

**ENVIROMESH**<sup>®</sup>

Specialists in the design & supply of all welded & woven gabion systems

# INTRODUCTION



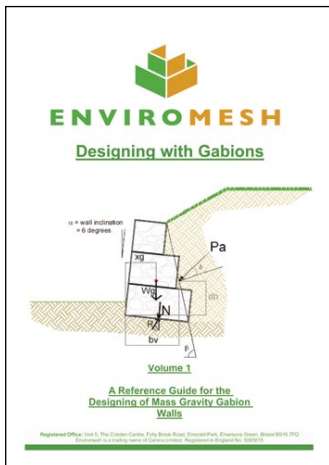
## Who are Enviromesh?

Enviromesh are the UK's leading name in welded and woven wire mesh gabion systems.

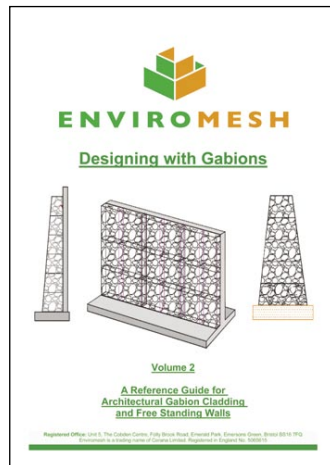
The Company's personnel have over 40 years experience in design, sales, manufacture and on site support. The Company offers a comprehensive range of gabions, mattresses and rock netting products in both welded mesh and double-twist woven hexagonal wire mesh. Enviromesh products and services are available through an extensive national network of distributors throughout the UK and Ireland.

To help in the specification process, a series of detailed Technical Design Volumes and support documentation are available for download from the website [www.enviromeshgabions.com](http://www.enviromeshgabions.com) or alternatively they are available on **CD** upon request.

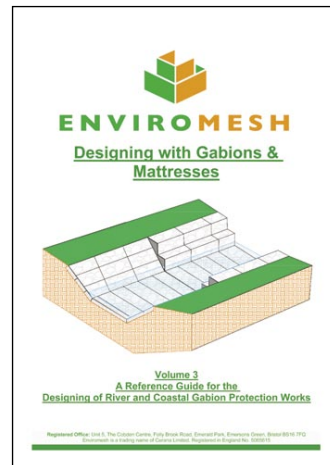
To further support the Company's client base, Enviromesh are also pleased to provide a **free desk top design advisory service**, utilising in-house dedicated software for the preliminary design of gabion retaining structures.



▲ Volume 1  
A Reference Guide for the Designing of Mass Gravity Gabion Walls.



▲ Volume 2  
A Reference Guide for Architectural Gabion Cladding and Free Standing Walls.



▲ Volume 3  
A Reference Guide for the Designing of River and Coastal Gabion Works.



▲ Gabion litter bins at Northala Park, London.



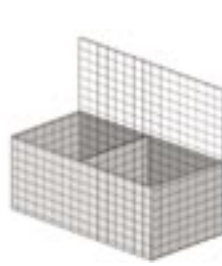
▲ All of the above Technical Design Volumes are also available on CD.



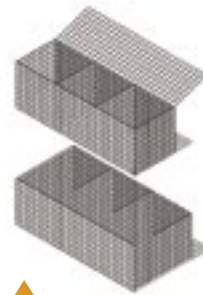
**ENVIROMESH®**

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▲  
*Gabion 39 System*



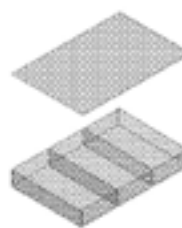
▲  
*Gabion 27 System*

## WOVEN MESH PRODUCTS PAGE

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▲  
*Woven Mesh Gabions*



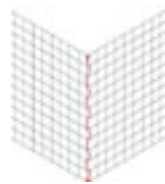
▲  
*Woven Mesh Mattresses*



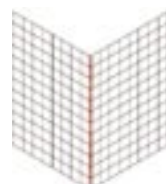
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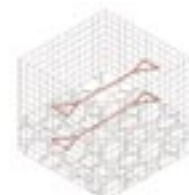
▲  
*Lacing*



▲  
*Helicals*



▲  
*'C' Rings & Tools*



▲  
*Internal Ties*



▲  
*Pre-formed Ties*



▲ *Gabion cladding to steel sheet piles at Dovercourt, Essex.*



# WELDED MESH PRODUCTS

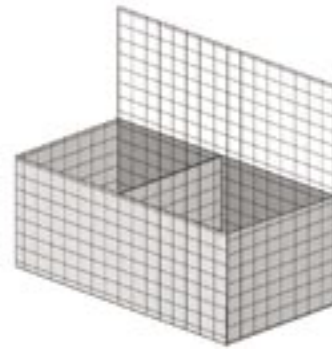
## GABION 39 SYSTEM - (Standard Gabions)

Gabions manufactured from dimensionally stable panels of mesh that are formed by welding transverse and longitudinal wires at each and every intersection to form a grid.

