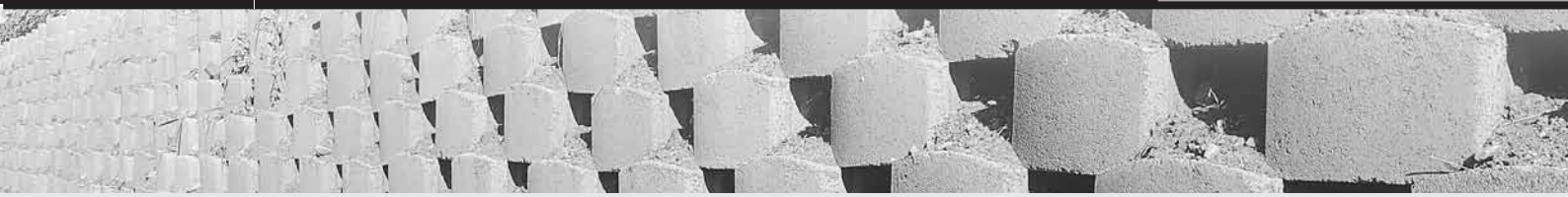
Earthform®

Concrete retaining blocks installation guidelines



Earthform of a height greater than 1,5m must be designed by a competent Engineer.

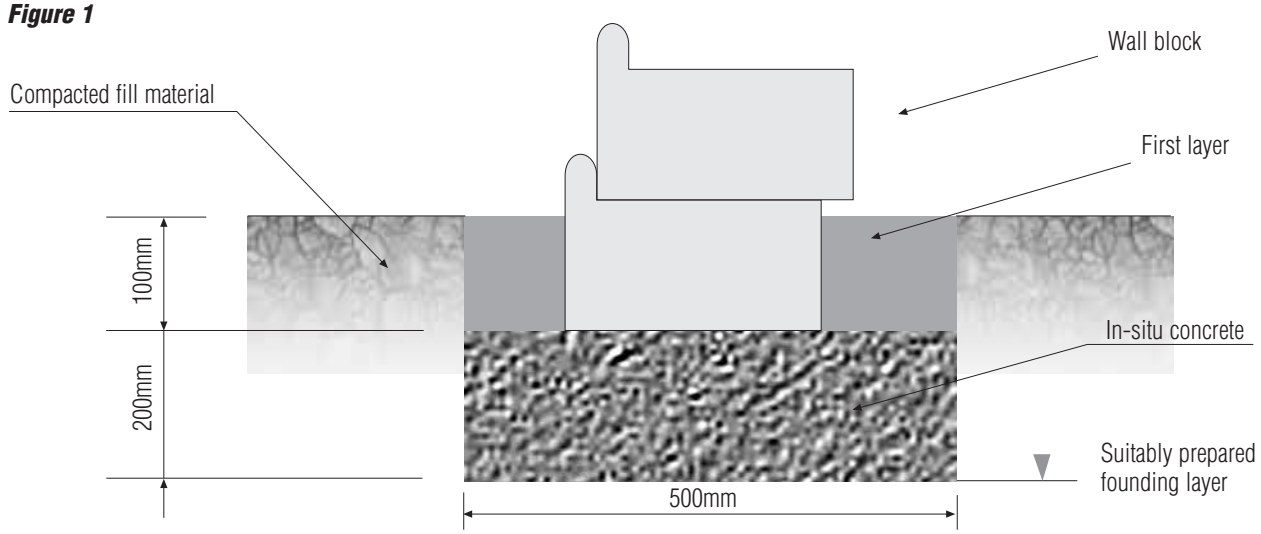
General

Approved backfill material should be well drained and compacted in layers not exceeding one block height at optimum moisture content. Where geofabrics are used behind the Earthform the fabrics must be installed to the Engineer's details.

Foundation

It is recommended that, unless otherwise specified by the engineer, a 200mm thick concrete foundation be used on a suitably prepared founding layer. The first layer of blocks is then laid out to obtain the necessary alignment and the remainder of the foundation on each face of the base block filled and compacted before commencing packing of the wall blocks.

