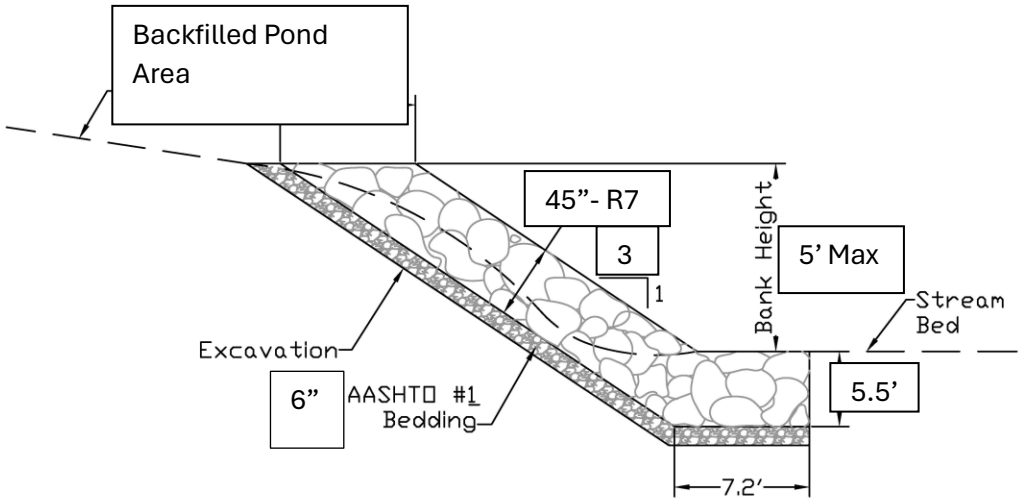
Hillside Farms Dam Removal **June 4, 2024**

General Notes on Project Approach and Protection of Property

1) The existing bridge immediately downstream of the dam removal can not be used for any construction equipment or hauling of materials. Contractor to install a temporary "No Construction Vehicles" sign across the bridge approaches before construction begins. Awarded Contractor will be responsible for any damages to the bridge created by the material suppliers, contractors staff and all associated dam removal work related traffic. The bridge and access ways will remain open for use by farm operators during construction.
2) All work-related equipment and materials will be hauled across the Livestock Ford (Site Access No. 1) upstream of the project site to access the general construction site. The Livestock Ford is presently not in use and will not conflict with construction operations. An ES Protection Rock Construction Entrance will be installed at Site Access No. 1 and No. 2 to protect access points from damage and or mud on the public road. Site Access No. 2 can be used as stockpile area for the materials needed near this location. The Livestock Ford will be returned to a preconstruction condition when the project is complete.
3) All traffic control and safety related signage will be the responsibility of the contractor.



Cross Section

Riprap Gradations					Bedding	
Gradation Name	Size – Inches 1/ (sq. opening 2/)				Gradation	Thickness
	D_{100}	D_{85}	D_{50} 3/	D_{15}	AASHTO	(inches)
R–5	18	15	9	4	#57	5
R–6	24	20	12	6	#1	6
R–7	30	26	18	12	#1	6
R–8	42	36	24	15	#1	6

1/ The subscript number is the maximum percent, by weight, which may be smaller than the respective size.

2/ The nominal size of a rock is that dimension (middle or composite average) which passes through a square opening with the same side dimension; i.e. it is not the longest dimension.

3/ At least 15%, by weight of the gradation, must be smaller than the D_{50} size.

Notes:

Install R7 Riprap at 3:1 slope as shown on plan, minimum placed thickness 42" with 6" Filter Rock bed AASHTO #1

All Riprap must be blocky in form, solid and non-weathered or flaking

Based on NRCS standard detail

(NOT TO SCALE)

Luzerne Conservation District - June 3,2024

Hillside Farm Dam Removal

LUZERNE COUNTY, PENNSYLVANIA

Riprap Detail

DATE

DESIGNED

DRAWN

CHECKED

APPROVED

TITLE

Construction Specification 461—Rock Riprap

1. Scope

The work shall consist of the construction of rock riprap revetments and blankets, including filter or bedding where specified.

2. Material

Rock riprap shall be dense, sound and free from cracks, seams and other defects conducive to accelerated weathering. The rock shall be angular to sub-rounded in shape with the greatest dimension not greater than 2 times the least dimension. It shall be free from dirt, clay, sand, rock fines, and other material not meeting the required gradation limits. Rock density shall be 165 pounds per cubic foot or greater. Rock hardness shall be such that it will not dent when struck with the rounded end of a one pound ball peen hammer, or hardness shall be determined by other methods approved by the NRCS. Unless otherwise specified on the plans riprap gradation shall conform to the specified mix number as follows:

Rock size in inches			
Mix Number	Maximum	Average D50	Minimum
1	7	4	1
2	9	6	1
3	14	9	1
4	18	12	2
5	23	15	2
6	27	18	3
7	32	21	3
8	36	24	4
9	45	30	4
10	54	36	5

The mix number shall be _____.

