

TEXAS FOREST SERVICE

Best Management Practices

Product and Vendor Guide

June, 2006

This guide consolidates information needed to obtain materials for road and stream crossing construction. The price information in this guide is approximated and may vary with distance from distributors.

More detailed information of each product is available from the BMP Project. If you need specific information about a product, call Hughes Simpson or Shane Harrington at (936) 639-8180 or e-mail us at sharrington@tfs.tamu.edu.

If you know of additional sources from which materials may be obtained, please let us know.

The Texas Forest Service does not endorse the use of specific products or vendors listed in the contents of this guide.

**All prices are subject to change.*

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GEOTEXTILE FABRICS

Application: Geotextiles, often called construction fabric, are the most widely used geosynthetic. They are constructed from long lasting synthetic fibers that are bonded together to form a fabric held together by weaving, heat bonding, or other means. They are primarily used for separation or reinforcement over wet, unstable soils. Geotextile fabrics are typically used in conjunction with geoweb or geogrid.

Note: Geotextiles are photodegradable; they must be stored out of the sunlight.

Manufacturers:

<u>Company</u>	<u>Phone</u>	<u>Product</u>
Contech	(409) 296-4098	C-200 Woven Fabric or C-38 Non-woven fabric
Nicolon/Mirafi Group	(800) 234-0484	140N
Linq Industries	(800) 543-9966	130EX

Price Range: \$00.32 to \$1.50 per square yard for nonwoven geotextiles.
\$00.50 to \$2.00 per square yard for woven geotextiles.

Quantities: Sold by the roll. One roll will cover 475 to 600 square yards (150ft. of road) and will weigh 120 to 150 pounds.

Distributors:

CONTECH Construction Products, Inc.
Greg Nester, Sales Representative
14505 Torrey Chase Blvd., Suite 108
Houston, TX 77014
Phone: (281) 893-6012
Fax: (281) 893-6026

Seabreeze Culvert, Inc.
Mason Breaux, Sales Representative
P.O. Box 6
Stowell, TX 77661
Phone: (409) 296-4098 or (409) 267-5274
Fax: (409) 296-4099

GEOGRIDS

Application: Geogrids are made from polyethylene sheeting that is formed into open grid-like configurations. Geogrids are good for reinforcement because they have high tensile strengths, and coarse aggregate can interlock into the grid structure.

Manufacturers:

<u>Company</u>	<u>Phone</u>	<u>Product</u>
Nicolon/Mirafi Group	(800) 234-0484	Miragrid 5T
Tensar	(800) 836-7271	BX 1100
Tenax	(800) 356-8495	MS330
Huesker	(800) 942-9418	Fortrac 35/20-20

Price Range: \$1.60 to \$5.00 per square yard (the higher cost products are made from coated polyester).

Quantities: Typically sold by the roll (13.1' X 164'). May be ordered in specific dimensions. One standard roll weighs 75 to 100 pounds.

Distributors:

CONTECH Construction Products, Inc.
Greg Nester, Sales Representative
14505 Torrey Chase Blvd., Suite 108
Houston, TX 77014
Phone: (281) 893-6012
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Seabreeze Culvert, Inc.
Mason Breaux, Sales Representative
P.O. Box 6
Stowell, TX 77661
Phone: (409) 296-4098 or (409) 267-5274
Fax: (409) 296-4099

Construction Materials
18909 Highland Road
Baton Rouge, LA 70821
Phone: (504) 751-4000

Tensar
David Poe
825 Fort View Road, Ste. 112F
Austin, TX 78704
Phone: (512) 440-0898
Fax: (512) 440-0899

GEOCELLS

Application: Geocells are made from polyethylene strips from 2 to 8 inches high that are bonded to form a honeycomb structure. The product is shipped in a collapsed and compact form. Geocells may be used as a low-water crossing or as a wet-area crossing. It works best in areas with flat approaches to the crossing and with a fairly firm base. Used in perennial and intermittent streams, water may flow over the geocells, which prevents lateral movement of the fill material and provides for a stable base for traffic. It is recommended that a geotextile fabric be installed under the geocells. Type of fill materials will be influenced by expected stream velocities.

Manufacturers:

<u>Company</u>	<u>Phone</u>	<u>Product</u>
Presto	(920) 738-1211	Geoweb
AGH	(713) 552-1749	Envirogrid
WEBTEC	(800) 438-0027	TerraCell

Price Range: \$150 - \$400 per unit.

