

## **Part 1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 31 05 17 – Aggregate Materials
- .2 Section 31 32 21 - Geotextiles.
- .3 Section 01 74 11 - Cleaning

### **1.2 MEASUREMENT PROCEDURES**

- .1 Measure gabions in cubic metres of stone filled baskets and mats incorporated into Work.
- .2 Measure installation of gabions in cubic metres and include excavation and preparation of foundation bed and supply and installation of graded stone fill and supply and installation of backfill.

### **1.3 REFERENCES**

- .1 American Society for Testing and Materials (ASTM)
  - .1 ASTM A313/A313M-13, Standard Specification for Stainless Steel Spring Wire.
  - .2 ASTM A764-95 (2011), Standard Specification for Metallic Coated Carbon Steel Wire, Coated at Size and Drawn to Size For Mechanical Springs.
- .2 Canadian Standards Association (CSA)
  - .1 CAN/CSA-G164-M92 (2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Gabion baskets:
  - .1 Factory fabricated so that sides, ends, lid and internal diaphragms can be readily assembled at site into rectangular baskets of sizes as indicated.
  - .2 Single unit construction or with joints having strength and flexibility equal to that of mesh.
  - .3 Provide diaphragms of same mesh as gabion walls, when length exceeds horizontal width. Diaphragms to divide basket into equal cells of length not to exceed horizontal width.
  - .4 Wire mesh gabions:
    - .1 Wire mesh: uniform hexagonal pattern wire woven in triple twist pattern with openings of approximately 80 x 100 mm, non-ravelling.
    - .2 Securely selvedge perimeter edges to form joints connecting selvedges with same strength as mesh body.

- .3 Wire to have following dimensions:
  - .1 Mesh: 3.0 PVC covered wire 2.4 mm diameter.
  - .2 Selvedges: 3.8 PVC covered wire 3.4 mm diameter.
  - .3 Binding: 2.0 mm diameter.
- .4 Wire: hot dip galvanized with minimum coverage of 260 g/m<sup>2</sup> to CAN/CSA G164. Cover with minimum 0.5 mm thick polyvinyl chloride coating.
- .5 Interlocking wire fasteners: galvanized steel to ASTM A764, finish 1, class 1, type 3.
- .5 Geogrid gabions:
  - .1 Geogrid mesh: rigid type, uniform, square pattern, non corrosive, high density polyethylene with inhibitors added to resist deterioration by ultra-violet and heat exposure.
    - .1 Geogrid openings: 50 x 50 mm.
  - .2 Geogrid mechanical properties: tensile modulus at 2% elongation: modified to manufacturer's recommendations, minimum 290 kN/m.
    - .1 Junction strength: minimum 90% of single rib strength.
- .2 Gabion mats:
  - .1 Factory fabricated sides, ends, lid and internal diaphragms ready to assemble at site into rectangular mats.
  - .2 Single unit construction or with joints having strength and flexibility equal to that of mesh.
  - .3 Provide diaphragms of same mesh as gabion walls, when length exceeds horizontal width. Diaphragms to divide mat into equal cells not to exceed 1 m x 3 m.
  - .4 Wire mesh gabion mats:
    - .1 Wire mesh: uniform hexagonal pattern wire woven in triple twist pattern with openings of approximately 80 x 100 mm, non ravelling.
      - .1 Securely selvedge perimeter edges of mesh to form joints connecting selvedges with same strength as mesh body.
    - .2 Wire to have following dimensions:
      - .1 Mesh: 2.20 mm diameter.
      - .2 Selvedges: 2.65 mm diameter.
      - .3 Binding: 2.20 mm diameter.
    - .3 Wire: hot dip galvanized with minimum coverage of 260 g/m<sup>2</sup> to CAN/CSA-G164.
    - .4 Interlocking wire fasteners: galvanized steel to ASTM A 764, finish 1 class 1, type 3.
  - .5 Geogrid gabion mats:
    - .1 Geogrid mesh: rigid type, uniform, square pattern, non corrosive, high density polyethylene with inhibitors added to resist deterioration by ultra-violet and heat exposure. Geogrid opening: 50 x 50 mm.
    - .2 Geogrid mechanical properties:
      - .1 Tensile modulus at 2% elongation: minimum 290 kN/m.

- .2 Junction strength: minimum 90% of single rib strength.
- .3 Stone fill:
  - .1 Hard, durable, abrasion resistant, capable of resisting degradation from action of wetting and drying, wave action, freezing and thawing cycles.
  - .2 Minimum 100 mm to maximum 200 mm dimension for individual stones.
- .4 Geotextile filter: in accordance with Section 31 32 21 - Geotextiles.

## **Part 3 Execution**

### **3.1 INSTALLATION**

- .1 Install gabions and geotextiles to lines and grades as indicated. Follow manufacturer's instructions in assembling baskets and mats.
- .2 Excavate for and backfill behind gabions in accordance with Section 31 23 10 - Excavating Trenching and Backfilling.

### **3.2 PLACING GABIONS**

- .1 Wherever possible, place baskets and mats in position prior to filling with stones.
- .2 Join adjacent baskets and mats together at corners as recommended by manufacturer, to ensure joints are as strong as mesh.

### **3.3 FILLING BASKETS AND MATS**

- .1 Tension geogrid gabions according to manufacturer's instructions before filling with stone. Do not release wall tension until sufficient stone fill has been placed to prevent wall slackening.
- .2 On exposed faces of gabions, place stones by hand with flattest surfaces bearing against face mesh to produce satisfactory alignment and appearance.
- .3 For wire mesh gabions, fill gabion cells in lifts not to exceed 300 mm and connect opposite walls with two tie wires after each lift.
- .4 For geogrid gabions, fill cells in lifts not to exceed 300 mm and connect opposite walls with two polyethylene braids after each lift.

**END OF SECTION**