



1. Preparing the Formation

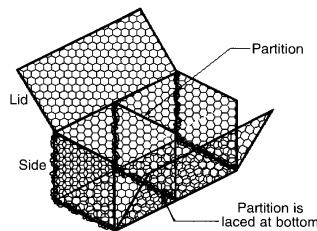
The surface which the gabions or filter layer is placed on should be even and firm. Excavate any soft or unsuitable material and backfill with sound material. Fill any holes, ruts or uneven areas with good material such as granular fill or concrete. Grade and compact the formation to the correct line and level. Where the surface is very uneven or soft a layer of sand or gravel (say 200 mm thick) may be placed to provide a firm and even surface. Concrete foundations are required when soil bearing capacity is inadequate for the wall.

2. Laying out mesh boxes

Gabion boxes arrive on site partially assembled and folded flat in bundles for easy transportation. Each box should be carefully opened out, laid flat and straightened out so the mesh is not creased. The sides of the boxes are then stood up and temporarily held together (tacked) with short wire ties. Now lift the gabion boxes into their final position a row at a time.

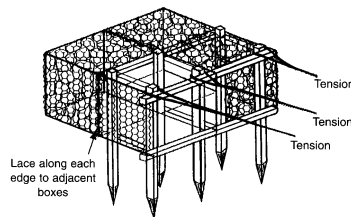
Once the boxes are in their final position, the selvedge wire along each edge is laced to the adjacent selvedge wire with lacing wire to give a continuous join. Note that adjacent boxes are also connected to each other at the same time. Lace all edges including diaphragms with single loops and double loops in turn at intervals of one mesh length. Secure the ends of the lacing wire at each corner with triple loops and turn the ends of the wire into the box.

Do not forget to also lace to boxes below and behind so that the whole structure is laced together.



3. Stretching

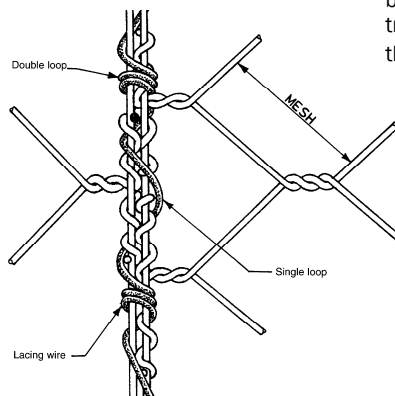
The boxes or groups of boxes are to be tensioned by using steel or wooden stakes to avoid bulging or sagging when filling with stones. Proper formwork for tensioning the gabions boxes is used as an economy measure for large repetitive jobs.



4. Lacing Together

Adjacent boxes or mattresses should be connected using the same procedure. Lace all four edges of each face to their adjacent boxes. It is easier to lace them together when the boxes are empty. Make sure lacing is carried out in a continuous sequence, not in individual loops. Do not forget to also lace to boxes below and behind so that the whole structure is laced together.

Although lacing with a wire is probably the best method, gabions can sometimes be laced using spirals and CL50 clips.



5. Filling

Filling can be by hand or machine. The stone used should be hard and durable, with a minimum size no less than 100mm and a maximum size no greater than 200mm. Stones should be tightly packed. Care should be taken not to damage the mesh particularly where sharp or crushed quarry stone is used.

Fill in stages so that the difference in fill level between adjacent gabions does not exceed half a metre.

If filled by machine greater care must be taken to ensure that the stone is tightly packed and that the mesh is not damaged during filling, particularly if the wire is PVC coated.

For mattresses on a slope start filling from the bottom of the slope upwards. Also peg the mattresses at the top of the slope at 2 metre centres to hold the mattresses in place during filling.

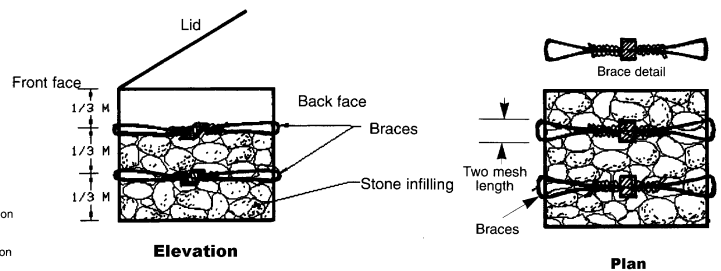
If pre-filled mattresses placed by crane are required please seek further guidance from Geo-Coastal Engineering Ltd.

6. Bracing

Metre high boxes should be braced when filled to a third and two thirds of a metre height. Partially fill to a third of a metre height and then brace by forming a 'Figure of 8' using tie wire, twist to tighten and so tension the faces. Repeat at two thirds of a metre height. Two braces should be made at each height. The loop of the brace should pass through the face of the gabion for at least two mesh lengths.

For greater rigidity and where more than one face will be exposed bracing can be fixed to all four vertical faces.

For 0.5 m high boxes brace when half full. Mattresses 0.23 and 0.30 m high do not need bracing.



7. Closing lids

Gabions should be overfilled by 25 to 50mm before closing to allow for settlement. The lids are then stretched over the stone fill and laced down. Secure the corners first to make sure the lid can be laced down without over-stretching the mesh. Remove or redistribute some of the stones at this stage if necessary. The lids are then laced down securely.

