MACCAFERRI

PRODUCT INSTALLATION GUIDE

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GREEN GABION®

Material Delivery

All baskets shall be of single unit construction made from non-raveling, double twisted, woven wire mesh. The front, base, back and lid of the Green Gabion® shall be woven into a single unit. The ends shall be pre-cut to the specified angle (45 or 60 degrees) and factory connected to the base. The front face of the Green Gabion® is lined with a coconut fiber blanket (specified weight = 8 oz/ft^2 [270 g/m^2]). See Fig. 1.
Green Gabions® are manufactured with all components mechanically connected at the production facility, as per ASTM A975. All Green Gabion® are supplied in the collapsed form, either folded and bundled or rolled. The bundles are compressed and strapped together at the factory for easy shipping and handling. Lacing wire is shipped in coils. Fasteners are shipped in boxes. Coconut fiber blankets are shipped in rolls.

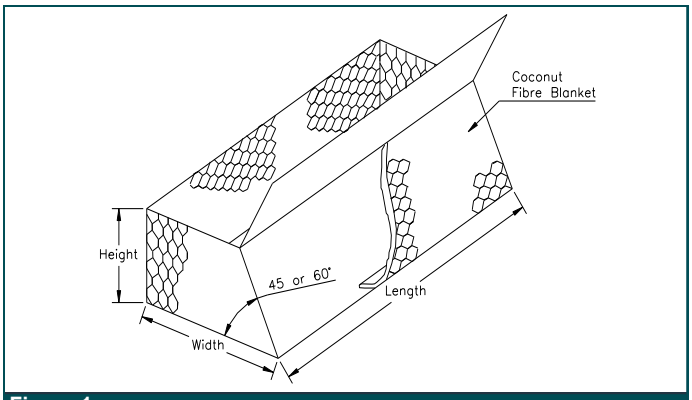

Figure 1

Assembly

The units shall be assembled individually by lining the front face with a coconut fiber blanket and erecting the sides and ends ensuring that all panels are in the correct position and the tops of all sides are satisfactorily aligned. Connect the side panels to the back panel of the unit. Then connect the side panels to the front face. **Only connect the front panels together halfway for easier access to place fill inside of the Green Gabion®.** (Fig. 2)
When attaching the coconut fiber blanket to the front face ensure that there is an overlap of 12 in. (30 cm) at the top and bottom of the unit.

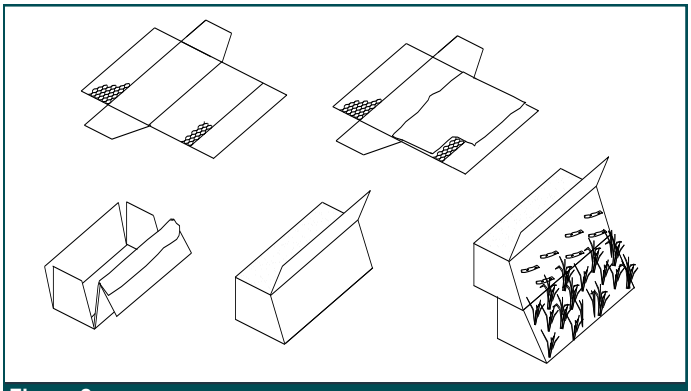
Figure 2

Fastening Procedure

When using tie wire, cut off a piece of wire approximately 1.5 times the length of the edge to be tied. Longer edges shall be joined by several lengths of wire. Tie wires shall be secured around the selvedge wire or heavier edge wire, where present, by looping and twisting the lacing wire around itself. Proceed tying with alternate double and single loops. Double loops shall be made at intervals not greater than 6 in. (150 mm). The basket pieces should be pulled tightly together during the tying operation. The other end of the tie wire shall be secured by again looping and twisting the wire around itself. When using tie wire to assemble the units, pliers may be used to create tight joints. Care should be taken to avoid damaging the wire coating. (Fig. 3)
When steel ring fasteners are used, the use of either a mechanical or a pneumatic fastening tool is required. Spacing of the rings shall be in accordance with ASTM A975 Table 2, Panel to Panel connection, Pull-Apart Resistance. In any case, ring fastener spacing shall not exceed 6 in. (150 mm). Rings shall be installed at the top and the bottom connections of the end and center diaphragms and along all edges.
The average maximum resistance of the fasteners from the field shall not be lower than 90% of the resistance provided in the certification.

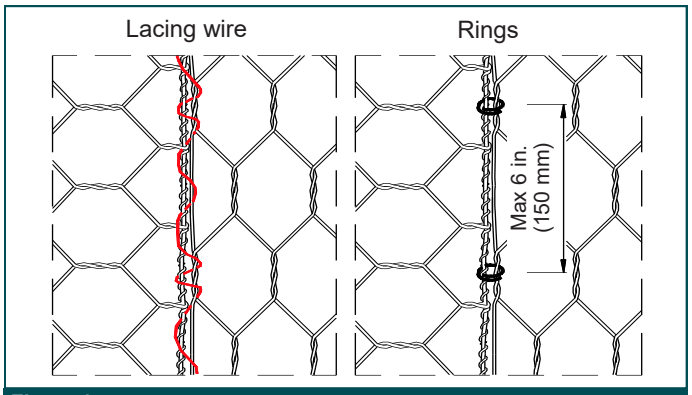

Figure 3

Foundation Preparation

The foundation on which the Green Gabion® is to be placed shall be level, and graded to the elevations as shown on the project construction drawings. The foundation for Green Gabion® shall be level, smooth, and free of surface irregularities, loose material, and vegetation in accordance with the project specifications. Appropriate measures shall be taken for filtering and drainage of the foundation, as per the project specifications (filter cloth, drain works, etc.).
Also, the size shall be such that a minimum of two layers of rock can be achieved when filling any Green Gabion®.