Quantities: Typically sold by the sheet (8' X 20'). Four inch sheets are adequate for light traffic (pick-up trucks and small tractors), while eight inch sheets are recommended for heavy traffic (large tractors and logging traffic.)

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Mason Breaux, Sales Representative
P.O. Box 6
Stowell, TX 77661
Phone: (409) 296-4098 or (409) 267-5274
Fax: (409) 296-4099

Big "R" Manufacturing &
Distributing, Inc.
Dave Wilke, Sales Rep.
P.O. Box 1290
Greeley, CO 80632-1290
Phone: (970) 356-9600 or
(800) 234-0734
Fax: (970) 356-9621

RENO MATTRESS

Application: A reno mattress is comparable to a box spring mattress from a bed. It differs in that it is made from a product similar to chain-link fencing. The mattress is place in the stream when it is filled up with fist-size rock and the top is wired shut. This product serves to hold rock in place for a low water crossing. It differs from Geoweb in that it does not necessarily need to be installed flush with the bottom of the stream channel. The open characteristics of the wire will allow for water to flow through the mattress as well as over the top. This product comes as galvanized wire or can be coated with PVC to extend the life of the product.

Manufactures:

<u>Company</u>	<u>Phone</u>	<u>Product</u>
MacCafferri Gabions	(972) 346-2974	Reno mattress
*Price range:	Galvanized	PVC
12'X6'X6"	\$68.00	\$98.75
12'X6'X12"	\$78.20	\$117.85

Distributors:

MacCafferri Gabions
1120S. Texas St., Suite F
Lewisville, Texas 75057-4833
Phone: (972) 346-2974
FAX: (972) 219-1639

The Texas Forest Service does not endorse the use of specific products or vendors listed.

CULVERTS

Application: Almost everybody knows when culverts are appropriate to install. What also needs to be understood is the tremendous variation in culvert sizes and types. Three “main types that seem to emerge by their use in forestry operations are galvanized steel, aluminum, and polymer-coated galvanized steel. Aluminized, asphalt coated, plastic, and fiberglass are less common types but may also be appropriate.

Specifications:

<u>Types</u>	<u>Description</u>	<u>Life Span</u>
Galvanized Steel	Most common	15 years (pH <7, >7)
Aluminum	Very light but easily crushed	50 years
Polymer-coated Galvanized	Relatively heavy, and must handle w/care	30-50 years
Asphalt-coated	Being phased out (environmental concerns)	N/A
Plastic	Relatively light, and gaining popularity	30 years
Aluminized	Relatively light	30 years
Fiberglass	Very heavy, but inexpensive	50 years

*Note that Life Spans are not definite – they vary with soil type, water acidity, and manufacturer’s claims.

Size/Price*:

<u>Types</u>	<u>24 inch</u>	<u>36 inch</u>	<u>48 inch</u>	<u>60 inch</u>
Galvanized Steel	\$12.42	\$18.55	\$24.65	\$38.06
Aluminum	\$17.93	\$30.30	\$39.81	\$62.28
Polymer-coated Galvanized	\$14.67	\$21.15	\$30.15	\$47.62
Aluminized	\$13.55	\$20.00	\$26.40	\$40.20
Fiberglass	\$10.00	\$12.50	\$15.00	\$20.00

*Prices are for standard 16 gauge per linear foot. Heavier gauges obviously cost more.

Arched Culverts: Culverts vary by shape as well. Arched culverts are “short” and egg-shaped, and work well where sufficient head or fill height is of concern. They may also require use of a heavier gauge to facilitate the arching process, thereby increasing the cost. The cost of arched culverts may generally be calculated by adding 7% to the initial culvert cost.

Culvert Sizing: It cannot be emphasized enough the importance of properly sizing culverts! Cheaper is not always better, and a 6” rain will sure prove it. refer to the chart below when sizing culverts.

