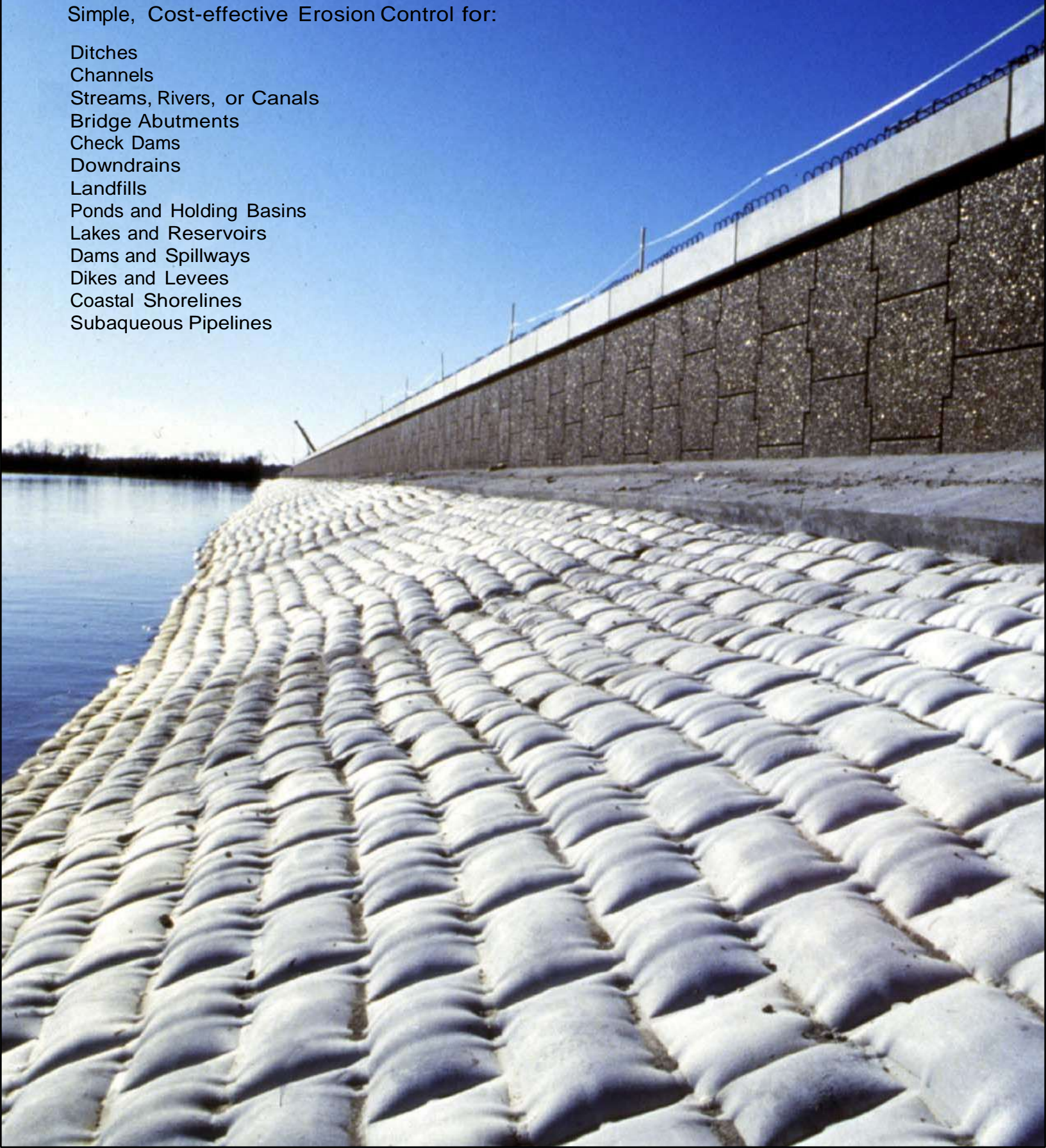


TEXICON™

EROSION CONTROL PRODUCTS

Simple, Cost-effective Erosion Control for:

