

## LC200511 VEGETATED CONCRETE EROSION CONTROL MAT (LCDOT)

Effective: October 26, 2017

Revised: June 7, 2018

**Description:** This work shall consist of all labor, equipment, and materials necessary to install a vegetated concrete erosion control mat.

**Materials:** The vegetated concrete erosion control mat shall be manufactured from individual concrete blocks that are tied together to form an erosion control mat such as Shoreflex by Shoretec, Flexamat Basic by Motz Enterprises, or an approved equal. Each concrete block within the mat will be tapered, uniform, and interlocked. Block interlocking will occur with the use of a high strength geogrid to ensure that no longitudinal or lateral movement of blocks occur during lifting or installation.

1. The concrete blocks will meet a minimum compressive strength of 4,000 psi at 28 days as per ASTM standards. The concrete blocks will be spaced no further than 1.5 in. apart creating an average minimum mat weight of 10.5 lb. per square foot.
2. The geogrid connection system is an open knitted fabric composed of high tenacity, multifilament polyester yarns knitted and coated in tension to form a stable grid structure. The geogrid is securely cast into and embedded within each concrete block to provide the connection strength. The geogrid will meet the requirements shown in Table1:

**Table1: Polyester geogrid system for interlocking concrete blocks.**

Description	Minimum requirement	Testing Method
UV Stabilization	25	years
Ultimate Tensile Strength (MD and CMD)	30 kN/m (2,055 lb./ft.)	ASTM D 6637
Elongation at Break	6%	ASTM D 6637
Tensile Strength @ 2%	12 kN/m (822 lb./ft.)	ASTM D 6637
Tensile Strength @ 5%	24 kN/m (1,646 lb./ft.)	ASTM D 6637
Tensile Modulus @ 2%	600 kN/m (41,000 lb./ft.)	ASTM D 6637
Tensile Modulus @ 5%	480 kN/m (32,900 lb./ft.)	ASTM D 6637
Grid aperture size (MD and CMD)	.6 inch	Length

3. The use of an erosion control blanket as a backing material will be used on top of specified seeding. All erosion control blankets will be attached to the geogrid along the outside of the mat via hog rings to ensure proper function of the underlying soil retention blanket.

Upon delivery, rolls or mats should be inspected to ensure that all of the units are free of defects that may hinder either performance or installation of the vegetated concrete erosion control mat. Delivered rolls or mats should not be left exposed for more than 30 days to ensure protection from UV light.

Missing concrete due to chipping or cracking shall not exceed 15% of the average concrete unit weight. If the threshold of 15% is surpassed the material may be rejected by the engineer. Repair, patch, or replacement of the affected area should be done per the manufacturer's recommendation.

The vegetated concrete erosion control mat will resist erosion and scour due to hydraulic forces and will meet the requirements listed in Table 2 when tested with a backing material on a non-vegetated surface.

**Table 2: Limiting shear stress testing, ASTM D 6460**

Test	Tested value	Bed Slope	Limiting Value
ASTM 6460	Shear Stress	10% & 20%	18 lb./ft. <sup>2</sup>
ASTM 6460	Velocity	10% & 20%	30 ft./sec

**General:** The work shall be performed according to the following:

1. Subgrade prep should follow the construction plans submitted either by the engineer or manufacturer. The subgrade should be smooth, firm, unyielding, and free from all debris including sticks, rocks, roots, and other protrusions that would inhibit intimate contact with the subgrade. No individual block should be raised more than ¾ in. above the immediately adjacent block to ensure proper hydraulic performance.
2. Top soil and seed can be applied directly to prepped subgrade prior to the placement of the mats to obtain desired expedited vegetation growth.
3. The vegetated concrete erosion control mats should be installed according to the line and grade shown in the plans that have been provided by the engineer or the manufacturer.
4. Installation of adjacent mat seams perpendicular to the flow should be done with a shingle installation method. The downstream mat should be placed a minimum of 18 in. underneath the upstream adjoining mat and can be fastened together as per the engineer or manufacturer's recommendation.
5. A minimum toe trench of 18 in. should be dug for the leading edge of the concrete mat that is perpendicular to channelized flow. The leading edge and sides of the mat will be placed in the trenches and backfilled with a non-erodible soil or site specific soil.
6. In addition to the duckbill anchors, anchoring can be achieved by using the lifting/anchoring loops that are embedded into the concrete blocks at the edges of each mat. Each loop can be used to adjust mats during

installation as well as be used for attaching earth anchors to permanently hold the concrete mats in place.

**Method of Measurement:** Vegetated concrete erosion control mat will be measured for payment in place and the area computed in square feet. This shall include the toe-in square footage.

**Basis of Payment:** This work will be paid for at the contract unit price per square foot for VEGETATED CONCRETE EROSION CONTROL MAT. *The unit price shall include all equipment, materials and labor required to furnish, place and establish the vegetated concrete erosion control mat.*