Step 5: DRAINAGE, BACKFILL & GEOGRID FOR REINFORCED WALLS

Place a Geopipe 150 collector drain to the rear of the reinforced infill soil with an Enkadrain behind the reinforced soil extended to 500mm from the surface. Place and compact infill soil as specified in construction note 6 behind the first block layer. Clean any debris from the top of the blocks to ensure the next blocks and 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 10mm of the front of the block, so that the purpose made connecting lugs can interlock. Butt join the geogrid along the length of the wall.

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 if compacted to 95%.

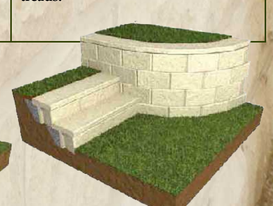
Step 7: LAYING CAPPING UNITS

Once backfilling and cleaning is completed as per step 5, fix the purpose made Sentinel 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	Corners	Steps
For Convex curved walls simply knock the back fin off the block with a hammer. MINIMUM RADIUS Sentinel Full Blocks: 1300mm Sentinel Half Blocks: 650mm This is the min. radius of the top course. Adjust lower courses allowing for 10mm step back.	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 Sentinel Blocks to ensure that the corner block fits evenly.	Steps can be easily built using a combination of Sentinel Blocks and capping units. The step risers are built with Sentinel blocks. The capping units are then adhered to the top of the blocks to form the treads.



DSM Sentinel Retainer Block ®

Full Sentinel Wall Block
390mm x 225mm x 200mm
13 per m2
75 per pallet

Sentinel Half Wall Block
190mm x 225mm x 200mm
26.5 per m2
150 per pallet

Sentinel 200mm Capping Block
200mm x 280mm x 60mm
5 per lineal metre
300 per pallet

Sentinel (Full or Half) Corner Block
145mm (235 or 340)mm x 200mm
(Available in left or right)
Right hand corner shown

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

These are our most popular colours

Sandstone

Cosmos

Zambezi Brown

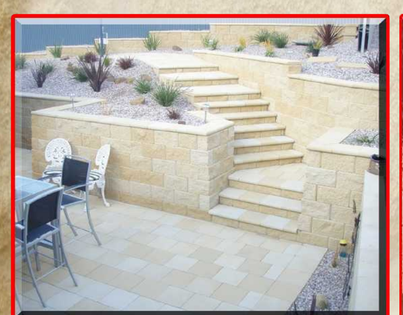
Colours displayed in this brochure are to be used as a guide only. Colours are as close as printing process will allow. Displays in stores may vary to actual colour due to batch variation. Obtain samples from DSM for current batch colour. Care should be taken to order sufficient product to complete job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

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

Tel: Office: +27 (0)11 964 2995
Fax number: +27 (0)86 601 6692
Email info@dsm-sa.co.za
Web:http://www.dsm-sa.co.za

DSM

Decorative Stone Masonry
TA / DSM



1) *Prestige & Quality*
2) *Near Vertical Walls*
3) *Do It Yourself*
4) *No Concrete Footings*
5) *Flexible – 90° Corners, Steps, Straight or Curved Walls*
6) *Commercial or Civil Walls to 6 Meters High*

DSM Sentinel Retainer Wall System ®

The SENTINEL retaining wall system incorporates purpose made corner and capping units to provide classical reconstructed sandstone retaining walls. The unique design of the *SENTINEL* wall system allows increased flexibility over competing products. The *SENTINEL* 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.

SENTINEL 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 high walls, geogrids are locked in every 2nd 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 all walls over 1.5 metres high or for low surcharged walls carrying car traffic, etc.

INSTALLATION GUIDE

Step 1: BASE PREPARATION

Dig out trench to the width and depth (key depth + hardfill base) as specified in the design tables. Place and well compact clean well graded hardfill.

Step 2: SAND BED

Spread 20mm of sand bedding over the compacted hardfill 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 layer. The use of a level and string is recommended to ensure that the first course is laid correctly. Compact hardfill along the front of the blocks to stabilise.

