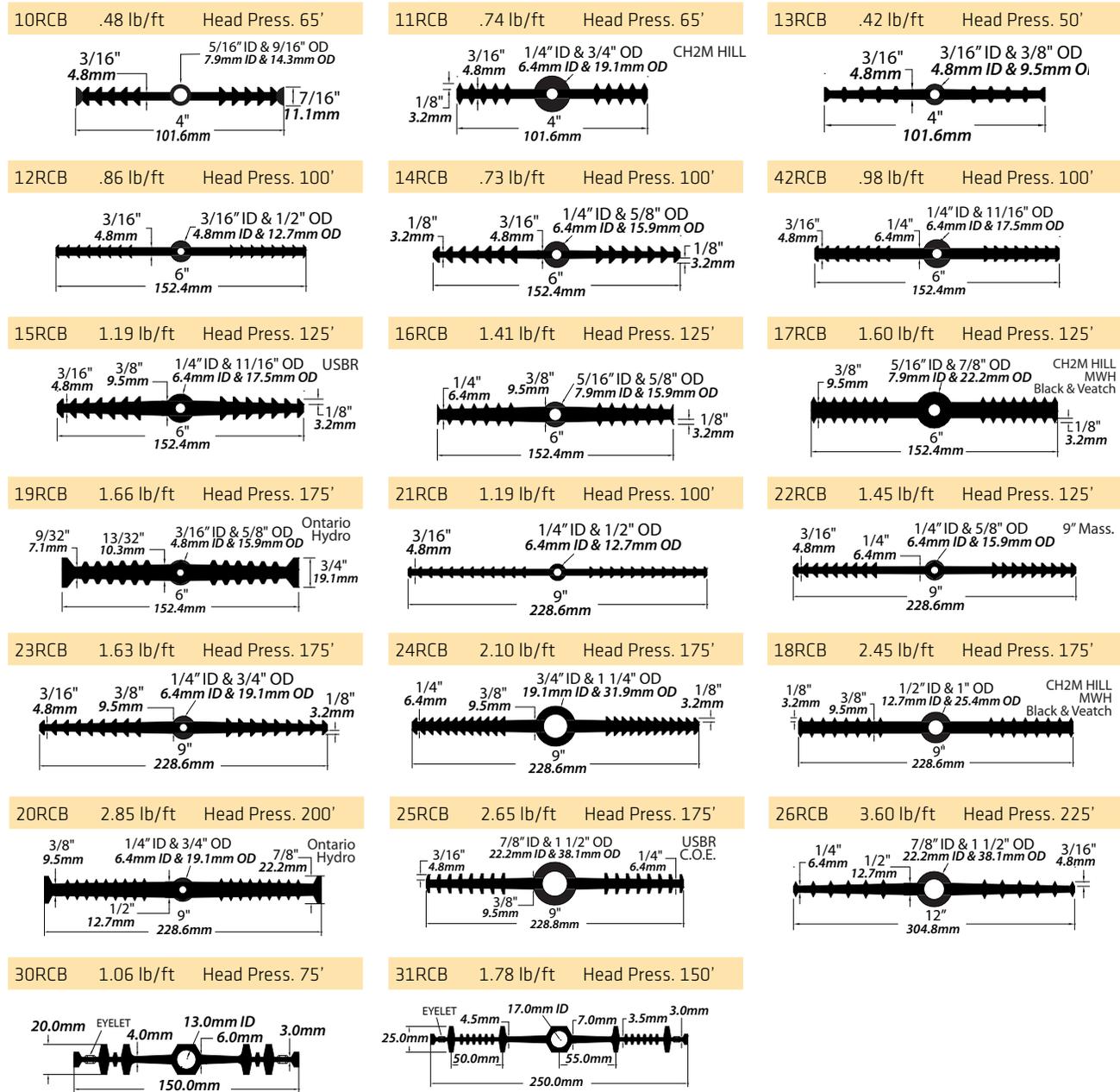
SPLICING IRONS are available in various sizes for field welding lengths of PVC waterstop. More information can be found on page 14.



DESIGN AND SIZES

Ribbed waterstops provide the best sealing characteristics.

