

RockBox Welded Mesh Gabions

Installation Guide

Description

Geosynthetics RockBox gabions are manufactured from 3mm galvan wire, weld mesh in a square 76mm x 76mm gauge. Supplied 'flat-packed' complete with lacing wire (for tying gabions together and for joints). Helicals are available for vertical joints.

Delivery

Gabions are delivered in a collapsed and compressed structure. They are strapped together in a folded, form on pallets to make it easier for transporting. The helicals are bundled separately and lacing wire is delivered in coils.

Assembly & Jointing

Unfold and remove each gabion onto a flat hard surface (Fig 1). Form an open box by lifting the sides, ends and diaphragms vertically. The back and the front panels of the gabion are then to be connected to the end panels and centre diaphragms using helicals (optional) to provide neat and easy vertical joints; or by using lacing wire supplied (the bottom of the base course of units should be tied even though it has the assembly clips). The lacing wire procedure is to cut a sufficient amount of wire; it is recommended that the maximum length to be laced in each operation is 1m. This requires about 1.4m of wire. First double loop and/or twist the lacing wire to the wire mesh (Fig 5). Then continue lacing double and single loops alternatively through every mesh opening (Fig 4). Pull each loop tightly and finally secure the end of the lacing wire to the wire mesh with a double loop and/or twist. It is recommended to use pliers to pull the wire tight whilst assembling the gabions and lacing the mesh together. Raise the diaphragms into a vertical position and tie them to the side panels in the same manner. Adjacent units are joined together and laced up at the same time using one operation; this ensures the wire supplied will be sufficient; it is wasteful and time consuming to fully assemble complete units then use more wire to join them together.

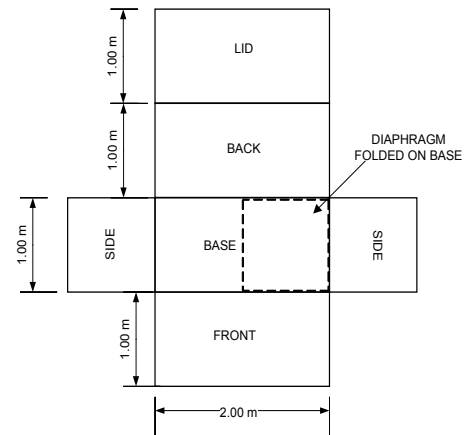


Fig 1. *(2m x 1m x 1m unit shown below) not to scale.

Foundation Preparation

The foundations on which a gabion can be placed should be level to the design gradient and the elevations are to be graded as shown on the project construction drawings. It should be compacted, smooth and free of surface irregularities and loose materials. We recommend a min 150mm (200mm ideally) compacted structural stone foundation (MOT type1 would be suitable type of material); the foundation required is subject to ground conditions on site; if there are any reservations a calculation should be done to ascertain the situation. Any geotextiles required to be installed behind gabion structures should to comply with the requirements for subsurface drainage applications and project specific specifications; our standard details show Fibertex F-32 or Ekotex 12 geotextile.

Installation and Filling

Once the foundation is prepared and the gabions are assembled, place them in the desired location to form the structure. Before filling the baskets with rock, the layer of gabions needs to be joined together (all connections must be carried out as described in the assembly & jointing section above prior to the fill operation commencing) and aligned. Rocks for gabions may be produced by any suitable quarrying method, and by the use of any device that yields the required sizes within the gradation limits chosen. The rocks used should be hard; angular to round, durable and of such quality that they will not disintegrate with water or weather throughout the life of the structure (igneous is preferable to sedimentary). The size of the gabion rocks shall range between 4 – 8 inches, stone grade 6G. All RockBox gabion units should be joined securely to neighbouring units on the same layer before the filling operation commences. During the filling operation it is advisable to use manual stone placement to minimise any voids and improve the visual appearance. Extra care should be taken with the exposed faces of the units with the rock fill being carefully hand placed for a neat, flat and aesthetically pleasing appearance. To avoid local deformation the cells should be filled in stages. At 1/3 depth of fill and again at 2/3 depth of fill cross bracing wires should be placed from the front to back of the gabions (1 per linear metre) as shown in Fig 2. (For 0.5m high units this only needs to be done once at 1/2 height). The ends of the cross bracing ties should span 5 meshes (7 bars) in the centre of the external faces (Fig 7). At no time shall any cell be filled to a depth that exceeds 1/3 higher than the adjoining cell. To minimize the amount of voids use well-graded stone and also avoid excessively large stones and this will give a compact stone fill. Loose or over tightened cross bracing wires will cause bulging of the face to occur. In the case that more than one layer of gabions needed, in order that individual units become one with the structure, the next layer of gabions must be connected to the layer underneath after that layer has been securely closed.

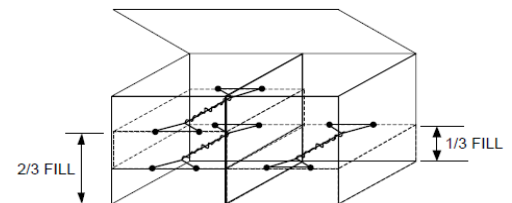


Fig2: cross bracing wires. 1 per linear metre. Spanning 5 mesh spaces.

Note: If a run of units is not filled to each level in one go, then always step down the filling at the end otherwise distortion will occur. This also allows further units to be connected later (Fig 3).

Closing

To allow the structure to settle, level off the fill with a surcharge 1 – 1.5 inches above the top of the mesh.

The top edge of the diaphragm must be exposed. Fold the lid and edges of the panels to be connected down. The lids should be tightly laced along all sides and diaphragms in the same manner as described in the assembly & jointing section. Any end wires should be turned in to prevent sharp protrusions.

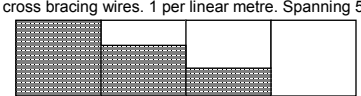


Fig3:

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Fig. 4 Tying wire showing how every mesh space should be tied



Fig. 5 How to finish and start tying wire between 1.5m wire sections



Fig. 6 Showing the use of helicals fastenings for vertical joints

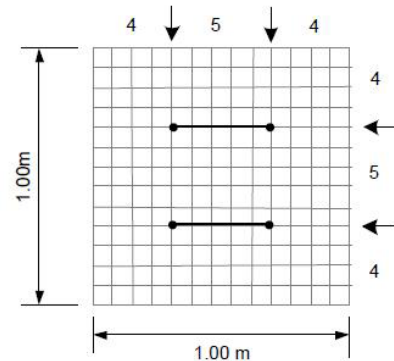


Fig. 7 Bracing wire approx positioning

Construction Details showing typical arrangement of a RockBox Gabion gravity retaining wall installation:

