

## **SECTION 03166 – VEGETATED GEOGRID SLOPE**

### **PART 1 – GENERAL**

#### **1.1 DESCRIPTION:**

A. Work shall consist of construction of Vegetated Geogrid Slope in accordance with these specifications and as shown on the project construction plans. Items include, but are not limited to:

1. Fill and backfill to the lines and grades and installing plants shown on the project construction plans.
2. Furnishing and installing geogrid and erosion control fabric of the type, size, location, and lengths designated on the project construction plans.
3. Construction of drainage layers as shown on the project construction plans.

B. Related Work in Other Sections:

1. Excavating, Back Filling, and Grading: Section 02200
2. Geotextile, Erosion Control Blanket, and Filter Fabric: Section 02205
3. Streambank Planting: Section 02900

#### **1.2 QUALITY ASSURANCE:**

A. Qualification of Workmen: Contractor shall provide at least one person who shall be present during the execution of this portion of the work and who shall be thoroughly familiar with the type of material being installed and the best methods for their installation and who shall direct work performed under this Section.

#### **1.3 DELIVERY, STORAGE AND HANDLING**

A. Contractor shall check all materials upon delivery to assure that the proper type, specification, and certification have been received.

B. Contractor shall protect all material from damage due to jobsite conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

## **PART 2 – PRODUCTS**

### **2.1 MATERIALS:**

#### **A. Geogrid.**

- a. Geogrid shall be Mirafi BXG 110 or approved equal.
- b. Geogrid shall be a polymeric grid formed by a regular network of integrally connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock or earth and function primarily as reinforcement.

#### **B. Erosion Control Fabric.**

- a. Erosion Control Fabric shall consist of erosion control blanket consisting of a 100% biodegradable double net coir blanket manufactured from natural coconut fibers such as North American Green C125BN.
- b. The erosion control blanket shall consist of a rolled erosion control product manufactured from long lasting fiber mechanically attached to or woven into 2 continuous 100% biodegradable woven netting structures.
- c. Matrix: 100% coir, minimum weight 9.79oz/square yard.
- d. Netting: Top and bottom, woven biodegradable fiber with 0.5 inch to 1.0 inch openings.
- e. Stitching: Biodegradable thread on 1.5 inch centers.
- f. Roll Size: 8.0 feet x 112 feet.
- g. Roll Weight: 65.25 pounds +/- 10%.

#### **C. Drainage Aggregate**

- a. Drainage Aggregate material shall consist of the aggregate used for the drainage layer and meet the Standard Specifications for CA-5 aggregate.

#### **D. Vegetated Geogrid Slope Planting**

- a. Vegetated Geogrid Slope Planting material shall be as shown on the project construction plans.

## **PART 3 – INSTALLATION**

### **3.1 EXCAVATION:**

- A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall inspect the excavation and approve prior to placement of any other materials or fill soils. Proof roll foundation area as directed to determine if remedial work is required.

### **3.2 GEOGRID AND EROSION CONTROL FABRIC INSTALLATION:**

- A. Geogrid shall be lined with Erosion Control Fabric and oriented with the highest strength axis perpendicular to slope.
- B. Geogrid and Erosion Control Fabric shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.
- C. Geogrid and Erosion Control Fabric shall be laid horizontally on compacted backfill. Place the next layer of fill over the geogrid and erosion control fabric. The geogrid shall be pulled taut, and anchored prior to backfill placement on the geogrid.
- D. Geogrid and Erosion Control Fabric shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid and erosion control fabric or gaps between adjacent pieces of geogrid and erosion control fabric are not permitted.

### **3.3 BACKFILL PLACEMENT:**

- A. Backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and erosion control fabric and installation damage shall be oriented with the highest strength axis perpendicular to the wall.
- B. Batter Board shall be utilized to maintain the vertical face of each geogrid layer during backfill compaction.
- C. Backfill shall be placed and compacted in lifts not to exceed 6 inches (150 mm) where hand compaction is used, or 8 - 12 inches (200 to 250 mm) where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.
- D. Backfill shall be compacted to a minimum of 95 % Standard Proctor density per ASTM D-698 or 92% Modified Proctor Density per ASTM D1557. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be dry of optimum, + 0%, - 3%.

- E. Tracked construction equipment shall not be operated directly upon the geogrid and erosion control fabric. A minimum fill thickness of 6 inches (150 mm) is required prior to operation of tracked vehicles over the geogrid and erosion control fabric. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid and erosion control fabric.
- F. Rubber tired equipment may pass over geogrid and erosion control fabric at slow speeds, less than 10 MPH (15 KPH). Sudden braking and sharp turning shall be avoided.
- G. At the end of each day's operation, the Contractor shall slope the last lift of backfill away from the wall units to direct runoff away from slope face. The Contractor shall not allow surface runoff from adjacent areas to enter the vegetated geogrid slope construction site.

3.4 VEGETATED GEOGRID SLOPE PLANTING:

- A. Vegetated Geogrid Slope Planting shall be per the Streambank Planting specification, Section 02900.
- B. Vegetated Geogrid Slope Planting shall be paid separate from the Vegetated Geogrid Slope.

3.7 DRAINAGE LAYER:

- A. Drainage Layer shall consist of drainage aggregate wrapped in Geogrid lined with Erosion Control Fabric as shown on the project construction plans.
- B. Drainage Layer shall be incidental to the Vegetated Geogrid Slope.

3.8 FIELD QUALITY CONTROL:

- A. Quality Assurance - The Owner shall/may engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction. This does not relieve the Contractor from securing the necessary construction quality control testing.
- B. Quality Assurance should include foundation soil inspection. Verification of geotechnical design parameters, and verification that the contractor's quality control testing is adequate as a minimum. Quality assurance shall also include observation of construction for general compliance with design drawings and project specifications. (Quality Assurance is usually best performed by the site geotechnical engineer.)

**PART 4 – MEASUREMENT AND PAYMENT**

4.1 METHOD OF MEASUREMENT:

- A. Vegetated Geogrid Slope will be measured by the square yard of completed, in-place, and accepted work.

4.2 BASIS OF PAYMENT:

- A. The amount of work completed and approved, as stated above, shall be paid for at the contract unit price.

END OF SECTION 03166