Waterstops play a critical role in the integrity of concrete structures. They provide a fluid-tight diaphragm when embedded in, and running through concrete joints. Earth Shield® Metallic Waterstop can stop even the most corrosive fluids in their tracks, even at severely elevated temperatures.

J P Specialties, Inc. is the leading manufacturer of chemical resistant waterstop and related concrete accessories. Our NSF 61 certified Earth Shield® line of chemical resistant waterstop is used throughout the world by major engineering firms and project owners for primary and secondary containment applications, as well as industrial wastewater treatment and ozone contactor structures. We invented and hold the patent on the technology used to mechanically weld thermoplastic waterstops.

Services offered include free blueprint take-off and shop drawings, on-site welding certification, and individual corrosion resistance certification for the project owner.
Earth Shield® Stainless Steel (SS) Waterstop Basic Use
Earth Shield® Stainless Steel Waterstop is used as a fluid-tight diaphragm, embedded in concrete, across and along the joint, for primary and secondary containment structures. Earth Shield® Stainless Steel Waterstop can stop even the most corrosive fluids in their tracks, even at severely elevated temperatures.

A variety of metals, grades, and gauges are available. Earth Shield® utilizes 20 gauge 316 low carbon as our standard alloy, which offers broad spectrum corrosion resistance to most aggressive media, and is virtually untouched by the deleterious effects of ozone, making it an ideal choice for ozone contactor structures used in modern water treatment plants.

Earth Shield® Stainless Steel Waterstop is available in many standard shapes and sizes including profiles for new construction and retrofit. All change of direction fabrications (shop made fittings) can be premanufactured leaving only butt-welding for the Contractor in the field.

Typical Applications
- Primary and secondary containment
- Refineries
- Ozone contactor structures
- Fuel storage (AST)
- LNG facilities
- Chemical plants

Earth Shield® Advantages
- Outstanding fluid resistance to a wide range of aqueous-based fluids, oils, solvents, and hydrocarbons
- Extreme heat resistance (approx. 3,000°F)
- Extreme cold resistance, perfect for LNG
- Superior ozone and weathering

Basic Use
Install Earth Shield® SS Waterstop in all concrete joints. Waterstop should be centered in, and run the extent of the joint. All changes of directions should be prefabricated (Shop Made Fittings), leaving only butt-welding for the field. *If installing in an expansion joint, keep center “V” unembedded to allow it to accommodate movement as designed.*

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Required Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength</td>
<td>ASTM A240</td>
<td>90,000 psi</td>
</tr>
<tr>
<td>Elongation in 2&quot; min.</td>
<td>ASTM A240</td>
<td>45%</td>
</tr>
<tr>
<td>Yield Strength</td>
<td>ASTM A240</td>
<td>45,000 psi</td>
</tr>
<tr>
<td>Rockwell B Hardness</td>
<td>ASTM A240</td>
<td>95</td>
</tr>
<tr>
<td>High Temperature Resistance</td>
<td></td>
<td>2,552°F</td>
</tr>
</tbody>
</table>

Splices in stainless steel waterstop shall be welded using a TIG (recommended) or MIG process utilizing a weld rod to match the stainless (weld rod: 316L; diameter — .035 to 045). Dam-
aged waterstops shall be repaired by removing the damaged portions and patching. Patches shall overlap a minimum of 1 inch onto undamaged portion of the waterstop. Weld all straight run material edge-to-edge (no overlapping).

Preparation
1. Position waterstop to ensure proper distance from steel reinforcing bars to prevent rock pocket and honey comb.
2. Protect waterstop from damage during progress of work.
3. Clean waterstop after first pour to remove debris and dirt.

Examination and Inspection
1. Prior to placement of concrete notify Engineer for field inspection approval.
2. Upon inspection of waterstop installation, replace any damaged or unacceptable waterstop and dispose of defective material.

