CI/SfB (Ff2)

April 2009

Kiveton Walling

The natural appeal of dry-stone retaining walls

Forticrete stone
Confidence you can build on

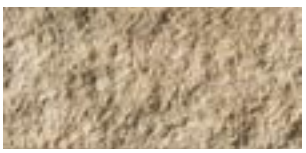
Kiveton Walling
Simple, effective dry-stone walls

Kiveton Walling is a dry-build retaining wall system that enables the simple creation of low height gravity landscape walls or taller reinforced soil wall structures capable of handling surcharge loads. Evoking the old-world charm of a mason-crafted wall, Kiveton Walling is available in a range of colours and face finishes that match many of the regional stone variations prevalent throughout the UK.

There is a choice of four colours and two face finish options – a rugged split face and a pitched face, which is a rough effect whereby each stone has a raised centre, typical of quarry-dressed stone. Both of these finishes can be laid to create vertical or stepped battered walls. To create a continuous battered wall, there is a product with a raked face, the bottom half of which is split and the top half of which is raked back by 20mm to create a natural battered effect when laid.

Finishes

Pitched Face



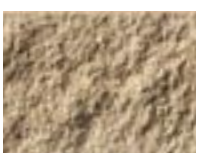
Split Face

Colours

Brown Old Weathered

Natural

Buff



Black Old Weathered

Each stone is 300mm deep and the system comprises stones of three different face sizes, which can be used in single size or combined to create a random effect. On the bottom rear face of each unit is a series of slots, provided to accept high strength plastic pins that locate into the stones in one of two ways. One way aligns the back faces of the units to create a near vertical wall. Turn the pin round and slot it in the alternative way and it aligns the units 20mm further back than the unit below, creating a traditional battered wall. Capping units complete the natural walling effect.

Units are manufactured and supplied with both smooth and split side faces, so returns are created simply. Standard units have parallel sides, for creating straight walls or concave curves. Stones with specially shaped sides are supplied to order that enable the creation of convex curves with a minimum radius of 1355mm achievable using the 225mm face size. Walls with random sizes will achieve varying radii, depending on the blend of sizes chosen.

Packaging and delivery

Kiveton Walling stones are delivered on pallets of same size units and each pallet contains enough units to create just over 2 square metres of wall. Capping units are supplied with approx. 32 linear metres per pallet. Pins are supplied in packs of 50 or 100.

Kiveton range

Unit	Face Size (mm)	Typical Dry Unit Weight (kg)	Quantity Per Pack	Typical Dry Pack Weight (kg)
Walling Straight	225 x 140	19.6	72	1412
Walling Straight	300 x 140	25.4	54	1373
Walling Straight	450 x 140	39.2	36	1412
Walling Curved	225/175 x 140	18.1	72	1302
Walling Curved	300/250 x 140	23.9	54	1290
Walling Curved	450/400 x 140	37.7	36	1357
Capping Straight	225 x 65	9.0	144	1297
Capping Straight	300 x 65	12.2	108	1323
Capping Straight	450 x 65	18.0	72	1296
Capping Curved	225/175 x 65	7.9	144	1133
Capping Curved	300/250 x 65	11.1	108	1198
Capping Curved	450/400 x 65	17.0	72	1223

Standard units

225 x 140mm face size

300 x 140mm face size

450 x 140mm face size

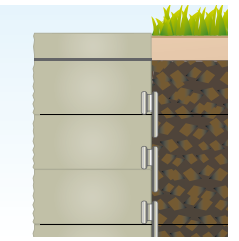
Shaped units for convex curves

225 x 140mm face size

300 x 140mm face size

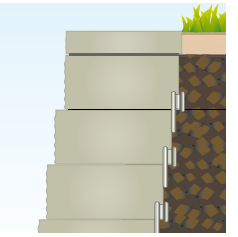
450 x 140mm face size

Vertical wall pin position

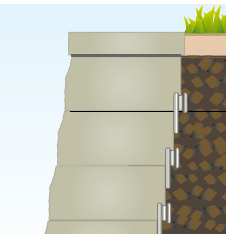


This pin position will align a wall in the 'near vertical' position.

Battered wall pin position



Stepped batter



Raked batter

Using this pin position on all courses will build the wall with an approximate 8° batter (setback). This is a 20mm setback for each 140mm of vertical wall.

High strength alignment pins

Installation

1. Prepare the Base Levelling Pad

Remove all the surface vegetation and debris. Excavate the base trench to the designed width and depth. Level the prepared base with 150mm of C20/25 concrete*.
If the foundation is to be stepped, start the levelling pad at the lowest elevation along the wall and step up as required in 140mm increments. At no point must you have less than one course or H/20 embedment.