- Ditches
- Channels
- Streams, Rivers, or Canals
- Bridge Abutments
- Check Dams
- Downdrains
- Landfills
- Ponds and Holding Basins
- Lakes and Reservoirs
- Dams and Spillways
- Dikes and Levees
- Coastal Shorelines
- Subaqueous Pipelines



The Advantages of Concrete – Without the Cost

TEXICON™ Erosion Control Systems are constructed by filling high-strength fabric forms with fine aggregate concrete (structural grout). As a result, they can provide superior performance to rip rap, cast-in-place concrete, or precast concrete erosion control systems while providing significant reductions in construction costs.

TEXICON fabric forms are installed as a continuous concrete forming system. They are filled by pumping fine aggregate concrete into the forms and can be installed either underwater or in-the-dry. Our forms create a highly durable concrete erosion protection system that outperforms traditional cast-in-place concrete slab systems yet costs less to install than rip rap, cast-in-place, or precast systems.

Performance Advantages

- The various styles of forms allow the project designer to predetermine the surface contours of the system to slow or increase the flow of water over the surface of the system.
- The fabric forms adapt to minor variations in the contours of the underlying soil, providing greater resistance to undercutting and toe scour.
- Form styles can be chosen to allow for the planting of vegetation within the boundaries of the forms for a more natural appearance, or to allow the form to adapt to uneven settlement in the subgrade beneath the system.

Cost Advantages

- Transportation costs are kept to a minimum, since the fabric forms themselves are extremely lightweight. The fine aggregate concrete is brought to the site from the nearest concrete plant.
- Mobilization costs are minimized, since a small crew can handle the placement and filling of the forms.
- Material costs are low, since no additional forming components are required.
- Installation costs are reduced, since the only equipment needed at the site is a concrete pump, which
- can be located as much as 400 feet from the form site itself, an important consideration when sites are difficult to reach or surrounded by soft ground or water.

The installation itself is a quick, one step operation. No form components need to be removed once the pumping is complete.

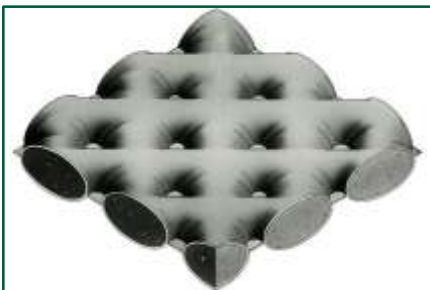
Whether your job is to line a channel, construct a revetment, protect a bridge from scour, repair flood damage, or protect a shoreline or stream bank from erosion, TEXICON fabric formed concrete offers a higher performance alternative to conventional methods at a far lower cost.



Fabric Forms Designed to Meet Your Site Conditions

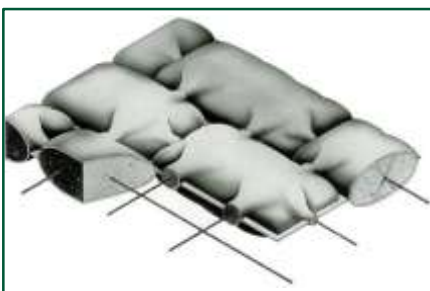
Since no two sites are exactly the same, TEXICON provides a variety of form styles, each designed to meet specific site conditions. We can work closely with your project team to help select the right method of erosion control for your site.

Our range of forms allow for the relief of hydrostatic pressure, containment of fluids in channels or ponds, adaptation to uneven settlement, or establishment of vegetation within the installed structure. For more severe erosion control applications, such as emergency bridge repair, TEXICON Concrete Bags (see page 5) offer an even more robust option.



Filter Point Linings provide a permeable concrete lining for structures constructed over firm subgrades and subject to relatively low hydrostatic loads. The double-layer fabric form is joined by interwoven filter points to form a concrete lining with a deeply cobbled appearance. The spacing of the filter points determines the concrete lining's thickness and weight, while the specially designed filter points relieve hydrostatic pressure and reduce stress to the fabric form during concrete pumping. If the attenuation of hydraulic force is needed to achieve lower velocities, the high coefficient of hydraulic friction ($n = 0.25$ to 0.30) of Filter Point's cobbled surface provides significant advantage over smooth-faced concrete linings.

