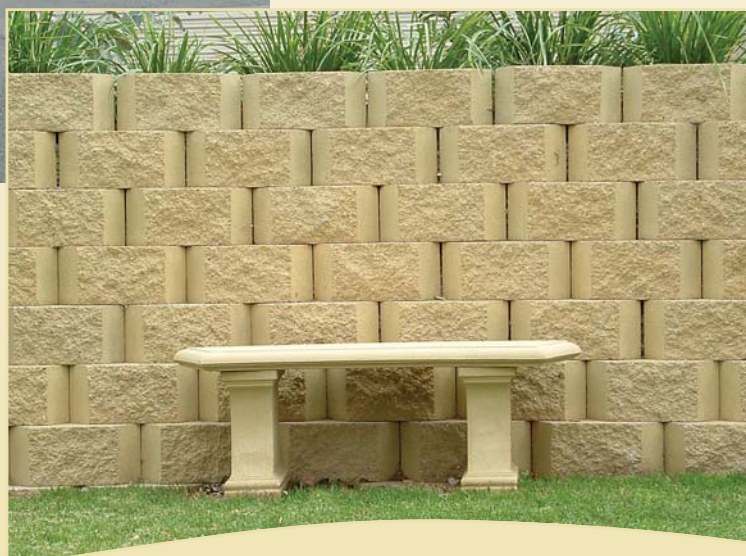


Norfolk[®]™

From...



Retaining Wall System



- ❖ Do it yourself
- ❖ Economical to build
- ❖ No mortar required
- ❖ Structurally sound
- ❖ Low Maintenance

Australian Owned, Australian Designed and Manufactured – All Profits Remain In Australia.

ESTIMATING DATA



Norfolk Capping Block

- 390L x 190W x 180mm H
- 1 linear m of capping = 2.56 Blocks
- 21.5kg each
- 90 per pallet

Norfolk Block

- 390L x 190W x 180mm H
- 1m² Wall = 14 Blocks
- 18.5kg
- 90 per pallet



CALCULATING BLOCK QUANTITIES - Example wall

20 metres long x .9 metres high = 10m² x 14 blocks per m² = 252
LESS 20 lineal metres x 2.56 capping blocks per metre = 52 capping blocks required overall
Blocks required for complete job = 200 Norfolk Blocks
+ 52 Norfolk Capping Blocks

INSTALLATION GUIDE

Step 1: FOOTING

Dig out trench approx. 200mm deep. The trench should be 60mm wide. Place and well compact 100mm to 200mm of fine crushed rock (gravel). This base thickness depends on the wall height e.g. 150mm thick for 1 metre high, 200mm thick for 1.5 metre high and over.



Step 2: SAND BED

Spread 25mm of sharp sand over the compacted base. This should be in a straight line checked with a level. If the wall tapers, run a string line at the desired finish level, then gauge down at multiples of 180mm.



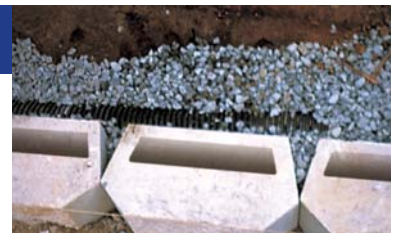
Step 3: FIRST COURSE

The first block course is now bedded into the sand bed. The use of a level and string is recommended to ensure that the first course is layed correctly. Make sure at least 100mm of the first block course is buried below the finish ground level with gravel well compacted along the front of the blocks to stabilise.



Step 4: DRAINAGE & BACKFILL

Where an agpipe or strip drain is used, place behind base of first course. Backfill behind the blocks using a clean free draining material (e.g. blue metal). Allow 300mm for walls over 1 metre. Now compact backfill material thoroughly to remove all voids. If backfill is needed behind the drainage area, existing site soils may be used. (Do not use heavy clay).



Step 5: FOLLOWING COURSES

Lay the second and subsequent courses following the same procedure e.g. use the correct backfill material. Continue to lay and compact behind each block course. A Norfolk Capping block is layed as the final course (see above).



CURVED WALLS: If building a curved wall, be conscious that the length of courses will vary for a concave or convex wall. E.g.: the course length will shorten if the wall is convex and lengthen if concave.

MINIMUM DIAMETER: 1900mm (internal dimension). This is the minimum diameter. Adjust lower courses allowing for 55mm step back.

DESIGN GUIDE

Maximum wall heights for Norfolk block gravity retaining walls

Norfolk retaining walls that comply with the maximum wall heights shown in the design tables can be built as gravity walls (refer to construction notes). These walls use the weight and interlocking mechanisms of the **Norfolk** blocks to retain an embankment.