2. Install the Base Course

If your design includes the larger units, use the purpose-designed lifting tool to lift the stones into position ensuring that the pin holes are positioned to the rear facing down. Bed the first course in mortar. Make sure each unit is level as this is critical for accurate and acceptable results. Minimum embedment of base course is 140mm below grade.

3. Install Drainage Fill, Backfill & Compaction

Provide a minimum of 300mm of non-cohesive drainage material behind the units. Fill any open spaces between the units with the same material. Proceed to place backfill in maximum 140mm layers and fully compact.

4. Install Additional Courses

As you lay the next course of stones, locate the plastic pins into the slots in the rear underside of the units, positioned dependant on whether the wall is to be vertical or battered. Push each unit forward until the pin locates against the rear of the stone below. Ensure that joints between one course of stones and the next is staggered, to avoid 'stack bonding'.

5. Installing Geogrid

Where there is a requirement for the use of geogrid it will be necessary to excavate behind the wall in order to install the grid. Please refer to the table on the back page. The geogrid is placed over the stones as shown and held in place by the next layer of walling. Always allow a minimum 250mm of geogrid material to rest on the stones' top face. This will ensure the next unit is fully supported on geogrid. Place all sections of geogrid abutting each other. Once you've laid the next course over the geogrid, pull the grid taut to eliminate loose folds, stake or secure back edge before backfill and compaction. Wherever possible, compact from back of wall towards embankment to avoid loosening geogrid or putting compaction pressure on the wall.

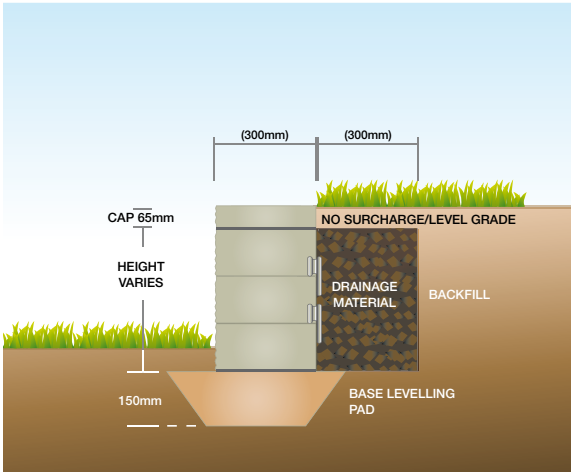
6. Capping the Wall

Clean off the last course in preparation for the capping units. Use mortar to create a bond between the top course and the capping unit. The cap may be flush to the front or overhanging as required by the aesthetics and design.

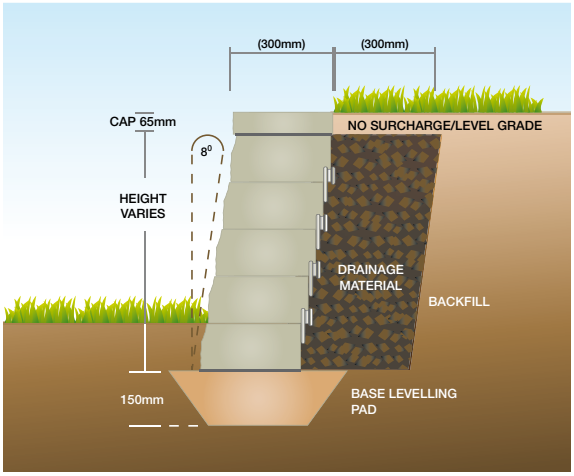
* For further advice on the correct levelling pad, please contact the Forticrete Technical Department.

Wall types

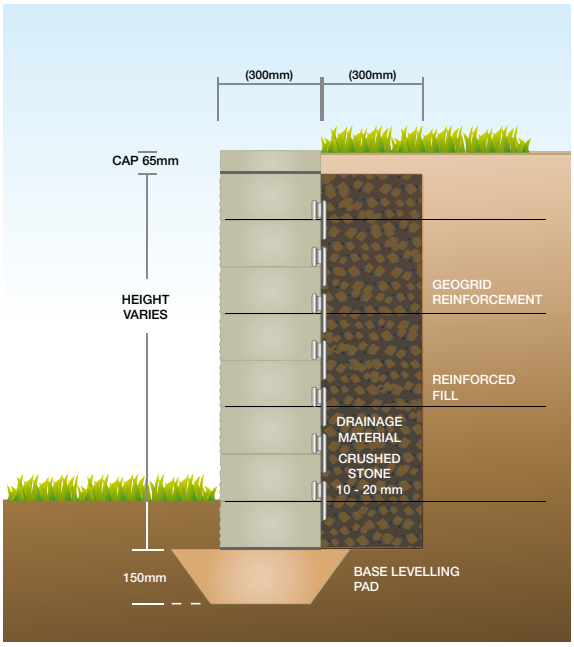
Gravity wall – near vertical
(maximum 0.6 metres)