Uniform Section Linings are smooth-faced, highly impermeable concrete linings. They reduce the leakage of water, waste products, or other fluids into or out of open channels, landfills, ponds, basins, and containment areas. Uniform Section concrete linings are resistant to most chemicals. The double-layer fabric is vertically connected at closely spaced centers by interwoven drop cords of specified length to form a concrete lining of the desired thickness and weight. With a comparatively smooth and uniform cross section, Uniform Section concrete linings exhibit a relatively low coefficient of hydraulic friction ($n = 0.015$ to 0.02). Specially designed weep tubes may be inserted through the fabric form, prior to filling, to relieve hydrostatic pressure.



Articulating Block Mats provide a cable-reinforced, articulating concrete block mattress for use over soft subgrades or where a revetment is exposed to attack by waves. When filled with a fine aggregate concrete, they form a system of staggered, interconnected, cable-reinforced, concrete blocks. The permeable interwoven perimeter of each block serves as a drain, filter, and hinge. The hinge permits articulation of the filled compartments (blocks). Factory installed high-strength cables and optional transverse cables are threaded between the two layers of fabric and through the fabric form's grout ducts to link the concrete blocks. The cables are self-positioning within the fabric formed concrete blocks and are embedded at approximately the vertical center of the concrete blocks.

Vegetated Mat Linings provide concrete linings for structures where the establishment of a vegetative cover is desired. They are generally installed above the waterline to provide protection against periodic high water flows. The double-layer fabric form is joined by interwoven areas to form a concrete lining with a lattice pattern. The spacing of the interwoven areas determines the concrete lining's thickness and weight, and their size controls the lining's percent of open area. When filled, they form a matrix of concrete elements and removable open areas. When the large interwoven fabric areas within the lattice are prepared, open areas are created that permit the establishment of vegetation within the lining. These open areas can be planted or filled with topsoil and seeded to provide a stand of erosion-resistant vegetation.



Engineered to Exceed Your Expectations

At Donnelly Fabricators, Inc. we have extensive experience in the design and use of fabric form technology. This expertise is at your disposal to assist in the preparation of engineering drawings and fabric form placement diagrams, as well as in many other aspects of the design and installation process. Our objective is to assure the most reliable, cost-efficient installation possible.

In general, the most important design elements to be considered include:

- expected velocity, flow rate, and depth of flow
- wave height and period, wind velocity and fetch

- channel or waterway geometry, including slope angle
- composition of soil to be protected
- ground water conditions

Beginning with this information, we can establish the correct form style for the site and basic cost and engineering parameters for the project. Structures to protect channels, streams, and riverbanks are normally designed utilizing permissible tractive stress calculations. Structures built to protect riverbanks and shorelines subject to wave attack are normally designed to resist an expected wave height.

In every instance, a qualified Professional Engineer, experienced in hydraulic structures, must investigate the soil and hydraulic conditions and prepare calculations for each design.

The following information is not suitable for detailed design; however, it does provide a good indication of the initial stability of the various styles of TEXICON linings and revetments. Technical notes, complete product specifications, and design assistance is available from Donnelly Fabricators on request.

Typical range of mix proportions for fine aggregate concrete		
Material	Mix Proportions lb/yd ³ (kg/m ³)	After Placement Mix Proportions lb/yd ³ (kg/m ³)
Cement*	750-850 (445-505)	805-915 (475-540)
Sand	2120-2030 (1255-1205)	2290-2190 (1355-1295)
Water	540-555 (320-325)	460-470 (270-275)
Air	As Required	As Required
* Pozzolan grade fly ash may be substituted for up to 35% of the cement as an aid to pumpability.		



Note: Values shown are typical and will vary with weight of concrete and field conditions.

