

# INSTALLATION GUIDE

## 1) FOUNDATION PREPARATION

The foundation on which the gabions are to be placed shall be cut or filled and graded to the lines and grades shown on the drawings. Surface irregularities, loose material, vegetation, and all foreign matter shall be removed from foundation surface area. When fill is required, it shall consist of materials conforming to the specified requirements. Gabions and bedding or specified geotextiles shall not be placed until the foundation preparation is completed, and the subgrade surfaces have been inspected and approved by the engineer or the engineer's representative. Compaction of bedding or filter material will be required per plans and specifications. The surface of the finished material shall be to grade and free of mounds, dips or windrows. Extra care should be taken with foundation preparations in order to ensure a level and smooth surface. Geotextile shall be installed in accordance with the requirements of the plans and specifications.

## 2) ASSEMBLY AND PLACEMENT

The assembly and placement of gabions shall be in accordance with the following procedures:

**Assembly.** Rotate the gabion panels into position and join the vertical edges with fasteners for gabion assembly. Where lacing wire is used, wrap the wire with alternating single and double half hitches at intervals between 100) to 130 mm. Where spiral fasteners are used, crimp the ends to secure the spirals in place. Where ring type alternate fasteners are used for basket assembly, install the fasteners at a maximum spacing of 150 mm. Use the same fastening procedures to install interior diaphragms where they are required. Interior diaphragms will be required where any inside dimension exceeds 91 cm for gabion baskets thicker than 300mm. Diaphragms will be installed to assure that no open intervals are present that exceeds 91 cm. For baskets 300 mm or less rectangular cells are allowed with dimensions 91 cm in one direction and not to exceed 183 cm in the perpendicular direction.

**Placement.** Place the empty gabions on the foundation and interconnect the adjacent gabions along the top, bottom, and vertical edges using lacing wire or spirals. Wrap the wire with alternating single and double half hitches at intervals between 100 mm and 150 mm. Spiral fasteners are commonly used for the assembly and interconnection of welded mesh gabions. Spirals are screwed down at the connecting edges then each end of the spiral is crimped to secure it in place. Lacing may be used as needed to supplement the interconnection of welded mesh gabions, and the closing of lids.

Interconnect each layer of gabions to the underlying layer of gabions along the front, back, and sides. Stagger the vertical joints between the gabions of adjacent rows and layers by at least one-half of a cell length.

## 3) FILLING OPERATION

After adjacent empty wire gabion units are set to line and grade and common sides properly connected, they shall be placed in straight-line tension to gain a uniform alignment. Staking of the gabions may be done to maintain the established proper alignment prior to the placement of rock. No temporary stakes shall be placed through geotextile material. Connecting lacing wire and other fasteners (as allowed) shall be attached during the filling operation to preserve the strength and shape of the structure.

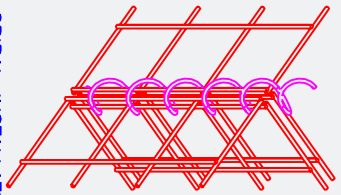
Internal connecting cross-tie wires shall be placed in each unrestrained gabion cell greater than 500 mm in height, including gabion cells left temporarily unrestrained. Two internal connecting wires shall be placed concurrently with rock placement, at each 300 mm interval of depth. In welded mesh gabions these crossties or stiffeners will be placed across the corners of the gabions (at 300 mm from the corners) providing diagonal bracing. Lacing wire or preformed wire stiffeners may be used.

The gabions shall be carefully filled with rock, either by machine or hand methods, ensuring alignment, avoiding bulges, and providing a compact mass that minimizes voids. At no point in the filling process may rock be mechanically placed from a height of over 91 cm from machine to fill area. Machine placement will require supplementing with handwork to ensure the desired results. The cells in any row shall be filled in stages so that the depth of rock placed in any one cell does not exceed the depth of rock in any adjoining cell by more than 300 mm. Along the exposed faces, the outer layer of stone shall be carefully placed and arranged by hand to ensure a neat, compact placement with a uniform appearance.

