# Revision Of Section 216

# Concrete Block Soil Retention System

## Revise Section 216 of the Standard Specifications for this project as follows:

## In Subsection 216.02, add paragraph (e) to include the following:

1. *Concrete Block Soil Retention System.* Concrete Block Soil Retention System shall be a continuous matrix of concrete blocks interconnected with either a cable or geogrid. It shall be flexible, so it lays flat on the site grade. The system shall include a polyester backed geotextile or Turf Reinforcement Mat (TRM) that can be permanently adhered to the concrete blocks and conforms to the following properties:

**Backing Geotextile or TRM**

|  |  |  |
| --- | --- | --- |
| **Property** | **Minimum Requirement** | **Test Method** |
| Thickness | 5 mils | ASTM D6525 |
| Tensile Strength | 290 x 190 lb/ft | ASTM D6818 |
| UV Resistance % Retained 1,000 hr | 80% | ASTM D4355 |

The connected block matrix and backing geotextile will be referred to throughout this specification as the Block System.

The precast concrete blocks shall conform to Subsection 712.02 and the following Concrete and Index Values of Block System tables below. Wash blocks clean all concrete casting dried slurry material before delivery on site. Do not cast blocks on site.

**Concrete Requirements**

| **Property** | **Requirement** | **Test Method** |
| --- | --- | --- |
| 28-Day Compressive Strength | > 4,000 psi  | ASTM C39 |
| Air Entrainment | 4-7% |  ASTM C260 |
| Portland Cement  | -- | ASTM C150 |
| Concrete Aggregates | -- | ASTM C33 |
| Coal Fly Ash | -- | ASTM C618 |

**Index Values of Overall Block System**

| **Property** | **Requirement** | **Test Method** |
| --- | --- | --- |
| Permissible Sheer Stress (unvegetated) | > 18 lb/sq ft | ASTM D6460 |
| Weight | > 10 lb/sq ft | --- |
| Tensile Strength  | 2,000 lb | --- |
| Percent Open Area  | > 30% | --- |

Before starting work, the Contractor shall submit the following submittals:

* + - 1. Manufacturer’s product data, specifications, and installation details.
			2. Physical product samples of both the blocks and backing geotextile (minimum size three square feet).
			3. Independent laboratory testing data that the Block System meets the requirements for shear stress using ASTM 6460.
			4. A Certificate of Compliance (COC) per Subsection 105.12 confirming that the Block System conforms to the Concrete and Index Values outlined in Section 216.02(e).

## Subsection 216.02 shall include the following:

## In Subsection 216.02, add paragraph (f) to include the following:

*(f) Concrete Block Soil Retention System*. Furnish and install the Block System per the manufacturer’s recommendation unless otherwise directed. Install the entire system per plans.

Before installation, grade the area to an elevation to conform to the lines, grades, and cross-sections shown in the plans.

Apply four inches of topsoil. Remove rocks 1-inch in diameter or larger so no individual block within the system protrudes more than 1 inch from the adjacent block. Ensure there are no voids under the entire system. Allow uniform continuous contact of the Block System with the topsoil.

Ensure trenches and the entire edge of the Block System are compacted to prevent water from migrating underneath.

Do not install damaged blocks or blocks that weigh less than 95 percent of the manufacturer’s specified weight; replace these at the Contractor’s expense.

Install the Block System without tearing, puncturing, or detaching the backing geotextile, unless otherwise shown on the plans. Place the Block System so the longest dimension is parallel to the direction of the water flow. Sections of backing geotextile shall span the seam sot there is an overlap of at least 18 inches on each side at splices or joints.

When the backing geotextile is not permanently attached to the Block System, place staples to prevent movement of the backing geotextile during the placement of the tied-together concrete blocks.

Do not allow construction equipment to traverse over the Block System.

Upon accepting the Block System, fill voids between blocks with a seed and topsoil mixture conforming to Sections 207 and 212. Reapply soil seed mix if any erosion occurs before Final Acceptance. Reseeding shall be at the Contractor’s expense.

## In Subsection 216.04, delete the first sentence and replace it with the following:

**216.04** **Slope Application.** Erosion control blanket and TRM shall be installed on slopes as follows:

**Subsection 216.05, delete the first sentence and replace it with the following:**

Install erosion control blanket and TRM as follows on a channel application:

## Subsection 216.07 shall include the following:

Measure the Block System as the number of square yards installed and accepted by the Engineer. No allowance will be made for block systems placed outside plan dimensions unless the Engineer ordered the additional placement.

## Subsection 216.08 shall include the following:

**Pay Item Pay Unit**

Concrete Block Soil Retention System Square yard

Include cables, connectors, and backing geotextile in the Block System cost; they will not be paid separately.