

### RECOMMENDED INSTALLATION INSTRUCTIONS

#### General:

DrainStar Z-Drain is designed to be installed in conjunction with the TUFF-N-DRI® Basement Waterproofing System, consisting of a TUFF-N-DRI waterproofing membrane and either WARM-N-DRI foundation board or TUFF-N-DRI Barrier Board. Enhanced warranties without the standard drainage exclusion are available only when Z-Drain is used in conjunction with TUFF-N-DRI® Basement Waterproofing System.

Z-Drain may also be used with other waterproofing and insulation systems offered by Tremco Barrier Solutions by following these instructions as written. Z-Drain may also be used with membrane-only waterproofing by following these instructions with exception that the dimples are installed facing away from the foundation wall rather than toward the wall/insulation as written here.

DrainStar Z-Drain is a composite drainage system consisting of a three-dimensional drainage core and a nonwoven, needle-punched fabric. Z-Drain is specifically designed with two integral sections, 1) the 6-inch wide water transport section with large core dimples and 2) the water collection and transfer section with smaller core dimples covering the remainder of the width.

The Z-Drain product is to be applied with the water transport section installed vertically against the top six inches of the footer. The product is then bent so that the adjacent portion of the water collection and transfer section is against the top horizontal portion of the footer, and then bent upward so that the remainder of the water collection and transfer section is installed vertically against the WARM-N-DRI insulation. It will often be necessary to remove soil from beside the top 6 inches of the vertical footer surface to allow proper installation of Z-Drain. Z-Drain should be secured to the wall with mechanical fasteners placed 4-5 feet apart and within 2 inches of the top of the product. Fasteners may also be added through the horizontal portion over the footer top surface if desired.

All DrainStar Z-Drain connections, splices and core interlocking should be overlapped with additional filter fabric, taped and fastened to the foundation wall. This ensures that the DrainStar Z-Drain fabric will maintain a continuous barrier preventing soil entry into the DrainStar Z-Drain.

Water Collection & Transfer Section

Water Transport Section



## Product Application:

---

1. Unwind roll of DrainStar Z-Drain around excavation.
2. Starting at a termination point of DrainStar Z-Drain (at the sump connector tile or daylight exit), place DrainStar Z-Drain vertically against the side of the footer, bend over the horizontal footer portion and up against the vertical face of the WARM-N-DRI with the dimples facing toward the WARM-N-DRI. The flap of filter fabric should face down.
3. Attach DrainStar Z-Drain to the wall with powder-actuated fasteners every 4-5 feet, as necessary to keep DrainStar Z-Drain snug against WARM-N-DRI. Fasteners should be installed at a level near the top of the DrainStar Z-Drain, within 2 inches, to prevent soil backfill from folding the DrainStar Z-Drain over. For proper fastener type, size and installation tool, contact Tremco Barrier Solutions Technical staff at 1-800-876-5624.
4. Follow the detail procedures listed below for the proper treatment of corners, splices, step-downs, and chimneys.
5. Continue with installation until reaching the drain exit point(s).

- For daylight or walkout drainage, install a DrainStar universal outlet fitting directly to the end of the DrainStar Z-Drain. Wrap and tape the fabric to prevent soil penetration through any loose edges. Secure the fitting to the foundation with a powder-actuated fastener to ensure it does not become disconnected from the DrainStar Z-Drain. To connect a 4" pipe to the DrainStar universal outlet, fasten the 4" pipe with 3" tape, screws or a 4" interior coupling.

Six-inch DrainStar outlet fittings may be used, if desired, using the following procedure. Fold the fabric back from the end at least four inches. Next, cut away the small dimple section of the exposed core leaving only the large dimple portion. Place the 6-inch DrainStar outlet over the exposed large dimple core section, re-wrap the fabric over the outlet and fold back over the upper portion of the Z-Drain to effectively close the end. Tape the fabric to prevent soil penetration through any loose edges. Secure the fitting to the foundation with a powder-actuated fastener to ensure it does not become disconnected from the DrainStar Z-Drain.