Figure 1



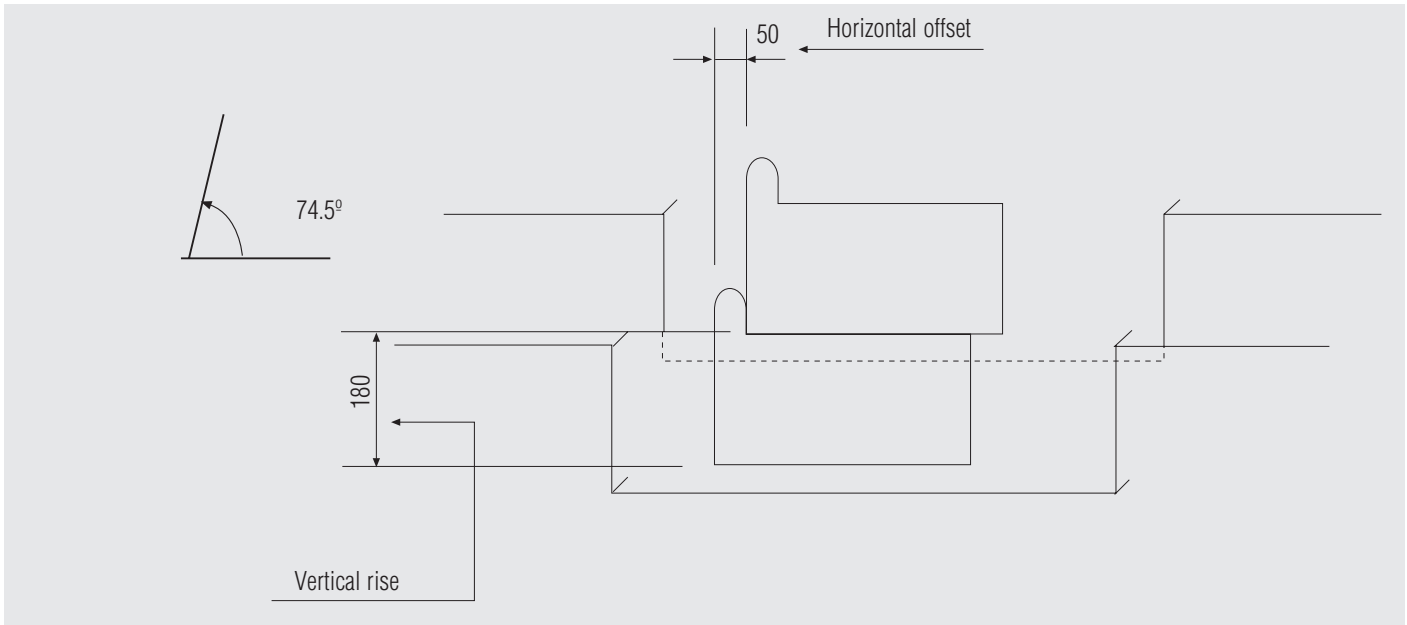


Figure2: If the foundation is to be stepped, the rise should be multiples of 180mm. The foundation must be stepped back by 50mm.

The foundation must follow the contours as required. The top of the foundation should be level. If the natural ground level is sloping along the line of the foundation, the foundation should be stepped, taking due cognisance of the set back (see figure 2).

Where the level of the foundation is stepped, the next row of blocks will be stepped back by the amount of the specified setback.

