

Stratum™ Cellular Foundation Mattress System Installation Guide

1. Roll out the specified Tensar base TriAx geogrid parallel to the embankment centerline. Provide a 12 in. (300mm) minimum overlap between adjacent rolls (Figure 1).
2. Roll out the specified Tensar Stratum geogrid transverse diaphragms side by side across the width of the embankment and over the base geogrid at right angles to the embankment centreline (Figure 1). Joints should be made with polymer bodkin joint bars where they are required to join successive lengths of diaphragms.
3. Connect one edge of each transverse diaphragm to the base geogrid using HDPE braid (Figure 2) or UV resistance cable ties. Connect every second uniaxial geogrid aperture of the transverse diaphragm to the corresponding transverse rib on the base geogrid. In addition, a full hitch knot is tied at every 6ft 6in (2m) spacing where braid is used. The loops of braid or cable ties should be located to allow the transverse diaphragms to slide across the base geogrid during the subsequent tensioning operation.

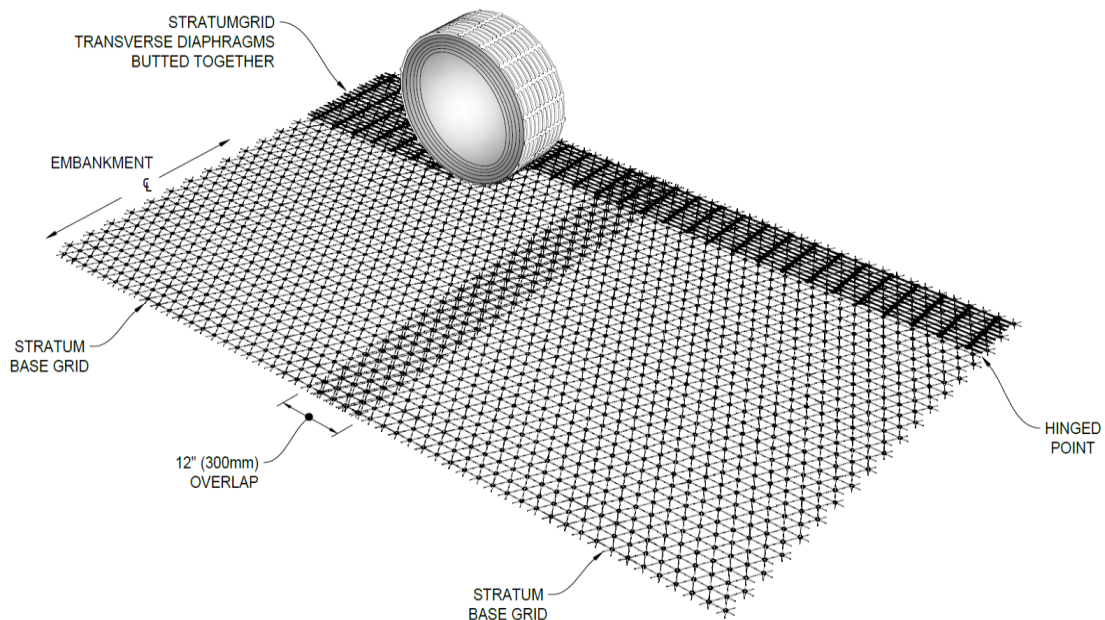


Figure 1

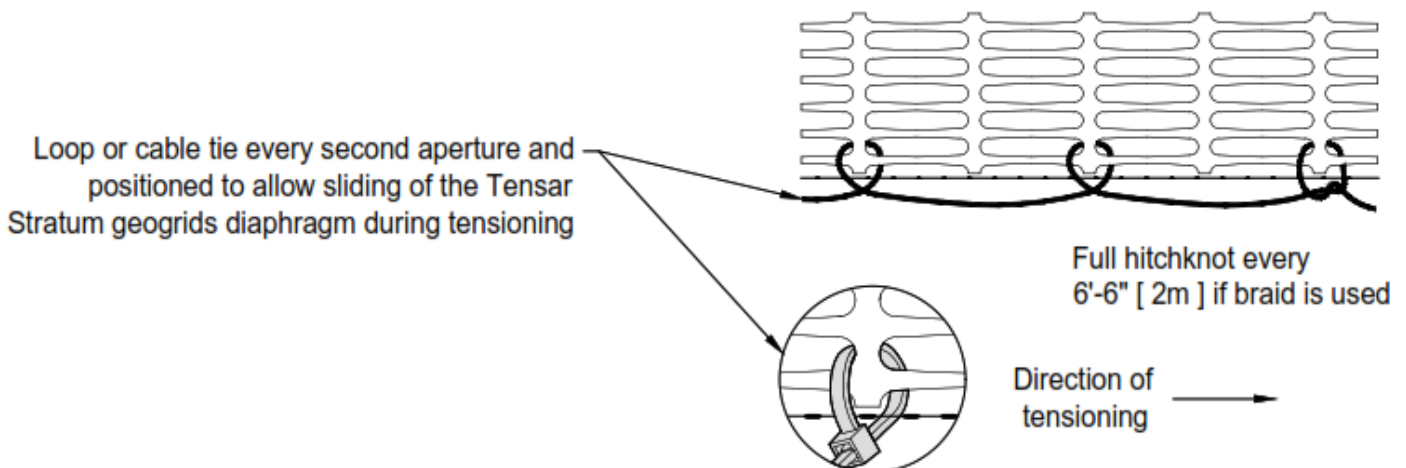


Figure 2

4. Raise a transverse diaphragm to a vertical position by rotating around the hinged connections (Figure 3), anchor at one end to a suitable fixed point and tension from the other (Figure 4). The maximum length normally tensioned is 100ft (30m) and intermediate tensioning posts will be required for longer lengths.

Tension is applied by using simple turnbuckles formed by passing a 12 in. (300mm) length of pipe through the loops of braid connecting the transverse diaphragms to the posts (Figure 4).

A rod can be threaded through a pair of pipes to maintain tension once applied. It may be necessary to apply tension from both ends of the diaphragm if tensioning from one end only is found to be insufficient.