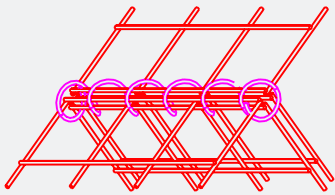
The last layer of rock shall be uniformly leveled to the top edges of the gabions. Lids shall be placed over the rock filling using only approved lid closing tools as necessary. The use of crowbars or other single point leverage bars for lid closing is prohibited due to the potential for damage to the baskets.

The gabion lid shall then be secured to the sides, ends, and diaphragms with spiral binders, approved alternate fasteners, or lacing wire wrapped with alternating single and double halfhitches in the mesh openings.

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.

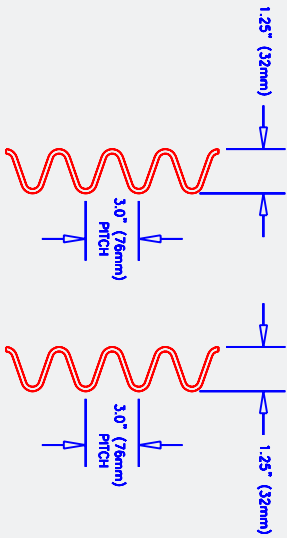


**SPIRAL INSTALLATION**



**SPIRAL CLOSURE**

**WELDED WIRE GABIONS**  
**SPIRAL BINDERS**



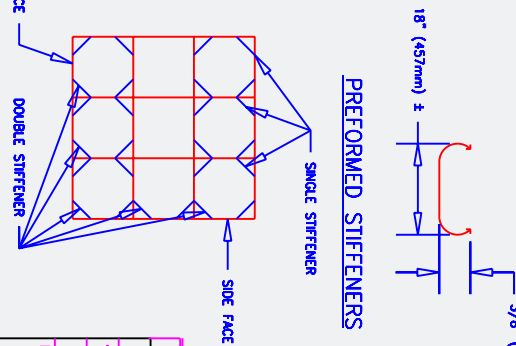
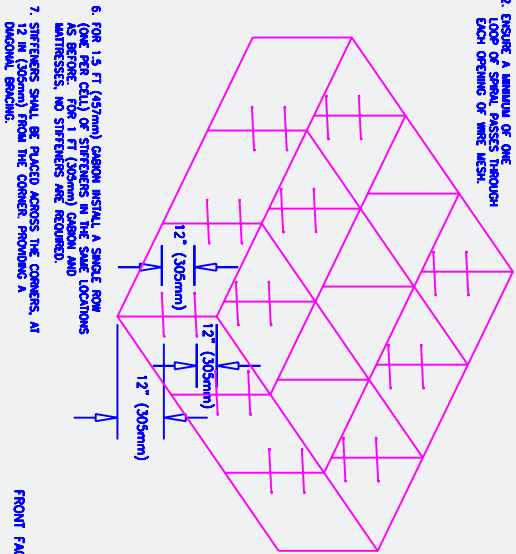
LESS THAN 1 FT (305mm) HEIGHT  
**GABION MATTRESS**