Installation
1. Position waterstop as indicated on drawings.
2. Center waterstop on joint, with approximately one-half of waterstop width to be embedded in concrete on each side of the joint.
3. Allow clearance between waterstop and reinforcing steel a minimum of one and a half times the largest aggregate size. (This prevents rock pockets and air voids caused by aggregate bridging.)
4. Carefully place concrete without displacing waterstop from proper position.
5. Thoroughly and systematically vibrate concrete in the vicinity of the joint and to maximize intimate contact between concrete and waterstop.
6. After first concrete pour, clean unembedded waterstop leg to ensure full contact of second concrete pour. Remove laitance, spillage, form oil and dirt.

Technical Assistance
Qualified technical assistance is available during any phase of your construction project.

Specifications
Standard 3-part Specifications are available at our website in Microsoft® Word and Adobe® PDF format, and upon request in printed and a variety of computer word processor formats. Call our Technical Sales Staff for additional help with your specification.

Suggested Proprietary Short Form Guide Specification Section 03150
(Master Format 2004 — 03 15 13)
Stainless Steel Chemical Resistant Waterstop
Waterstop indicated in drawings and specifications for contraction (control), expansion and construction joints shall be Earth Shield® Stainless Steel Chemical Resistant Waterstop Part No. #### [Designer insert appropriate part number here] as manufactured by J P Specialties, Inc.; Murrieta, CA 92562; Phone 951-763-7077; www.earthshield.com
1. Stainless Steel (SS) Waterstop shall conform to EPA Title 40 CFR Section 265.193. The suitability of the waterstop for a specific application should be determined by specific testing for that particular requirement. Project-specific certification to be provided by the manufacturer.
2. No equals or substitutions allowed.

Shop Made Fittings
Intersection and change of direction stainless steel waterstops shall be shop fabricated as manufactured by J P Specialties, Inc.; Murrieta, CA 92562; Phone 951-763-7077; www.earthshield.com
1. No equals or substitutions allowed.
Stainless Steel Waterstop
and Standard Fabrications

JP358L1 Flat Ell
JP558L1 Flat Ell
JP858L1 Flat Ell
JP1158L1 Flat Ell

JP358T1 Flat Tee
JP558T1 Flat Tee
JP858T1 Flat Tee
JP1158T1 Flat Tee

JP358X1 Flat Cross
JP558X1 Flat Cross
JP858X1 Flat Cross
JP1158X1 Flat Cross

JP358L2 Vert Ell
JP558L2 Vert Ell
JP858L2 Vert Ell
JP1158L2 Vert Ell

JP358T2 Vert Tee
JP558T2 Vert Tee
JP858T2 Vert Tee
JP1158T2 Vert Tee

JP358X2 Vert Cross
JP558X2 Vert Cross
JP858X2 Vert Cross
JP1158X2 Vert Cross

The Primary Choice for Secondary Containment®
JP358
4" Stainless Steel Waterstop
50 ft Head of H2O

JP558
6" Stainless Steel Waterstop
75 ft Head of H2O

JP858
9" Stainless Steel Waterstop
125 ft Head of H2O

JP1158
12" Stainless Steel Waterstop
175 ft Head of H2O

The Primary Choice for Secondary Containment®
Retrofit waterstop is designed to provide a fluid-tight seal between existing and new concrete construction, without resorting to the labor-intensive and structurally destructive saw-cut-and-grout method. It is ideal for constructing a new containment curb or wall to an existing slab, or joining a new slab to an existing wall. Special profile fabrications are available for columns and pipe penetrations.

All of our retrofit waterstops are sold as a system, and include all the necessary stainless steel bars and bolts. We also offer a high-quality chemical resistant novolac epoxy — VEN 1000. Earth Shield® retrofit waterstops are manufactured with grade 316L (low carbon) stainless steel, which provides for unsurpassed chemical resistance.