ACRES DRAINED	Light Soils (Sands)			Medium Soils			Heavy Soils (Clays)		
	Flat	Mod.	Steep	Flat	Mod.	Steep	Flat	Mod.	Steep
Culvert Diameter in Inches									
5	18	18	18	18	18	21	21	21	24
10	18	18	18	21	24	27	27	27	36
20	18	18	18	24	27	36	36	36	42
30	18	18	18	27	30	36	36	42	48
40	18	18	18	27	36	42	42	48	
50	18	18	18	30	36	48	48	48	
75	18	21	21	36	42				
100	21	21	24	36	48				
150	21	24	24	42					
200	24	30	30	48					
250	27	30	30						
300	30	36	36						
350	30	36	42						
400	36	36	42						

Flat: 0% - 5% Slope
 Moderate (Mod.): 5% - 10%
 Steep: 15%+

Distributors:

CONTECH Construction Products, Inc.
Greg Nester, Sales Representative
14505 Torrey Chase Blvd., Suite 108
Houston, TX 77014
Phone: (281) 893-6012
Fax: (281) 893-6026

Seabreeze Culvert, Inc.
Mason Breaux, Sales Representative
P.O. Box 6
Stowell, TX 77661
Phone: (409) 296-4098 or (409) 267-5274
Fax: (409) 296-4099

Texas Steel Culvert Company
Susan Cole, Sales Representative
2020 W. Division
Arlington, TX 76012
Phone: (817) 265-2255
Fax: (817) 265-2250
Galvanized and Polymer-coated only

STEEL PIPE

Product: Steel Pipe

18" X 40'	\$10.95/ft.
22" X 40'	\$12.95/ft.
24" X 40' (Truckload of 15 joints)	\$550/joint
48"	\$2,250/30 ft. joint; 3 joints/\$4,150

Distributor:

Price Co. (Steel Pipe)
Rt. 2, Box 42K
Kumby, TX 75433
Phone: (800) 443-1145

TEMPORARY CROSSING MATS FOR HARVESTING OPERATIONS

Application: Temporary crossing mats are used to cross small streams and/or wet areas. They are easily moved from one location to another by a large tractor or skidder. They are relatively inexpensive and they prevent the need for fill material associated with culverted crossings.

Product: Drag-Line Mats (Heavy Duty)

Specifications: Mats are constructed of untreated, mixed American hardwoods.

Size/Price/Weight:

Eight Inch (4 X 8):

Sixteen Feet	\$295 each	\$885/set of 3	2,800 lbs. per mat
Eighteen Feet	\$330 each	\$990/set of 3	3,200 lbs. per mat
Twenty Feet	\$385 each	\$1,155/set of 3	3,500 lbs. per mat
Twenty-four Feet	\$480 each	\$1,440/set of 3	4,200 lbs. per mat

Twelve Inch (4 x 8):

Twenty Feet	\$575 each	\$1,725/set of 3	5,280 lbs. per mat
Twenty-four Feet	\$700 each	\$2,100/set of 3	6,300 lbs. per mat
Twenty-eight Feet	\$875 each	\$2,625/set of 3	7,400 lbs. per mat
Thirty Feet	\$970 each	\$2,910/set of 3	7,900 lbs. per mat
Thirty-two Feet	\$1175 each	\$3,525/set of 3	8,400 lbs. per mat

Manufacturer/Distributor:

Quality Mat Company
John Penland, Sales Representative
6550 Tram Road
Beaumont, TX 77713
Phone: (409) 722-4594 or (800) 227-8159

Gillespie Lumber Company
Gene Burns, Sales Representative
8211 Highway 59 South
Nacogdoches, TX 75963
Phone: (936) 569-6158

Product: Laminated Drag-Line Mats
"Board Road"

Specifications: Mats are constructed of untreated, mixed American hardwood. Mats are designed for light traffic, or heavy traffic in wet-areas with no span. Life span is about five years.

Size/Price/Weight:

12' X 8' X 6" (oak)	\$295 per mat	2600 pounds
16' X 8' X 6" (oak)	\$415 per mat	3400 pounds
16' X 8' X 6" (mixed hdwd.)	\$395 per mat	3250 pounds

Manufacturer/Distributor:

Quality Mat Company
John Penland, Sales Representative
6550 Tram Road
Beaumont, TX 77713
Phone: (409) 722-4594 or (800) 227-8159

Gillespie Lumber Company
Gene Burns, Sales Representative
8211 Highway 59 South
Nacogdoches, TX 75963
Phone: (936) 569-6158

Product: "Panel-Lam" Skidder Mats

Specifications: Constructed from 4" X 8" creosote treated timbers. Life span is approximately 5 years.