Step 4: DRAINAGE & BACKFILL FOR UNREINFORCED WALLS

Lay filter fabric behind the first course of blocks and up the cut soil to be retained.
Place a perforated draincoil, with a 1 in 80 fall behind the first course of blocks over the filter fabric. Connect draincoil to site storm water system. Backfill behind the blocks approximately 200-300mm using 10-20mm clean, free-draining material (e.g. washed gravel). Ensure that each block is also well filled with free-draining material. If required place fill behind the drainage layer and filter fabric with your available backfill material (see design tables) in a maximum of 150mm layers. Compaction 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.

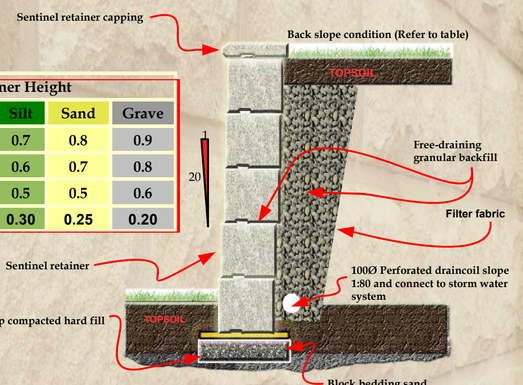
DESIGN TABLES

Maximum wall heights for Sentinel block gravity retaining walls

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

Table 1: Sentinel Block Unreinforced Retaining Walls

Maximum Retainer Height				
Back slope	Clay	Silt	Sand	Grave
Level	0.6	0.7	0.8	0.9
Slope 1V:3H	0.5	0.6	0.7	0.8
Domestic Vehicles	0.4	0.5	0.5	0.6
Key (m)	0.35	0.30	0.25	0.20



Construction Notes

All walls over 1.5m require Building Consent from your local authority, please seek specific engineering advice.

1. Any surcharged wall including low height walls carrying vehicle loads, back slopes or other loads may require Building Consent, check with your local authority and seek specific engineering advice.
2. Seek advice on retained material soil classification if unsure.

- Clay: Particles passing 0.002mm sieve, Assumed angle of shearing resistance Φ = 20°+
- Silt: Particles passing 0.06mm sieve, Particles not passing 0.002mm sieve, Assumed angle of shearing resistance Φ = 25°+
- Sand: Particles passing 2.0 mm sieve, Particles not passing 0.06mm sieve, Assumed angle of shearing resistance Φ = 30°+
- Gravel: Particles passing 100 mm sieve, Particles not passing 2.0mm sieve, Assumed angle of shearing resistance Φ = 35°+

3. Domestic vehicle loads are taken as 5kPa (500kg/m2) suitable for residential driveways only. For any heavy vehicle loads seek specific engineering advice.
4. All footings to be formed on good ground assumed capable of carrying 100 kPa allowable bearing working stress. Seek advice if soft clay or silt exist.
5. Free draining granular backfill to unreinforced walls to be washed stones in the range of 10 to 20mm diameter.
6. Infill soil to reinforced walls to be well graded granular material with not more than 15% passing 0.06mm sieve and no particles larger than 100mm diameter. Compact in 150mm layers to achieve 95% relative compaction. Use caution compacting close to wall face.
7. Reinforced walls shall use 40-40 Geogrid unless noted otherwise.
8. All products, including blocks, geogrid and other specified products to be installed in accordance with manufacturers specifications.

IF IN DOUBT, PLEASE SEEK ADVICE.

DSM

TABLE 2: SENTINEL BLOCK REINFORCED RETAINING ® WALLS

DOMINANT RETAINED MATERIAL	RETAINED HIGHT (M)	GX 40/40 GEOGRID LENGTHS (M)		
		BACK SLOPE CONDITION:		
		LEVEL	SLOPE 1V : 3H	DOMESTIC VEHICLES
Clay	1.0	1.9	2.6	2.6
	1.5	2.6	3.7	3.4
	2.0	3.4	4.8	4.2
	2.5	4.1	5.9	4.9
Silt	1.0	1.3	1.6	1.8
	1.5	1.8	2.2	2.3
	2.0	2.3	2.8	2.8
	2.5	2.8	3.4	3.3
Sand	1.0	1.0	1.1	1.3
	1.5	1.3	1.5	1.7
	2.0	1.6	1.9	2.0
	2.5	2.0	2.3	2.3
Gravel	1.0	0.8	0.9	1.0
	1.5	1.2	1.2	1.2
	2.0	1.6	1.6	1.6
	2.5	2.0	2.0	2.0