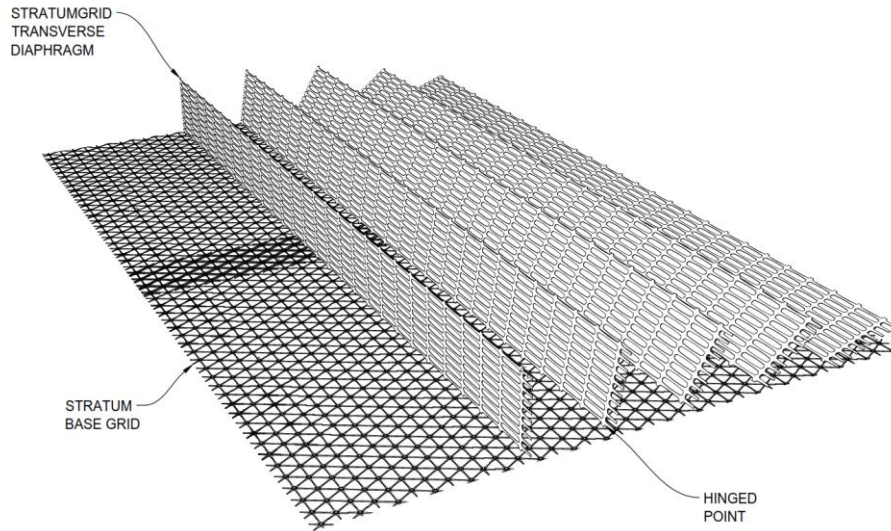


Figure 3

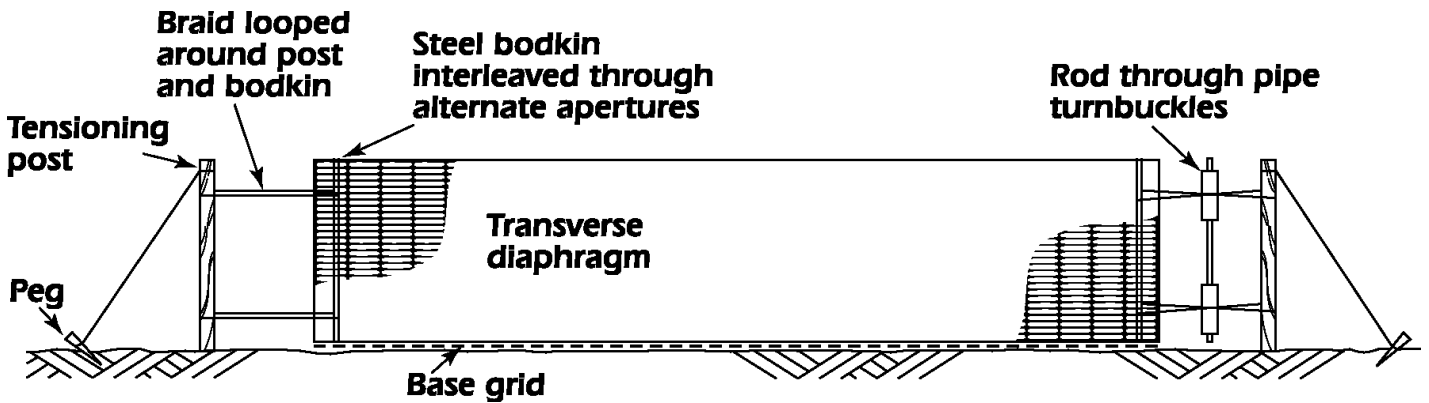


Figure 4

5. To create the 'diamond pattern' in plan shown in Figure 5, mark along the top edge of the transverse diaphragms for a distance of $2 \times RD$ on center with chalk or paint, and offsetting the marks on alternate diaphragms by a distance of RD . The distance RD is dependent on the height of the Stratum cellular mattress as shown in Table 1.

Stratum Height, ft (m)	2.2 (0.65)	3.3 (1.0)	4.3 (1.3)
RD, ft (m)	2.5 (0.8m)	3.3 (1.0)	3.3 (1.0)

Table 1 Stratum Cellular Mattress – Transverse Diaphragm Spacing (RD)

6. With a roll of Stratum geogrid, work along adjacent transverse diaphragms forming triangular cells with diagonal diaphragms. Each diagonal diaphragm is coupled to a transverse diaphragm at the $2 \times RD$ on center (Figure 5) using round HDPE bodkins to form bodkin connections (Figure 6). The diagonal diaphragms are NOT attached to the base grid.

