

Tasman[®]

From...



BAINES MASONRY BLOCKS PTY LTD

Retaining Wall System



- ❖ Prestige & Quality
- ❖ Near Vertical Walls
- ❖ Do It Yourself
- ❖ No Concrete Footings
- ❖ Flexible - 90° Corners, Steps, Straight or Curved Walls
- ❖ Commercial or Civil Walls to 6 Meters High

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

Tasman[®]™

Retaining Wall System

The **Tasman** retaining wall system incorporates purpose made corner and capping units to provide classical reconstructed sandstone retaining walls. The unique design of the **Tasman** wall system allows increased flexibility over competing products. The **Tasman** walls can be built almost vertical. Each block has only a 10mm setback, which allows all available space to be utilised to the maximum. Curved or straight walls can be erected and it is easy to build 90-degree corners with the purpose made corner block. A capping unit is adhered to the top course of the blocks to finish off the wall.

Tasman blocks are suitable for retaining walls up to 6 metres high. The blocks are easily dry-stacked and their patented design locks into the block above to form an attractive structural retaining wall. **For walls over 1 metre high, FORTRAC[®] geogrids are locked in every 3rd course of blocks** to create a reinforced soil retaining wall structure. (See design tables). 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.

INSTALLATION GUIDE

Step 1: BASE PREPARATION

Dig out trench approx. 250mm deep. The trench should be 600mm wide. Place and well compact 150mm to 200mm of fine crushed rock (gravel). This base thickness depends on the wall height e.g. 150mm thick for 1 metre high, extra thickness for higher walls may be required, subject to engineers design.



Step 2: SAND BED

Spread 25mm of either sharp sand or metal dust over the compacted base. This should be in a straight line and checked with a level. If the wall is stepped, start at the lowest point.



Step 3: LAYING 1ST 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 laid correctly. For walls up to 1 metre high, **make sure at least 100mm of the first block course is buried below the finished ground level. Allow approx. 200mm for walls over 1 metre high and 300mm for walls over 2 metres high.** Compact gravel along the front of the blocks to stabilise.



Step 4: DRAINAGE & BACKFILL

Place P.V.C. ag-pipe with a geotextile sock drain behind the wall, with a 1 in 100 fall. Backfill behind the blocks approx. 200-300mm using 10-20mm clean, free-draining material (e.g. blue metal). Ensure that each block is also well filled with free-draining material. Backfill behind the drainage layer with your chosen backfill material in a maximum of 200mm layers. Compaction rate of 95% must be achieved (use only hand operated plate compactors close to wall). **Do not use soft or wet clay to backfill.** Be careful not to mechanically compact too close to the wall.



Step 5: LAYING GEOGRID

Clean any debris from the top of the wall to ensure the next block and or the geogrid layer sits perfectly. Roll the geogrid perpendicular to the wall, pull tight and cut to the required length. Ensure that the geogrid sits within 15mm of the face of the block, so that the purpose made connecting lugs can interlock. Butt join the geogrid along the length of the wall. Place the next course on top of the geogrid.



Step 6: LAYING ADDITIONAL COURSES

Lay the next course and subsequent courses to a string line following the same procedure, as outlined previously, e.g. clean the top of the blocks, fill the block cores and form a 300mm drainage layer behind the blocks, backfilling in max. 200mm layers, as per step 4. Ensure backfill is compacted to 95%.



Step 7: LAYING CAPPING UNITS

Once backfilling and cleaning is completed as per step 5, fix the purpose made Tasman Capping blocks with adhesive. For domestic situations, a waterproof construction adhesive is recommended. For high use areas, a 2-part epoxy is preferred.



Step 8: SURFACE DRAINAGE LAYER

Care should be taken where possible to divert water away from the wall face. If the surface water cannot be taken away from the top of the wall, place a 100-150mm clay (or similar) impermeable layer on top of the wall fill (see figure 2). If soil is used on top of wall, a layer of geotextile must be used to stop any soil filtering down through the drainage layer (see figure 1).



Curves

For Convex curved walls simply knock the back fin off the block with a hammer.

MINIMUM RADIUS

Tasman Blocks: 1300mm
Tasman Half Blocks: 650mm

This is the min. radius of the top course. Adjust lower courses allowing for 10mm step back.