Like all our stainless steel waterstops, Earth Shield® retrofit can be heat-welded using a standard TIG (or MIG) welding method. This allows for easy field fabrications, and allows the waterstop to function as a continuous, homogeneous, fluid-tight diaphragm. Waterstop change of directions can be purchased along with straight stock, and custom, fit-to-print waterstop modules are produced to order. Prefabricated ells, tees, tank pads, column fittings, and many others are in stock and ready to ship.
JP358R
4" Retrofit Waterstop System
(Includes all anchors)
50 ft Head of H2O

JP558R
6" Retrofit Waterstop System
(Includes all anchors)
75 ft Head of H2O

JP578R
Movement Retrofit Waterstop System
(Includes all anchors)
75 ft Head of H2O

JP858R
8" Retrofit Waterstop System
(Includes all anchors)
125 ft Head of H2O
Movement Joint Systems

JP578R Movement Retrofit Waterstop System
(Includes all anchors)
75 ft Head of H₂O

The Primary Choice for Secondary Containment®
Base Seal Waterstop Systems
Easy to Install, Lay Flat on Subgrade

Base seal (aka Rear Guard) waterstop is ideal for flat pavement jobs such as runways, large containment slabs, etc. Base seal waterstop is by far the easiest waterstop to install... Simply lay the waterstop directly on the compacted subgrade, place and finish concrete, and create control joint using saw cut or other method. The base seal provides a permanent, life-of-structure seal at the bottom of the joint. Base seal is suitable for construction, contraction (control), and expansion joints.

JP1122
Base Seal Waterstop
75 ft Head of H2O

JP1122R
Base Seal Retrofit Waterstop System
(Includes all anchors)
75 ft Head of H2O

The Buncefield Incident (right).
On December 11, 2005 a series of explosions rocked the Hertfordshire Oil Storage Terminal, located near Hemel Hempstead in Hertfordshire, England. The plastic waterstops that were in the fuel terminal joints all failed due to the high heat of the fire. The Health Protection Agency and the Major Incident Investigation Board provided advice to prevent incidents such as these from happening again, including the utilization of stainless steel waterstop in place at all concrete joints to prevent fuel from escaping the bund walls.

In July of 2014, J P Specialties, Inc. was contracted to provide our Earth Shield® Stainless Steel Waterstop (part nos. JP1122 and JP1122R) in the reconstruction and rehabilitation of the Hertfordshire Oil Storage Terminal.
Made in the U.S.A.

Waterstop for Chemical, Industrial, & Environmental Applications

Manufactured with pride by J P SPECIALTIES, INC.

WWW.EARTHSHIELD.COM
J P Specialties, Inc. manufactures a wide range of high-quality waterstop and waterstop accessories for the concrete construction industry. Our Earth Shield® line of chemical resistant waterstop is designed to offer solutions for today’s unique regulatory compliance needs. Our waterstop welding equipment is used industry-wide as the standard for quality, high tensile strength waterstop welds. Knowing that a waterstop will only offer a fluid-tight barrier if change of directions are done properly, J P Specialties has been a leader since 1954 in Prefabricated Waterstop Modules and Shop Made Fittings.
Availability

National and International Warehouses

Earth Shield® Stainless Steel Waterstop is readily available from a variety of sources:

- **Preferred Regional Stocking Partners** — We are partners with some of the very best Concrete Accessories Distributors in the world. All our preferred partners have large stocking inventories and are factory trained to provide the utmost in on-site assistance.

- **Distributor Sales** — Earth Shield® can be special ordered from many distributor sales channels throughout the world.

- **Factory Direct** — Earth Shield® may be contacted directly for project quotation and product purchase (call 800-821-3859).

- **Web Store** — Earth Shield® products can be ordered directly on our web store at http://waterstop.enstore.com

Services

- **Project and Product Certification** — We assist the Design Engineer and Project Owner with individual project and product certification. When you specify our waterstop, you can be assured it is the correct product for your application.

- **Take-off Assistance** — For the Contractor.

- **Shop Drawings** — 3-D isometric and 2-D CAD details are available to assist the project.