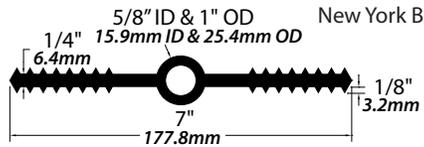
RIBBED CENTER BULB



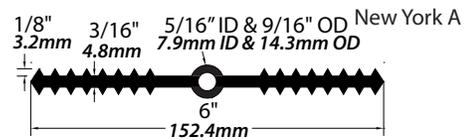
DESIGN AND SIZES

RIBBED / SPECIAL

93SP 1.28 lb/ft

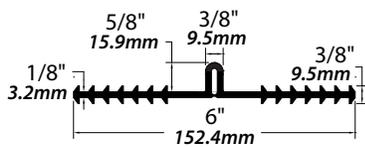


94SP .92 lb/ft Head Press. 100'

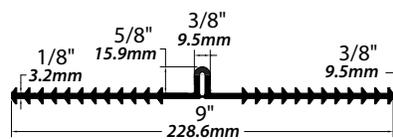


TEAR WEB

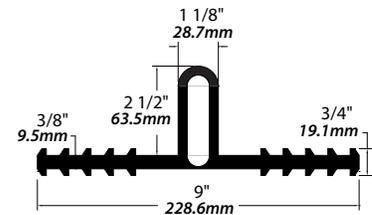
71TW .78 lb/ft Head Press. 65'



72TW 1.00 lb/ft Head Press. 100'

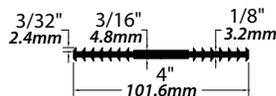


73TW 3.78 lb/ft Head Press. 150'



FLAT RIBBED

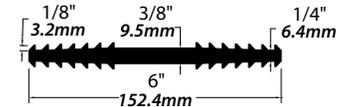
13 FR .43 lb/ft Head Press. 65'



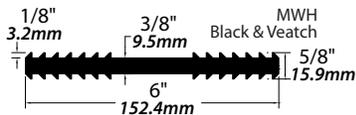
12FR .84 lb/ft Head Press. 75'



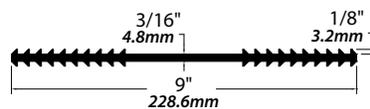
15FR 1.39 lb/ft Head Press. 125'



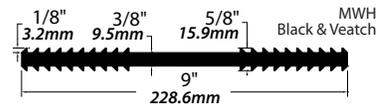
17 FR 1.50 lb/ft Head Press. 125'



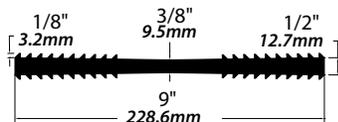
21FR 1.22 lb/ft Head Press. 100'



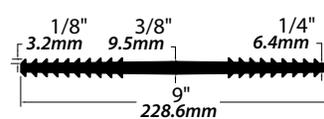
18FR 2.37 lb/ft Head Press. 175'



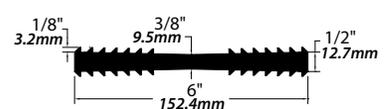
22FR 2.40 lb/ft Head Press. 175'



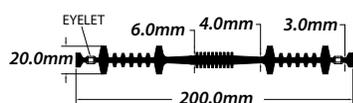
41FR 2.07 lb/ft Head Press. 175'



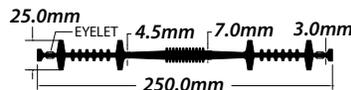
47FR 1.71 lb/ft Head Press. 125'



23FR 1.32 lb/ft Head Press. 125'



24FR 1.75 lb/ft Head Press. 150'

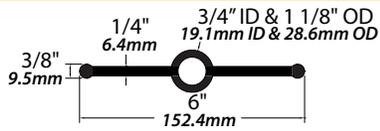


SHAPES ARE DRAWN
TO VARYING SCALES

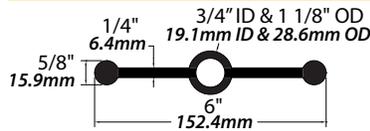
DESIGN AND SIZES

DUMBBELL CENTERBULB

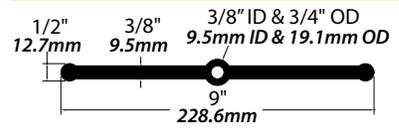
54DBCBC 1.20 lb/ft Head Press. 100'