- For sump connections, install a DrainStar universal tee fitting adjacent to the sleeve through the footer with the outlet facing inward toward the sleeve. Prior to installing the tee, use a utility knife or other tool to slice tee outlet along horizontal top edge of the outlet pipe section from the outlet edge to where it transitions to the vertical portion of the fitting. This allows the outlet to be squeezed down to a reduced diameter that will fit into the footer sleeve. Next, cut and remove the filter fabric from the surface of the DrainStar Z-Drain at the location aligning with the inside hole of the tee fitting (removing the fabric allows water to exit the DrainStar Z-Drain without restriction). Finally, insert the reduced diameter tee outlet into the footer sleeve, wrap and tape the tee fabric around the Z-Drain securely. Place soil against the outside edge of the water transport section or use a mechanical fastener to insure that the connection stay properly in place.

## PRODUCT APPLICATION DETAILS

### Foundation Inside Corners:

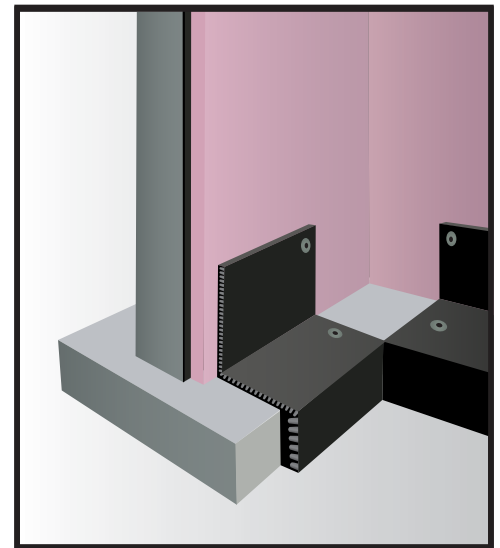
DrainStar Z-Drain requires the use of corner guards and the following procedure at inside corners. The procedure involves cutting the fabric and removing a portion of the core from the water collection and transfer section, and making a vertical slit in the fabric of the water transport section that is against the footer corner for proper corner guard application.

a. Mark the location on the Z-Drain that will be at the footer corner. Make a vertical slit about 5 inches in length (only in the filter fabric) between the two vertical rows of large dimples that will be closest to the footer corner. Stop the slit at the lower side of the top row of dimples. Make a second slit, along the same vertical line as the first, through both layers of fabric and the core of the water collection and transfer section. This slit should start at the third row of small dimples and continue across the entire small dimple section. The fabric on the dimple side of the product should still have a 2-3 inch wide strip intact above the vertical slit in the large dimple section.

b. Cut and remove a section of the small dimple section. Six complete vertical rows of the small dimples should be removed, three from each side of the split. Wrap the fabric around the small dimple core from the front to the back side of the Z-Drain and secure with tape.

c. Bend the Z-Drain to a 90° angle, place the corner guard over the vertical slit in the large dimple section, wrap the corner guard fabric both under and over the top of the large dimple section and secure with tape. Place the Z-Drain against the footer and secure the water transport section in place with soil. Install the water collection and transfer section horizontally over the footer top and vertically onto the WARM-N-DRI insulation; mechanically fasten the two top corners. The fasteners should penetrate the front fabric, the core, and both layers of fabric that were wrapped onto the back side in step b.

d. The WARM-N-DRI and the top of the footer will not be covered by the Z-Drain all the way to the corner. If completed coverage is desired, as an option a second piece of Z-Drain can be installed over uncovered corner section. If desired, cut a 12 to 24 inch length of Z-Drain, remove 2-3 inches of core from each end, and wrap the fabric and tape to enclose both ends. With dimples facing toward the wall and down, press the Z-Drain into the corner so that it covers the intersecting vertical wall sections and the horizontal footer surface and overlaps the Z-Drain installed in step c. (This will require making an S fold in the Z-Drain against one wall section.) Mechanically fasten the Z-Drain through the S fold and at the other top corner to secure in place.



Inside Corner

## Foundation Outside Corners:

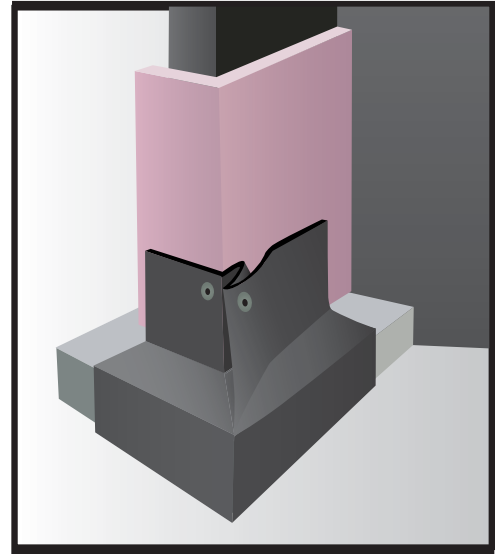
---

For outside corners, neither corner guards nor cutting are required for proper Z-Drain application.