- **On-site waterstop welding certification class** — $500.00 flat fee

- **On-site waterstop installation assistance** — $1,000.00 per day

- **Telephone and Web-based assistance** — Always FREE

Earth Shield® Waterstop Limited Warranty

J P Specialties, Inc. warrants to the Buyer that this product is new and will be free from defects and will perform as represented in writing subject to the two (2) following conditions: First, the application of the product and the concrete construction practices used in the application are in accordance with J P Specialties, Inc. recommendations; and, Second, the Buyer has selected the proper product for the specific application required.

Any information supplied in good faith by J P Specialties, Inc. with respect to its products is believed to be correct. J P Specialties, Inc. Makes no representation or warranties, expressed or implied, as to the accuracy or completeness of such information.

The exclusive remedies of the Buyer and the limit of the liability of J P Specialties, Inc. from any and all losses or damages resulting from the use of this product shall be either full refund of the purchase price to the Buyer of this product or the replacement of the quantity of product purchased by the Buyer at the discretion of J P Specialties, Inc.

All supplied testing data has been performed by independent testing laboratories.
Suggested Long Form Guide Specification

PART 1 GENERAL

1. Provision Includes
   A. The use of metallic waterstops for use in concrete joints subjected to corrosive effects of aggressive chemicals, ozone and high temperatures, which would destroy other types of waterstops.

2. References
   The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
   A. American Society for Testing and Materials (ASTM)
   B. Federal Specifications
      2. EPA Title 40 CFR Section 265.193.
   C. Canadian Council of Ministers of the Environment
   D. Buncefield Standards Task Group
   E. American Welding Society
      1. D1.6 (1999) Structural Welding Code — Stainless Steel

3. Submittal Procedures
   A. Chemical Resistant Waterstops
      1. Earth Shield® Stainless Steel Metallic Waterstop submittal shall contain the following:
         a. Samples of each size and shape to be used.
         b. Plate drawings of the waterstop profile indicating all dimensions.
         c. Shop drawings of shop made fittings to be provided by the manufacturer or prepared by the contractor.
         d. Sample field lap splice to be furnished with shipment.
         e. Manufacturer’s Literature, including MSDS sheets, installation instructions and splicing instructions.
         f. Certificate of compliance to physical properties outlined in this specification using ASTM A 240 test method.

4. Delivery and Storage
   Material delivered and placed in storage shall be stored off the ground and protected from moisture, dirt, and other contaminants.

PART 2 PRODUCTS
1. Waterstops
   Intersection and change of direction waterstops shall be shop fabricated.
   A. Manufacturer: J P Specialties, Inc. — 25811 Jefferson Avenue, Murrieta, CA 92562 — Phone 800-821-3859; International 951-763-7077; Fax 951-763-7074; Web www.earthshield.com; E-mail davidp@earthshield.com
   B. Stainless Steel — Stainless Steel waterstops shall conform to ASTM A 240 (type 316ELC), be 20 gauge thick, and be manufactured specifically as a waterstop, with outer flanges and center “V”, as opposed to flat steel.

Stainless Steel Waterstop shall conform to the following minimum physical properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Required Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength</td>
<td>ASTM A 240</td>
<td>90,000 psi</td>
</tr>
<tr>
<td>Elongation in 2” minimum</td>
<td>ASTM A 240</td>
<td>45%</td>
</tr>
<tr>
<td>Yield Strength</td>
<td>ASTM A 240</td>
<td>45,000 psi</td>
</tr>
<tr>
<td>Rockwell B Hardness</td>
<td>ASTM A 240</td>
<td>95</td>
</tr>
<tr>
<td>High Temp. Resistance</td>
<td></td>
<td>2,552°F</td>
</tr>
</tbody>
</table>

Unless otherwise specified or indicated on the drawings provide the following types:

1. **Part No. JP558** — 6”, 20 gauge, 316 extra low carbon, “W” shaped, as manufactured by J P Specialties, Inc. *(all-purpose waterstop)*
2. **Part No. JP358** — 4”, 20 gauge, 316 extra low carbon, “W” shaped, as manufactured by J P Specialties, Inc. *(all-purpose waterstop)*
3. **Part No. JP578** — 6”, 20 gauge, 316 extra low carbon, “U” shaped, as manufactured by J P Specialties, Inc. *(large joint movement waterstop)*
4. **Part No. JP858** — 9", 20 gauge, 316 extra low carbon, “W” shaped, as manufactured by J P Specialties, Inc. *(all-purpose waterstop)*
5. **Part No. JP558R** — 6" retrofit, 20 gauge, 316 extra low carbon, joins to “W” shaped material (558), as manufactured by J P Specialties, Inc. *(for joining to concrete to existing surface)*
7. **Part No. JP1122R** — 12” retrofit, 20 gauge, 316 extra low carbon, joins to “W” shaped base seal material (1122), as manufactured by J P Specialties, Inc. *(for joining to concrete to existing surface)*
8. **Part No. JP1158** — 12", 20 gauge, 316 extra low carbon, “W” shaped, as manufactured by J P Specialties, Inc. *(all-purpose waterstop)*

C. Stainless Steel Waterstop Shop Made Fittings
   1. Provide shop made fittings, which are T.I.G. welded to provide maximum tensile strength.
   2. Shop made fittings shall maintain continuity of profile (center “V” and flanges). All directional changes shall be miter cut and welded.
   3. All welds shall be nonporous and contaminant-free.

**PART 3 EXECUTION**

1. Waterstop, Installations and Splices — Waterstops shall be installed at the locations shown to form a continuous fluid-tight diaphragm. Adequate provision shall be made
to support and completely protect the waterstops during the progress of the work. Exposed waterstops shall be protected during application of form release agents to avoid being coated. Suitable guards shall be provided to protect exposed projecting edges and ends of partially embedded waterstops from damage when concrete placement has been discontinued. Splices shall be made by certified, trained personnel using approved equipment and procedures.

A. Stainless Steel — Splices in stainless steel waterstops shall be welded using a TIG (recommended) or MIG process utilizing a weld rod to match the stainless (weld rod: 316ELC; diameter — .035 to .045). Damaged waterstops shall be repaired by removing damaged portions and patching. Patches shall overlap a minimum of 1 inch onto undamaged portion of the waterstop. Weld all straight run material edge-to-edge (no overlapping). If installed in expansion joint, assure backside (or open end of the center “V”) is covered completely with tape and the annulus (between tape and waterstop) is filled with 7/8” diameter backer rod prior to concrete pour. This allows the center “V” to remain open allowing for joint movement. (Tape and backer rod is not necessary in non-moving contraction and construction joints.)

2. Preparation

A. Position waterstop to ensure proper distance from steel reinforcing bars to prevent rock pockets and honey comb (see installation section 3.04).
B. Protect waterstop from damage during progress of work.
C. Clean concrete joint after first pour to remove debris and dirt.

3. Examination/Inspection

A. Prior to placement of concrete notify engineer for field inspection approval.
B. Upon inspection of waterstop installation, replace any damaged or unacceptable waterstop and dispose of defective material.

4. Installation

A. Position waterstop in joint as indicated on drawings.
B. Center waterstop on joint, with approximately one-half of waterstop width to be embedded in concrete on each side of the joint.
C. Allow clearance between waterstop and reinforcing steel of a minimum two times the largest aggregate size. Prevent rock pockets and air voids caused by aggregate bridging.
D. Carefully place concrete without displacing waterstop from proper position.
E. Thoroughly and systematically vibrate concrete in the vicinity of the joint, and to maximized intimate contact between concrete and waterstop.
F. After first pour, clean unembedded waterstop leg to ensure full contact of second concrete pour. Remove laitance, spillage, form oil and dirt.

END OF SECTION