Size/Price/Weight:

5' X 24' X 8"	\$2350 - \$2500 per mat	4600 pounds
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Manufacturer:

Wheeler Lumber Operations
3340 Republic Avenue
P.O. Box 26100
St. Louis Park, MN 55426
Phone: (800) 328-3986

Distributor:

Big "R" Manufacturing & Distributing, Inc.
David Wilke, Sales Representative
P.O. Box 1290
Greeley, CO 80632-1290
Phone: (970) 356-9600 or (800) 234-0734
Fax: (970) 356-9621

RAILCARS

Product: Tank Cars

Specifications: Tank cars with the ends cut out. Wall thickness from 1/2 inch to 7/8 inch. Life span is 30-50 years. Appropriate in larger creeks where conventional sized culverts are too small.

Price/Size*:

<u>Diameter</u>	<u>Length</u>	<u>Cost</u>
6'6" – 7'11"	32' – 40'	\$85/foot (\$3,750/car)
8'0" – 8'11"	32' – 50'	\$90/foot (\$3,750/120 ft.)
9'0" – 9'4"	32' – 50'	\$95/foot
9'5" – 10'	40' – 60'	\$105/foot

*Price is per linear foot.

Distributors:

Diversified Railcar
Terry Smith, Owner
143 Ouachita 504
Camden, AR 71701
Phone: (870) 231-9782 or (870) 664-2196

Price Company
Rt. 2, Box 42K
Kumby, TX 75433
Phone: (800) 443-1145

Product: Flat Cars

Specifications: Appropriate for spanning larger streams. Very inexpensive relative to constructing a bridge.

Size/Price*/Weight:	10' X 40'	\$3,500	20,000 pounds
	10' X 50'	\$4,000	25,000 pounds
	10' X 60'	\$4,800	38,000 pounds
	8' X 89'	\$9,500	44,000 pounds

Distributors:

Diversified Railcar
Terry Smith, Owner
143 Ouachita 504
Camden, AR 71701
Phone: (870) 231-9782 or (870) 664-2196

Product: Box Car Beds

Specifications: Appropriate for spanning larger streams. Very inexpensive relative to constructing a bridge. Box car beds are box cars with the top cut off. They are lighter than the flat cars.

Size/Price*/Weight:

10' X 50'	\$4,000	27,000 pounds
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*Price includes delivery to most of East Texas.

Distributor:

Diversified Railcar
Terry Smith, Owner
143 Ouachita 504
Camden, AR 71701
Phone: (870) 231-9782 or (870) 664-2196

GABION BASKETS

Application: Gabion baskets look like chain link fencing material. They are made from both zinc-coated wire and zinc-coated with a PVC sleeve. The baskets are primarily used as retaining structures, and may be appropriate for use in stream crossings. Baskets are typically filled with 6” or larger stones (no fines). One drawback is that rock must be placed by hand.

GABION BASKETS SIZES AND PRICES						
Length (feet)	Width (feet)	Height (feet)	Number of Cells	Capacity (cubic yards)	Price Galvanized	Price PVC-Coated
6	3	3	2	2.0	\$47.15	\$62.67
9	3	3	3	3.0	\$67.27	\$89.92
12	3	3	4	4.0	\$85.50	\$114.87
6	3	1.5	2	1.0	\$33.27	\$43.70
9	3	1.5	3	1.5	\$47.47	\$62.67
12	3	1.5	4	2.0	\$70.17	\$80.82
6	3	1	2	0.66	\$29.82	\$38.95
9	3	1	3	1.0	\$41.25	\$54.67
12	3	1	4	1.33	\$52.15	\$71.02
4.5	3	3	1	1.5	\$40.70	\$48.70

*Some units may be purchased at costs up to \$275.

Manufacturers:

Lane Metal Products Division
 State Rt. 1030
 Dublin, VA 24084
 Phone: (540) 674-4645

MacCaferri Gabions, Inc.
 1120 S. Texas St., Ste. F
 Lewisville, TX 75057-4833
 Phone: (972) 436-2974
 FAX: (972) 219-1639
 email: magaec@aol.com

Distributors:

Big “R” Manufacturing & Distributing, Inc.
 Dave Wilke, Sales Representative
 P.O. Box 1290
 Greeley, Co 80632-1290
 Phone: (970) 356-9600 or (800) 234-0734
 Fax: (970) 356-9621

CONTECH Construction Products, Inc.
 Greg Nester, Sales Representative
 14505 Torrey Chase Blvd., Suite 108
 Houston, TX 77014
 Phone: (281) 893-6012
 Fax: (281) 893-6026

MISCELLANEOUS PRODUCTS

Product: Silt Fencing

Application: Appropriate for use as an erosion barrier.