Installation and Filling

After initial assembly, the baskets are carried to the work area and placed in their final position. The adjoining empty basket must be securely joined together along the vertical and top edges of their contact surfaces. The recommended procedure to apply lacing wire is described in the fastening procedure.
Whenever a structure requires more than one course, the upper empty baskets shall also be connected to the top of the lower course along the front and back edges of the contact surface using the same connecting procedure(s).
The rock for Green Gabion® shall be hard, angular to round, durable and of such quality that they shall not disintegrate on exposure to water or weathering during the life of the structure as specified in ASTM A6711.

Green Gabion® rocks shall range between 4-8 in. (100-200 mm). The range in sizes may allow for a variation of 5% oversize and/or 5% undersize rock, provided it is not placed on the Green Gabion® exposed surface. With any gradation, the intermediate dimensions of any rock shall be larger than the smallest opening dimension of the mesh of the Green Gabion®. In all cases, the oversize rock shall not be larger than 10 in. (250 mm), and the undersize rock shall not be smaller than 2 in. (50 mm).

During the filling operation some manual stone placement is required to minimize voids. Fill the units in a row halfway, then finish connecting the side panel to the front face. At no time shall any unit be filled to a depth exceeding 1 ft (0.3 m) more than the adjoining unit. It is also recommended to slightly overfill the baskets to allow for settlement. It is a good practice to place the compact backfill material behind the units simultaneously with the Green Gabion® filling operation. Care should be taken when placing the stone to assure that the PVC coating on gabions will not be damaged.

Top soil should be sandy clay or clay like sand, with 3% to 20% of organic material. The soil should be fertile and friable. The top soil should be free from wood and stones larger than 2 in. (50 mm) in. maximum dimension. The topsoil is then mixed with the gabion rock and placed in the Green Gabion®. The mix should be soil and rock (minimum 50%).

Minimize the number of voids by using a well-graded stone and avoid large stones in order to achieve a dense, compact stone fill. All corners should be securely connected to the neighboring Green Gabion® of the same layer before filling the units.

When more than one layer of Green Gabion® is required, in order for the individual units to become incorporated into one continuous structure, the next layer of Green Gabion® must be connected to the layer underneath after this layer has been securely closed.

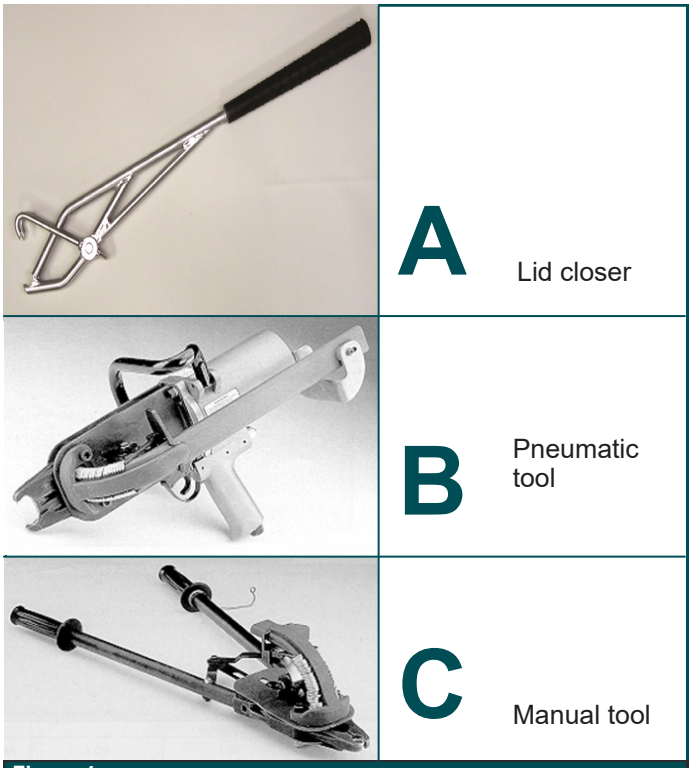

Figure 4

Closing

Once the baskets are completely full, the lids shall be pulled tight using a lid closer until the lid meets the perimeter edges of the basket. The lid shall then be tightly laced and/or fastened along all edges, ends and tops of diaphragm(s). The lacing should be in accordance with the fastening procedure described before.

The installation of the fasteners shall be done in accordance with the manufacturer's recommendations. (Fig. 4)

Vegetation

The vegetation can be incorporated into the structure during or after installation of the Green Gabion® units. There are two techniques suggested for introducing vegetation after installation, hydroseeding and planting live stakes. Brushlayering is another technique that can be used with the vegetation installed during the assembly of the structure. It is highly recommended to consult a local specialist to select the appropriate vegetation techniques related to the project.

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