



PVC Waterstop Installation Guide

GREENSTREAK GROUP, INC

Greenstreak PVC Waterstops have been the industry standard for over 50 years. These high performance products are formulated, compounded and manufactured by Greenstreak using only prime resins and all virgin raw materials. Greenstreak PVC waterstops meet or exceed the standards of the most stringent specifications, including the U.S. Army Corps of Engineers CRD-C 572-74.

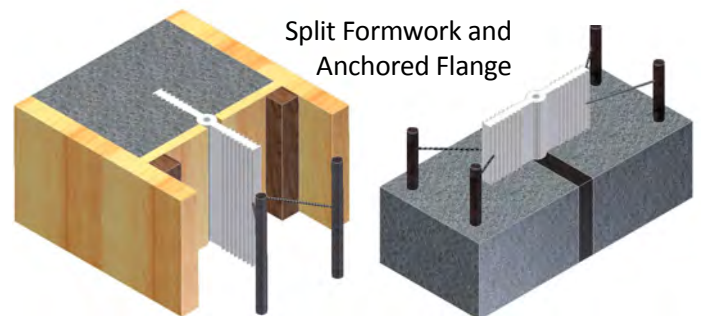
PVC waterstops are for use in concrete joints subjected to hydrostatic pressure. Embedded in concrete, PVC waterstops span the joint to form a continuous, watertight diaphragm that prevents the passage of liquid through the joint. The waterstop must be properly selected and installed to accommodate joint expansion, contraction and other longitudinal and transverse movements. In addition to these considerations, the waterstop must also be resistant to any liquids to which the waterstop may be exposed.

Forming and Positioning Requirements

PVC waterstops are installed prior to concrete placement to ensure proper positioning and concrete consolidation around the waterstop. Split formwork is generally required for slab-to-slab, slab-to-wall, and wall-to-wall joints where ribbed or dumbbell style waterstops are used. Base Seal (also known as "Exterior" or "Rear Guard" waterstop), labyrinth and split style waterstops are installed in a different manner and are addressed in a separate installation guide. Split forms allow half of the waterstop to be positioned within the first pour with the other half projecting into the second pour. The centerline of the waterstop should be aligned with the center of the joint. Size and style of the waterstop determine permissible variation from the centerline. Contact Greenstreak for specific guidelines.

The split form should firmly hold the waterstop in position to prevent misalignment of the waterstop during concrete placement. A tight fit between the waterstop and the form is also necessary to prevent excessive leakage of concrete paste, which could lead to honeycombing of the concrete.

PVC waterstop must be properly secured prior to concrete placement. This is accomplished with factory-applied grommets or pre-punched holes, or field-applied hog rings placed on 12" centers between the two outermost ribs of the waterstop. Factory-punched grommets and pre-punched holes are not available for dumbbell style waterstop profiles. Alternatively, field-applied hog rings can be punched into the dumbbells. Tie wire is looped through the hog ring, grommet or punched hole and tied off to adjacent reinforcement. This adequately secures the waterstop to prevent any displacement or "folding over" of the waterstop during concrete placement.



Never place nails or screws through the body of the waterstop. It is important to note thicker waterstop profiles are less likely to fold over and also reduce the potential for the hog rings or grommets to tear out of the waterstop due to the stresses induced during concrete placement.

Important Precautions

Thoroughly consolidate the concrete around the waterstop to prevent voids or honeycombing adjacent to the waterstop. Pay particular attention to the underside of horizontally placed waterstops. Intimate contact between the concrete and waterstop is necessary for full performance of a waterstop. Voids next to the waterstop can significantly compromise its water stopping ability. Furthermore, maintain adequate clearance between reinforcing steel and the waterstop. Typical clearance should be twice the maximum aggregate size. Inadequate clearance can promote the formation of voids due to aggregate bridging. The waterstop should never be cut or modified to allow reinforcement to pass through the waterstop.

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Be sure that the PVC waterstop is clean prior to concrete placement. It is difficult to achieve a quality seal if the waterstop is greasy, dirty, or covered with concrete laitance. Store PVC waterstops under tarps or indoors to avoid direct exposure to sunlight. PVC can suffer UV degradation from the sun. Extended UV exposure will leach the plasticizer from the PVC, reducing its physical properties and causing the PVC to become brittle. Protect installed waterstops from UV if the pour of concrete will be delayed more than 30 days.

Splicing Requirements

Continuity of the waterstop is critical for optimum performance of the waterstop system. Poorly constructed transitions, intersections and splices are prime locations for leaks. Lapping of the waterstop should never be permitted. Continuity of the waterstop profile, including ribs, dumbbells and center bulbs is also critical and should be maintained through changes of direction and transitions. Continuity is maintained at these locations by use of mitered welds. Mitered fabrications offer the additional benefit of longer weld lines resulting in stronger transitions.

PVC waterstop is easily butt spliced with a thermostatically controlled splicing iron equipped with a replaceable peel-and-stick Teflon cover. The ends of the waterstop must be cut square to form matching edges. Uniformly and simultaneously melt the waterstop ends at roughly 380°F using the splicing iron. It is important to use an indirect source of heat for this procedure. Direct exposure to a flame will change the chemical composition of the PVC and result in a weak weld. When a 1/8" diameter melted bead develops at each waterstop end, quickly remove the ends of the waterstop from the splicing iron and immediately press the two ends together, keeping the waterstop properly aligned at the weld. Hold until the material has fused and cooled. Allow the splice to cool naturally; do not quench. Melt temperature of the splicing iron must be maintained to avoid burning or charring the material. Heating irons have resistance type heating elements and experience diminished performance if a reduced voltage is supplied. Avoid operating with long runs of small gauge extension cords.

Experience has shown that mitered intersections (such as ell's, tee's, and crosses) are difficult to accomplish on site. PVC waterstop intersections require special tooling and custom equipment that can be expensive and difficult to work with in the field. Therefore, factory fabrications are strongly recommended, leaving only straight butt splices for the field. In this way, the owner, engineer, and contractor can be assured of a high quality waterstop system. Splicing irons, fabrications, and accessories are available through Greenstreak's network of distributors. Greenstreak splicing irons are available in multiple sizes. When ordering, verify that the splicing iron size is large enough to accommodate the size and geometry of the waterstop profile being used.

Unacceptable splicing defects include:

- Tensile strength less than 80 percent of the parent section.
- Misalignment of centerbulb, ribs, and end bulbs greater than 1/16 inch.
- Bond failure at joint deeper than 1/16 inch or 15 percent of material thickness, whichever is less.
- Misalignment which reduces waterstop cross section more than 15 percent.
- Visible porosity in the weld.
- Bubbles or inadequate bonding.
- Visible splice separation when a cooled splice is bent by hand at a sharp angle.
- Charred or burnt material

For additional technical assistance, please contact a Greenstreak engineer.



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