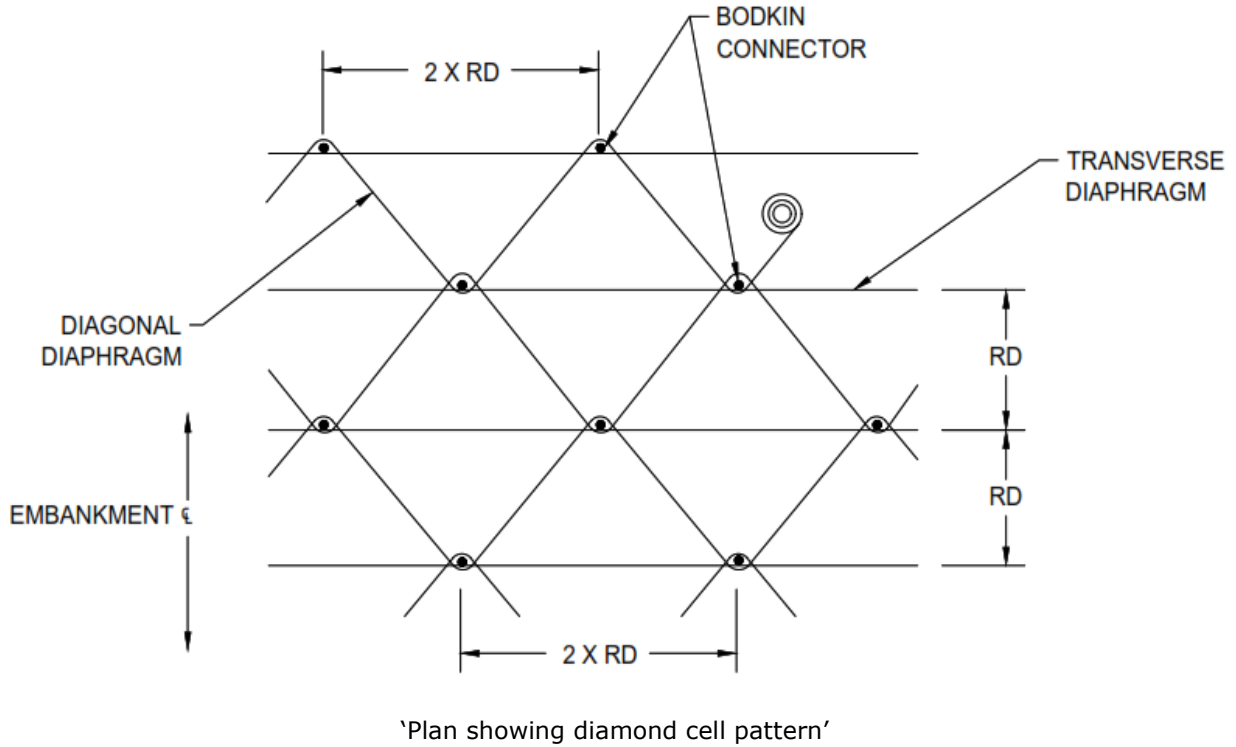


Figure 5

7. A bodkin connection coupling is formed by folding a set of ribs of a diagonal diaphragm and pushing them through apertures in the transverse diaphragm to form a loop. A bodkin connector (Figure 6) is then pushed into and down through the loops.

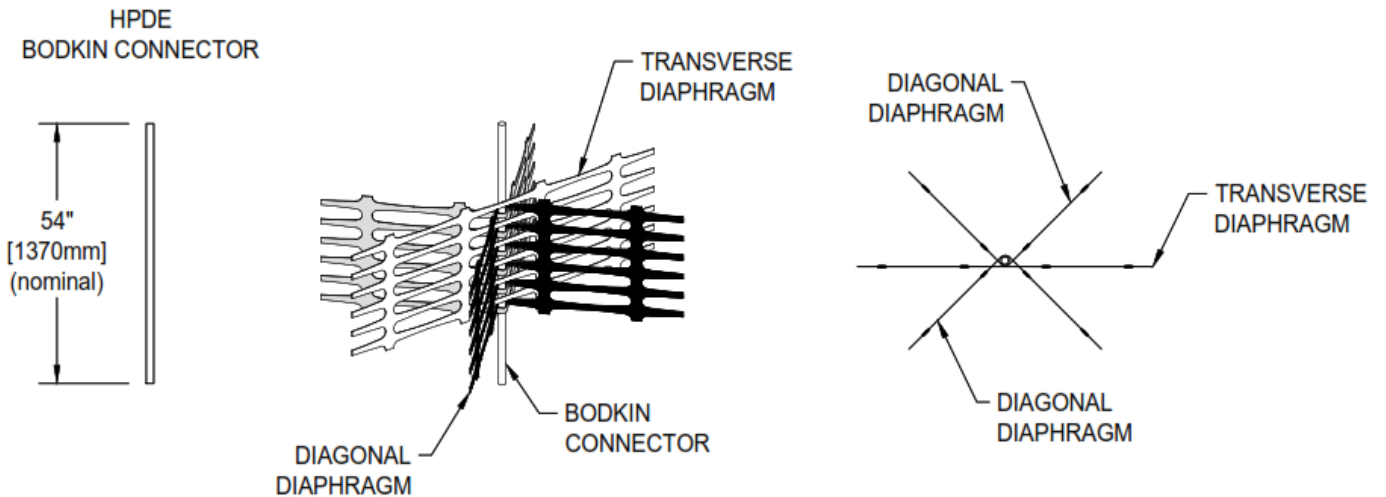


Figure 6

8. **Material required to fill a Stratum Cellular Mattress** – Fill shall be natural gravel, natural sand, crushed gravel, crushed rock other than argillaceous rock, crushed concrete, chalk or well burnt colliery spoil and shall meet the following requirements.