The gabion box is then part assembled by hinging the face, back, sides and internal diaphragms to the base panel and the lid to the rear panel with 'C' rings or clips. The units are transported to site flat packed with lacing wire as standard for on site erection.

On site, the unit is opened out in the required position and the sides, diaphragms, face and rear panels are rotated to the vertical position and joined with a continuous lacing operation (wire supplied as standard), using helicals or 'C' rings (supplied at additional cost). Joints between courses are normally continuously laced or clipped with 'C' rings.

Once assembled, the gabions are filled with stone or rock and the lid secured to form a monolithic structure in accordance with the recommended installation procedures.



### Applications

- Mass gravity retaining walls
- Facing units to reinforced soil walls
- Landfill
- Perimeter walling
- Acoustic barriers
- River and coastal protection
- Reed beds
- Weirs
- Abutments
- Landscaping
- Free standing walls
- Temporary works

### Specification

Welded mesh Gabion 39 System is available in mesh aperture 76.2mm x 76.2mm and in the following specifications to the nominal dimensions stated below. Other non-standard mesh apertures are available on request.

#### Coatings:

Galfan Coated (95% Zinc 5% Aluminum)

Zinc Coated

Zinc/PVC Coated

Stainless Steel (to special order)

#### Wire Diameters:

3.0mm (Galfan, Zinc or Stainless Steel)

4.0mm (Galfan, Zinc or Stainless Steel)

5.0mm (Galfan, Zinc or Stainless Steel)

2.70mm/3.20mm (Zinc/PVC Coated)

3.80mm/4.30mm (Zinc/PVC Coated)

Combinations thereof:

#### Standard Sizes:

1.0m x 1.0m x 0.5m

1.0m x 1.0m x 1.0m

1.5m x 1.0m x 0.5m

1.5m x 1.0m x 1.0m

2.0m x 1.0m x 0.5m

2.0m x 1.0m x 1.0m

Non standard unit sizes available to order.



Typical hand placed stone to the front face of a welded mesh gabion to give a high quality dry stone wall appearance.





▲ A typical landscape example, where smaller mesh apertures have been utilised to contain a rounded stone fill to achieve the desired aesthetic effect.



▲ Mass gravity gabion wall designed and constructed with a flush face at Catterick Garrison.

# WELDED MESH PRODUCTS

## GABION 27 SYSTEM

Gabion 27 System, are modular welded mesh units introduced into the UK market by Roger Farmer (Technical Director) to improve the quality and speed of installation, and also to reduce the wall's sectional design requirements. This combination of benefits result in savings on labour costs, overall material supply and associated earthworks.

The Gabion 27 System comprises of units that are sub-divided into 686mm cells along the length of the cage. Construction is such that the base of the gabion forms the lid of the unit below. The base is extended by fixed dimensions on one face to allow for a predetermined stepping arrangement at each course. The base on the other face is flush, allowing for a flush faced wall to be constructed if required or coursing with a combination of flush and stepped faces.

The use of combined lids and bases reduces the construction time, but does not compromise the structural integrity of the system. The mesh weight to volume ratio is greater with this system than the Gabion 39 system and the distribution of mesh within the structure is more even thus producing a higher quality of installation.

The face and rear panels are manufactured from a heavier mesh wire diameter to maintain both better linear and lateral alignment. The 686mm cell height means that no difficulty occurs in stone filling and hand facing of the system.

Vertical jointing for assembly utilises helicals (supplied as standard) to encompass all the mesh at one juncture, reducing installation time whilst providing the strongest joint. The helical also encompasses the cut ends of mesh which is an important health and safety issue where gabions are used in public areas.

Horizontal joints can be helicalled but are normally formed by a continuous lacing system (supplied as standard) or clipped with 'C' rings (at additional cost).