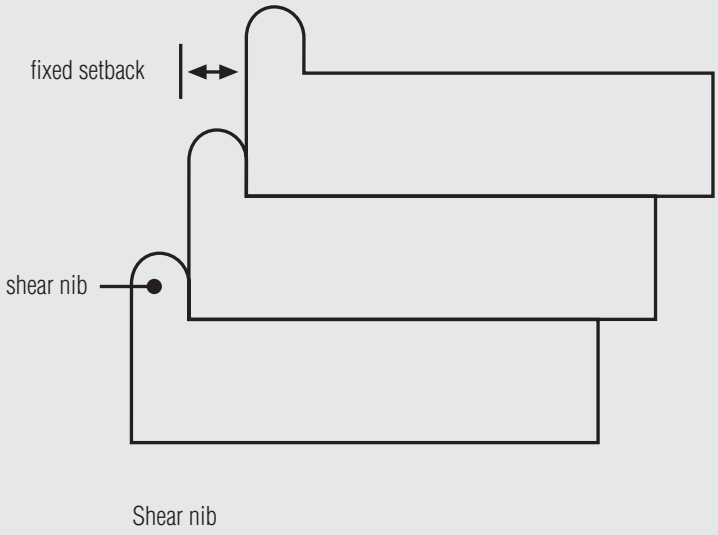


Figure 2: Secrtion through blocks showing setback and shear nibs.

Shear resistance between blocks

The different types of blocks employ various methods of shear resistance to prevent one block moving relative to the underlying block. Some blocks have nibs, others use shear keys. For small walls (less than 1,2m in height), the use of shear nibs is not critical, for higher walls it is important (depending on the inclination).

The height of the wall is a function of the batter or slope of the wall. The less steep the slope is, the higher the wall can be constructed. The batter or slope is achieved by laying the blocks with a setback. Often the setback is determined by the nib employed to prevent shear. In these cases, the setback is fixed. Greater setbacks can be achieved by simply placing the blocks further back. However, this can only be done when the friction between the blocks is sufficient to resist the horizontal earth pressures.

For high walls (>1,2m), it is recommended that the blocks be placed with the setback as determined by the shear nib or shear key, in order to ensure that shear resistance becomes fully effective. If a less steep slope is required, this can be achieved by rotating the base block on the foundation by a predetermined angle.