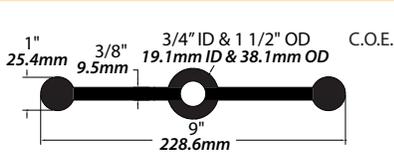
28DBCBC 1.41 lb/ft Head Press. 100'



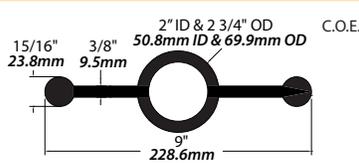
53DBCBC 2.06 lb/ft Head Press. 125'



23DBCBC 3.10 lb/ft Head Press. 150'

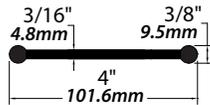


27DBCBC 3.70 lb/ft Head Press. 150'

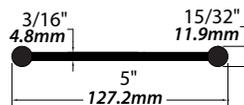


DUMBBELL

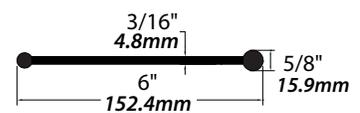
13DB .47 lb/ft Head Press. 65'



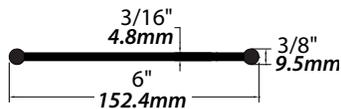
12DB .63 lb/ft Head Press. 65'



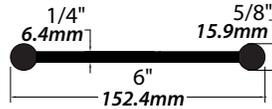
14DB .87 lb/ft Head Press. 75'



29DB .71 lb/ft Head Press. 75'



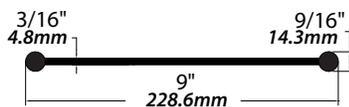
28DB 1.20 lb/ft Head Press. 100'



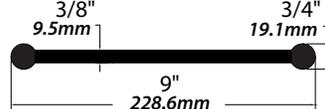
15DB 1.51 lb/ft Head Press. 125'



21DB 1.18 lb/ft Head Press. 100'



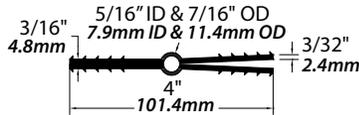
23DB 2.18 lb/ft Head Press. 150'



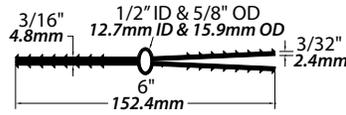
DESIGN AND SIZES

SPLIT RIBBED W/CTRBULB

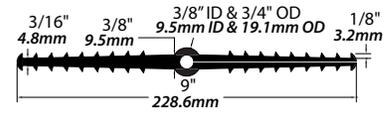
13SR .50 lb/ft Head Press. 65'



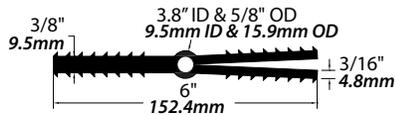
14SR .76 lb/ft Head Press. 100'



23SR 1.90 lb/ft Head Press. 150'

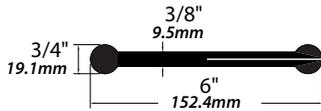


15SR 1.54 lb/ft Head Press. 125'



DUMBBELL - SPLIT

15DBS 1.49 lb/ft Head Press. 125'

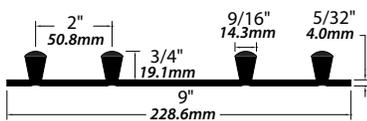


23DBS 2.20 lb/ft Head Press. 150'

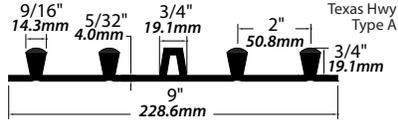


BASE SEAL

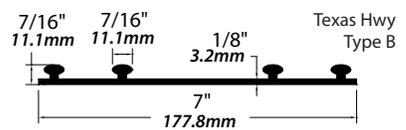
41BS 1.53 lb/ft Head Press. 100'



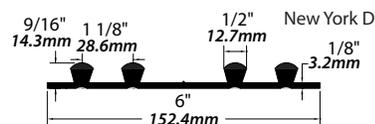
42BS 1.85 lb/ft Head Press. 100'



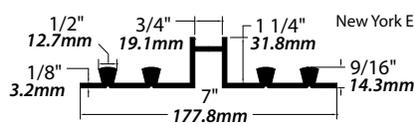
43BS .79 lb/ft Head Press. 75'



