

Tied Concrete Block Mat

PART 1: GENERAL

A. Scope of Work

The Contractor shall furnish all labor, materials, equipment, and incidentals required and perform all operations in connection with the installation of tied concrete erosion control mats in accordance with the lines, grades, design and dimensions shown on the Contract Drawings and as specified herein.

B. Submittal

The Contractor shall submit to the Engineer all manufacturer's performance research results and calculations in support of the tied concrete block mat system. Calculations and shop drawings shall be provided by the manufacturer for the means and methods necessary to place the mats in accordance with PART 2.A and in accordance with the plans. The shop drawings shall indicate the size and location of mats and placement along with providing the details and how the mats are tied together and are to be moved.

The Contractor shall furnish to the Engineer all manufacturers' specifications, literature, shop drawings for the installation of the mats, and any recommendations, if applicable, that are specifically related to this project.

PART 2: PRODUCTS

A. General

Tied concrete block mats shall be manufactured or field fabricated from individual concrete blocks tied together with a high strength geogrid.

Each block shall be tapered, beveled and interlocked. Each block shall incorporate interlocking surfaces or connections that prevent lateral displacement of the blocks within the mats when they are lifted for placement.

B. Tied Concrete Block Mat

1. Scope

This specification covers concrete blocks for erosion control mats used for stabilizing channels.

2. Materials

Cementitious Materials - Materials shall conform to the following applicable ASTM specifications:

- Portland Cements - Specification C 150, for Portland Cement.
- Blended Cements - Specification C 595, for Blended Hydraulic Cements.
- Hydrated Lime Types - Specification C 207, for Hydrated Lime Types.
- Pozzolans - Specification C 618, for Fly Ash and Raw or Calcined Natural Pozzolans for use in Portland Cement Concrete.

Aggregates shall conform to the following ASTM specifications, except that grading requirements shall not necessarily apply:

- Normal Weight - Specification C 33, for Concrete Aggregates.

3. Physical Requirements

TABLE 1. PHYSICAL REQUIREMENTS			
Compressive Strength Net Area Min. psi (mPa)		Water Absorption Max., lb/ft ³ (kg/m ³)	
Avg. of 3 units	Individual Unit	Avg. of 3 units	Individual Unit
4,000 (27.6)	3,500 (24.)	10 (160)	12 (192)

Durability. The manufacturer shall satisfy the purchaser by proven field performance that the concrete units have adequate durability even if they are to be subjected to a freeze-thaw environment.

4. Visual Inspection

All units shall be sound and free of defects that would interfere with the proper placing of the unit or impair the strength or permanence of the construction. Surface cracks incidental to the usual methods of manufacture, or surface chipping resulting from customary methods of handling in shipment and delivery, shall not be deemed grounds for rejection.

5. Sampling and Testing

The purchaser or his authorized representative shall inspect the units upon delivery. Units missing more than 4 blocks per 80 square feet section shall be deemed grounds for rejection.

6. Manufacturer

Cellular concrete block systems shall the following or equivalent:

Manufacturer: Motz Enterprise
Product Name: Flex-A-Mat
11006 Reading Road
Cincinnati, OH 45241
Phone: (513)772-MOTZ (6689)

The tied concrete block mats shall have one or more of the following nominal characteristics:

Minimum open area of 10%

The tied concrete block mat shall exhibit resistance to mild concentrations of acids, alkalis, and solvents.

Polypropylene Geogrid

Revetment mat shall be constructed of high tenacity, low elongating, and continuous filament polypropylene fibers. Interlocking geogrid shall have the following physical characteristics:

Mass/Unit Area ASTM D-5261 7.0 oz/yd² 240 g/m²

Aperture Size Measured 1.6 x 1.6 inch 40 x 40 mm

Wide Width Tensile Strength

Machine Direction (MD) ASTM D-6637 2,055 lb/ft 30 kN/m

Cross Machine Direction (CMD) ASTM D-6637 2,055 lb/ft 30 kN/m

Elongation at Break ASTM D-6637 6 % 6 %

Tensile Strength @ 2%

Machine Direction (MD) ASTM D-6637 822 lb/ft 12 kN/m

Cross Machine Direction (CMD) ASTM D-6637 822 lb/ft 12 kN/m

Tensile Strength @ 5%

Machine Direction (MD) ASTM D-6637 1,640 lb/ft 24 kN/m

Cross Machine Direction (CMD) ASTM D-6637 1,640 lb/ft 24 kN/m

Tensile Modulus @ 2%

Machine Direction (MD) ASTM D-6637 41,100 lb/ft 600 kN/m

Cross Machine Direction (CMD) ASTM D-6637 41,100 lb/ft 600 kN/m

Tensile Modulus @ 5%

Machine Direction (MD) ASTM D-6637 32,900 lb/ft 480 kN/m

Cross Machine Direction (CMD) ASTM D-6637 32,900 lb/ft 480 kN/m

NOTE: Polypropylene geogrid shall be determined by the manufacturer.

Tied concrete block mats are packaged in rolls. These are packaged with high strength lifting straps for moving material into place with an excavator.

PART 3: CONSTRUCTION.

Prior to placing the tied concrete block mats, prepare the sub grade as detailed on the plans. All subgrade surfaces prepared for placement of mats shall be smooth and free of all rocks, stones, sticks, roots, other protrusions, or debris of any kind.

The prepared surface shall provide a firm unyielding foundation for the mats with no sharp or abrupt changes or breaks in the grade.

Apply seed directly to the prepared soil prior to installation of the Tied Concrete Block Mat. Use seed per project specifications.

Install mats to the line and grade shown on the plans and according to the manufacturer's installation guidelines.

The manufacturer will provide technical assistance during the slope preparation and installation of the tied concrete block mats as needed.

Part 4: Measurement and Payment.

The completed work as described shall be measured and paid for at the contract unit price for the following contract item (pay item):

Contract Item (Pay Item) Pay Unit

Tied Concrete Block Mat.....Square Foot

Payment for Tied Concrete Block Mat shall include all labor, equipment and materials to complete the work as described.