ROTATION OF BASE BLOCK

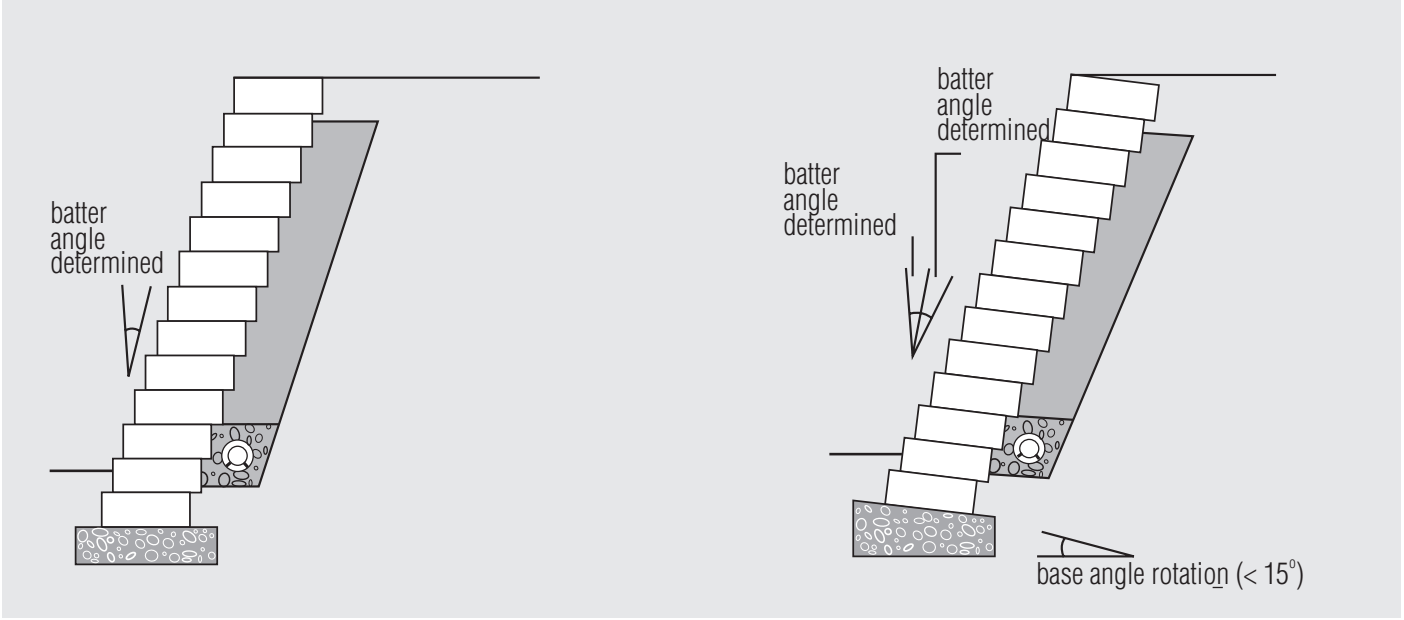


Figure 4a: Batter of wall determined by set back of block.

Figure 4b: Batter of wall increased by rotating base block.

Geosynthetic reinforcement

Depending on the design of the wall, the engineer may have specified the use of geosynthetic reinforcement. The purpose of geosythetic material for reinforcement is to incorporate the backfill soil into the retaining wall, thus increasing the total mas of the wall and so increasing the stability of the wall. The contractor must ensure that the geosynthetic is in accordance the specification, is stored in an acceptable manner and is not damaged before or during the installation.

Construction procedure for geosynthetic reinforcement

1. The CRB blocks are positioned and levelled as with a gravity wall.

2. The soil is filled inside the block and behind the block and compacted, ensuring that the surface is level and free from sharp objects.

3. The geosynthetic is laid on the soil. Ensure that the geosynthetic is laid with the warp perpendicular to the wall. Ensure that the geosynthetic is properly tied into the CRB block in accordance with the manufacturer's instructions. Ensure that the geosynthetic is flat and without creases or folds. Ensure that the geosynthetic extends to the required length into the soil mass. Ensure that the geosynthetic remains taut during the backfill for the subsequent layers.

4. Proceed with the next layer in the same manner.

5. Where the goesynthetic is to be lapped, a lap of at least 0,5m is required. Note: geosynthetics should not be lapped in the strength direction, unless this has been specifically allowed for the design. Generally, geosynthetics should only be lapped in the lateral direction.