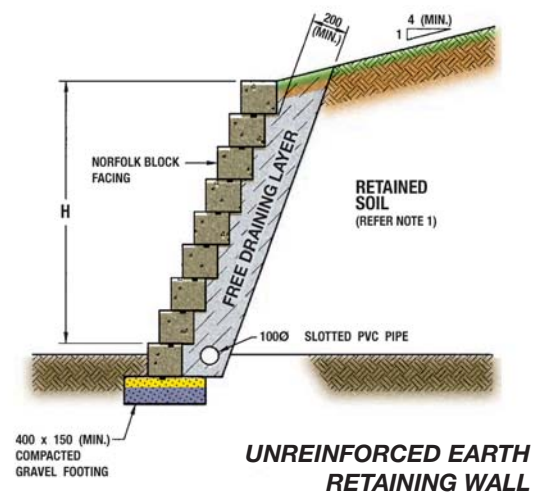
For walls higher than the tables below, please consider the Tasman Retaining Wall System. Tasman Walls, together with Fortrac® Geogrid reinforcing provide a reinforced soil mass for walls up to 6 metres high (see *Tasman brochure*).

Norfolk Block UNREINFORCED Retaining Walls (See figure 1)

MAXIMUM WALL HEIGHT 'H' (m)*			
BACKSLOPE CONDITIONS / LOADINGS	BACKFILL / RETAINED SOIL TYPES		
	Type 1	Type 2	Type 3
LEVEL, WITH: NO SURCHARGE	1.0	1.4	1.6
DOMESTIC VEHICLES	0.8	1.0	1.2
1:4, WITH: NO SURCHARGE	0.8	1.0	1.2
DOMESTIC VEHICLES	0.6	0.8	1.0

* Increased wall heights may be achieved by using mass concrete in some cases.

SOIL TYPE DESCRIPTIONS	
Type 1 Soils	Includes soft & firm clay, fine sands, silty clays Internal friction angle $\geq 20^\circ - 24^\circ$
Type 2 Soils	Includes stiff sandy clays and gravelly clays Internal friction angle $\geq 25^\circ - 30^\circ$
Type 3 Soils	Includes FCR, rock, sandstone and gravels Internal friction angle $\geq 30^\circ+$



UNREINFORCED EARTH RETAINING WALL

FIGURE 1

Construction Notes

Engineering – To comply with most council requirements, please seek specific engineering advice for walls over 1 metre high or for low walls carrying car traffic, etc.

- The following assumptions have been made regarding soil properties:
 - Infill soil types – As above: Internal friction angle $\geq 20^\circ - 30^\circ +$
 - Bearing pad – Compacted density angle: at least 18.6 kg/m^3
– Effective internal friction angle: at least 37°
– Effective cohesion: at least 5 kPa
- Caution is required when using heavy or dry clays as retained soil or backfill.
- Surcharge loads are as follows: Domestic vehicles – 500 kg/m^2 (5 kPa)
Heavy vehicles – to be separately assessed
- The wall footing shall consist of a compacted, well-graded gravel footing 600 mm wide x 150 mm deep for walls up to 1 metre high, with the first course at least 100 mm below finished ground level. For walls over 1 metre high, an engineer will consider extra depth in the gravel footing along with a minimum 200 mm embedment of the first course, subject to soil conditions.
- Drainage shall be supplied in the form of a slotted P.V.C. ag-pipe with geotextile sock drain (fall at $1:100 \text{ min.}$) or with weep holes. A 300 mm drainage layer of uniformly graded gravel shall be provided behind the wall.
- The Unreinforced soil design table should be used for low, non-structural garden walls only.
- For backslope conditions greater than 1 in 4 , seek specific engineering advice.
- Vehicle traffic should be allowed no closer than 1 metre behind the wall.

Norfolk^{® TM}

Retaining Wall System



Computer Design Program Available

Visit: www.bainesmasonry.com.au/downloads/tasman_design_program_download.html

(Complies with AS4578/HB156-2002)



Appin Stone



Charcoal



Oakdale



Penrose



Robertson



Red Rock



Yellow Rock

Colours displayed in this brochure are to be used as a guide only. Colours are as close as printing process will allow. Displays in stores may vary to actual colour due to batch variation. Obtain samples from Baines Masonry for current batch colour. Care should be taken to order sufficient product to complete job at one time to avoid batch variation. Surplus blocks not returnable. No claims after 7 days or once products have been incorporated in construction.

CHECK WITH YOUR LOCAL COUNCIL TO ENSURE ALL LOCAL BUILDING CODES ARE COMPLIED WITH

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