**Project Name: GFA CFS072R**
**Project Number: Test**

# Section 02370

# Specification for RECB Used in Temporary Erosion Control Application

## 1 GENERAL

### 1.1 SECTION INCLUDES

A. Erosion Control Blanket to prevent soil loss by temporarily stabilizing and protecting disturbed soil from raindrop impact and surface erosion, to increase infiltration, decrease compaction and soil crusting, and to conserve soil moisture. Mulching with erosion control blankets to increase the germination rates for grasses and legumes and promote vegetation establishment for a permanent erosion control system. Erosion control blankets to protect seeds from predators, reduce desiccation and evaporation by insulating the soil and seed environment. This specification does not apply to other types of light weight soil erosion control materials such as 0.5 lbs/sy. straw mats or open weave jute netting.

### 1.2 RELATED SECTIONS

A. Section 02050 - Basic Site Materials and Methods
B. Section 02100 - Site Remediation
C. Section 02200 - Site Preparation
D. Section 02300 - Earthwork

### 1.3 UNIT PRICES

A. Method of Measurement: By the square yard (or square meter - as indicated in contract documents) including seams, overlaps, and wastage.

B. Basis of Payment: By the square yard (or square meter - as indicated in the contract documents) installed.

### 1.4 REFERENCES

A. Erosion Control Technology Council (ECTC) Guidelines:
   1. Light Penetration
   2. Swell

B. American Society for Testing and Materials (ASTM):
   1. D1117 - Water Absorption.
   2. D1388 - Stiffness Of Fabrics, “Option A”
   3. D1777 - Resiliency
   4. D4354 - Practice for Sampling of Geosynthitics for Testing.
   5. D4491 - Permittivity.
   6. D5035 - Tensile Strength
   7. D5035 - Elongation
   8. D5199 - Thickness
   9. D5261 - Mass Per Unit Area

C. Accredited Independent Testing Facilities:
   3. Utah State Water Research Laboratory.
   4. San Diego State University Soil Erosion Laboratory.
   5. Precision Geosynthetic Laboratory.
   6. TRI Environmental Inc.

D. Federal Highway Administration (FHWA) - Geosynthetic Design and Construction Guidelines.

E. Salix Applied Earthcare.

F. Texas Department of Transportation (TTI).

G. National Transportation Product Evaluation Program (NTPEP) - ECTC Bench Scale Test Methods are not recognized by this specification as an accredited material performance test method.

## 1.5 DEFINITIONS

A. Minimum Average Roll Value (MARV): Property value calculated as typical minus two standard deviations. Statistically, it yields a 97.7 percent degree of confidence that any sample taken during quality assurance testing will exceed value reported.

B. RECB: Rolled Erosion Control Blanket are generally a machine produced mat of organic, biodegradable mulch such as straw, curled wood fiber (excelsior), coconut fiber or a combination thereof, evenly distributed on or between photodegradable polypropylene or degradable natural fiber netting.

C. OWT: Open Weave Textiles are processed natural and or polymer yarns woven into a matrix.

## 1.6 SUBMITTALS

A. Submit the following :

1. Certification: The contractor shall provide to the Engineer a certificate stating the name of the manufacturer, product name, style number, chemical composition of the fiber, netting and thread and all other pertinent information to fully describe the erosion control blanket. The Certification shall state that the furnished erosion control blanket meets the performance requirements of this specification as evaluated under the Manufacturer's quality control program. The Certification shall be attested to by a person having legal authority to bind the Manufacturer.

2. A certificate of weed free status shall be available from the manufacturer The manufacturer shall use straw that is Certified Weed Free Forage under California Food and Agriculture Code Section 5101 and 5205.

## 1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Manufacturers permitted to furnish materials under this specification shall submit a written quality control program conforming to the requirements of Section 2.3 Quality Control.

2. Manufacturers permitted to furnish materials under this specification shall maintain recurrent material testing to ensure minimum quality standards are being met, conforming to the requirements of Section 2.3 Quality Control.

## 1.8 DELIVERY, STORAGE, AND HANDLING

A. Erosion Control Blanket labeling, shipment, and storage shall follow ASTM D 4873 or the manufacturers written storage and handling procedures. Product labels shall clearly show the manufacturer or supplier name, and blanket type name.

