

Gabion Construction

GABION DEFINITION

Gabion baskets are large, multi-celled, welded wire or wire mesh boxes. Gabions are useful if a vertical wall is required or if larger rock is needed for construction than is available locally.

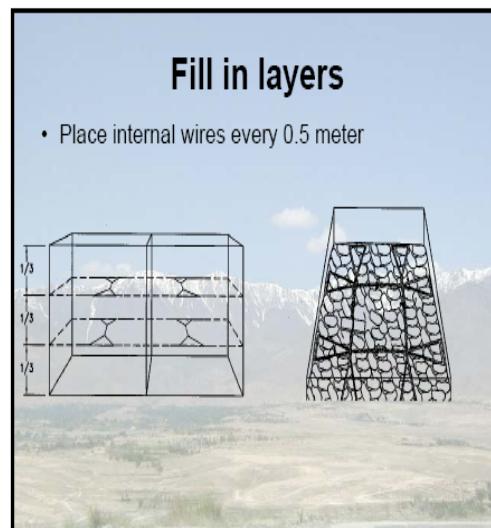
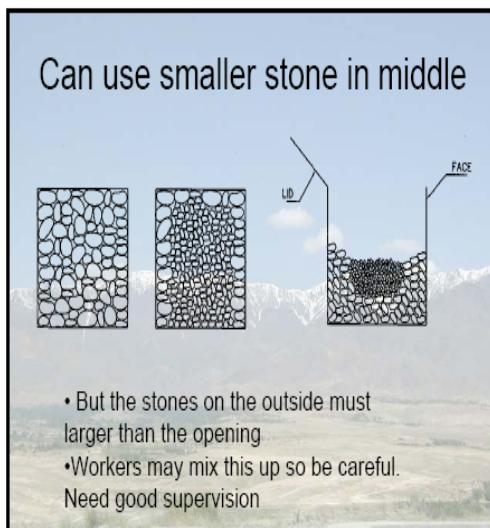
CONDITIONS WHERE GABIONS ARE APPLIED

Gabion baskets are used here to mechanically protect stream banks or steep slopes from erosion. On stream bank applications, the foundation is an important design feature of the structure. As an alternative, riprap can be used along stream banks (and is generally preferred) if appropriate rock is available and banks are not vertical.

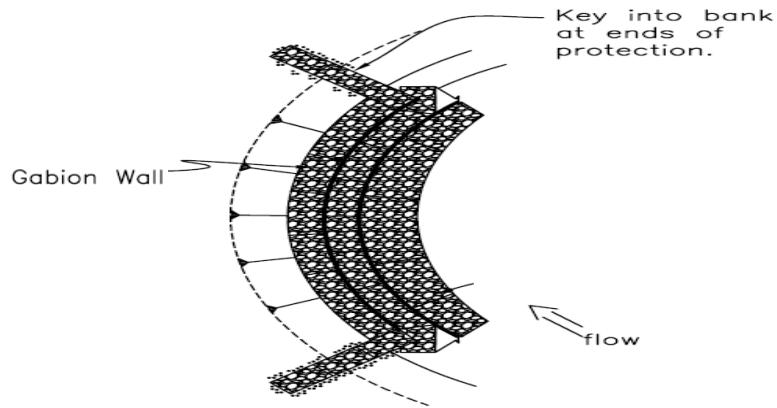
CONSTRUCTION

The following requirements shall be met when constructing with gabions:

- Gabion baskets shall be wired together to manufacturer's specifications.
- The bed on which gabion cages are to be laid before they are filled with rock shall be so leveled as to present an even surface at the depth shown on the drawings or as directed.
- The lower gabion basket will be excavated into the channel bottom a minimum of 1/3 the height of the gabion.
- The gabion will be stretched to remove any kinks and to gain a straight alignment and carefully filled with rock that is larger than the wire openings (smaller stone may be used in the interior of the basket); ensuring that a compact mass of rock with minimal void spaces is installed within the basket.
- The baskets shall be filled in layers and in stages so that the depth of stone placed in any cell does not exceed the depth of the stone in an adjacent cell by more than 30 centimeters.
- Stacked gabion baskets used for bank stability shall be tilted towards the soil they are protecting by a minimum of 6 degrees from vertical.
- Stones placed against the outside mesh of the basket must be larger than the basket openings.
- Internal connecting cross-tie wires shall be placed in each gabion.