Corners

Corners are built by adhesively fixing the purpose made corner blocks to alternate courses. Allowances should be made for a 10mm step back per course. Lugs must be removed from the Tasman Blocks to ensure that the corner block fits evenly.

* Separate data sheets available.



Steps

Steps can be easily built using a combination of Tasman Blocks and capping units.

The step risers are built with Tasman blocks.

The capping units are then adhered to the top of the blocks to form the treads.



NOTE: For terraced walls, fences above walls and any specialised applications, contact your supplier.

Maximum wall heights for Tasman block gravity retaining walls

Tasman retaining walls that comply with the maximum wall height shown in table 1 can be built as gravity walls (*REFER CONSTRUCTION NOTES*). These walls use the weight and interlocking mechanisms of the **Tasman** blocks to retain an embankment.

Tasman retaining walls that exceed the height of table 1 will require Fortrac® Geogrid soil reinforcement (see table 2). **Tasman** walls, together with Fortrac® Geogrids locked into the patented interlocking blocks, provide a reinforced soil mass for walls up to 6 metres high.

TABLE 1: Tasman 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	0.7	1.0	1.0
DOMESTIC VEHICLES	0.5	0.7	0.7
1:4, WITH: NO SURCHARGE	0.7	0.9	0.9
DOMESTIC VEHICLES	0.5	0.7	0.7

* Increased wall heights may be achieved by core filling with no fines concrete.

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 $\geq 30^\circ+$

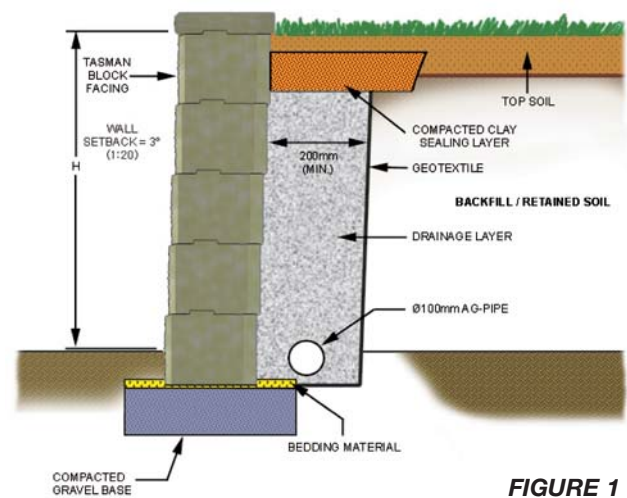


FIGURE 1

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 600mm wide x 150mm deep for walls up to 1 metre high, with the first course at least 100mm below finished ground level. For walls over 1 metre high, an engineer will consider extra depth in the gravel footing along with a minimum 200mm 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 (as shown in figure 2, fall at 1:100min. to S/W disposal system) or with weep holes. A 300mm drainage layer of uniformly graded gravel shall be provided behind the wall.
- Geogrid soil reinforcement shall be Fortrac® installed in accordance with the manufacturer's recommendation. Fortrac® geogrid is to be unrolled perpendicular to the wall.
- The geogrid reinforcing should be butt joined, or aligned vertically. Where overlapping can occur (e.g. curved walls) the geogrid must be separated with a minimum of 100mm of backfill material.
- The Unreinforced soil design table should be used for low, non-structural garden walls only.
- The Reinforced soil design table complies with AS 4678 and is based on Tasman blocks 390mm L x 225mm W x 200mm H.
- 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.

Engineering by: Dale P Luck & Associates Consulting Engineers and Quasar Management Services Pty Ltd.

T A B L E S

TABLE 2: Tasman Block REINFORCED Retaining Walls (See figure 2)

Wall Height 'H' (m)	# Layers of Geogrid	Spacing 's' (m)	Level Backslope				1:4 Backslope				Type A Infill Soil
			Without Surcharge		Domestic Vehicle Surcharge		Without Surcharge		Domestic Vehicle Surcharge		
			Type of Geogrid	Geogrid Lengths 'L' (m)	Type of Geogrid	Geogrid Lengths 'L' (m)	Type of Geogrid	Geogrid Lengths 'L' (m)	Type of Geogrid	Geogrid Lengths 'L' (m)	
0.8	2	0.4	35/20-20	1.6	—	—	—	—	—	—	
1.2	3	0.4	35/20-20	1.8	—	—	—	—	—	—	
1.6	4	0.4	35/20-20	1.9	55/30-20	2.5	—	—	—	—	
2.0	5	0.4	55/30-20	2.2	55/30-20	2.8	—	—	—	—	
2.4	6	0.4	55/30-20	2.6	55/30-20	3.3	—	—	—	—	
2.8	7	0.4	55/30-20	3.1	—	—	—	—	—	—	