**a.** Apply the Z-Drain around the corner fitting the large dimple section firmly against the vertical surface of the footer.

**b.** On one side of the corner, fold the Z-Drain over the top of the footer and up onto the vertical surface of the WARM-N-DRI insulation and fasten near the top 3 to 4 inches away from the corner.

**c.** As you begin to fold the top of the Z-Drain around the corner, allow the product to fold back on itself making a fold. Press the folded Z-Drain onto the footer top and onto the WARM-N-DRI on the other side of the corner. Mechanically fasten through the z-fold of product near the top and near the fold edge of the outermost material.



Outside Corner

## Splices:

---

- If a roll of DrainStar Z-Drain ends in the middle of a foundation wall, applicators should use the “eggshell carton” method, or core interlocking, to connect the new roll of DrainStar Z-Drain. Pull the filter fabric back away from the two Z-Drain ends to be joined; on both ends expose five vertical rows of the large dimples. Place the five rows of large dimples from one Z-Drain end over the top of five rows of large dimples of the other Z-Drain end, and press them together so that they net together with one large dimple set pressed inside the other large dimple set. It is not necessary to press the small dimples together. Re-wrap the filter fabric from one side back over the exposed core, then re-wrap the filter fabric from the other side over the core and fabric replaced from the first side. Securely tape the exposed fabric edge around the entire product, front and back, and then fasten properly to foundation wall.

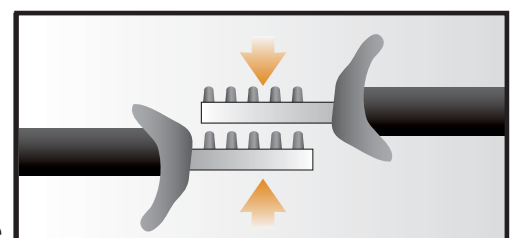
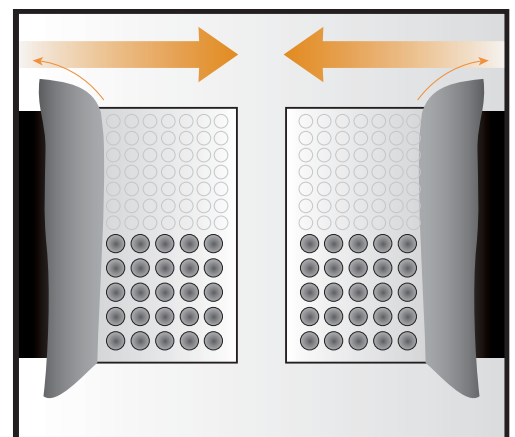
## Step-downs:

---

The “eggshell carton” method can also be used to step down DrainStar Z-Drain at footing elevation changes. Six-inch DrainStar is preferred for the vertical portion of the step-down for convenience, but Z-Drain may be used as well.

Use the following procedure to construct the step-down.

**a.** Cut the upper horizontal run of Z-Drain 4 inches past the edge of the step-down. Fold the fabric back far enough to expose approximately 10 inches of Z-Drain core. Cut and remove the last 4 inches of core.



Splice

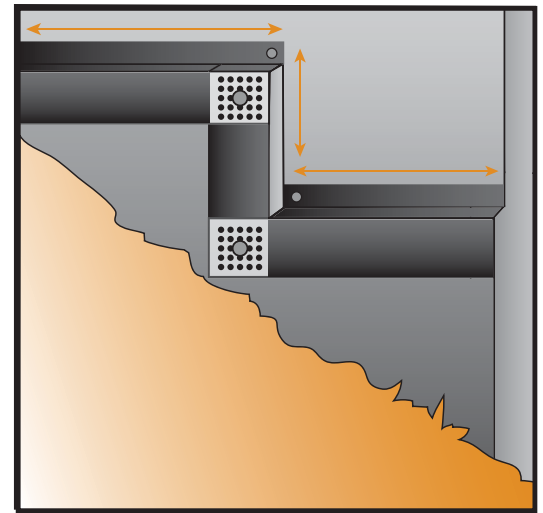
**b.** Cut a piece of 6-inch DrainStar so that it is six inches longer than the distance between the bottoms of the two horizontal Z-Drain sections being connected. Pull the filter fabric back to expose 6 inches of core at both ends.