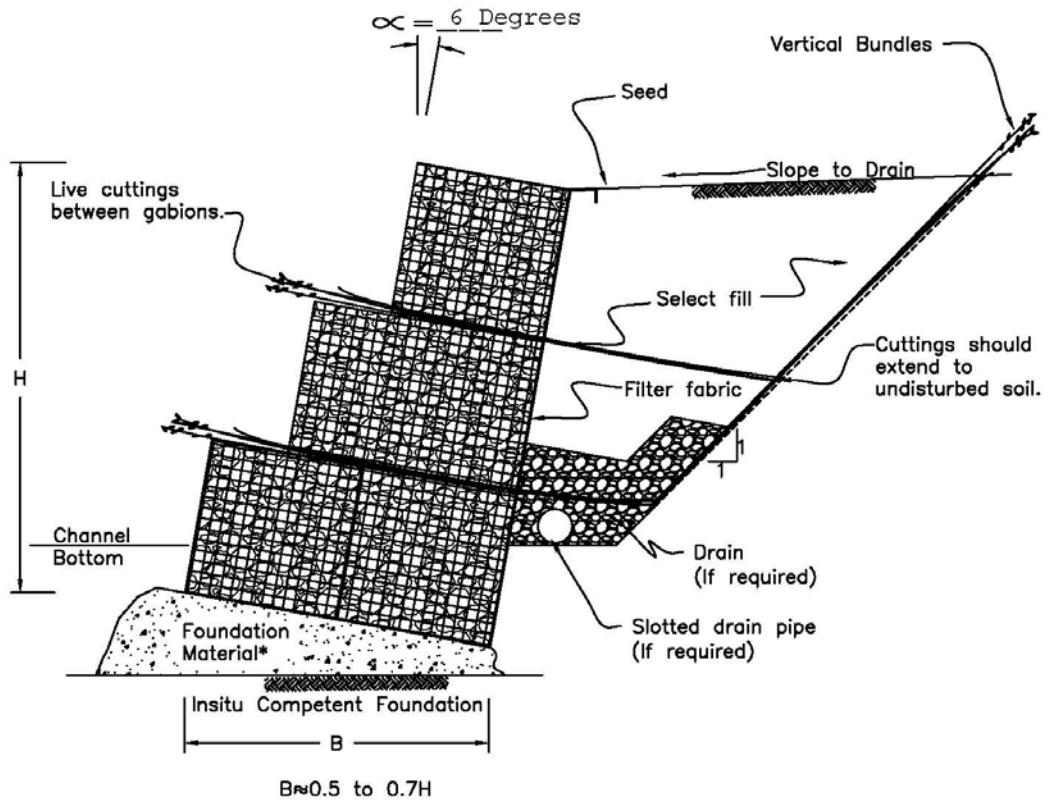
- Along the exposed faces, rock shall be placed by hand to ensure a uniform and neat appearance. Each basket shall be full prior to closing and fastening of basket lids. The uppermost layer of rock shall completely fill the gabion basket and shall be uniformly leveled to the top edges of the basket so that the lid will bear on the rock when it is secured. Lids shall be stretched tight over the rock filling using only approved lid closing tools as necessary. The use of crowbars or other single point leverage bars for lid closing is prohibited as they may damage the baskets. The lid shall be stretched until it meets the perimeter edges of the front and end panels. The gabion lid shall then be secured to the sides, ends, and diaphragms per manufacturer's specifications.
- Gabions shall be placed to 30 cm above average bank height. Baskets placed on top of each other shall be offset horizontally like a brick wall. Baskets will be stepped vertically so as not to form a sheer face. Average offset shall be 1/3 depth of gabion.
- Gabion walls placed along stream banks must be keyed in to the bank on both upstream and downstream ends. Length for the keys (tiebacks or key-ins) on the end of a gabion wall shall be at least equal to the bank height plus the anticipated scour depth.



- Extend gabion walls 5 m beyond point of visible erosion.
- Any damage to the wire or coatings during assembly, placement and filling shall be repaired promptly in accordance with the manufacturer's recommendations or replaced with undamaged gabion baskets.

VEGETATION:

Vegetation may be planted between gabions as directed in this SOW and as showing on the following diagram.



*Foundation of gabion wall should be competent and non-erosive. For example: extend to competent insitu material or establish a base with grouted rock or concrete mud slab (shown). Foundation should be below frost line and have adequate bearing capacity.

Notes:

- Gabion wire shall be PVC coated.
- Live cuttings should be washed in during installation to ensure good soil to stem contact.
- Further analysis required for final design.

Conceptual Plan Not for Construction

N.T.S.



Gabion Wall

W. Anderson, Designed J. Fripp, K. Worster	Date 10/06	File Name Gabion-Wall.dwg
Drawn J. Renteria	10/06	Drawing Name Gabion Wall
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Approved _____		Sheet of _____

MEASUREMENT AND PAYMENT

Payment for the gabions is made at the contract unit price per gabion and includes site preparation, wire mesh, rock, specified bedding material, specified plantings, and construction and emplacement of the gabions. Such payment is considered full compensation for all labor, material, equipment, and all other items necessary and incidental to completion of the work.

The contract price includes removal of materials, cleanup and disposal of waste construction debris, and backfilling and repairing holes, depressions and other ground disturbances.

OPERATION AND MAINTENANCE

An operation and Maintenance plan shall be prepared for use by the landowner or operator. The plan should include provisions to address the following, at a minimum:

- Inspect regularly and after each major storm. Check for signs of undercutting or other instability
- Repair damaged areas immediately to restore designed effectiveness and to prevent damage or erosion of the slope or stream bank
- Check wire of baskets for rusting and wear. Repair where possible or replace.
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REFERENCES:

Natural Resources Conservation Service: <http://www.ndcsmc.nrcs.usda.gov/technical/Stream/>