

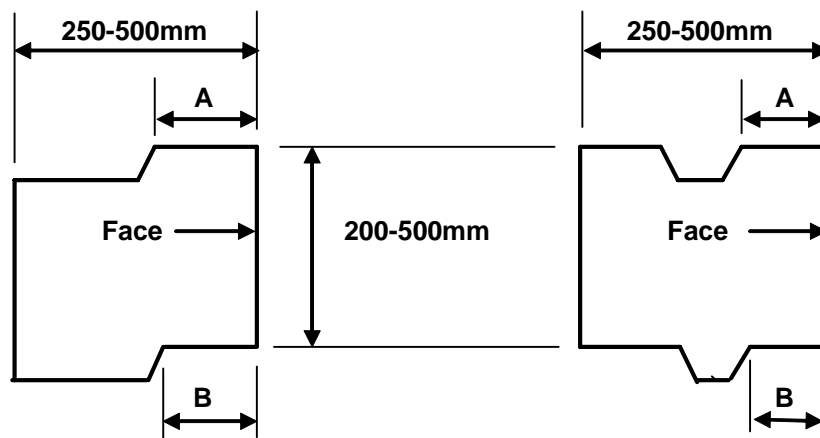
Advice for the Manufacture and Installation of Mechanically Stabilised Earth Walls

1: Introduction:

This advice is given in good faith to help customers to achieve the best possible results in situations where Etsong Geogrids are appropriate materials for use in Mechanically Stabilised Earth Walls (MSEW). Because the conditions of wall projects vary so much no guarantee can be given by The Qingdao Etsong Geogrid Co., Ltd. or NewGrids Limited that these products or design or installation suggestions are suitable for any particular project. This must be checked and confirmed by the engineer responsible for each project.

2: Wall Face Blocks:

In many cases wall face blocks wet-cast in mass Concrete are suitable. The key point about the design of the block is that the blocks of one layer should be prevented from sliding out over the layer below. Possible designs include "Z" blocks and "Tongue & Groove" blocks as shown in figures 1(a) and (b).



1(a): "Z" Block

1(b): Tongue & Groove Block

Figure 1: Possible Block Cross-Section Shapes

Notes:

1: The face may be of any form selected by the designer. For example smooth or exposed aggregate. It is advantageous to have a chamfer of at least 10mm around all edges of the face to improve the appearance of the finished wall.

- 2: Often, dimension A is slightly larger than Dimension B to give a slight batter to the wall.
- 3: Blocks are typically 350-1000mm long depending on the designer's requirements and lifting facilities available on site
- 4: Special blocks with flat bases are required for the bottom course in a wall.
- 5: Special blocks with flat tops may be required by the designer for the top of the wall.

3: Inclusion of Geogrid in Block:

At each block course in the wall where geogrid reinforcement is required then blocks are used with a "Tail" of geogrid cast into them. A moulding arrangement suitable for producing these blocks is illustrated in Figure 2.

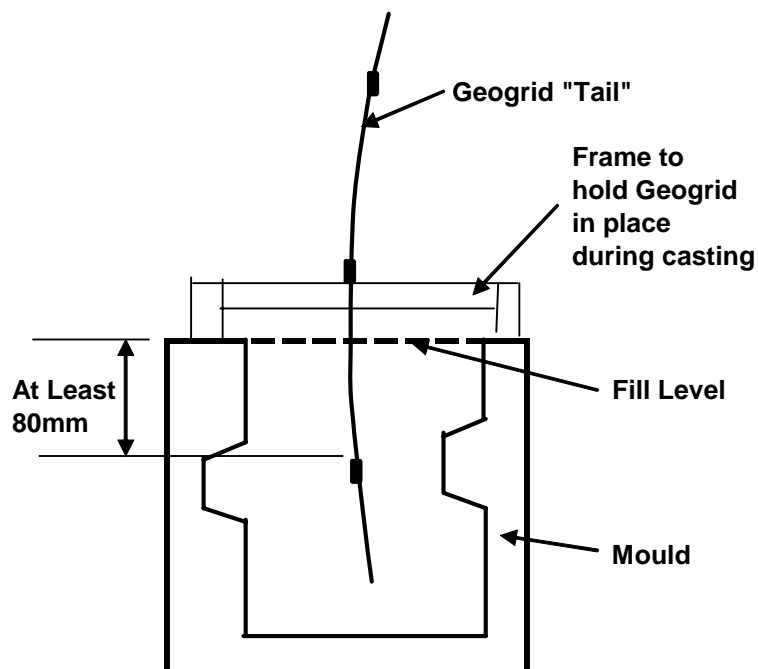


Figure 2: Block moulding with Geogrid "Tail"

Notes:

- 1: Depending on the size of the block either 1 or 2 geogrid transverse bars may be cast into the concrete.
- 2: The Geogrid "Tail" outside the concrete block must be at least 1.5 grid apertures in length.

