VEGETATED CONCRETE BLOCK MAT

SHOREFLEX
SHOREFLEX.COM
WHY
SHOREFLEX®

ELIMINATES EROSION.
EASY INSTALL.
GROWS GREEN.

• FAST, SIMPLE INSTALLATION
• EASY MAINTENANCE
• DRIVEABLE SURFACE
• PROVEN PERFORMANCE
• QUICK VEGETATION
• MULTIPLE EROSION CONTROL APPLICATIONS
• LIGHTWEIGHT HARD ARMOR
• CUSTOM MAT ROLL SIZES
• CUSTOM BACKING OPTIONS
• ENGINEERING SUPPORT
• 4,000 PSI CONCRETE

SHOREFLEX
Killeen, Texas
Applications

- Boat Ramp
- Bridge Abutment
- Canoe-Kayak Launch
- Channel Lining
- Curb Inlet
- Detention Basin
- Existing Outlet
- Letdown Channel
- New Outlet
- Overflow
- Parking Pad
- Pipeline Protection
- River Bank
- Roadside Channel
- Sandy Shore
- Shoreline
- Slope Protection

- Over 30 years of concrete manufacturing
- Sold throughout the United States
# SHOREFLEX® PROPERTIES

<table>
<thead>
<tr>
<th>WIDTH</th>
<th>LENGTH</th>
<th>8'</th>
<th>16'</th>
<th>24'</th>
<th>32'</th>
<th>40'</th>
<th>48'</th>
<th>50'</th>
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<tbody>
<tr>
<td>4'</td>
<td>WEIGHT (lbs)</td>
<td>352</td>
<td>704</td>
<td>1,056</td>
<td>1,408</td>
<td>1,760</td>
<td>2,112</td>
<td>2,200</td>
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<tr>
<td></td>
<td>MATS/TRUCKLOAD</td>
<td>127</td>
<td>63</td>
<td>42</td>
<td>31</td>
<td>25</td>
<td>21</td>
<td>20</td>
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<tr>
<td>8'</td>
<td>WEIGHT (lbs)</td>
<td>704</td>
<td>1,408</td>
<td>2,112</td>
<td>2,816</td>
<td>3,520</td>
<td>4,224</td>
<td>4,400</td>
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<tr>
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<td>MATS/TRUCKLOAD</td>
<td>63</td>
<td>31</td>
<td>21</td>
<td>15</td>
<td>12</td>
<td>10</td>
<td>10</td>
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<tr>
<td>10'</td>
<td>WEIGHT (lbs)</td>
<td>880</td>
<td>1,760</td>
<td>2,640</td>
<td>3,520</td>
<td>4,400</td>
<td>5,280</td>
<td>5,500</td>
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<tr>
<td></td>
<td>MATS/TRUCKLOAD</td>
<td>51</td>
<td>25</td>
<td>17</td>
<td>12</td>
<td>10</td>
<td>8</td>
<td>8</td>
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</tbody>
</table>

*CUSTOM SIZES AVAILABLE

## Material Information
- **Blocks**: 4,000 PSI, Wet-Cast Portland Cement
- **Interlocking Biaxial Geogrid**: Polyester 30/30 w/ 2,000 lb/ft biaxial strength
- **Polypropylene 50/50 geogrid w/ 3,600 lb/ft biaxial strength**
- **Underlayment Options**: Doublenet Straw, GS 50, Non-Woven Fabrics

<table>
<thead>
<tr>
<th>Material Weight</th>
<th>10 lbs. / sf</th>
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<tbody>
<tr>
<td>Block Size</td>
<td>6.5&quot;x 6.5&quot;x 2.25</td>
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<tr>
<td>Percentage Open Area (POA)</td>
<td>30% min.</td>
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</tbody>
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## Performance