Before rock is delivered from its source, the contractor shall designate the source from which rock material will be obtained and provide information satisfactory to the NRCS that the material meets design requirements. The contractor shall provide the NRCS technical representative free access to the source for the purpose of visually inspecting the rock and/or obtaining samples for testing. The size and grading of the rock shall be as specified in the construction drawings.

Filter or bedding aggregates, when required, shall be composed of clean, hard and durable mineral particles free from organic matter, clay balls or other deleterious substances. The size and grading of the filter or bedding shall be as specified in the construction drawings.

Geotextiles, when required, shall conform to the requirements outlined in Construction Specification 495, Geotextile.

3. Subgrade preparation

The subgrade surface on which the rock riprap, filter, bedding, or geotextile is to be placed shall be cut or filled and graded to the lines and grades shown on the drawings. When fill to subgrade lines is required, it shall consist of approved material and shall be compacted to a density equal to the adjacent existing soil material.

Rock riprap, filter, bedding, or geotextile shall not be placed until the foundation preparation is completed and the

subgrade surface has been inspected and approved by the NRCS.

4. Equipment-placed rock riprap

The rock riprap shall be placed by equipment on the surface and to the depth specified. It shall be installed to the full course thickness in one operation and in such a manner as to avoid serious displacement of the underlying material. The rock for riprap shall be delivered and placed in a manner that ensures the riprap in place is reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact one to another with the smaller rocks and spalls filling the voids between the larger rocks.

Rock riprap shall be placed in a manner to prevent damage to structures. Hand placing is required as necessary to prevent damage to any new and existing structures.

5. Hand placed rock riprap

The rock riprap shall be placed by hand on the surface and to the depth specified. It shall be securely bedded with the larger rocks firmly in contact one to another without bridging. Spaces between the larger rocks shall be filled with smaller rocks and spalls. Smaller rocks shall not be grouped as a substitute for larger rock.

6. Filter or bedding

When the contract specifies filter, bedding, or geotextile beneath the rock riprap, the designated material shall be placed on the prepared subgrade surface as specified. Compaction of filter or bedding aggregate shall be as specified on the construction drawings. The final surface of such material shall be finished reasonably smooth and free of mounds, dips, or windrows.

7. Construction operations

Construction operations shall be done in such a manner that erosion and air and water pollution are minimized. The owner, operator, contractor or others will conduct all work and operations in accordance with proper safety guidelines for the type of construction being performed.

The completed job shall be workmanlike and provide a good overall appearance.

8. Specific details

Futerra® F4 Netless®

Futerra® F4 Netless®
Proven 99% Effective

Futerra® F4 Netless® blankets provide greater aesthetic appeal, are easier to install and provide an unparalleled 99.9% erosion control effectiveness and faster germination than traditional stitch-bonded straw, coconut and excelsior blankets that are plagued by dangerous and unsightly loose nettings and threads.

Through a proprietary and patented process, Futerra uses Thermally Refined® wood and degradable man-made fibers that are intertwined into a dimensionally stable composite matrix that conforms to the soil surface, preventing washouts and seed migration. This innovative technology allows Futerra to rapidly absorb water and hold it in place for enhanced germination and growth.

Futerra®
F4NETLESS®

PROFILE Products LLC
750 Lake Cook Rd. • Suite 440
Buffalo Grove, IL 60089 • 800-508-8681
www.profileproducts.com

GENERAL

1.01 SUMMARY

(Section 31 25 13 – Erosion Controls)

A. The Netless Erosion Control Blanket (NECB) shall consist of an open, flexible and dimensionally stable network of degradable, thermally-bonded wood and crimped, interlocking man-made fibers. The porous matrix shall have a functional longevity of up to 12 months and provide highly effective erosion protection for steep slopes, low flow channels, wetlands and other environmentally sensitive areas. The highly absorbent NECB shall facilitate rapid germination and accelerate plant growth. The netless erosion control blanket shall be provided in a turf green color (fugitive biodegradable vegetable dye) or in a natural wood color to ensure enhanced visual aesthetics. Under no circumstances will erosion control blankets containing nets or stitching threads be accepted.

B. Related Sections: Other Specification Sections, which directly relate to the work of this Section include, but are not limited to the following:

1. *Section 01 57 00 - Temporary Erosion and Sediment Control*
2. *Section 31 20 00 - Earthwork; Establishment of Subgrade*
3. *Section 31 25 00 - Erosion and Sediment Control*
4. *Section 32 92 00 - Lawns and Gardens*

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions. Include required substrate preparation and list of materials.

B. Certifications: Manufacturer shall submit a letter of certification that the product meets or exceeds all physical property, endurance, performance and packaging requirements.

1.03 DELIVERY, STORAGE AND HANDLING

A. Deliver materials and products in UV and weather-resistant factory labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage, weather, excessive temperatures and construction operations.

PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

A. PROFILE Products LLC
750 Lake Cook Road – Suite 440
Buffalo Grove, IL 60089
800-508-8681 (Fax 847-215-0577)
www.profileproducts.com

2.02 MATERIALS

A. The NECB shall be Futerra® F4 Netless® as manufactured by Profile Products, LLC and shall conform to the property values as noted.

B. PACKAGING

ROLL DIMENSIONS	ROLL AREA	AVERAGE WEIGHT	ROLLS/ PALLET	TRUCKLOAD QUANITY
32.5' x 90' 1 m x 27.4 m	32.5 yd^2 27.4 yd^2	10.25 lb 4.66 kg	32	24,960 yd^2 20,866 m^2
6.5' x 90' 2 m x 27.4 m	65 yd^2 54.8 m^2	20.5 lb 9.32 kg	16	24,960 yd^2 20,866 m^2

Rolls: Available in green or natural color; Individually wrapped in UV resistant plastic film with printed installation guidelines
Pallets: Weather-resistant stretch wrap for outdoor storage

C. PROPERTIES

	TEST METHOD	ENGLISH	SI
PHYSICAL			
Mass Per Unit Area	ASTM D6475	5 oz/yd^2	170 g/m^2
Thickness	ASTM D6525	0.2 in	5.1 mm
Tensile Strength	ASTM D6818	4.3 lb/ft	0.8 kN/m
% Ground Cover	ASTM D6567	79%	79%
Flexural Rigidity	ASTM D6575	0.006 oz-in	435 mg-cm
Water Absorption	ASTM D1117	395%	395%
Shear Stress	ASTM D7207	1 lb/ft^2	48 Pa
ENDURANCE			
Functional Longevity	Observed	≤ 12 months	≤ 12 months
PERFORMANCE			
Cover Factor[1] (6 in/hr event)	ASTM D7101	0.02	0.02
% Effectiveness	ASTM D7101	98%	98%
Cover Factor[1]	Large Scale[2]	0.002	0.002
% Effectiveness	Large Scale[2]	99.8%	99.8%
Vegetation Establishment	ASTM D7322	476%	476%

1. Cover Factor is calculated as soil loss ratio of treated surface versus an untreated control surface. One minus Cover Factor multiplied by 100% equals % Effectiveness.
2. Large scale testing conducted at Utah Water Research Laboratory, San Diego State University/Soil Research Laboratory, Texas Transportation Institute and TRI/Environmental, Inc. For specific testing information please contact a Profile technical service representative at 800-508-8681.

EXECUTION

3.01 SUBSTRATE AND SEEDBED PREPARATION

A. Examine substrate and conditions where materials will be installed. Install NECB on geotechnically stable slopes that have been designed and constructed to divert runoff away from the slope face. Do not proceed with installation until satisfactory conditions are established.

B. Strictly comply with manufacturer's installation instructions and recommendations. Slope interruption devices or water diversion techniques are recommended when slope gradients exceed 4V:1H and slope lengths exceed 40'. The soil surface should be stable, firm and free of rocks and other obstructions greater than 2" diameter. Install NECB in the primary direction of flow after application of seed, fertilizer and any other necessary soil amendments.

3.02 INSTALLATION

A. Slopes: Construct 6" by 6" anchor trench 1'-3' above the slope crest for entire length of slope to be treated. Unroll approximately 2' of NECB, place blanket upside down in anchor trench, anchor on 1' centers, backfill trench with compacted soil and roll blanket right side up over the compacted trench and down slope. Begin unrolling NECB down slope taking care to not allow roll to fall freely. Evenly apply anchors to leading roll edge every 2'-5' depending upon site conditions. Drive all anchoring devices flush with the soil surface. To ensure maximum soil contact, do not stretch NECB over soil surface. When installing 6.5' wide rolls, it may be necessary to anchor center of roll every 5'-10' depending upon site conditions. Repeat anchor trench procedure above, overlap a maximum of 2' depending upon site conditions. Repeat same stapling frequency as leading edge, stapling every 2'-5', securing both rolls with a common anchor. Shingle lap successive rolls 2"-4" in downstream direction of the slope. Secure terminating roll ends by anchoring on 1' centers.

B. Channels: Construct 6" by 6" anchor trench at the beginning of the channel across the entire width and follow above directions for trench details. Follow above directions for edge and roll end overlaps and anchoring techniques. Increase anchoring rate to at least 1.5 anchors per square yard. Depending upon site conditions construct additional 6" by 6" anchor trenches or check slots at intervals along the channel reach and at the terminal end of the channel.

To maximize blanket to soil contact, irrigate treated areas immediately after installation. Evenly apply water at 2000 gallons/acre to simulate natural rainfall. Do not irrigate if rainfall is imminent.

3.03 CLEANING AND PROTECTION

A. Clean up all installation trash. Advise owner of methods for protection of treated areas. Do not allow treated areas to be trafficked or subjected to grazing.

An electronic text file of this CSI formatted specification can be obtained by contacting a technical service representative at 800-508-8681.