1 FT (305mm) OR OVER  
BASKET HEIGHT  
**GABION BASKET**

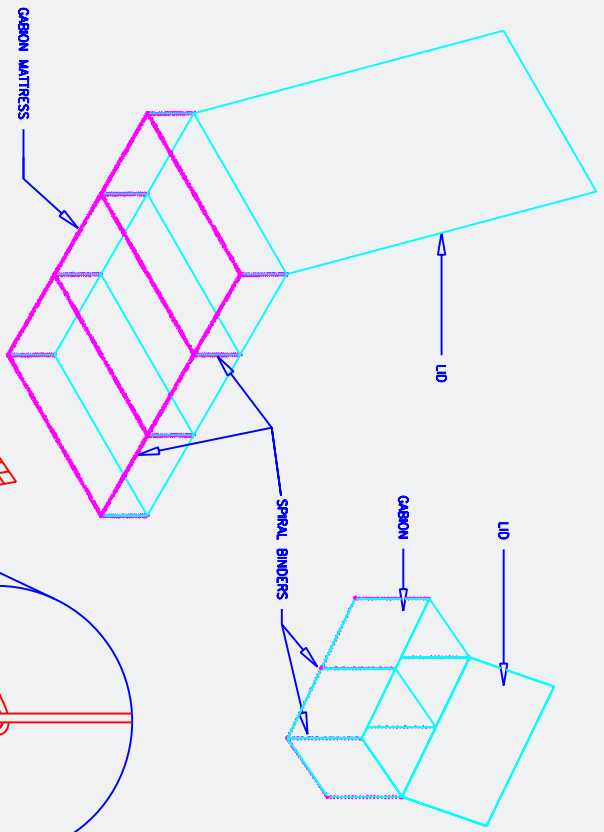
**NOTE:**

1. USE SPIRAL BINDERS WITH WELDED WIRE MESH ONLY.
2. ENSURE A MINIMUM OF ONE LOOP OF SPIRAL PASSES THROUGH EACH OPENING OF WIRE MESH.

- GENERAL NOTES:**
1. ON ANY CRIP-LINK, BASKETS WITH EXPOSED FACES MUST BE FILLED PRIOR TO FILLING BASKETS WITH NO EXPOSED FACE.
  2. GAGE OF GABION TO BE CONSTRUCTED BELOW SOON DEPTH NEXT TO STRUCKS.
  3. EXTERIOR GABIONS SHALL CONSIST OF WIRE-MESH BASKETS FILLED BY HAND PLACEMENT OF COARSE AGGREGATE. INTERIOR GABIONS SHALL BE CONSTRUCTED AS A SINGLE CELL.
  4. INTERIOR GABIONS SHALL CONSIST OF WIRE-MESH BASKETS FILLED BY HAND PLACEMENT OR SMALL FORMER EQUIPMENT PLACEMENT OF COARSE AGGREGATE.
  5. FOR 3 FT (914mm) GABION, INSTALL PERFORMED STIFFENERS ACROSS THE CORNERS OF THE GABION BEHIND THE FRONT FACE AND STIFFENERS 2 PER CELL BEHIND THE BACK FACE. INSTALL A SINGLE ROW (1 PER CELL) ON THE BACK FACE. NO STIFFENERS ARE REQUIRED IN THE INTERIOR CELLS.



**LOCATION OF STIFFENERS, TOP VIEW**



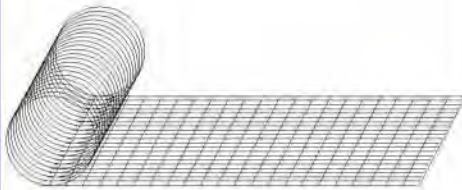
**PREFORMED STIFFENERS**

**HOOK STIFFENERS AT CROSSING WIRE**

LET	DATE	BY	REV
DIMENSIONS IN INCHES UNLESS NOTED			
TOLERANCES UNLESS NOTED:			
FRACTIONAL 1/64			
DECIMAL .XX .03			
+ OR - .XXX .005			
ANGULAR +/- 1/2°			
FILE			
<b>C.E. SHEPHERD Co. Inc.</b> 2221 CANADA DRY ST. HOUSTON, TEXAS 77023 date 20MAY02 JLS DATA ENCLOSED PROVIDES LAYER INFORMATION WHICH IS CONSIDERED PROPRIETARY scale 2:4 GABION BINDERS & LACING PATTERNS AS NOTED <b>B</b> GAB12			