Gravity wall – 8º battered
(maximum 0.9 metres)

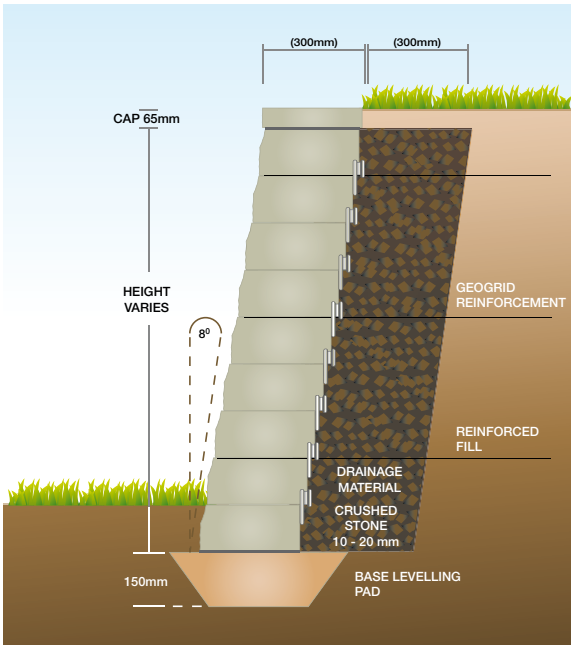


Reinforced wall – near vertical



Embedment depth below grade minimum 1 unit or H/20

Reinforced wall – 8º battered



Embedment depth below grade minimum 1 unit or H/20

A CRH plc company

EMS 74048

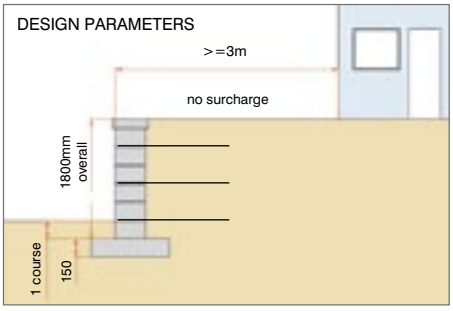
FM 00562

Kiveton Walling design information

Kiveton Walling can be used in walls in excess of 0.9m high, however these situations will require individual designs producing. Forticrete is able to offer a design and supply package for these situations. The chart on this page gives grid and design requirements for walls with less onerous requirements (landscaping walls).

GRID REQUIREMENTS

Overall Height	Grid Length	Top of Wall Detail	Surcharge	Number of Layers	Grid Position Top of Course	Bearing Pressure
Up to 0.9	1.3	Level	5kN/m²	3	1, 3, 5	45.4kN/m²
0.9 – 1.2	1.3	Level	5kN/m²	4	1, 3, 5, 7	36.4kN/m²
1.2 – 1.5	1.6	Level	5kN/m²	5	1, 3, 5, 7, 9	28.3kN/m²
1.5 – 1.8	1.6	Level	5kN/m²	6	1, 3, 5, 7, 9, 11	21.1kN/m²
Up to 0.9	1.3	Max 1:3 Slope	0	3	1, 3, 5	51kN/m²
0.9 – 1.2	1.3	Max 1:3 Slope	0	4	1, 3, 5, 7	41.2kN/m²
1.2 – 1.5	1.6	Max 1:3 Slope	0	5	1, 3, 5, 7, 9	32.5kN/m²
1.5 – 1.8	1.6	Max 1:3 Slope	0	6	1, 3, 5, 7, 9, 11	25.7kN/m²



GRID REQUIREMENTS – NOTES

- Grid length is 1.3m or 1.6m
- Backfill and soil behind the wall assumed to be free draining (less than 15% fines) c'=0kN/m² Øp ≥ 36°or greater γb – 20kN/m²
- Minimum embedment below ground is 1 course or height/20
- All walls require minimum 300mm drainage layer comprising 10-20mm clean material
- This chart can be used for both near vertical walls or those incorporating an 8° batter.
- Foundation soils; the design has been undertaken based on the foundation soils providing a competent base for safe and tolerable support of the reinforced soil wall and are assumed to be capable of carrying the loads given in the above table under bearing capacity.
- Vertical walls without geogrid should be no more than 0.6m high overall; Battered walls no more than 0.9m
- There should be no surcharge to top of wall
- Wall must not be within 3m of a structure

FOR PRODUCT & SALES ENQUIRIES CONTACT:

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Forticrete stone

Confidence you can build on