

SPECIFICATION SECTION 12800 - GABIONS

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SPECIFICATION SECTION 12800 - GABIONS

1. DESCRIPTION

This Specification Section prescribes the provision and installation of rock filled gabion baskets installed at locations indicated on the Drawings or as may be required by the Engineer.

2. MATERIAL REQUIREMENTS

2.1 Bedding

- a) Granular material for bedding shall be in accordance with paragraph 4.2, Table 4 of Vietnamese Standard TCVN 7570–2006 and subject to the approval of the Engineer.
- b) Lean concrete for bedding shall be class C10 bedding or blinding concrete in accordance with the requirements of Specification Section 07100 Concrete and Concrete Structures.

2.2 Geotextiles

Geotextile material shall be; non woven, continuous filament type, manufactured from durable synthetic polymers. The fabric shall meet the requirements shown in the Table below:

Property	Test Method	Required Values	VN Standard 22TCN 248-1998
Min. Weight (gm/m ²)	ASTM D3776	130	-
Min. Strip Tensile Strength (kN/m)	ASTM D4595	8	-
Max. Elongation at Failure (%)	ASTM D4595	50	Less than 65

The Contractor shall submit to the Engineer the relevant test results, demonstrating that the geotextile conforms with the requirements of this Specification Section. The geotextile shall be from a reputable manufacturer and shall be approved by the Engineer. During construction, three random samples shall be selected from every 50,000 m² of geotextile delivered to the Site for testing or at an outside laboratory, or as required by the Engineer. Geotextile shall be supplied in rolls, marked to show the length, width, type and weight of the material. Each roll shall be packed in black plastic and shall be protected from direct sunlight during transport and storage.

2.3 Gabions

The wire mesh for gabion baskets shall be galvanized steel having a minimum size of 3.05 mm diameter with a tensile strength in the range of 4,220 to 5,980 kg/cm². The minimum zinc coating of the wire shall be 0.24 kg/m² of wire surface as determined by AASHTO T65. The maximum linear dimension of the mesh openings shall not exceed 0.110 m and the area of mesh opening shall not exceed 0.041 m².

2.4 Rock Fill

Rock fill for gabions shall consist of hard, durable rock pieces that will not deteriorate when submerged in water or exposed to severe weather conditions. Rock pieces shall generally be uniformly graded in sizes as specified in the design. Filled gabions shall have minimum density of 1,400 kg/m³. Voids shall be evenly distributed. Rocks shall meet the requirements of AASHTO M63 except that the sodium-sulphate soundness loss shall not exceed 9% after 5 cycles. The Contractor may use rock from the excavation if it is available.

3. FABRICATION OF GABION BASKETS

The wire mesh shall be twisted to form hexagonal openings of uniform sizes. The mesh shall be fabricated in such a manner that it will not unravel.

Gabion baskets shall be fabricated such that the sides, ends, lids and diaphragms can be assembled at the construction site into rectangular baskets of the specified sizes.

A gabion basket shall be of single unit construction with base, lid, ends and sides either woven into a single unit or one edge of those members connected to the base section of the gabion basket in such a manner that the strength and flexibility at the point of connection is at least equal to that of the mesh.

The gabion basket shall be equally divided by diaphragms of the same mesh and gauge as the body of the gabion basket into cells; the length of which do not exceed the horizontal width. The gabion basket shall be furnished with the necessary diaphragms secured in proper positions on the base in such a manner that no additional tying at this junction will be necessary.

Perimeter edges shall be formed of selvedge using 3.76 mm galvanized wire of the same tensile strength as the basket wire. Tie and connection wires shall be supplied in sufficient quantities to allow secure fastening of all edges and diaphragms and to provide for four cross connecting wires in each cell. The wire shall have the same properties as the wire used in the mesh except that it may not be more than two gauges smaller.

4. CONSTRUCTION REQUIREMENTS

4.1 Preparation of Surfaces

The Contractor shall carry out any excavation that may be required for the gabion work in accordance with the requirements of Specification Section 03200 Structural Excavation. The Contractor shall be responsible for all dewatering and temporary support works for the excavation and all other necessary Temporary Works that may be required during construction.

- a) Geotextile shall be placed and stretched out on properly leveled surfaces to obtain a continuous filter layer, without kinks and creases. Joints shall either have an overlap of not less than 0.50 m or shall have overlaps of not less than 0.25 m. Any damage to the geotextile shall be the Contractor's responsibility. Repair or replacement shall be done at the Contractor's cost to the satisfaction of the Engineer.
- b) Bedding materials shall be placed as indicated on the Drawings.

4.2 Placing Gabion Baskets

Each gabion unit shall be assembled by binding together all vertical edges with wire ties at approximately 150 mm centres or by continuous stitching around the vertical edges with connecting wire and with an additional coil located at approximate 100 mm centers.

Empty baskets shall be set to line and grade as shown on the Drawings or as directed by the Engineer and a standard fence stretcher or iron bar at each corner shall be used to stretch the baskets and hold their alignment.

The baskets shall be filled with stone, carefully placed by hand to assure alignment and avoid bulges with a minimum of sags.

Alternate placing of stone and connecting wires shall be performed until the gabion basket is filled.

After filling the lid shall be bent over until it meets the sides and edges. The lid shall then be secured to the sides, ends and diaphragms with wire ties or connecting wire in the manner described for assembly.

5. MEASUREMENT AND PAYMENT

5.1 Method of Measurement

- a) The rock filled Gabion baskets shall be measured according to the number of cubic meters of completed baskets in accordance with the Drawings or the shop drawings to the approval of the Engineer.
- b) The rock filled Gabion baskets to the river bank revetments shall be measured according to the number installed of each particular size in accordance with the Drawings or the shop drawings to the approval of the Engineer.

- c) The unit rates shall include, inter alia, working in water, excavation, backfill, disposal of spoil on or off Site, bedding materials, geotextiles, rock fill and all incidentals and any other supplementary work necessary for the completion of the work.
- d) Gabions provisions, material requirements, fabrication of gabion baskets and construction requirements identified in this Specification Section shall be measured for payment in pay items 12800-01 and 12800-03.
- e) Any Gabion Works, not specifically identified in this Specification Section but which are necessary for the performance of the Works, shall be deemed to be included in pay item 12800-01 and 12800-03.

5.2 Payment

The work under this Specification Section shall be paid for in accordance with the applicable unit prices as indicated in the Bill of Quantities and given below. Payment shall constitute full compensation for performing the requirements of the Contract for the item of work as specified including furnishing all necessary labor, materials, tools, equipment, tests and incidentals.

<u>Pay Item</u>	<u>Description</u>	<u>Unit</u>
12800	Gabions	
12800-01	Rock Filled Gabion Baskets	m ³
12800-03	Gabion for River Bank Revetment (2.0m*1.0m*0.5m)	no