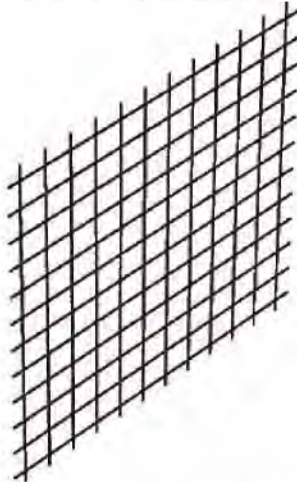
# MODULAR GABION SYSTEMS

Modular Gabions Systems may be supplied in (A) roll form,



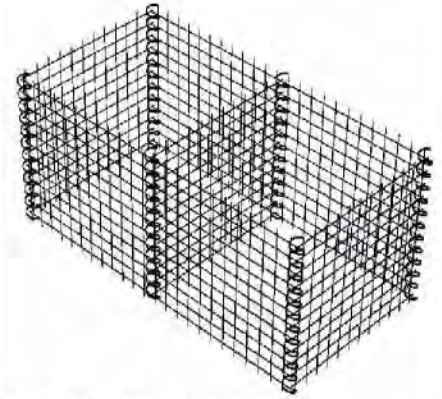
When using roll stock, begin the assembly process at Step 1.

(B) pre-cut panels or



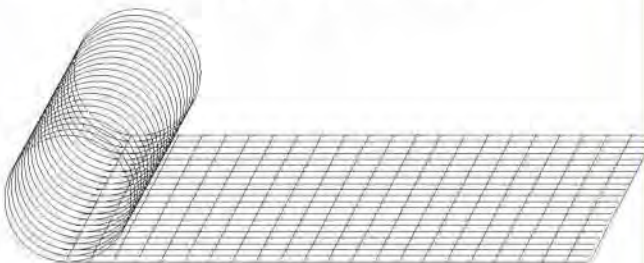
When using pre-cut panels, proceed to Step 2.

(C) partially assembled gabions or mattresses.



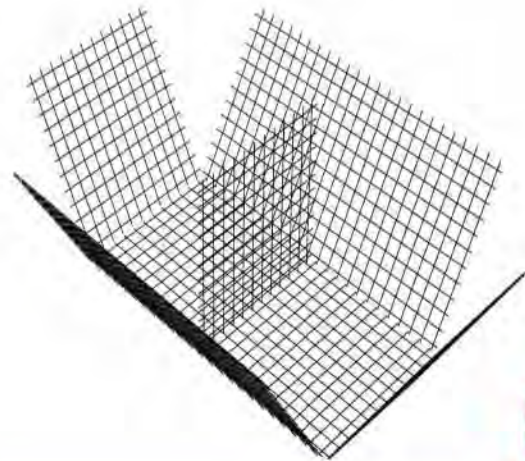
When using pre-assembled gabions, proceed to Step 3.

Panels may be cut to appropriate sizes in the field. When using roll stock, bottoms, lids, fronts and backs may be rolled out in lengths up to 300'.



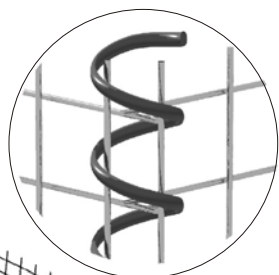
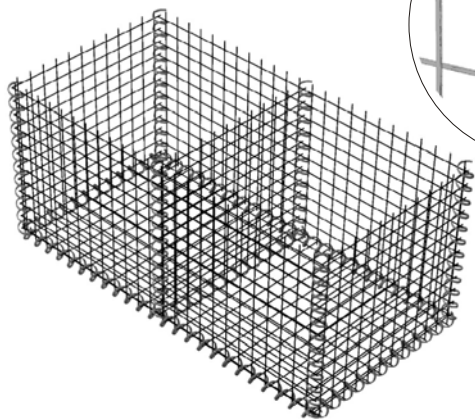
1

Ends, diaphragms, front and back panels are placed upright on the bottom section of wire mesh.