Vegetated Mat	250	400
Average Thickness, in (mm)	2.5 (64)	4.0 (102)
Mass Per Unit Area, lb/ft ² (kg/m ²)	28 (138)	45 (220)
Open (vegetated) Area, %	35	35

Articulating Block	400	600	800
Average Thickness, in (mm)	4.0 (102)	6.0 (152)	8.0 (203)
Mass Per Unit Area, lb/ft ² (kg/m ²)	45 (220)	68 (330)	90 (440)
Mass per Block, lb (kg)	88 (39.8)	188 (85.2)	325 (148)
Nominal Block Dimensions, in (mm)	20x14 (508x356)	20x20 (508x508)	20x26 (508x660)

Uniform Section	300	400	600	800	1000
Average Thickness, in (mm)	3.0 (76)	4.0 (102)	6.0 (152)	8.0 (203)	10.0 (254)
Mass Per Unit Area, lb/ft ² (kg/m ²)	34 (165)	45 (220)	68 (330)	90 (440)	113 (550)
Drop Point Spacing, in (mm)	3x3 (76x76)	3x4 (76x102)	3x6 (76x152)	4.5x7.5 (114x191)	4.5x9 (114x229)

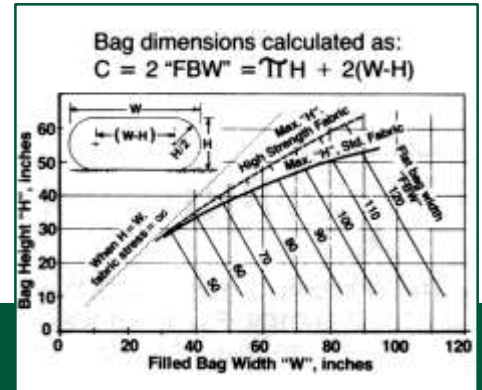
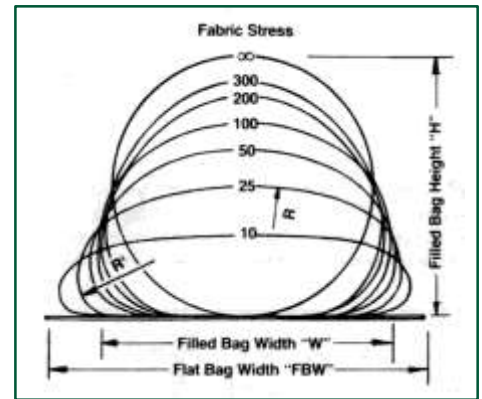
Filter Point	220	400	600	800	1000	1200
Average Thickness, inches (mm)	2.2 (56)	4.0 (102)	6.0 (152)	8.0 (203)	10.0 (254)	12.0 (305)
Mass Per Unit Area, lb/ft ² (kg/m ²)	25 (121)	45 (220)	68 (330)	90 (440)	113 (550)	135 (661)
Filter Point Spacing, inches (mm)	5.0 (127)	8.0 (203)	10.0 (254)	12.0 (305)	14.0 (356)	16.0 (406)
Area per Filter Point, in ² (cm ²)	2.0 (12.9)	2.0 (12.9)	6.3 (40.7)	6.3 (40.7)	12.2 (78.7)	12.2 (78.7)
Perimeter per Filter Point, inches (mm)	6.5 (165)	6.5 (165)	11 (279)	11 (279)	15 (381)	15 (381)

Even Under Demanding Conditions

TEXICON Concrete Bags are an extremely robust method of erosion control. The concrete bags range in size from 200 pounds to in excess of 70 tons, depending on the project requirements. They are customarily used for lakefronts and shorelines exposed to frontal attack by waves, and they have been extensively used for the repair of bridge scour. Since they can be filled underwater, they can be used in emergency situations, providing a solution to critical infrastructure repair projects. When a massive concrete erosion barrier is needed, concrete bags provide the most cost-effective and simple to install solution.

Concrete bags are constructed to order from specially woven fabric, designed to handle the high stresses of filling. Due to our extensive experience in this type of application, the bags can be rapidly fabricated and delivered to the site. Self-closing filling valves are installed during the fabrication process in the plant.