Price/Size: Standard roll (3' X 100') costs \$30.00 and weighs 55.0 lbs.
Silt fencing backed with wire for \$90.00 for a roll (3' X 100')
Both rolls come with pre-attached posts for installation.

Distributors:

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Fax: (281) 893-6026

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Mason Breaux, Sales Representative
P.O. Box 6
Stowell, TX 77661
Phone: (409) 296-4098 or (409) 296-5274
Fax: (409) 296-4099

Product: Erosion Control Fabrics

Application: Appropriate for use on exposed soils to prevent erosion. The products are so widely varied in specifications and prices that it is impractical to list specific products. However, below is a list of distributors that carry many different types of fabrics. Fabrics range from polymer synthetics to natural materials.

Distributors:

Synthetic Industries
Geosynthetic Products Division
4019 Industry Drive
Chattanooga, TN 37416
Phone: (800) 621-0444 or (423) 899-0444
Fax: (423) 899-7619

North American Green
14649 Highway 41 North
Evansville, IN 47711
Phone: (800) 772-2040 or (812) 867-6632
Fax: (812) 867-0247

BonTerra America
355 W. Chestnut Street
Genesee, Idaho 83832
Phone: (800) 882-9489
e-mail: bonterra@moscow.com

American Excelsior Company
<http://www.amerexcel.com>
Phone: (800) 777-SOIL (777-7645)
Fax: (817) 649-7816

Product: Hydromulch

Application: Slope rehabilitation and stabilization. The products are often used for revegetation after large forest fires as well as stabilizing large road cuts. Probably limited in forestry practices; however, information is available if the need arises.

Quantities: 40 bales per ton

Rates: Average application rates vary but average 800 lbs. of fiber per acre.

Prices: Average price is \$250 per ton.

Distributors:

Dyna Turf Fibers
Rose Niemi
1125 Muscat Avenue
Sanger, CA 93657
Phone: (888) Buy Turf or (559) 875-0493
Fax: (559) 875-0667

Wood Recycling, Inc.
Woburn, MA 01801
(800) 850-9752
*Free video available.

Spittle Enterprises, Inc. (Product is called Terramulch)
Kevin Spittle
P.O. Box 1918
Huntersville, NC 28070
Phone: (800) 726-6414 or (704) 822-6511
Fax: (704) 827-9398

Product: Hydroseeders

Application: Use in applying hydromulches.

Prices: Prices range from \$7,500 for 300 gallon seeders to \$40,000 for 2,000 gallon seeders.

Distributor:

Finn Corporation
9281 LeSaint Drive
Fairfield, OH 45014
Phone: (800) 543-7166 or (513) 874-2818
Fax: (513) 874-2914

FILL MATERIALS

Southeast Texas:

<u>Distributor</u>	<u>Phone</u>	<u>Product</u>
Wayne Hooks – Grisham Construction	(409) 661-0717	Slag
Smith & Company	(409) 756-6960	Crushed Limestone
WM. Acreman	(409) 756-3634	Fill Dirt
		Crushed Limestone
Deanco	(281) 356-8417	Crushed Limestone
Nathan Hoagland Construction	(409) 264-3322	Crushed Sandstone
		Crushed Concrete
		Fill Dirt
		Crushed Asphalt

Northeast Texas:

<u>Distributor</u>	<u>Phone</u>	<u>Product</u>
Lee’s Gravel	(903) 756-5387	Iron Ore
		Crushed Limestone
Transit Mix Concrete & Materials Co.	(409) 569-9571	Crushed Concrete
		Crushed Limestone
East Texas Asphalt	(409) 639-2216	Crushed Limestone
		Filtered Limestone

<u>Product</u>	<u>Cost Per Ton*</u>
Crushed Limestone	\$20.00 - \$32.00
Slag	\$6.50
Fill Dirt	\$6.00 - \$7.50
Crushed Concrete	\$5.00
Crushed Sandstone	Price based on distance. Please call for quote.
Crushed Asphalt	Price based on distance. Please call for quote.
Iron Ore	Price based on distance. Please call for quote.

*Note that one ton is equal to approximately 1.35 cubic yard. Price does not include hauling fee. Some businesses charge flat rates per mile and some charge hourly fees.