

# EXPECTED IMPLEMENTATION JULY 2018

D

**530 REVETMENT SYSTEMS.**  
**(REV 10-26-17) (FA 12-13-17) (7-18)**

SUBARTICLE 530-1.3 is deleted and the following substituted:

**530-1.3 Gabions:** Furnish and install gabions, including gabion baskets and gabion mattresses, filled with rock in accordance with this Section and in conformance with the lines, grades, design, and dimensions shown in the Plans.

R

SUBARTICLE 530-2.2 is deleted and the following substituted:

**530-2.2 Articulating Concrete Block (ACB) Revetment Systems:** Obtain all precast block, cabling, anchors, and necessary incidental materials from the same manufacturer. ACB revetment systems must meet the requirements of ASTM D6684, ASTM D7276 and ASTM D7277. Submit to the Engineer certification from the manufacturer that the ACB revetment system meets the requirements of this Section.

ACB system components must meet the following requirements:

- Concrete .....Section 347, ASTM D6684
- Cables and Fittings.....ASTM D6684
- Type D-2 Geosynthetic Material\* .....Section 514
- Granular Underlay .....Section 901

\*Use products listed on the Department's APL.

Cables must maintain at least 85% of original tensile strength (ASTM D638) after 1000 hours exposure to a saturated solution of calcium hydroxide (pH greater than or equal to 11) at 73°F, plus or minus three degrees. Cables must not exceed a maximum of 0.5% moisture absorption at seven days, per ASTM D570. Cable crimps must be aluminum or stainless steel Type 304 or 316.

A

SUBARTICLE 530-2.3 is deleted and the following substituted:

**530-2.3 Gabions:**

**530-2.3.1 General:** Provide gabions meeting the requirements of ASTM A974 and ASTM A975 as modified herein.

F

Allowable Gabion Wire and Connector Material	Substructure Environmental Classification
Polymeric	Any
Metallic	Slightly Aggressive
Metallic – Galvanized and PVC coated	Slightly Aggressive Moderately Aggressive
Metallic – Type 304 Stainless Steel, Size W1.4 (MW10) or larger	Slightly Aggressive Moderately Aggressive Extremely Aggressive (< 2,000 ppm Chlorides)

T

# EXPECTED IMPLEMENTATION JULY 2018

Allowable Gabion Wire and Connector Material	Substructure Environmental Classification
Metallic – Type 316 Stainless Steel, Size W1.4 (MW10) or larger	Any

**530-2.3.2 Metallic Gabions:** The components of metallic gabions must meet the following requirements:

- Wire Mesh and Fabric\* .....ASTM A974 and A975
- Spiral Binders, Lacing Wire, Stiffeners and Ring Wire Fasteners.....ASTM A974 and A975
- Stainless Steel Wire, Wire Fabric and Lacing Wire .....ASTM A1022

\*Wire mesh must be Style 1 or Style 3. Wire fabric must be Style 1 or Style 5.

**530-2.3.3 Polymeric Gabions:** Polymeric gabions must be constructed in general accordance with ASTM A974 using a single layer of structural geogrid instead of welded wire, and polymeric braid instead of ring wire fasteners. The structural geogrid must be Type R-1, 2, 3, 4, or 5 meeting the requirements of Section 985 and the following:

- Tensile Strength @2% strain MD\* .....575 lb/ft
- Tensile Strength @ 2% strain XD\*\* .....575 lb/ft
- Junction Strength (% of Tensile Strength)..... 90%
- Min UV Stability..... 85%
- Min. Carbon Black Content (by Weight)..... 2%

\*MD = machine direction

\*\*XD = cross direction

Polymeric braid for seaming polymeric gabions or connecting metallic gabions must have a minimum tensile strength of 400 pounds for a 36 inch long specimen and contain at least 2% carbon black by weight.

**530-2.3.4 Gabion Rock:** Use rock meeting the requirements of ASTM D6711 to fill gabions. The rock must be reasonably free from thin, flat or elongated pieces. Rock size must be at least 1.25 times greater than the aperture size of the wire mesh or fabric. Each range of sizes may allow for a variation of 5% oversize rock by weight, 5% undersize rock by weight, or both.

Physical Property Requirements	Acceptable Range
LA Abrasion, ASTM C131 and ASTM D535	Maximum loss 40%
Bulk Specific Gravity	Minimum 2.20
Absorption, ASTM C127 and ASTM C128	Maximum 3%

**530-2.3.5 Miscellaneous Components:** Miscellaneous components for gabion installations must meet the following requirements:

- Type D-2 Geotextile Fabric\* .....Section 514
- Granular Underlay .....Section 901
- Anchors ....Section 451 or manufacturer’s recommendations

\*Use products listed on the Department’s APL.

# EXPECTED IMPLEMENTATION JULY 2018

SUBARTICLE 530-3.5 is deleted and the following substituted:

**530-3.5 Gabions:** Install double-twisted wire mesh gabions in accordance with ASTM D7014. Install welded wire fabric gabions and polymeric gabions in accordance with the manufacturer's recommendations.

Prior to installation, complete any required excavation and preparation of the foundation as shown in the Plans or as directed.

Install soil anchors as specified in the Plans.

All adjoining gabion units shall be connected along the perimeter of their contact surfaces to obtain a monolithic structure. If more than one tier, stagger the vertical joints of subsequent rows by one half cell length and adjoin the empty gabions to the top of the lower tier along the front and back edges of the contact surface.

Fill gabions in a manner that minimizes voids, protects against local deformation of the basket or mattress and prevents damage to PVC coating. At no point in the filling process may rock be mechanically placed from a height of over 36 inches from machine to fill area. Uniformly overfill gabions by 1 to 2 inches to compensate for future rock settlements.

Any damage to the basket, mattress, or coatings during assembly, placement, or filling shall be repaired promptly in accordance with the manufacturer's recommendations or replaced with undamaged gabion baskets.

SUBARTICLE 530-4.4 is deleted and the following substituted:

**530-4.4 Gabions:** For mattress type applications, the quantity to be paid for will be the plan quantity, in square yards, placed in the final locations.

For stacked basket applications, the quantity to be paid for will be the plan quantity, in cubic yards, placed in the final locations.

SUBARTICLE 530-5.7 is deleted and the following substituted:

**530-5.7 Payment Items.** Payment will be made under:

- |                   |   |
|-------------------|---|
| Item No. 530- 1-  | Riprap (Sand-Cement) - per cubic yard.                          |
| Item No. 530- 3-  | Riprap (Rubble) - per ton.                                      |
| Item No. 530- 4-  | Articulating Concrete Block Revetment System - per square yard. |
| Item No. 530- 5-  | Gabion  |
| Item No. 530- 74- | Bedding Stone - per ton.  |