<table>
<thead>
<tr>
<th>Test</th>
<th>Tested Value</th>
<th>Bed Slope</th>
<th>Soil Classification</th>
<th>Limited Value</th>
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<tbody>
<tr>
<td>ASTM 6460</td>
<td>Shear Stress</td>
<td>10% &amp; 20%</td>
<td>Clayey Sand (USCS) Loam (USDA)</td>
<td>18+ PSF</td>
</tr>
<tr>
<td>ASTM 6460</td>
<td>Velocity</td>
<td>10% &amp; 20%</td>
<td>Clayey Sand (USCS) Loam (USDA)</td>
<td>30+ ft/SEC</td>
</tr>
</tbody>
</table>
ASTM D 6460 Testing — 10% & 20% Flume Test

Non-vegetated testing on 10% & 20% slope.

RESULTS: Shear Stress - $\text{SHOREFLEX}^\circledR = 18+$ psf

Velocity $\text{SHOREFLEX}^\circledR = 30+$ ft/sec.

Testing: Current federal design procedures utilize bed shear stress for primary stability analysis. This approach takes into consideration: velocity, depth of flow, and energy slope gradient to determine how much hydraulic energy (bed shear) is incident on the ShoreFlex® mats. ShoreFlex® has been flume tested to withstand shear stresses of 18lb/ft² and velocities of 30 ft/s.

- Engineering support available
- Project specific mat layouts
Q: What is the open area of ShoreFlex® and why is that important?
A: ShoreFlex® is designed with approximately 30% open area to facilitate vegetation growth.

Q: Which product is appropriate for my application?
A: The Hydraulic Engineering Circular (HEC RAS) determines if ShoreFlex® is applicable for your application by analyzing the hydraulic conditions with ShoreFlex’s permissible shear and calculating the safety factor. The HEC RAS is available for download on our website.

Q: Which erosion control underlayment is best to use under ShoreFlex®?
A: The type of erosion control underlayment should be chosen based off of site specific needs. Different projects may require different levels of erosion control underlayment and each job site should be evaluated independently.

Q: What sizes do the ShoreFlex® mats come in?
A: ShoreFlex® is offered in a wide variety of sizes to fit your specific needs. Most commonly, ShoreFlex® will be sold in 8' x 32' mats, but custom sizes are available upon request.

Q: What is maximum velocity ShoreFlex® can handle?
A: Current federal design procedures utilize bed shear stress for primary stability analysis. This approach takes into consideration: velocity, depth of flow, and energy slope gradient to determine how much hydraulic energy (bed shear) is incident on the ShoreFlex® mats. ShoreFlex® has been flume tested to withstand shear stresses of 18 lb/ft² and velocities of 30 ft/s.

Q: How strong is the geogrid that holds the concrete blocks together?
A: The geogrid that is used to connect the concrete blocks together is a high strength low elasticity polyester geogrid with a 2,000-lb. breaking tensile strength in both directions which allows for maintenance equipment and vehicular traffic.

Q: How do you connect adjacent ShoreFlex® mattresses at the sides?
A: The geogrid that is used to connect the concrete blocks together is a high strength low elasticity polyester geogrid with a 2,000-lb. breaking tensile strength in both directions which allows for maintenance equipment and vehicular traffic.
ShoreFlex® will be installed in a shingling configuration. The downstream mat perpendicular to the flow of water shall be laid a minimum of 18’ underneath the upstream mat. The mats will then be connected together via the 18” ground staples.

**Q:** Do I need to be concerned about the geogrid deteriorating?

**A:** The polyester geogrid is designed for a minimum 25-year life expectancy and in most cases will be protected by and incorporated into the vegetation that grows onsite.

**Q:** What is the maximum slope ShoreFlex® can handle?

**A:** 2:1 slopes are the preferred limit. However, steeper slopes, up to 1:1, can be designed providing a proper slope stability analysis has been performed.

**Q:** How fast can ShoreFlex® be placed?

**A:** ShoreFlex® comes delivered in a roll for easy install. Most small equipment can easily handle and install the ShoreFlex® rolls allowing for quick installation time. ShoreFlex® can also be cut onsite to avoid trees or other objects to further expedite installation.