44BS .83 lb/ft Head Press. 100'



45BS 1.21 lb/ft Head Press. 100'

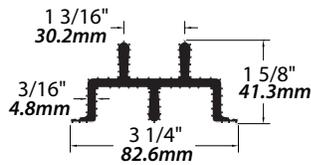


SHAPES ARE DRAWN TO
VARYING SCALES

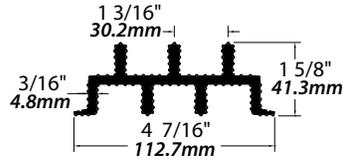
DESIGN AND SIZES

MULTI-RIBBED

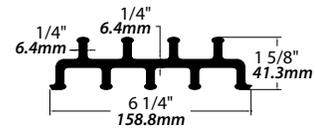
51MR .84 lb/ft Head Press. 25'



52MR 1.24 lb/ft Head Press. 50'



53MR 1.81 lb/ft Head Press. 50'



A NOTE ABOUT HEAD PRESSURE RATINGS:

Head Pressure Ratings are based on parameters published in the Corps of Engineers document, Waterstops and Other Preformed Joint Materials for Civil Works Structures EM 1110-2-2101, dated 30 September 1995. Sample testing conducted by Sika® Southern Metal on select profiles has indicated a conservative tendency in these ratings. That said, the published Head Pressure Ratings should be considered to be ultimate values. An appropriate safety factor should be applied to these values. Contact a Sika Canada representative for more information.

RETROFIT WATERSTOP SYSTEMS

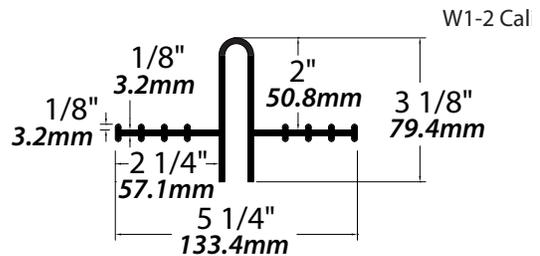
Retrofit waterstops seal joints where new construction meets an existing structure and can be suitable for working joints. Systems include waterstop profile, stainless steel batten bars and anchor bolts. Epoxy 7300 is sold separately.



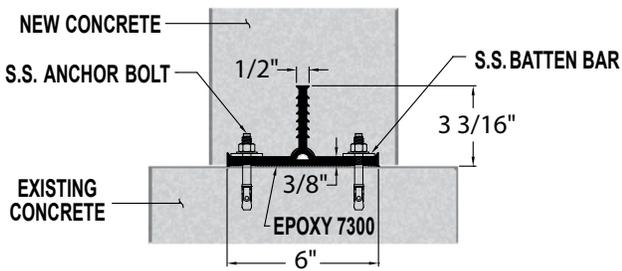
SPECIALTY SHAPES

These shapes have been developed to meet unique requirements of clients or other specifying groups. Consult a Sika Canada representative for more information or for special applications.

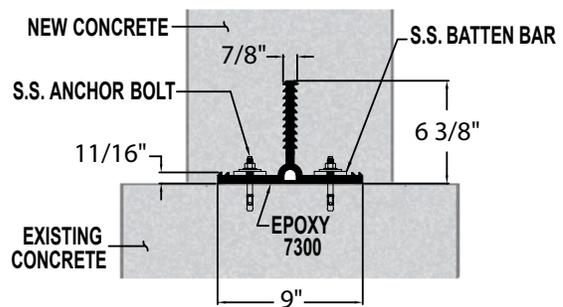
U-550 1.10 lb/ft



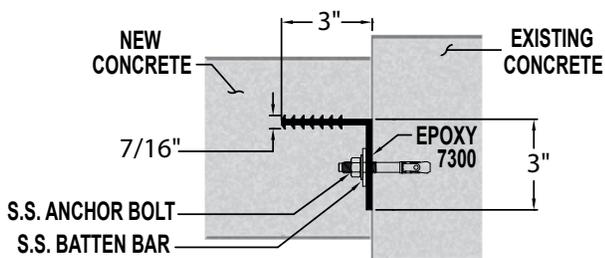
43RET 2.92 lb/ft with hardware



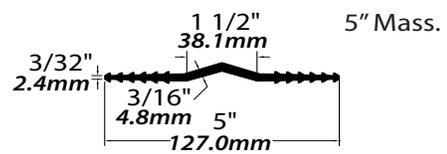
912RET 8.27 lb/ft with hardware



49SCP 1.38 lb/ft with hardware Head Press. 125'