Wall Height 'H' (m)	# Layers of Geogrid	Spacing 's' (m)	Level Backslope				1:4 Backslope				Type B Infill Soil
			Without Surcharge		Domestic Vehicle Surcharge		Without Surcharge		Domestic Vehicle Surcharge		
			Type of Geogrid	Geogrid Lengths 'L' (m)	Type of Geogrid	Geogrid Lengths 'L' (m)	Type of Geogrid	Geogrid Lengths 'L' (m)	Type of Geogrid	Geogrid Lengths 'L' (m)	
0.8	2	0.4	—	—	35/20-20	1.0	—	—	35/20-20	1.6	
1.2	3	0.4	35/20-20	1.0	35/20-20	1.1	35/20-20	1.3	35/20-20	1.9	
1.6	3	0.6	35/20-20	1.3	35/20-20	1.3	35/20-20	1.6	55/30-20	2.1	
2.0	4	0.6	35/20-20	1.5	55/30-20	1.5	55/30-20	1.8	55/30-20	2.4	
2.4	6	0.4	55/30-20	1.8	55/30-20	1.8	55/30-20	2.2	55/30-20	3.0	
2.8	7	0.4	55/30-20	2.1	55/30-20	2.4	55/30-20	2.5	—	—	

Wall Height 'H' (m)	# Layers of Geogrid	Spacing 's' (m)	Level Backslope				1:4 Backslope				Type C Infill Soil
			Without Surcharge		Domestic Vehicle Surcharge		Without Surcharge		Domestic Vehicle Surcharge		
			Type of Geogrid	Geogrid Lengths 'L' (m)	Type of Geogrid	Geogrid Lengths 'L' (m)	Type of Geogrid	Geogrid Lengths 'L' (m)	Type of Geogrid	Geogrid Lengths 'L' (m)	
0.8	2	0.4	—	—	35/20-20	0.9	—	—	35/20-20	1.5	
1.2	3	0.4	35/20-20	1.0	35/20-20	1.1	35/20-20	1.3	35/20-20	1.9	
1.6	3	0.6	35/20-20	1.3	35/20-20	1.4	35/20-20	1.6	35/20-20	2.3	
2.0	4	0.6	35/20-20	1.5	35/20-20	1.6	35/20-20	1.9	35/20-20	2.5	
2.4	5	0.6	35/20-20	1.8	35/20-20	1.8	35/20-20	2.3	55/30-20	2.9	
2.8	5	0.6	35/20-20	2.1	55/30-20	2.2	55/30-20	2.7	55/30-20	3.3	

Geogrid Spacing

- Bottom Layer – Top of 1st course (200mm from base).
- Intermediate Layers – 400-600mm max.
- Top Layer – 400mm from top course.
- Geogrid lengths from design table above are measured from the back of the wall.