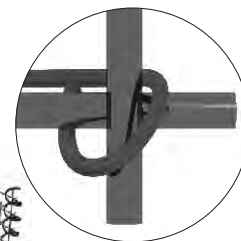
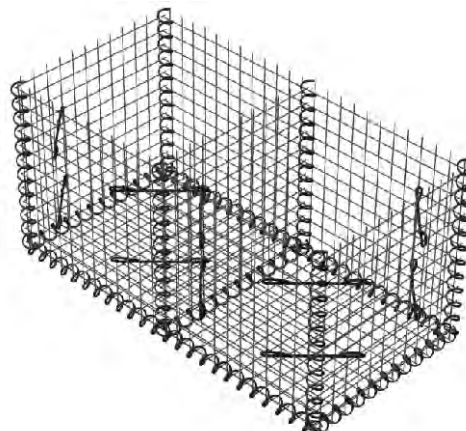
2

Secure panels by screwing spiral binders through the mesh openings in adjacent panels.



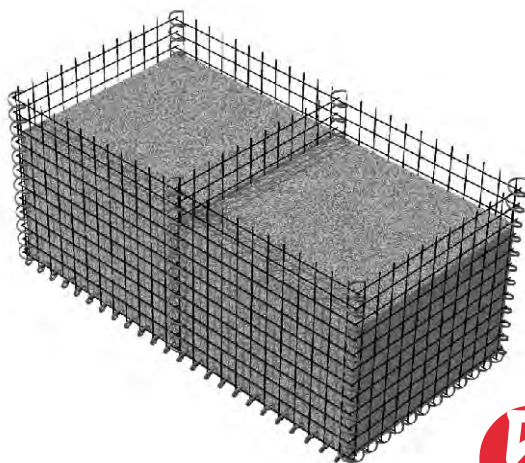
3

18" Stiffeners should be placed inside at 12" intervals (4 per cell) and crimped over the line and cross wires on the front and side faces. None are needed in interior cells.



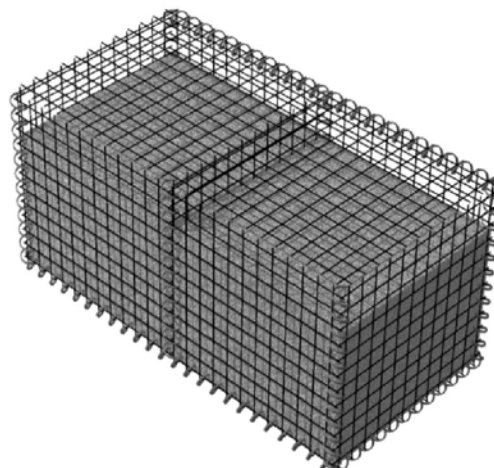
4

Gabions may be filled with graded stone by hand or with a backhoe or loader.



5

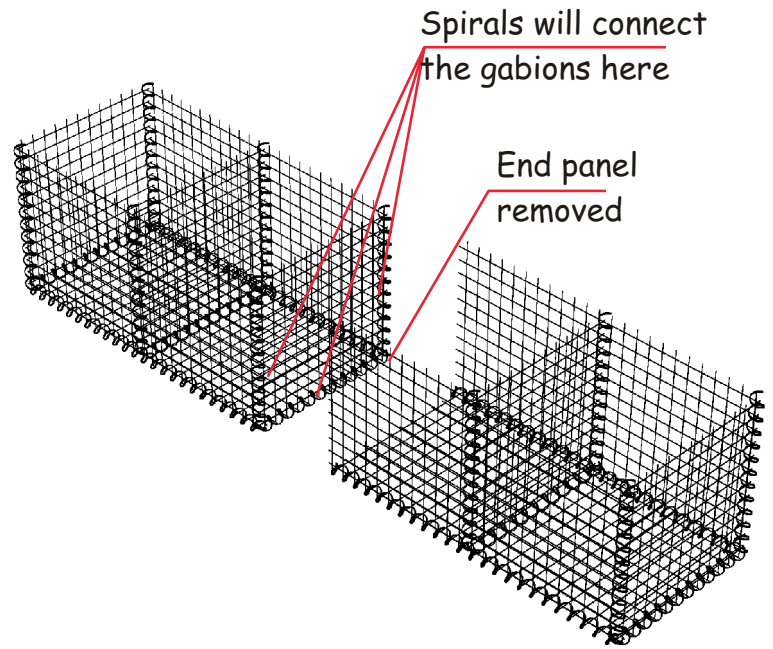
After filling, close the lid and secure with spiral binders at the diaphragms, ends, front and back.