As these bags are filled, they assume a flattened cylindrical cross section, with the width usually being twice the height of the filled bag. (While the width/height ratio can be greater than 0.5, this is rarely done due to the fabric stress that is incurred.) Full reference tables are available in our TEXICON specification for concrete bags.



Simple to Install with Minimal Resources

Once the areas to be protected have been brought to finished grades and elevations, the recommended procedure for installing TEXICON linings or revetments (with the exception of concrete bags) are as follows:

- A fine aggregate concrete pump with a capacity of approximately 12 to 35 cubic yards per hour and a typical crew (consisting of a foreman, pump operator, and three to four laborers) are mobilized.
- Place the filter fabric over the area as required by the project drawings. Under certain soil conditions it may be necessary to place filter beds or filter fabric under the forms to assure the functioning of the filter points, permeable hinges, or weep tubes. When TEXICON forms are used to protect predominantly fine grained soils (50% or more passing through a No. 200 sieve), a sand blanket of four to six inches in thickness may be required on the soil before placing the filter fabric and fabric forms. The sand blanket will stop the piping of the fine soil and prevent its accumulation against the filter fabric.
- Place the first TEXICON fabric form at its design location, as identified on the layout drawings provided by Donnelly Fabricators.
- Fold back the last panel of the first form and place the accordion-folded second form atop this last panel so that the adjoining edges are abutting.
- Join the two forms together. Adjacent panels are joined edge to edge by field sewing or zippering. First join the top layers together. Then join the bottom layers. When installing Articulating Block, the optional transverse cables should be spliced prior to joining the bottom layers of fabric. (If conventional joining of forms is impractical, they may be overlapped a minimum of three feet with the upstream panel lying on top of the downstream panel.) Butt joints are not permitted.
- Extend the second fabric form into position along the area to be protected with the seams turned down. Continue in this manner with the remaining forms.
- Fold the upper edges of the forms into an anchor trench at the top of the

slope and securely position the form on the bank, assuring that the forms have sufficient extra length to allow for form contraction during filling. Care should be taken to assure accurate placement with seams generally perpendicular to the waterline for a pleasing appearance. When installing Articulating Block Mats, slope cables are attached to anchors located in the anchor trench at the top of the slope.

- Verify that the extra form length, provided for form contraction during filling, is gathered into temporary tucks. These tucks are generally perpendicular to the waterline.
- Following panel placement, the pumping crew injects fine aggregate concrete between the top and bottom layers of the fabric form, starting at the lower panel edge and proceeding gradually up the slope until the fabric form has been filled to the recommended thickness.

- Fine aggregate concrete is injected into the fabric forms by inserting an injection pipe through a small slit cut in the upper layer of fabric and sealing around the pipe with a cloth. When the pipe is withdrawn, cloth is stuffed into the hole and then removed when the fine aggregate concrete is no longer fluid. The concrete surface is smoothed by hand.
- When placing panels in flowing water, place the upstream panel first and proceed downstream. Pump the upstream panel of each form before filling the remainder of the form. Water velocities in excess of three feet per second may require the use of special installation methods. (Contact Donnelly for recommendations.)
- This procedure is repeated until the designated area has been protected.



Fabric forms being filled with fine aggregate concrete.

DONNELLY FABRICATORS, INC.

For additional information on TEXICON products, call 1-770-967-9335. Or write Donnelly Fabricators, Inc., 6328 Falling Water Lane, Hoschton, GA 30548. You can also fax us at 1-770-967-9336 or reach us via E-mail: texicon@bellsouth.net.

Additional information on our products as well as complete product specifications are available at our web site: www.texicon.com

The information presented herein will not apply to every installation. Dimensions and quantities shown are approximate only and will vary as a result of site conditions and installation procedures. No warranty or guarantee, expressed or implied, is made regarding the performance of any product, since the manner of use and handling are beyond our control. TEXICON is a trademark of Donnelly Fabricators, Inc. Printed in USA. © 2011, Donnelly Fabricators, Inc.