

Construction & Material Specifications

Material Specifications

DEPARTMENT OF PUBLIC WORKS
ENGINEERING
APPROVED

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CONSTRUCTION AND MATERIAL SPECIFICATIONS CONTENTS

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DIVISION II

FILTER CLOTH

2.1 Scope

The work covered by this section consists of furnishing all labor, plant, equipment, and materials and performing all operations required to complete the installation of filter cloth as shown on the Drawings and in strict accordance with this Specification.

2.2 Materials

2.2.1. Filter Fabric:

The plastic filter fabric shall be porous, plastic sheets woven, calendared and palmered filament yarn. The plastic yarn shall consist of a long-chain synthetic polymer composed of at least 85% by weight of propylene, ethylene, ester, amide or vinylidene chloride, and shall contain stabilizers and/or inhibitors added to the base plastic if necessary to make the filaments resistant to deterioration due to ultra-violet and heat exposure. The fabric shall conform to the following minimum requirements:

Property	Test Method	Criteria
Seam Breaking Strength	ASTM D-4884	>90%
Tensile Strength	ASTM D-4632	400 x 315 lbs.
Burst Strength	ASTM D-3786	800 psi
CBR Puncture Strength	ASTM D-6241	1,150 lbs.
Elongation@Break	ASTM D-4632	15 x 15%.
Wide Width Tensile	ASTM D-4595	250 x 230 lbs.
Trapezoidal Tear	ASTM D-4533	150 x 165 lbs.
AOS	ASTM D-4751	40 U.S. Sieve
Permittivity	ASTM D-4491	.90 Sec-1
Flow Rate	ASTM D-4491-85	70gal/min/ft.
U.V. Resistance @ 500 hrs.	ASTM D-4355	90%

One material equal to the above requirement is "Mirafi FW 404" as manufactured by US Fabrics, Inc., 3904 Virginia Ave., Cincinnati, OH 45227

2.2.2. Seams:

Seams of fabric shall be sewn with thread meeting or exceeding specifications given for plastic yarn, and shall be bonded by cementing or calendaring. Seams shall be tested in accordance with method ASTM D-1683, and the seam strength shall meet the strength specified herein but shall not be less than 90% of the tensile strength of the imaged fabric in any principal direction.

2.2.3. Securing pins:

Securing pins shall be 3/16 inch in diameter, of steel pointed on one end, and fabricated such that the head retains a steel washer 1.5 inches in diameter or more. Pins shall be no less than 18 inches in length. In cases where stone protection will be placed adjacent to timber bulkheads, galvanized staples or roofing nails placed at 24 inch o.c.e.w. shall be used to fasten the filter cloth to the bulkhead. Alternate anchoring methods may be used, subject to approval by the Agent for the Owner.

2.2.4. Certification of fabric:

All plastic filter fabrics to be used shall be tested for compliance with the above Specifications. Before installing the filter cloth, the Contractor shall submit to the Agent for the Owner a certificate or affidavit signed by a legally-authorized representative of the company manufacturing the fabric. The certificate shall state that the chemical, physical, and manufacturing requirements of this Specification are met.

2.3 Installation

2.3.1. Placement of filter cloth:

The strips of plastic filter cloth shall be spread parallel to the major axis of the structure on the prepared foundation as shown on the Drawings. The cloth shall be loosely laid (not stretched). Rolls of as great a length as it economical for the Contractor to handle shall be used whenever possible in order to minimize the number of overlaps perpendicular to the major axis of the structure. The cloth shall be securely fastened in place to prevent slippage during construction with securing pins placed thirty (30) inches apart each way.

2.3.2. Placement of stones on filter cloth:

Adequate precaution shall be taken to prevent damage to the plastic filter cloth from placement of overlaying materials. No stone will be dropped onto the filter cloth. Care shall be taken in placing plastic filter cloth onto prepared subgrade of rock or broken concrete. This subgrade shall be prepared to prevent cloth damage from below. Any filter cloth damaged or displaced before or during placement of overlaying materials or improper subgrade preparations shall be replaced or repaired to the satisfaction of the Agent for the Owner at the Contractor's expense.

DIVISION III

FILL AND GRADING

3.1 Scope

The work covered in this section consists of furnishing all labor, plant, equipment, and materials, and performing all operations required to perform the upland fill and grading to the lines and grades shown on the Drawings, and in strict accordance with this Specification. Unsuitable or excess material shall be disposed of off-site.

