

SECTION 03150 — WATERSTOPS FOR CONCRETE JOINTS — rev. 06/09/18

***** MasterFormat™ 2004 — Section 03 15 13 *****

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Suggested Short Form Guide Specification

Flexible PVC Waterstop for Concrete Joints

Waterstop indicated in drawings and specifications for contraction (control), expansion, and construction joints shall be Earth Shield® Polyvinyl Chloride (PVC) Waterstop **Part No. ####** [Designer insert appropriate part number here] as manufactured and available from J P Specialties, Inc. — Murrieta, CA, USA 92562 — Phone 800-821-3859; 951-763-7077; Fax 951-763-7074; www.earthshield.com; E-mail davidp@earthshield.com

1. Flexible Polyvinyl Chloride (PVC) Waterstop shall be manufactured with prime virgin resin.
2. No equals or substitutions allowed.

PVC Waterstop Shop Made Fittings for Directional Changes

Intersection and change of direction waterstops shall be factory fabricated as manufactured and available from J P Specialties, Inc. — Murrieta, CA, USA 92562 — Phone 800-821-3859; 951-763-7077; Fax 951-763-7074; Web www.earthshield.com; E-mail davidp@earthshield.com and installed at all locations on the drawing by the Contractor. The Contractor shall only weld straight lengths of waterstop with all change of directions (fittings) being fabricated and supplied by Manufacturer.

1. No equals or substitutions allowed.

Suggested Long Form Guide Specification

PART 1 GENERAL

1. Provision Includes

- A. Embedded waterstop in concrete including contraction, expansion and construction joints creating a continuous diaphragm to prevent the passage of fluid.
- B. The use of nonmetallic waterstops for use in concrete joints subjected to chlorinated water, sea water, and many waterborne chemicals.

1. 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
 1. COE CEGS-03250 July 1995 Guide Specification for Military Construction.
 2. Corps of Engineers — CRD C572-74
 3. Bureau of Reclamation — C-902
- C. Canadian General Standards Board
 1. 41-GP-35M Types 1 and 3

3. Submittal Procedures

A. Flexible PVC Waterstop

1. Earth Shield® PVC 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. Manufacturer's Literature, MSDS sheets, installation, safety, and splicing instructions.

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- e. Certificate of compliance to physical properties outlined in this specification with third-party independent test reports (all testing reports within three years of date of submittal).
2. Flexible PVC Waterstop and Splices — Specimens identified to indicate manufacturer, type of material, size, quantity of material, and shipment or lot represented. Each sample shall be not less than 6 inches long of each type, size, and lot furnished. One splice sample of each size and type for every 50 splices made in the shop and every 10 splices made at the job site. The splice samples shall be made using straight run pieces with the splice located at the mid-length of the sample and finished as required for the installed waterstop. The total length of each splice shall be not less than 12 inches long.

4. Delivery and Storage

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

PART 2 PRODUCTS

1. Flexible PVC Waterstop

Intersection and change of direction waterstops shall be factory fabricated.

A. Manufacturer:

J P Specialties, Inc. — Murrieta, CA, USA 92562 — Phone 800-821-3859; 951-763-7077; Fax 951-763-7074; Web www.earthshield.com; E-mail davidp@earthshield.com

- B. Flexible PVC waterstops shall be manufactured from a prime virgin, flexible polyvinyl chloride (PVC) compound, containing no pigments, scrap or reclaimed material.

Flexible Polyvinyl Chloride (PVC) Waterstop shall conform to the following typical physical properties:

Property	Test Method	Required Results
Specific Gravity	ASTM D 792	1.38 to 1.40
Shore A Hardness (15 sec.)	ASTM D 2240	77±3 at 25°C (77°F)
Tensile Strength	ASTM D638	2,100 psi
Ultimate Elongation	ASTM D638	400%
Stiffness in Flexure	ASTM D747	700 psi
Tear Resistance	ASTM D624	320 lbs./inch
Brittle Point	ASTM D746	-37°C (-35°F) No Failure
Accelerated Extraction Tensile Strength	Corps of Engineers	2,005 psi
Accelerated Extraction Elongation	Corps of Engineers	390%
Effect of Alkali Weight Change	CRD C572-74	+0.11%
Effect of Alkali Hardness Change	CRD C572-74	-0.6 points

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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. Any waterstop punctured or damaged shall be repaired or replaced. 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. Flexible PVC Shop Made Fittings — Fittings shall be shop made using a machine specifically designed to mechanically weld the waterstop. A miter guide, proper template (profile dependent), and portable power saw shall be used to miter cut the ends to be joined to ensure good alignment and contact between joined surfaces. The splicing of straight lengths shall be done by squaring the ends to be joined and using an ST-10® waterstop splicing tool. Continuity of the characteristic features of the cross section of the waterstop (ribs, tabular center axis, protrusions, etc.) shall be maintained across the splice.
 - B. Flexible PVC Waterstop — The splicing of straight lengths shall be done by squaring the ends to be joined and using an ST-10® waterstop splicing tool utilizing a thermoplastic splicing iron with a non-stick surface specifically designed for waterstop welding. The correct temperature (350°F to 380°F) shall be used to sufficiently melt without charring the plastic. The spliced area, when cooled, shall show no signs of separation, holes, or other imperfections when bent by hand in as sharp an angle as possible.
2. Preparation
 - A. Uncoil waterstop 24 hours prior to installation for ease of handling and fabrication.
 - B. Position waterstop to ensure proper distance from steel reinforcing bars to prevent rock pockets and honeycomb (see installation section 3.04).
 - C. Protect waterstop from damage during progress of work.
 - D. 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. Inspect waterstop and field splices for defects and conformance to Quality Assurance Standard section 3.05.
 - C. 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. Ensure centerbulb is not embedded at expansion joints.
 - E. Secure waterstop in correct position using optional factory-installed brass eyelets (or JPS hog rings crimped between last two ribs on 12 inch maximum centers), and wire tie to adjacent reinforcing steel. Center-to-center spacing may be increased upon written request and approval from ENGINEER.
 - F. Carefully place concrete without displacing waterstop from proper position.
 - G. Thoroughly and systematically vibrate concrete in the vicinity of the joint, and to maximized intimate contact between concrete and waterstop.
 - H. After first pour, clean unembedded waterstop leg to ensure full contact of second concrete pour. Remove laitance, spillage, form oil and dirt.

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5. Quality Assurance — Edge welding will not be permitted. Centerbulbs shall be compressed or closed when welding to non-centerbulb type. Waterstop splicing defects which are unacceptable include, but are not limited to the following:
- A. Tensile strength not less than 60 percent of parent sections.
 - B. Free lap joints.
 - C. Misalignment of centerbulb, ribs, and end bulbs greater than 1/16 inch.
 - D. Misalignment which reduces waterstop cross section more than 15 percent.
 - E. Bond failure at joint deeper than 1/16 inch or 15 percent of material thickness.
 - F. Misalignment of waterstop splice resulting in misalignment of waterstop in excess of 1/2 inch in 10 feet.
 - G. Visible porosity in the weld.
 - H. Charred or burnt material.
 - I. Bubbles or inadequate bonding.
 - J. Visible signs of splice separation when cooled splice (24 hours or greater) is bent by hand at sharp angle.

END OF SECTION

All information is presented in good faith and the results are believed to be accurate. All testing was done independently of Earth Shield® and J P Specialties, Inc.; therefore, neither Earth Shield® nor J P Specialties, Inc. makes any guarantee as to the testing data accuracy or the results obtained.