B. Each Erosion Control Blanket roll shall be wrapped with a material that will protect the blanket from damage due to shipment, water, sunlight, and contaminants.

C. During storage, Erosion Control Blanket rolls shall be elevated off the ground and adequately covered to protect them from the following: site construction damage, precipitation, extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, flames including welding sparks, excess temperatures, and any other environmental conditions that may damage the physical property values of the blanket.

## 2. PRODUCTS

### 2.1 MANUFACTURERS

A. Greenfix America LLC.
P.O. Box 1459
Brawley, CA, USA 92227
1-800-929-2184
1-760-351-7791
1-760-351-7795, fax
www.greenfix.com

### 2.2 MATERIALS

A. Rolled Erosion Control Blanket:

1. The Erosion Control Blanket shall be machine produced using 70% certified weed free agricultural straw blended with a minimum 30% coconut fibers evenly distributed over the entire area of the blanket. The natural fibers shall be sewn into a heavy weight photodegradable top net and medium weight photodegradable bottom net on 1.5 inch centers with cotton polyester or polypropylene thread. Natural fiber threads shall not be allowed to ensure conformance with this specification. The blankets shall be at a minimum (85 sq. yds.) per roll.

2. Light weight Erosion Control Blankets containing wheat straw (i.e., 0.5 lbs/sy. Wheat straw mats or open weave jute netting, OWT) shall not be allowed.

3. The Erosion Control Blanket shall meet the minimum performance requirements of Table 1. The product must be guaranteed to meet all numeric performance values in Table 1 under the specific conditions as stated.

**TABLE 1 - TEMPORARY EROSION CONTROL BLANKET - SLOPES**

| Property | Test Method | Units | Min. Value | Material | Unit | Min. Value |
|---|---|---|---|---|---|---|
| Tensile Strength MD | ASTM D 5035 | (lbs/in) | 17.2 | Top Net | (lbs/1000 $ft^2$) | 3.0 |
| Tensile Strength TD | ASTM D 5035 | (lbs/in) | 15.3 | | | |
| Thickness | ASTM D 5199 | (Inches) | .38 | Bottom Net | (lbs/1000 $ft^2$) | 1.6 |
| Mass per Unit Area | ASTM D 5261 | (lbs/square yard) | 0.7 | | | |
| Soil Loss[2] | Rainfall Sim.[2] | (lbs/Hr.)[2] | 0.11 (max.) | Thread (B.L)[3] | (lbs/ft) | 17.0 |
| Germination Ratio[2] | Rainfall Sim.[2] | % Of Total Pos. | 81.4 | | | |
| Apparent Opening Size | ASTM D 4751 | (Inches) | .625x.625 | Straw Fiber | Avg. Length (in) | 3.0 |
| Light Penetration | ECTC | % Penetration | 19 (max.) | | | |

[1] A measured in accordance with applicable ASTM standard.
[2] Minimum 5 in./hr.- Minimum Duration .75 hrs. or 10 year storm event on 2:1 slope with Sandy Loam type soil.
[3] Minimum Allowable Break Load.

4. Approved Erosion Control Blankets are as follows:

Greenfix America CFS072R Photodegradable Double Net Straw Coconut

## 2.3 QUALITY CONTROL

A. Manufacturing Quality Control: Physical property testing shall be performed at an indoor laboratory accredited to perform such tests required for the Erosion Control Blanket, at a frequency not to exceed annually. A certification of the recurrent testing requirement shall be provided by the manufacturer upon request. The certification shall at a minimum identify the Test Facility, Manufacturer, Product ID, Test ID and Test Date to verify conformance with manufacturers published specifications.

B. Manufactures providing materials under this specification shall upon request submit a written description of the manufacturer's quality control program to verify conformance with this specification. The manufacturer's quality control program shall include a guaranteed remedy for nonconforming material supplied to project.