4: Joining of Reinforcement to Geogrid "Tail":

Lengths or reinforcing geogrid are fastened to each Geogrid "Tail" by means of a "Bodkin" Joint as illustrated in Figure 3:

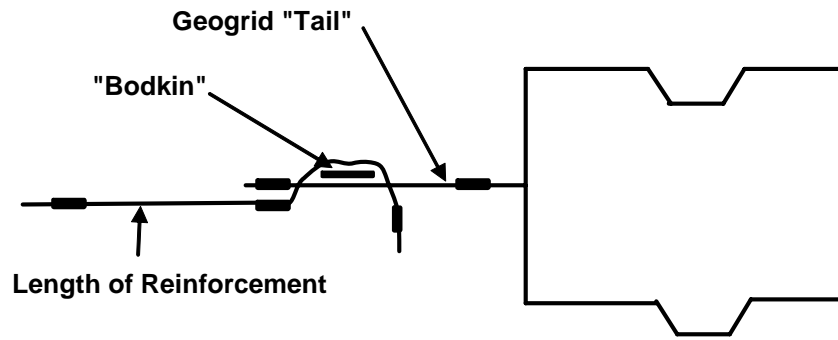


Figure 3: "Bodkin" Joint

Notes:

- 1: The "Bodkin" is a flat bar made from HDPE by the geogrid manufacturer specifically for use with his geogrid.
- 2: After making a joint as illustrated it must be pulled tight before Fill is places on the length of reinforcement.

5: Principles of Wall Construction:

The principles of wall construction are illustrated in Figure 4 below:

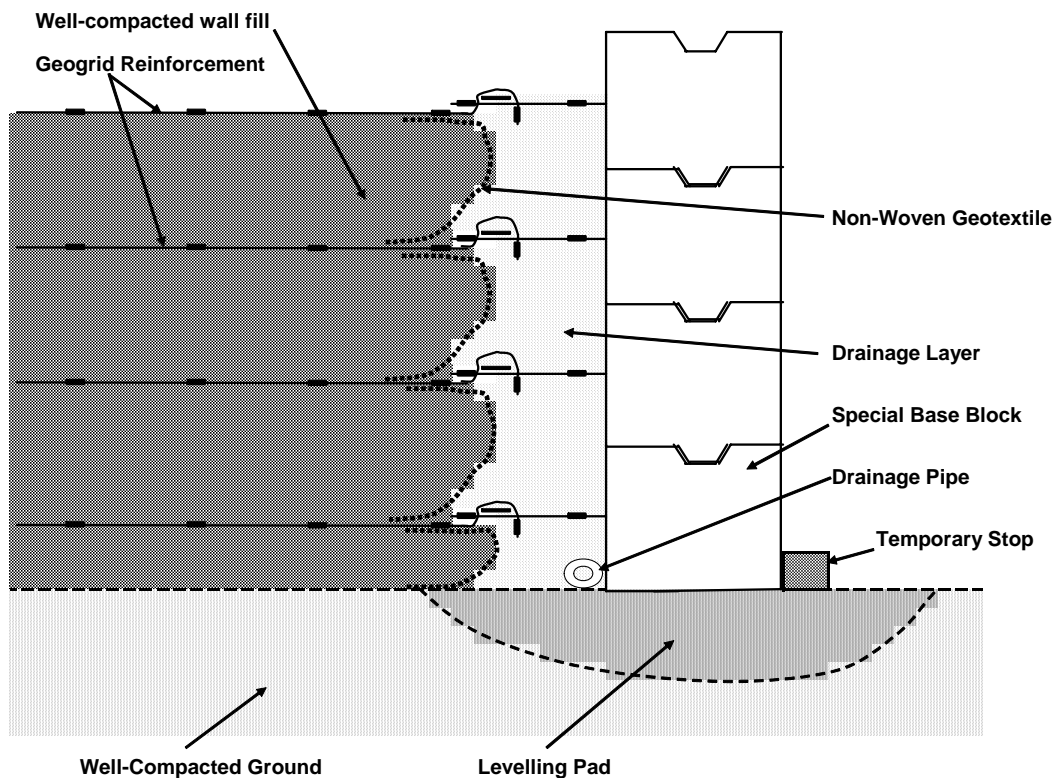


Figure 4: Principles of Wall Construction

Notes:

- 1: The designer must ensure that the ground is well-compacted and suitable to bear the loads imposed by the wall.

2: The levelling pad may be of concrete, mortar, compacted granular fill, or other suitable material, depending on wall height.

3: The Non-Woven Geotextile may be omitted if the grading of the Drainage Layer is such that it is non-clogging and it will minimise wash-out of fines from the Wall Fill.

4: During Construction heavy plant and compaction equipment must not be used within 2m of the wall face. In this region light compaction equipment such as a vibrating plate must be used with thin layers of fill.

5: Reinforced fill must be compacted to the standard specified by the designer to ensure stability of the wall and to minimise risk of settlement

6: Construction Sequence:

1: Prepare levelling Pad and lay base course of blocks, ensuring strict level and alignment and place Drainage Pipes in position. To set good alignment a temporary stop, e.g wooden battens nailed in place, can be used. This is removed when the third layer of blocks is in place with fill compacted behind

2: Hold geogrid "Tail" up out of the way and lay and compact Drainage Layer, Non-woven Geotextile and Wall Back Fill to the level of the Geogrid "Tail".

3: Fasten the first layer of reinforcement Geogrid to the "Tails", stretch it out away from the wall to tighten the joints and lay the next layer of fill on it.

Note: Do not drive any equipment directly on the geogrid. Place fill first.

5: Lay the next course(s) of Blocks up to the next layer of reinforcement

5: Complete laying and compacting drainage layer, non-woven geotextile and fill to the level of the next layer of reinforcement.

6: Repeat this sequence to the top of the wall.

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