

Special Specification 2001

Tied-Concrete Block Erosion Control Mat



1. DESCRIPTION

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 plans.

The Contractor must 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 will 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 must 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 must 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.

2. MATERIALS

General - Tied concrete block mats must be manufactured or field fabricated from individual concrete blocks tied together with a high strength geogrid. Each block must be tapered, beveled and interlocked. Each block must incorporate interlocking surfaces or connections that prevent lateral displacement of the blocks within the mats when they are lifted for placement.

2.1. Materials - Cementitious Materials - Materials must 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 must conform to the following ASTM specifications, except that grading requirements will not necessarily apply: Normal Weight - Specification C 33, for Concrete Aggregates.

2.2. Physical Requirements – The physical requirements should follow the items in Table 1.

2.3. Durability - The manufacturer must 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.

2.4. Visual Inspection - All units must 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, will not be deemed grounds for rejection.

2.5. Sampling and Testing - The purchaser or his authorized representative will inspect the units upon delivery. Units missing more than 4 blocks per 80 square foot section will be deemed grounds for rejection. The tied concrete block mats must have one or more of the following nominal characteristics: Minimum open area of 10%. The tied concrete block mat must exhibit resistance to mild concentrations of acids, alkalis, and solvents.

- 2.6. Polypropylene Geogrid - Revetment mat must be constructed of high tenacity, low elongating, and continuous filament polypropylene fibers. Interlocking geogrid must have the following physical characteristics:
- 2.7. Mass/Unit Area ASTM D-5261 7.0 oz/yd² 240 g/m² Aperture Size Measured 1.6 x 1.6 in. (40 x 40 mm) Wide Width Tensile Strength
- 2.8. 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
- 2.9. Elongation at Break ASTM D-6637 6%. Tensile Strength @ 2%. Machine Direction (MD) ASTM D-6637 822 lb/ft 12 kN/m
- 2.10. 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
- 2.11. Cross Machine Direction (CMD) ASTM D-6637 1,640 lb/ft 24 kN/m
- 2.12. 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
- 2.13. 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 will 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.

**Table1
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)

3. CONSTRUCTION

- 3.1. 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 must be smooth and free of all rocks, stones, sticks, roots, other protrusions, or debris of any kind.
- 3.2. The prepared surface must provide a firm unyielding foundation for the mats with no sharp or abrupt changes or breaks in the grade.
- 3.3. Apply seed directly to the prepared soil prior to installation of the Tied Concrete Block Mat. Use seed per project specifications.
- 3.4. 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.

4. MEASUREMENT

This Item will be measured by the square foot as shown on the plan, complete in place.

5. PAYMENT

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