FIGURE 2: Typical Reinforced Retaining Wall Detail

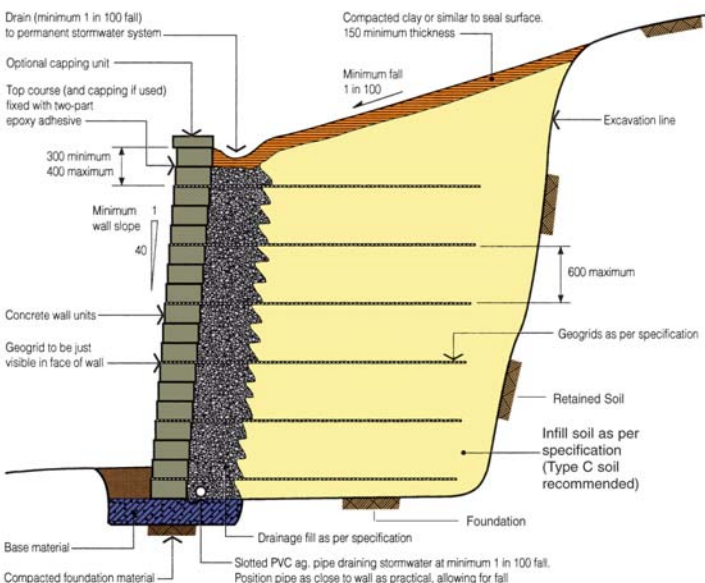


Figure 2.1 from HB156-2002 "Segmental Concrete Reinforced Soil Retaining Walls - Design and construction Guide" published by Concrete Masonry Association of Australia and Standards Australia - used with permission.

Drainage System

The drainage system consists of:

- A permeable drainage layer at least 300mm wide adjacent to the stem of the wall;
- A slotted PVC agricultural pipe, with geofabric sock if appropriate, or equivalent system, draining to the storm water system;
- A catch drain capable of removing surface water from the top of the embankment;
- A surface-sealing layer that prevents the ingress of surface water into the fill behind the wall.

Drainage fill material should be:

A single-sized gravel or crushed rock in the range of 10 to 20mm, designated GP, or a well graded gravel, designated GW, with a minimum particle size at least 5mm. The drainage fill must be free draining, particularly in the lower parts of the wall. It should be positioned so that it delivers water at the level of the drainage pipe, which must slope along the length of the wall.

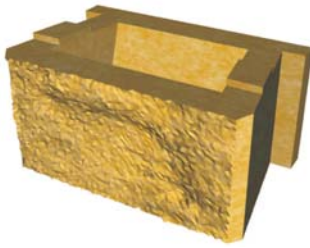
To minimise the effect of clogging, position the drainage pipe in the drainage fill at a minimum uniform grade of 1 in 100. The agricultural pipe should be connected to a PVC stormwater pipe and brought through the front face of the wall at intervals not exceeding 30m. Where practical, it should be connected to the storm-water system at the lower end of each run, and must drain positively away from the base of the retaining wall. The whole of the disturbed fill surface should be sealed by at least 150mm of compacted clay and properly drained.

Reinforced Infill Soil

Reinforced infill material, i.e. the fill that is strengthened by the geogrids, should not contain large or sharp material that will damage the geogrids. It must also be capable of being fully compacted to form a solid mass reinforced by the geogrids. Well-graded gravel (GW) is recommended (Type C soils per reinforced design table above).

Tasman[®]™

Retaining Wall System



Tasman Wall Block
390mm x 225mm x 200mm
13 per m²
75 per pallet
Code: 225-01



Tasman Half Wall Block
190mm x 225mm x 200mm
26.5 per m²
150 per pallet
Code: 225-03



Tasman 200mm Capping Block
200mm x 225mm x 60mm
5 per lineal metre
300 per pallet
Code: 60-230



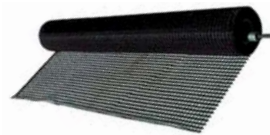
Tasman Full Cap
390mm x 240mm x 60mm
2.5 per lineal metre
120 per pallet
Code: 60-240
Note: These caps are made by another manufacturer and colour variation may occur between these caps and Baines blocks.



Tasman Full Corner Block
145mm x 340mm x 200mm
(Available in left or right)
Right hand corner shown
Code: 225-34



Tasman Half Corner Block
145mm x 235mm x 200mm
(Available in left or right)
Right hand corner shown
Code: 225-14



Fortrac[®] Geogrid
Roll size 2.50m W x 200m L
Types available
35/20-20; 55/30-20; 80/30-2



Bull Nose Cap
585mm x 245mm x 60mm
1.7 per lineal metre
Code: 50-245
Note: These caps are made by another manufacturer and colour variation may occur between these caps and Baines blocks.

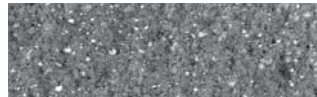
Computer Design Program Available

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

(Complies with AS4578/HB156-2002)



Appin Stone



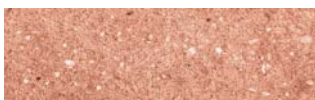
Charcoal



Oakdale



Penrose



Robertson



Opal White



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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BMB-TAS-SER009