The material shall be well graded, shall have a uniformity coefficient (D_{60}/D_{10}) greater than 5 and lie within the grading requirements in Table 2.

Sieve Size	% Passing
4"	100
3"	80 – 100
1½"	65 – 100
¾"	50 – 100
#4	25 – 50
#40	10 - 20
#100	5 - 15
#200	0 - 10

Table 2 Stratum Cellular Mattress - Fill Gradation

9. **Filling the Stratum Cellular Mattress** - Fill the first two rows of cells to half height. Fill first row to full height, using approved granular fill. Continue filling, ensuring that leading row is always half filled before trailing row is fully filled (Figure 7). Filling may be carried out by mechanical plant operating directly on top of filled cells. It is normal practice for the fill to be placed within the Stratum cellular mattress system without applying direct compaction. A protective cover of 150mm thickness of compacted fill should be placed over the Stratum cellular mattress before trafficking.

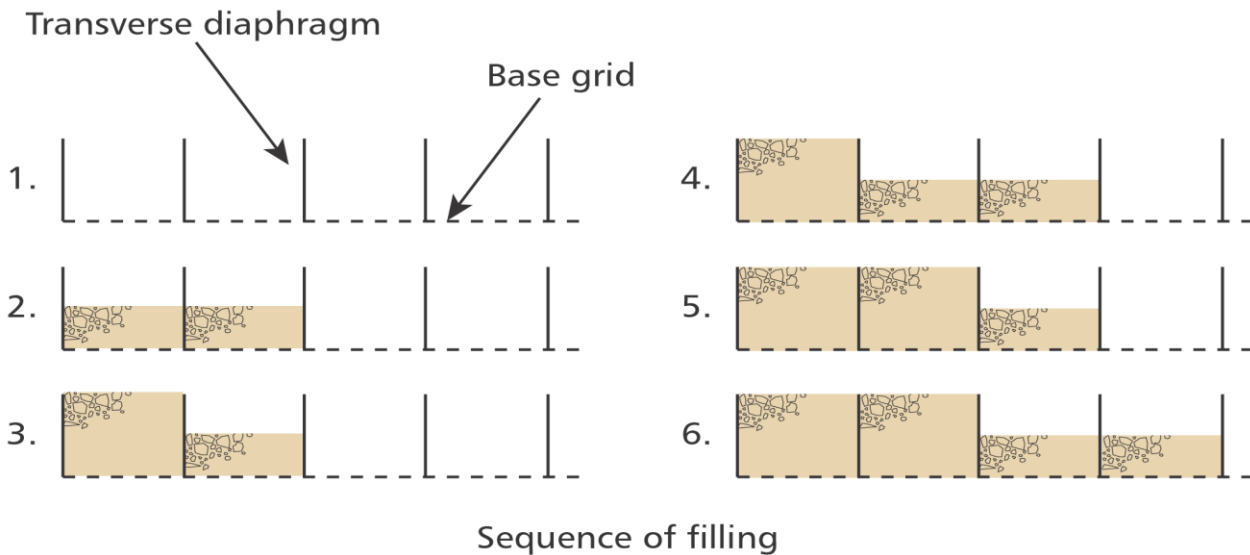


Figure 7 'Section showing sequence of filling'

10. The tensioning arrangement can be removed once the Stratum cellular mattress has been filled.
11. The standard Stratum cellular mattress height is 4.3ft (1.3m) deep. If the design calls for a half-height 2.2ft (0.65m) deep, the bodkin connectors and bodkins will need to be cut in half on site using an appropriate circular saw.

Contact Tensar International Corporation if more specific advice is required.

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