**c.** Fold the fabric back far enough to expose approximately 10 inches of Z-Drain core on the lower horizontal section. Cut and remove the last 4 inches of the large dimple core. Cut and remove all 10 inches of the small dimple core.

**d.** Align the Z-Drain so that exposed 6 inches of large dimple core of the lower section is directly under the exposed 6 inches of large dimple core of the upper section. Connect the upper section and lower section with the 6-inch DrainStar piece prepared in (b). Nest all of the exposed dimples ( 5 rows of five at each end) and press together as with splices. In this case, the splice is oriented at 90 degrees.

**e.** On the upper connection, first pull the fabric from the 6-inch DrainStar up over at least two rows of dimples on the Z-drain. Next rewrap the Z-Drain fabric around the connection area (this will require cutting the lower edge of the Z-Drain fabric for 9-10 inches) and onto the back side next to the wall/insulation. Tape the open edges of filter fabric around the spliced connections to prevent any soil penetration. Mechanically fasten the upper section of the small dimple section of the Z-Drain to the foundation near the upper corner and through the wrapped fabric. Place a second fastener through the DrainStar/Z-Drain splice and wrapped fabric.

**f.** On the lower connection, first pull the Z-Drain fabric across the spliced area, fold and wrap to the rear. Next rewrap the DrainStar fabric down over the connection area (this will require cutting one side of the DrainStar fabric for about 6 inches to fit over the Z-Drain). Tape the open edges of filter fabric around the spliced connections to prevent any soil penetration. Mechanically fasten the upper section of the small dimple section of the Z-Drain to the foundation near the upper corner and through the wrapped fabric. Place a second fastener through the DrainStar/Z-Drain splice and wrapped fabric.



Step Down

## Chimneys:

Chimneys can be installed under window wells at the builder's request or as required by code using either 6-inch DrainStar or Z-Drain. To install a chimney, fasten the DrainStar up the foundation wall and terminate at a level where it will properly drain water from below the window. Wrap the top and bottom of DrainStar with filter fabric to prevent soil or gravel from entering DrainStar. Where the chimney DrainStar meets the footing Z-Drain, fasten the DrainStar chimney on the outside of the footing Z-Drain. The footing Z-Drain should make a continuous loop, with the chimney DrainStar on the outside and the soil backfill against it.

## Quality Reminders:

---

- Ensure that the TUFF-N-DRI Waterproofing membrane is sprayed to the proper 60 mils wet thickness on the foundation wall and at the footing/wall joint transition, and that the WARM-N-DRI foundation board is properly applied.
- Z-Drain is always installed with the dimple side toward the foundation wall and WARM-N-Dri insulation.
- Always cut filter fabric (when the outlet is on the dimple side of core), or fabric and core (when the outlet is on plastic sheet side of the core), from the DrainStar Z-Drain inside the 4" hole when installing a universal tee, so that the water flows from the Z-Drain without passing through filter fabric.
- Make certain that the installation around corners does not crease or crimp the plastic core impeding the flow of water.
- DrainStar Z-Drain can run up to 150 feet without an outlet. Tremco Barrier Solutions, Inc. recommends a minimum of two outlets per foundation. Installing one outlet per wall connected to an interior tile system is a preferred application. Two outlets at a sump corner is also a good idea, to provide a back up if one is damaged or disconnected. Check local code requirements for required outlets.
- If DrainStar Z-Drain cannot make a continuous loop around the foundation, as with a non-sleeved bulkhead wall or garage wall; terminate DrainStar Z-Drain at both sides of the wall, and drain from both sides. Ensure all DrainStar Z-Drain terminations are overlapped with filter fabric and fastened properly to the foundation wall.

For more information, please contact Tremco Barrier Solutions.

Phone 614-322-4420                      800-876-5624  
Fax 614-322-4753                      800-230-8178

6402 East Main Street, Suite 201  
Reynoldsburg, OH 43068