### Applications

- Mass gravity retaining walls - high quality installation
- Facing units to reinforced soil walls
- Perimeter walling
- Acoustic barriers
- Abutments
- Landscaping
- Trapezoidal gabions
- Free standing walls
- Cladding and rain screen

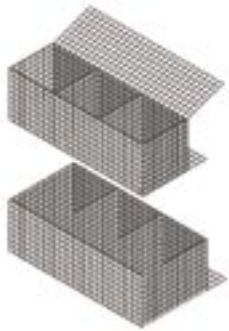
### Specification

#### Coatings:

Galfan Coated (95% Zinc 5% Aluminium)

Zinc/PVC Coated

Stainless Steel (to special order)



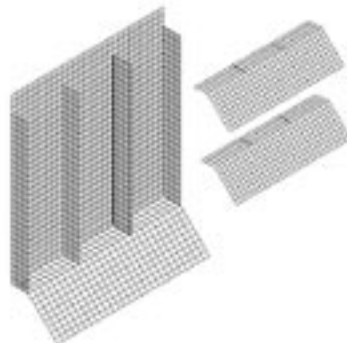
**Gabion 27 System used as mass gravity walls and as external facings to reinforced earth application.**

#### Wire Diameters:

3.0mm to the body of the unit and 4.00mm to the front and rear faces

#### Standard Sizes:

Lengths:	2.0m
Widths:	0.7m, 1.0m, 1.4m, 1.7m, 2.1m, 2.4m, 2.7m
Heights:	0.3m, 0.7m, 1.0m



**Gabion 27 System used as architectural cladding units.**

#### Wire Diameters:

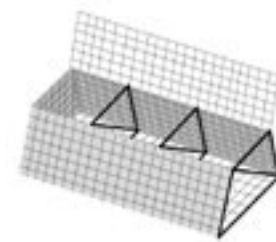
4.0mm

5.0mm

Combinations thereof

#### Standard Sizes:

Lengths:	1.0m, 2.0m
Widths:	0.3m
Heights:	0.7m, 1.0m, 1.4m, 2.07m



**Gabion 27 System used as trapezoidal units.**

#### Wire Diameters:

4.0mm

5.0mm

Combinations thereof

#### Standard Sizes:

Lengths:	1.0m, 2.0m
Base Widths:	Minimum 0.6m
Top Widths:	0.46m
(Base and top widths can be increased in increments of 152mm)	
Heights:	0.7m, 1.0m





▲  
*Gabion 27 System wall, designed and constructed at Bridies Tan, East Sussex.*



▲  
*Gabion 27 System cladding to a new build at Street, Somerset.*



## WOVEN MESH GABIONS & MATTRESSES

The mesh fabric for all these products is formed by weaving adjacent strands of wire by twisting them through one and a half turns at intervals, forming a hexagonal shaped mesh. The ends of the mesh wires are wrapped around a heavier transverse edge wire to form the panels. The tensile strength of the mesh in the direction of the weave is greater than across the weave.

The gabion box is manufactured from a main panel that forms the face, base, rear and lid of the unit. The side panels and diaphragms are then jointed to the base section of the main panel. The unit is then folded flat for transportation.

On site, the unit can be opened out into the required position and the sides, diaphragm and end panels are rotated vertically. The vertical joints are formed by a continuous lacing operation with the wire supplied or with 'C' rings to form the box shape.

Once assembled the gabions are filled with stone or rock and the lid secured to form a monolithic structure.

The gabion mattress is a box unit where the plan area is large compared to its height. Each unit is subdivided into compartments normally to give cells 2m x 1m in plan.

The units are laid on the bed of rivers. Once filled with stone or rock and the lid closed, they form a blanket erosion control system.

Mattresses are also used to provide under scour protection to retaining structures.

### Applications

- Mass gravity retaining walls
- Landfill
- Acoustic barriers
- River and coastal protection
- Weirs
- Abutments
- Temporary works

### Specification

#### Gabions

Woven mesh gabions are available in mesh aperture 80mm x 100mm and in the following specifications to the nominal dimensions stated below:

#### Coatings:

Zinc Coated

Zinc/PVC Coated

#### Wire Diameters:

2.70mm for the fabric (3.70mm overall for PVC coated units)

3.40mm for the selvedge wires (4.40mm overall for PVC coated units)

#### Standard Sizes:

1.0m x 0.5m x 0.5m

1.0m x 1.0m x 0.5m

1.0m x 1.0m x 1.0m

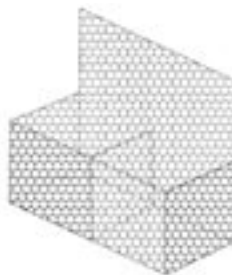
1.5m x 1.0m x 0.5m

1.5m x 1.0m x 1.0m

2.0m x 0.5m x 0.5m

2.0m x 1.0m x 0.5m

2.0m x 1.0m x 1.0m



#### Mattresses

Woven mesh mattresses are available in mesh aperture 60mm x 80mm and in the following specifications to the nominal dimensions stated below:

#### Coatings:

Zinc/PVC Coated

#### Wire Diameters:

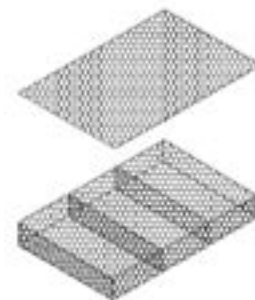
2.0mm/3.00mm overall for the fabric

2.70mm/3.70mm overall for the selvedge wire

#### Sizes:

2.0m x 2.0m x 0.3m

3.0m x 2.0m x 0.3m



▶ A typical hand placed stone to the front face of a PVC woven mesh gabion to give a high quality dry stone wall appearance.



# WOVEN MESH PRODUCTS



▲  
10m high mass gravity woven wire gabion wall designed and constructed in Kampala, Uganda.



▲  
Hexagonal woven wire mattresses acting as an erosion protection apron to a new lagoon at Swann Valley, Northampton.



## ROCK FALL PROTECTION NETTING

Rock fall protection netting is a hexagonal woven wire mesh manufactured in the same method as the gabion mesh fabric.

A woven mesh is preferable to a welded mesh as it can follow the contours of the rock face.

Rock fall protection can be dealt with in two ways:-

- by curtain meshing the rock faces
- by catch walling

By curtain meshing the face, spalling rocks can be either held in place by pinning the mesh to the rock strata or by draping it over the face guiding the falling rocks harmlessly to the base of the escarpment.

The mesh facing normally has vertical and/or horizontal cabling secured to the mesh/rock to provide fixity and integrity to the jointing of the panels. It is normal to seek advice from specialist installation companies as to the design of this type of work. Additional anchoring of large unstable rock masses on the face may be required.

Catch walling is a freestanding gabion wall of sufficient mass to withstand impact of falling rocks. Location of the catch wall and height of the wall is important to ensure the trajectory of the falling rocks will be impacted on or behind the wall.

### Specification

Rock netting is available in mesh aperture 80mm x 100mm and in the following specification to the nominal dimensions stated below:

#### Coatings:

Zinc/PVC Coated

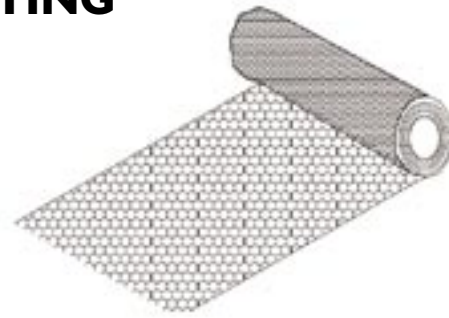
#### Wire Diameters:

2.70mm for the fabric (3.70mm overall for PVC coated units)

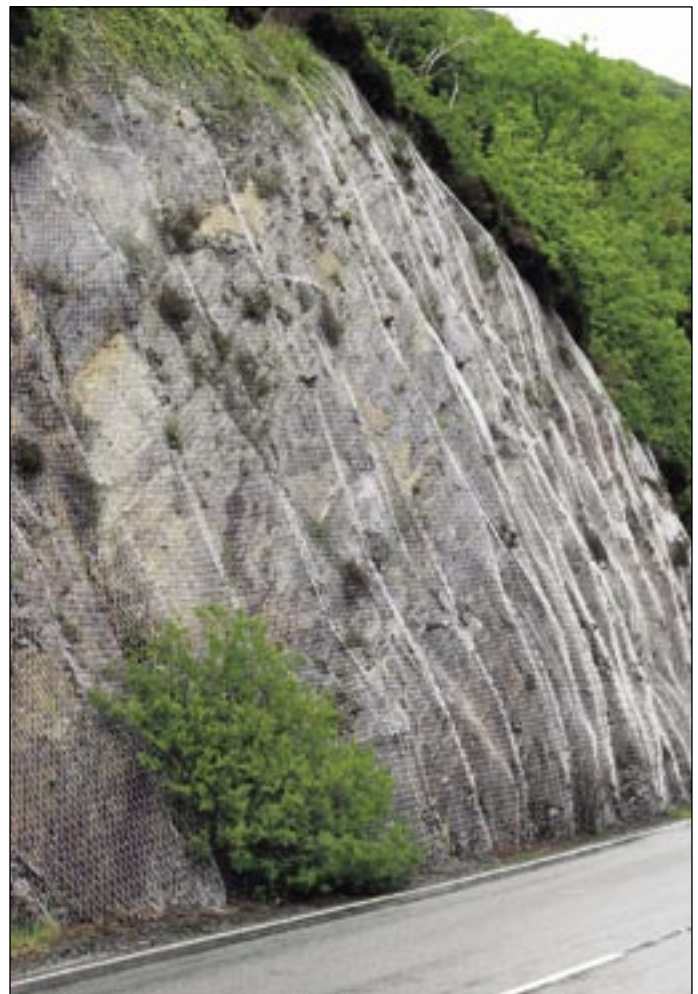
3.40mm for the selvedge wires (4.40mm overall for PVC coated units)