3.2 Fill

Where the depth of sand fill behind or above the proposed breakwater or sill substrate may exceed 1" the Contractor shall bring the area to grade with sand fill. Sand fill shall consist of earth materials, free from perceptible amounts of wood and debris. It shall be free of frost at the time of placement and shall not contain marl or other elements which tend to keep it in a plastic state. All sand fill shall be placed from the bottom up in successive 8" horizontal layers and compacted to the approval of the Agent for the Owner. All sand fill shall have no more than ten percent (10%) passing the number 100 sieve.

3.3 Grading

A. The Contractor shall grade all areas shown on the Drawings and all areas disturbed by construction activities, uniformly to the lines and grades shown on the Drawings. The finish surface shall be smooth, compacted, and free of irregular surface changes and areas which collect water.

B. The Contractor shall remove all excess stone and construction debris from the construction site prior to final grading to an approved disposal area. This shall include all waste larger than one inch in its largest dimension which may be embedded in the soil.

DIVISION I

STONE PROTECTION

1.1 Scope

The work covered by this section consists of furnishing all labor, plant, equipment and materials, and performing all operations in connection with the hauling and placement of stone as shown on the Drawings, and in strict accordance with this Specification.

1.2 Materials

All stone for the protection work shall be durable quarried stone. The stone shall be hard and angular, free from either laminations, weak cleavages or undesirable weathering, and of such character that it will not disintegrate from the action of air, salt water, or handling. Sedimentary stone will generally be unacceptable. Individual stones will be approximately rectangular in cross-section and free from thin slabby pieces having a maximum dimension of more than three and one-half times the least dimension. Existing rock may be reused as fill or armor if it meets size and material specifications. Existing on-site broken concrete may be reused as fill material if it meets size specifications.

1.3 Size And Weight: Stone shall meet the following requirements:

1.3.1. Stone: Sizes for the following structures:

A. **Breakwater:** Armor stone sizes shall be such that a minimum of 90% of the individual stones shall weigh from 1,000 lbs. to 2,500 lbs. and shall have a well graded distribution of these sizes through these limits. Not more than 10% of the individual stones shall weigh more than 2,500 lbs. No armor stones shall weigh less than 1,000 lbs. Core stone shall be approximately 3" up to 15" in size with an even distribution between these limits. Stone salvaged from the existing groins shall be considered for reuse as core material for the Breakwaters.

1.3.2. Unit weight:

The stone shall have a minimum unit weight of 165 lbs. per cubic foot.

1.4 Field Samples

The Contractor shall supply samples of stone to be displayed at the site with appropriate weights marked for the minimum, maximum and one-half (50%) weight range specified. These samples of stone shall be from the same quarry and of the same type of stone as that to be supplied for the job, and shall be delivered to the site in advance of the time when placing the stone is expected to begin. The Contractor will not be granted an extension of time or extra compensation due to delay caused by sampling, testing, approval, or disapproval of stone protection material to complete the requirements of the Specifications.

1.5 Certification

The Contractor shall obtain from the quarry and submit to the Agent for the Owner a certificate indicating the following:

- Stone classification
- Stone weight per cubic foot
- The stone furnished will meet the requirement of

Sections 1.2 and 1.3 of these Specifications

1.6 Placement

Stone shall be placed in such a manner as to produce a well-graded mass of rock with a minimum percentage of voids, and shall be constructed to the specified lines and grades shown on the Drawings. Stones shall be placed such that there is a well-graded distribution of the various sizes throughout the structure. Any oversized stones shall be placed at the toe of the structure. The finished structure shall be free from pockets of small stones and clusters of large stones. Rearranging of individual stones by mechanical equipment or by hand will be required to the extent necessary to obtain a well-graded distribution of stone size, to obtain contact between adjacent armor stones, and to achieve the lines and grades shown on the Drawings. The Contractor shall maintain the structure until it is accepted and any material displaced by any cause shall be replaced at the Contractor's expense to the lines and grades shown on the Drawings. A tolerance of +/-0.30 feet measured normal to the faces will be allowed. No negative or positive tolerance will be allowed over an area greater than fifty (50) square feet.

Approved by G. Gass
Title District Engineer

DATE 6/19
6/19
7/19

Designed G. Gass
Drawn G. Westbrook
Revised B. Clark
Checked



BREEZY POINT PARK
Construction & Material Specifications
Shoreline Re-Establishment Project
Calvert County, Maryland



Professional Certification:
I hereby certify that these documents were prepared and approved by me and that I am a duly licensed Professional Engineer under the laws of the State of Maryland, License No. 14544.
Glenn G. Gass, P.E.
Expiration Date: August 16, 2021

CAD FILE Breezy Point Plan.dwg
24 x 36
LAYOUT NO. 6
NO. 6 OF 8