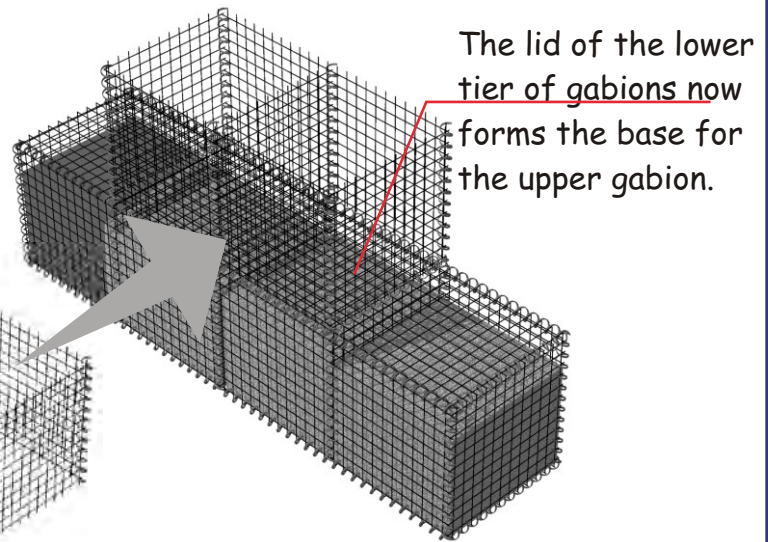
6

All illustrations depict a 3' x 3' x 6' gabion. Gabions constructed from roll stock may utilize continuous sections of welded wire mesh up to 300' long. Please review the instructions on page 3 for options to eliminate redundant panels.

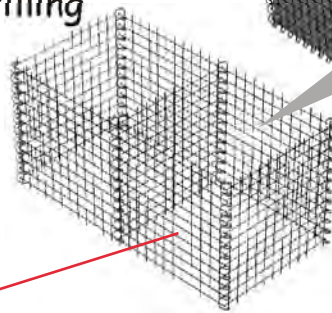
Redundant panels may be eliminated between gabions as illustrated. An end panel has been removed from the gabion on the right. This gabion will butt up against the gabion on the left so that the end panel of the left gabion becomes a diaphragm between the cells of the two gabions. Spiral connectors will secure all the adjoining panels.



When stacking tiers of gabions (or gabions on mattresses), the lid of the lower tier may serve as the base of the upper tier. Secure with spiral binders and add pre-formed stiffeners to exterior cells before filling with graded stones.



This gabion has been assembled without a base.



All illustrations depict a 3' x 3' x 6' gabion. Gabions constructed from roll stock may utilize continuous sections of welded wire mesh up to 300' long. Please review basic assembly instructions on pages 1 & 2.

## **Disclaimer**

The information presented herein, while not guaranteed, is to the best of our knowledge true and accurate.

While every effort has been made to provide accurate and reliable information, it is up to the user of this brochure to verify all information, including designs it might be based upon, with an independent source. Application of this data must be made on the basis of responsible professional judgement.

Except when agreed to in working conditions of use, no warranty expressed or implied is made regarding the performance of any product, since the manner of use and handling is beyond our control.