#### Standard Roll Sizes:

2m wide x 25m



◀ A typical photograph illustrating rock fall protection netting draped and bolted to a cliff face to prevent debris from falling to the road below. ▼

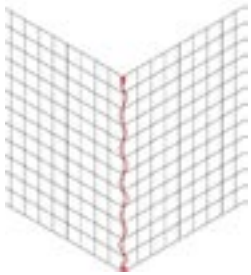




## FIXING SYSTEMS

Various methods of assembly and installation are available dependant upon the mesh type. Assembly guides are available as downloadable PDF Files from the web site or available on CD.

The following accessories are available for jointing:



### LACING WIRE

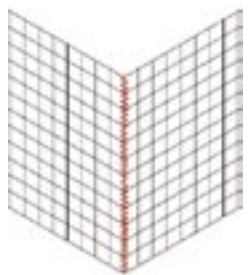
Lacing wire is supplied as the standard jointing system on Gabion 39 System and for Rock Netting. It is supplied in catch weights of either 5kg, 20kg or 25kg coils depending upon the wire specification.

The wire is used to continuously lace the panels/units together and also to form the windlass ties within gabions to support the mesh face.

### Specification

Galfan coated (95% Zinc - 5% Aluminium), Zinc only or Zinc/PVC.

### HELICALS

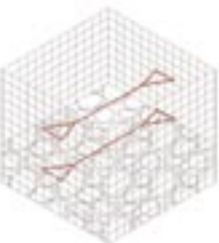


Helical connectors are supplied as standard on the Gabion 27 System for all vertical joints and with lacing wire supplied for all horizontal jointing. Helicals can be supplied for Gabion 39 System at additional cost.

The helical forms the strongest and most consistent method of jointing. The helical also serves to encompass the cut ends of the mesh wires to reduce the probability of snagging where gabions are used in public areas. Helicals are not suitable for woven mesh gabions.

### Specification

Galfan coated (95% Zinc - 5% Aluminium)

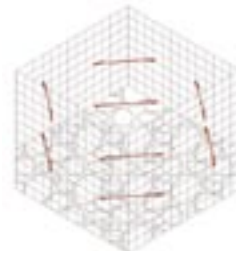


### INTERNAL BRACING TIES

Lacing wire is supplied as standard on both welded and woven gabions to form internal windlass bracing ties.

### Specification

Galfan coated (95% Zinc - 5% Aluminium), Zinc only or Zinc/PVC



### PRE-FORMED INTERNAL CORNER TIES

Pre-formed internal corner ties are an alternative to the internal windlass bracing ties that traditionally have been used in gabions and undertaken using lacing wire.

The pre-formed ties are supplied as standard for the Gabion 27 System. They are easier to install than forming windlass ties as well as providing greater control to the gabion face.

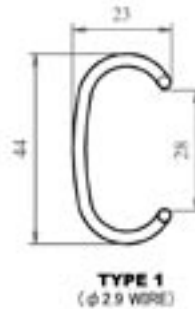
install than forming windlass ties as well as providing greater control to the gabion face.

Corner ties can be supplied for Gabion 39 System at additional cost.

### Specification

Galfan coated (95% Zinc - 5% Aluminium).

### 'C' RINGS & CLIPPING TOOLS



Pneumatic hog ring clipping tools are available to purchase. The 'C' rings are fixed intermittently at 150mm centres to connect adjacent panels or gabion to gabion. The pneumatic tool requires a compressor on site (not supplied).



### Specification

Galfan coated (95% Zinc - 5% Aluminium) or Stainless Steel dependant upon the gabion specification.



▲  
Gabion benches at Northala Park, London.

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