C. Manufacturing Quality Control: Product Performance testing shall be performed at an indoor laboratory accredited to perform such tests required for the Erosion Control Blanket. Performance testing is required for all products provided under this specification. Products must be guaranteed to perform to the minimum performance standards under the specific conditions as stated in this specification. Manufacturer's performance certifications and testing quality assurance shall be provided upon request to verify conformance with this specification.

## 3. EXECUTION

## 3.1 PREPARATION

A. Proper site preparation is essential to ensure complete contact of the protection matting with the soil.

**B.** The installation site shall be prepared by clearing, grubbing, and excavation, compacting or filling the area to the design grade. This includes removal of topsoil and vegetation.

**C.** Grade and shape area of installation.

**D.** Remove all rocks, clods, vegetative or other obstructions so that the installed blankets, or mats will have direct contact with the soil.

**E.** Prepare seedbed by loosening 2-3 inches (50.8-76.2 mm) of topsoil above final grade.

**F.** Incorporate amendments, such as lime and fertilizer, into soil according to soil test and the seeding plan.

G. Seeding:

1. Seed area before blanket installation for erosion control and re-vegetation. Seeding after mat installation is often specified for turf reinforcement application. When seeding prior to blanket installation, all check slots and other areas disturbed during installation must be reseeded.

## 3.2 INSTALLATION

A. The Erosion Control Blanket shall be placed in intimate contact with the soils without wrinkles or folds and anchored on a smooth graded surface approved by the Engineer. The Erosion Control Blanket shall be placed in such a manner that placement of the overlying materials will not excessively stretch so as to tear the Erosion Control Blanket. Anchoring of the terminal ends of the Erosion Control Blanket shall be accomplished through the use of key trenches or aprons at the crest and toe of the slope.

B. The Erosion Control Blanket shall be placed with the machine direction parallel to the slope. For streambank and channel protection the Erosion Control Blanket shall be placed with the machine direction parallel to the direction of water flow and perpendicular to wave action. Adjacent Erosion Control Blankets shall be joined by overlapping and anchoring. Overlapped seams of roll ends shall be a minimum of (1.5 ft.) except where placed under water. In such instances the overlap shall be a minimum of (2.5 ft). Overlaps of adjacent rolls shall be a minimum of (3 in) in all instances.

C. When overlapping, successive sheets, the Erosion Control Blankets shall be overlapped upstream over downstream, and/or upslope over downslope. In cases where wave action or multidirectional flow is anticipated, all seams perpendicular to the direction of flow shall be anchored with extreme care. Additional overlap and anchors should be required. In areas subject to high winds, Erosion Control Blankets shall be overlapped upwind over downwind and/or upslope over downslope.

D. Care shall be taken during installation so as to avoid damage occurring to the Erosion Control Blankets as a result of the installation process. Should the Erosion Control Blankets be damaged during installation, a material patch shall be placed over the damaged area extending (3.0 ft) beyond the perimeter of the damage.

E. The Erosion Control Blanket placement shall begin at the crest and proceed down the slope. Placement shall take place so as to avoid stretching and subsequent tearing of the Erosion Control Blankets.

H. Anchoring:

1. U-shaped wire staples, metal geotextile stake pins, or triangular wooden stakes can be used to anchor mats to the ground surface. Wire staples should be a minimum of 11 gauge. Metal stake pins should be 3/16 inch (4.8 mm) diameter steel with a 1 1/2 inch (38.1 mm) steel washer at the head of the pin. Wire staples and metal stakes should be driven flush to the soil surface. All anchors should be 6-8 inches (0.2-0.5 m) long and have sufficient ground penetration to resist pullout. Longer anchors may be required for loose soils.
2. Blankets shall be stapled sufficiently to anchor blanket and maintain contact with the soil. Staples shall be placed down the center and staggered with the staples placed along the edges. Steep slopes, 1:1 to 2:1, require 2 staples per square yard. Moderate slopes, 2:1 to 3:1, require 1-2 staples per square yard (1 staple 3’ o.c.). Gentle slopes require 1 staple per square yard.

G. Field monitoring shall be performed to verify that the placement does not damage the Erosion Control Blankets.

H. Any Erosion Control Blankets damaged during placement shall be replaced as directed by the Engineer, at the contractor's expense.

**END OF SECTION**