56SP 1.51 lb/ft Head Press. 125'

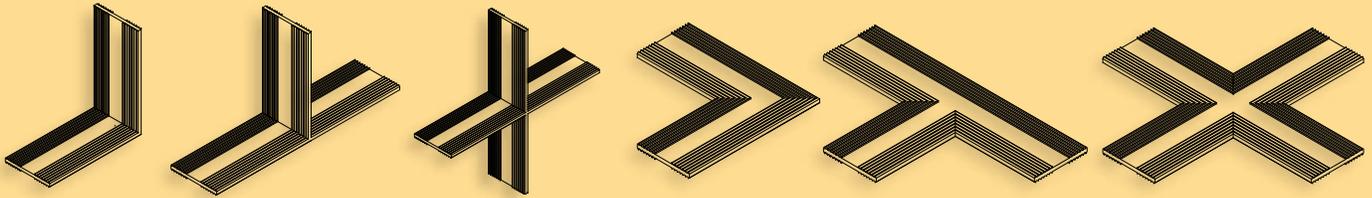


SHAPES ARE DRAWN TO VARYING SCALES

FABRICATIONS/SPLICING IRONS

TYPICAL PVC FABRICATIONS

Sika strongly recommends factory fabricated transitions and intersections. Typical fabrications for the most common shapes are inventoried by Sika and available to meet construction schedules. Sika can provide customized fabrications to suit unusual configurations or a convergence of differing profiles.



Vertical L, T, and Cross Fabrications

Flat L, T, and Cross Fabrications

SPLICING IRONS FOR FIELD WELDING

As noted, a quality waterstop installation requires quality welds. Sika **Splicing Irons** are specifically designed for welding thermoplastic waterstop and are constructed of the highest quality components for superior and long lasting performance. No other means or methods can be used.

Temperature controls are adjustable for various conditions and products. Irons are typically 120V operation, but 240V is available for the 213 and 214 irons.

The 213 and 215 irons have an integral thermometer to display the iron temperature for accurate welding. The splicing iron should be large enough to melt the entire cross-section of the waterstop profile. All irons are supplied with a teflon coated cover necessary for welding. Replacement covers are available for purchase.



No. 213
4 1/2" x 14" Plate



No. 215
9" x 9" Plate



No. 214
2" x 14" Plate

CHEMICAL RESISTANT WATERSTOP

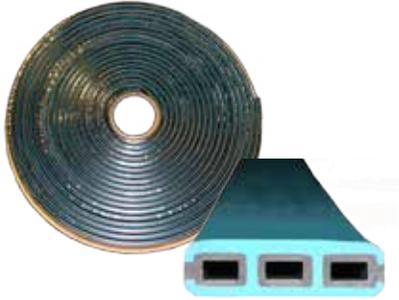
Sika® Southern Metal's companion brand, **Westec®**, offers waterstop solutions for secondary containment in petrochemical and industrial applications. **Westec® Envirostop™ TPE-R (Thermoplastic Elastomeric Rubber) Waterstops** resist a wide range of oils, solvents, and aggressive chemicals. Alcohols, ketones, glycols, esters and aqueous solutions of acids, bases, and salts have little effect on Westec® Envirostop™ TPE-R Waterstop. TPE-R has excellent ozone resistance, low temperature flexibility, excellent high temperature (up to 120 °C [250 °F]) performance and is heat weldable. Westec® Envirostop™ TPE-R Waterstop can also be defined as a Thermoplastic Vulcanizate, TPV.



Certified to
NSF/ANSI 61

Westec® Envirostop™ TPE-R Waterstop is certified to NSF/ANSI Standard 61 for Drinking Water System Components. Contact a Sika Canada representative or visit www.Chemstop.com for more information.

STRIP-APPLIED WATERSTOPS AND INJECTION HOSE SYSTEMS



Hydrotite is a world renowned hydrophilic waterstop. Composed of modified chloroprene rubber protected with a special delay coating, Hydrotite expands when exposed to water, creating an effective compression seal within joints where limited movement will occur.