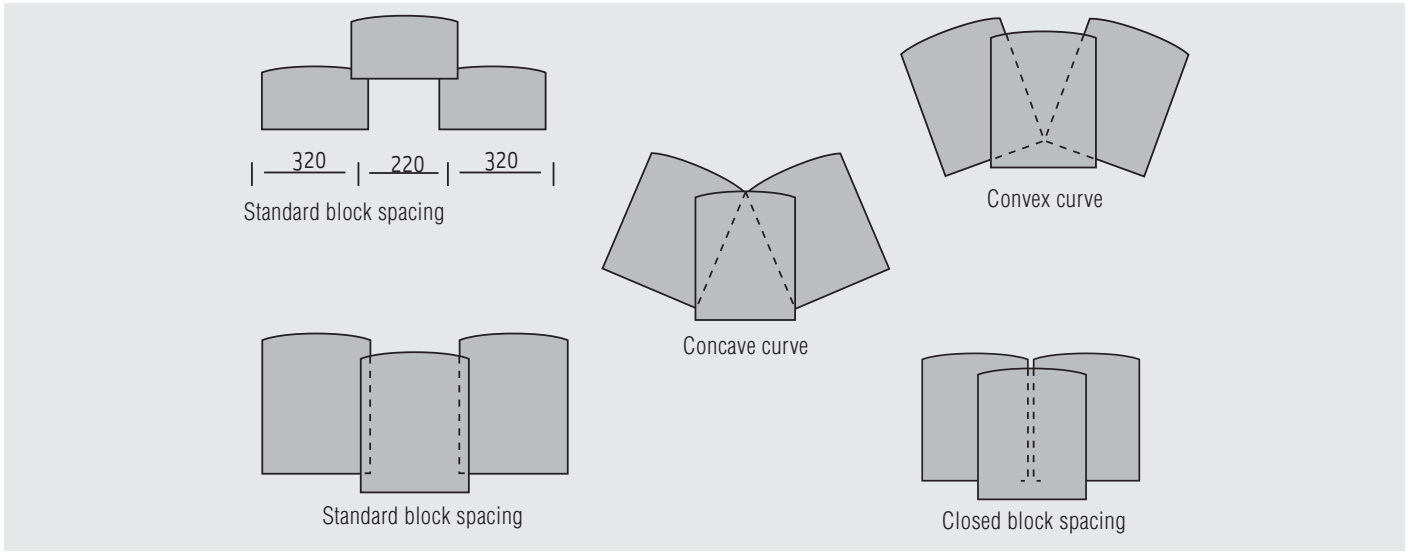


Figure 5

DETAILING AND INSTALLATION OF CRB WALLS

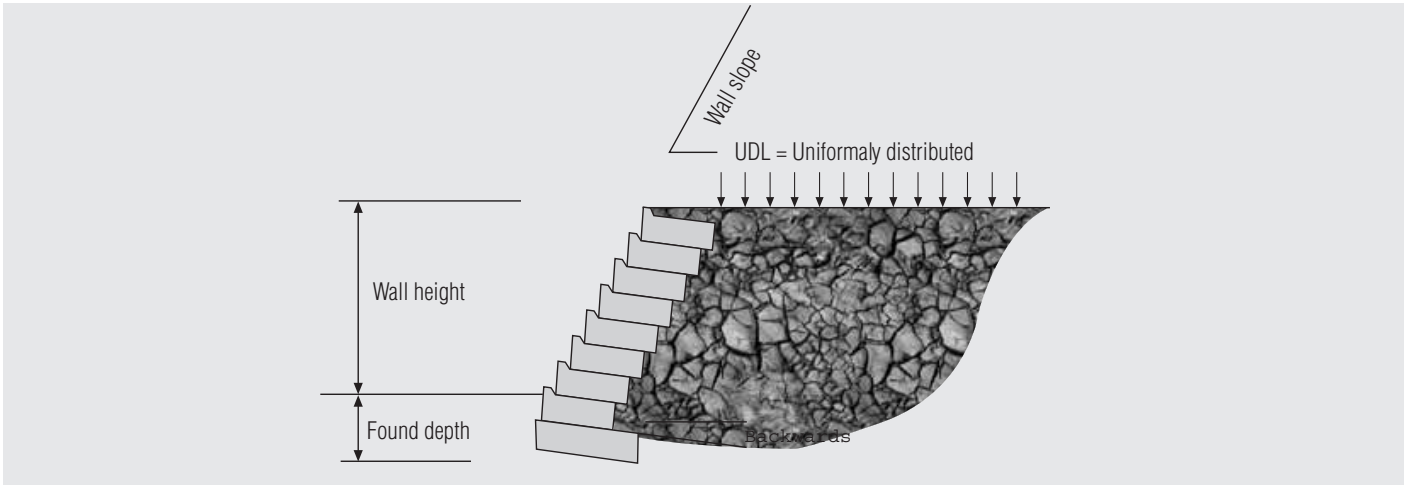


Figure 6

Foundations

The founding depth specified for a CRB wall should take into account the lowest depth of any excavation that is to take place immediately in front of the wall. For example, if a road pavement is to be constructed in front of a wall after the installation of the wall, then the founding depth should be specified below the underside of the road pavement.

Another situation in which care should be exercised when specifying the founding depth is when service trenches are to be excavated immediately in front of the CRB Wall. In such instances the specification of the founding depth should take cognisance of the anticipated maximum depth of the service trench excavation. Founding depths should generally be specified as minimum founding depths, and the final founding depths for a wall should be confirmed by the engineer on site.

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