**Q:** How much does ShoreFlex® cost?

**A:** Depending on the quantity of ShoreFlex® and type of erosion control backing, ShoreFlex® is competitive with other similar systems. Please contact your distributor for exact pricing.

**Q:** How do you handle upstream and downstream terminations?

**A:** ShoreFlex® terminations, both upstream and downstream, will be trenched in a minimum of 18” perpendicular to flow to ensure permanent placement and proper hydraulic functionality.

**Q:** How do you anchor the ShoreFlex®?

**A:** Anchoring ShoreFlex® can be accomplished by several different methods depending on the design objective. Most common methods utilize galvanized steel helical or duckbill anchors. Attachment to ShoreFlex® will be accomplished via the lifting/anchoring loops that are incorporated in the concrete blocks. CAD details available at www.shoreflex.com.

**Q:** How do you determine when mechanical anchors are necessary?

**A:** Mechanical anchors are used on steeper slopes or when an extra safety factor is desired.

**Q:** What subgrade compaction is required?

**A:** A 95% standard proctor within +/- 3% of optimum moisture content is the normal requirement for fill embankments. Existing compaction of undisturbed soils is sufficient provided they are stable soils and do not exhibit “yielding” of soft areas.

**Q:** Can you drive on ShoreFlex®?

**A:** ShoreFlex® is capable of handling maintenance equipment and light vehicular traffic. ShoreFlex® can be maintained with both industrial and smaller sized mowers.

**Q:** How do you handle obstructions and curves? (How do you install ShoreFlex® around pipes?)

**A:** Several CAD details are available for download on our website. ShoreFlex® will come to the jobsite rolled for ease of install and placement. ShoreFlex® can be cut onsite to avoid any obstacle that may be in the installation area. ShoreFlex® also comes in custom sizes to help accomplish any curve or turn the application site may present.

**Q:** Do you need to fill and seed ShoreFlex®?

**A:** Site seeding is optional but recommended. ShoreFlex® can be installed over both seeded and unseeded soils and vegetation will still occur. Seeded soils will typically vegetate faster but is not necessary to accomplish natural vegetation growth through ShoreFlex®.
HEC-RAS

HEC-RAS has been developed for the U.S. Army Corps of Engineers (USACE). HEC-RAS is a hydraulic modeling system used to properly analyze flow conditions in multiple situations.


Installation Details

Typical installation details available at www.shoreflex.com

Custom installation details available upon request.

Custom Mat Layout

Project specific layouts available for mat sizing, constructability, and shipping sequence.
ShoreFlex® can provide your project with various erosion control backings for your concrete mats. Customized backings allow for site specific seed and soil retention, providing different levels of longevity.

- Double Net Straw
- Turf Reinforcement Mat
- Non-Woven Geotextiles

Roll Delivery Options

- Onsite installation support
- Multiple anchoring systems available
Project Checklist

Place an Order

☐ Decide which ShoreFlex® backing is best for the site.

Prep Site

☐ Make sure the surface is smooth and free of objects.
☐ Seed and fertilizer should be applied prior to ShoreFlex® installation.

Optional Supplies

☐ #3 rebar 18” U anchors
☐ 4’ backing for seams and edges
☐ Geogrid for splices
☐ Zip ties (same as used for silt fence) or hog rings and pliers
<table>
<thead>
<tr>
<th>Rigging</th>
<th>Clevis</th>
<th>Hand Tools</th>
</tr>
</thead>
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<tr>
<td>Lifting Straps</td>
<td>Gloves</td>
<td>Hay Hooks</td>
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<td><img src="image" alt="Gloves" /></td>
<td><img src="image" alt="Hay Hooks" /></td>
</tr>
<tr>
<td>8” Zip Ties</td>
<td></td>
<td>Portable Chop Saw (if cutting)</td>
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<tr>
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<tr>
<td>Smooth Bucket</td>
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<td>BobCat (optional)</td>
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**Shoreflex**

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