Hydrotite is used extensively in sealing concrete construction joints, pipe penetrations, precast concrete segments, tunnel lining segments and for repair of existing joints or retrofit applications. Several shapes and sizes are available.



SikaSwell®-A (formerly Duroseal Gasket) is a water-swelling acrylate-ester that expands upon contact with water to form a compression seal in nonmoving concrete joints. SikaSwell®-A is available in three sizes and is adhered to varying substrates with **Sika® MK Adhesive** or **Quellpaste Type E**.



Sika® Swellstop® is a flexible butyl rubber and swellable clay waterproofing compound that expands upon contact with water to form a compression seal in nonmoving concrete joints. Swellstop® is available in two sizes and must be used in conjunction with **Swellstop Primer Adhesive** to create a watertight bond.

AS WITH ALL HYDROPHILIC WATERSTOPS, HYDROTITE, SIKASWELL A AND SWELLSTOP ARE SUGGESTED FOR APPLICATIONS WHERE EXPOSURE TO MOISTURE IS CONSTANT.



Lockstop is a single component and self-sealing mastic waterstop which bonds to concrete to prevent moisture from penetrating nonmoving joints. Lockstop must be used in conjunction with **Lockstop Primer Adhesive** to create a watertight bond.



Sika offers **SikaFuko® VT** injection hose, the world's number one injection hose system. SikaFuko® VT systems are available in two sizes and can deliver Portland cement, microfine cement, or a variety of resins to seal cracks or voids in the joint area. SikaFuko® VT has a unique "re-injectable" design, which allows the hose to be cleaned. This key feature allows for a complete maintenance program if leaks appear and future re-injections are required. **SikaFuko® Eco 1** (formerly Duroject) is an injection hose for delivering cements or resins for planned sealing of construction joints. It is for single injection applications. Sika offers a variety of injection materials for SikaFuko® VT injection hose systems.

MOST STRIP-APPLIED WATERSTOPS AND INJECTION HOSE SYSTEMS ARE SUITABLE FOR NONWORKING JOINTS ONLY.

SIKA SOLUTIONS FROM ROOF TO FOUNDATIONS

Roofing Systems



Sarnafil®
Sikaplan®
Sikalastic®

Concrete Production



Sika® ViscoCrete®
SikaRapid®
Sika® Air

Joint Sealing



Sikaflex®
Sikasil®
Sikadur® Combiflex

Grouting and Anchoring



SikaGrout®
Sikadur®
Sika AnchorFix®

Concrete Repair & Protection



Sika® MonoTop®
SikaTop®, SikaRepair®
Sikagard®

Structural Strengthening



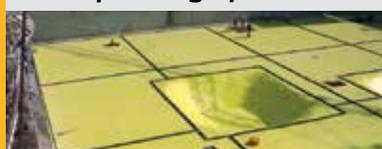
Sikadur®, Sika® CarboDur®
SikaWrap®
Sika® CarboShear

Floor & Wall Systems



Sikafloor®
Sikagard®
Sikagard® Duroplast

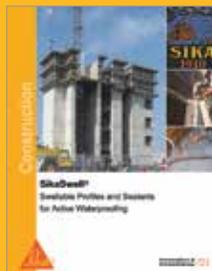
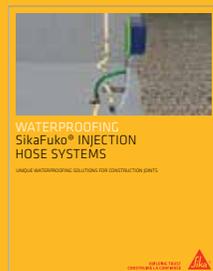
Waterproofing Systems



SikaProof®, SikaFuko®
Sika® Greenstreak®
SikaSwell®, SikaFix®

Sika Canada Inc., a member of the Sika Group, is a leader in the field of speciality chemicals, for construction and manufacturing industries. Our product lines feature high quality roofing systems, concrete admixtures, mortars and resins, sealants and adhesives, structural strengthening components, industrial and decorative flooring, as well as protective coatings and waterproofing systems. Our expertise is borne out of a global presence and served by strong, local support. Sika has earned the trust of our industries for over 100 years, by delivering the highest standards of commitment and partnership.

Also Available:



The information, and in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions, within their shelf life. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any recommendations, or from any other advice offered. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users should always refer to the most recent issue of the Product Data Sheet for the product concerned, copies of which will be supplied on request or can be accessed in the Internet under www.sika.ca.

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