



**COMMENTARY FOR SUGGESTED MASTER SPECIFICATIONS
SECTION 03 15 13 PVC WATERSTOPS**

1. Reference Specification Section 1.03 A --- “Waterstop manufacturer shall demonstrate five years (minimum) continuous, successful experience in production of waterstops.”

This specification item is particularly important for large scale projects. An established company (ie: **GREENSTREAK**) offers:

- The experienced personnel and processes to produce the highest quality product.
- The stability and commitment to stand behind their product after the project is complete.
- The technical support and practical knowledge gained from 40 + years experience in the waterstop business.

2. Reference Specification Section 1.04 A --- “Store waterstops under tarps to protect from oil, dirt, and sunlight.”

PVC waterstops must be properly stored on the project site. Embedded in the concrete, the waterstop should be clean and free of oil to enhance the seal between the PVC and the concrete. Additionally, PVC is susceptible to 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.

3. Reference Specification Section 2.01 A --- “Provide flexible PVC (polyvinyl chloride) waterstop as manufactured by Greenstreak, profile style number (fill in profile style number).”

It is advantageous for the design firm (and the waterstop manufacturer) to have a specific style clearly referenced in the specification. This helps to clearly define the desired shape. In many instances, the waterstop thickness, bulb diameter, and the individual rib dimensions are not defined. Varying these parameters can significantly affect the performance of the waterstop. We recommend that specific waterstop profiles be referenced to clearly define the waterstops for the project (i.e.: **GREENSTREAK #679** or equal for construction joints and **GREENSTREAK #735** or equal for expansion joints).

At the very least, the thickness, width, bulb diameter (inside and outside diameter), and rib dimensions (and layout) should be clearly specified. **GREENSTREAK** recommends that the minimum thickness of any waterstop be 3/8” and non-tapered. This thickness provides enough rigidity and substance to the waterstop to minimize the potential for the waterstop to “fold over” during the concrete pour. It also reduces the probability of tearing of the waterstop (particularly at the “tie off” locations) and is easier to work with in

the field due to its improved rigidity. The width of the waterstop is a function of the slab thickness, concrete mix design, and the structural design of the concrete structure. Likewise, the bulb diameter that should be specified is governed by the design parameters for your concrete structure. A good rule of thumb to follow bulb diameter selection is to provide an inside diameter that is at least equal to the anticipated joint movement. *Remember, of all the waterstop profiles available, ribbed profiles with centerbulb provide the best overall performance.*

- 4. Reference Specification Section 2.01 B --- “The PVC waterstop shall be extruded from an elastomeric plastic material of which the basic resin is prime virgin polyvinyl chloride. The PVC compound shall not contain any scrapped or reclaimed material or pigment whatsoever.”**

This portion of the specification is critical, particularly regarding the criteria that the PVC be manufactured from prime virgin compound, with no reclaimed material nor pigment whatsoever. Using reclaimed material puts into question the physical properties of the compound, the extrudability of the compound, and the longevity, durability, and the physical properties of the finished product. It is important to include criteria regarding pigment because waterstop manufactured from reclaimed or scrap material will often be colored to hide the imperfections of using off spec material. The natural color of PVC extruded from prime virgin compound is an off white, milky color.

- 5. Reference Specification Section 2.01 C --- “Performance requirements as follows.....”**

The reference specifications listed in section 1.02 A have varying performance property requirements. This table lists the most severe limits considering all of these references. Meeting this criteria ensures that the highest quality material will be used when manufacturing the PVC waterstop.

- 6. Reference Specification Section 2.02 A --- “Provide factory made waterstop fabrications for all changes of direction, intersections, and transitions leaving only straight butt joint splices for the field.”**

The advantages of factory fabricated intersections are numerous:

- The quality control situation is much improved in the factory. The field is not nearly as conducive to providing a watertight fabrication as the controlled conditions that the factory can provide.
- Complicated intersections and transitions require that skilled labor perform the splicing to ensure a watertight joint. This skilled labor may or may not be available in the field. The factory has full time, experienced personnel who produce these fabrications.
- The splicing equipment required to adequately and effectively carry out these fabrications is large and difficult to handle in a constantly changing environment such as the job site. The factory is a much more appropriate environment to provide high quality fabrications. GREENSTREAK has an independent area set up with specialized equipment and custom tooling to maximize the quality of factory fabricated intersections.

- The majority of leaks experienced on a water containment structure occur at these complicated intersections and transitions. This additional safeguard of requiring factory fabricated intersections helps to ensure a watertight waterstop system.
- Providing factory fabricated intersections has typically proven to be at least as cost effective as performing fabrications in the field.

7. Reference Specification Section 2.02 B -- “Provide hog rings or grommets spaced at 12” on center along length of waterstop.”

This procedure is critical to ensure proper placement of waterstop and to secure waterstop from losing its position (and “folding over”) during the concrete pour.

8. Reference Specification Section 3.01 B --- “Field butt splices shall be heat fused welded using a Teflon covered thermostatically controlled waterstop splicing iron at approximately 380 degrees F. Follow approved waterstop manufacturer recommendations. Lapping of waterstop, use of adhesives, or solvents shall not be allowed.”

Although it may seem that this would be understood, we have visited numerous project sites where the splices are either glued, butted up tight (with no adhesive or heat welding), or overlapped (with no adhesive or heat welding). Obviously, these methods are unacceptable and will nullify the integrity of the entire waterstop system.

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