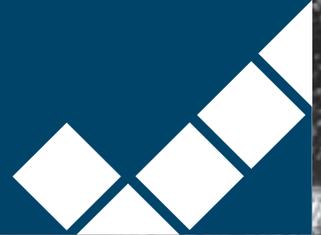


how to: **retaining walls**

**Landscaping
Solutions**



- garden edges
- retaining walls
- steps & corners

 **Hanson**

Checklist

1. Check with your council

Low garden edging can usually be installed without council approval. However, walls over 1m will generally need to be designed and certified by a suitably qualified engineer. Walls in locations close to buildings or driveways, in places where significant ground water or storm water build up can be expected, in steep or unstable terrain, or where there is reactive clay or fine sandy soils, may need special attention. If in doubt, please contact your local council.

2. Check off your equipment

To build a basic wall you will need:

- Garden gloves
- Spirit level
- Stakes & string
- Pencil & square
- 10-20mm Blue metal (for drainage gravel)
- Spade
- Wheelbarrow
- Small broom
- Rubber Mallet
- Road base (for levelling pad)

To split blocks you will need:

- Hammer & bolster
- Safety glasses

For larger jobs you may also require:

- Skid loader
- Whacker packer
- Circular saw (masonry)
- Ear muffs
- Geosynthetic reinforcement mesh

3. Safety

- Always wear eye protection when you're splitting or cutting Hanson pavers. Wear ear protection if you use a whacker packer.
- Bend your knees when lifting heavy blocks.
- Wear work boots to protect your feet & gardening gloves to protect your hands.
- Slip, Slop, Slap if you're working in the sun & keep your fluids up.

Installation

1. Mark out the wall

For straight walls use stakes and a string line. For a curved wall set the shape by laying a garden hose on the ground, then mark the curve with spray paint. It's best to use a hose with the tap on and the spray nozzle off, as the water pressure will form a more uniform curve.



Handy Tips: Use brightly coloured string so you don't trip over it.

2. Dig a trench

Dig a foundation trench 300-600mm wide and 130-150mm deep to fit the leveling pad. Refer to the cross-sectional diagrams for the specific leveling pad requirements per product. Remove any roots and soft earth. Level and firmly compact the soil at the bottom of the trench.



Handy Tips: Gloves make your spade user firendly.

3. Add levelling pad

Spread road base or pour concrete along the bottom of your trench (refer to note 7 under the cross-sectional diagrams to determine the appropriate material for your pad). If using road base, level with a straight edge and compact to the required height by tamping with the rear face of a block or a mechanical whacker packer.



Handy Tips: Road base consists of 5% cement-stabilised crushed rock.

4. The first course

Place blocks side-by-side at the front of the levelled and compacted road base whilst using a string line along the back of the units for alignment. For curved walls, place the blocks against the required shape formed by a garden hose and marked out with spray paint. Make sure the blocks are tightly side-butted together and true to the running edge of the finished wall. Sweep the top of the first course before laying the second.



Handy Tips: Use a rubber mallet to tamp blocks into place - a metal hammer may crack them.

Some additional tips

A great retaining wall requires a good foundation, correct backfill and di foundation) to an even depth, and if using road base make sure your be 20mm in size - blue metal is perfect. Remember the first course of bloc level side to side and front to back. Use a spirit level across the top of t down slopes and increase in height relative to the fall of the land, it will increments. For wall heights over the maximum stated, consult you

procedures

5. Backfill

With the first course in place, backfill behind the blocks with a minimum 300mm wide 10-20mm blue metal drainage aggregate to a level slightly lower than the block height. Lay in the second block course then backfill immediately behind the wall with the drainage aggregate.



Handy Tips: Backfill as you go. Otherwise the wall might fall.

6. Install the drain

If required, place a 100 mm drainage pipe behind the first course of blocks on the bed of drainage aggregate. Outlet the drain through the wall at every low point, at every 20m of wall length, and around the ends of the wall to your storm water system.



Handy Tips: Use ag pipe with a protective sock on it.

7. Continue to lay

Simply add your subsequent block courses to a maximum height stated in the cross-sectional diagrams. Remember to backfill with drainage aggregate as you go, and compact it when 300mm deep. Sweep the top of each course before laying the next to remove all foreign particles. Ensure the locking lips (at the back or top of the block) fit snugly together.



Handy Tips: Make sure your block lips lock together.

8. Finishing off

Backfill to the final wall height whilst being careful not to nudge any blocks out of alignment. For extra strength also glue the top course to the second top course using construction epoxy. Capping units should also be glued to the top course using the same construction epoxy.



Handy Tips: Make sure you've got a cold one in the fridge for when you're finished!

tricky bits

corners and curves

Insert a stake at the centre of the desired corner or curve then mark an arc on the ground with a spray can connected by string.

For outside curves, the top course will have the smallest radius so make sure this is not less than the minimum for the block type you are using. Conversely, for inside curves, the wall radius increases with each subsequent course.

For both inside and outside curves, you'll need to include partial blocks to maintain a proper running bond. These partial blocks will need to be fixed in place with concrete adhesive.

Handy Tips: Save on material costs by chiselling partial units from damaged or chipped blocks.



Outside curves decrease in radius towards the top of the wall



Inside curves increase in radius towards the top of the wall

square corners

To build an outside corner begin by placing a half unit on the corner then lay the rest of the base course working from the corner block out. Begin the second course with another half unit, this time aligned with the alternate wall. Place the second and third blocks on either side of the corner unit and fix with concrete adhesive. Continue to alternate the corner unit orientation with each subsequent course.

To build an inside corner, place a full block at the corner then lay a second block at right angles to the first. Continue laying out the rest of the base course working from the corner out. On the second course lay the blocks on bond (eg. like bricks) on one side of the corner. Once the second course of one wall is established, begin the second course of the adjacent wall. Partial units may be required on this wall to maintain running bond for better strength and appearance. Block placement in the corner should alternate direction with each subsequent course.



Start outside corner with a half unit



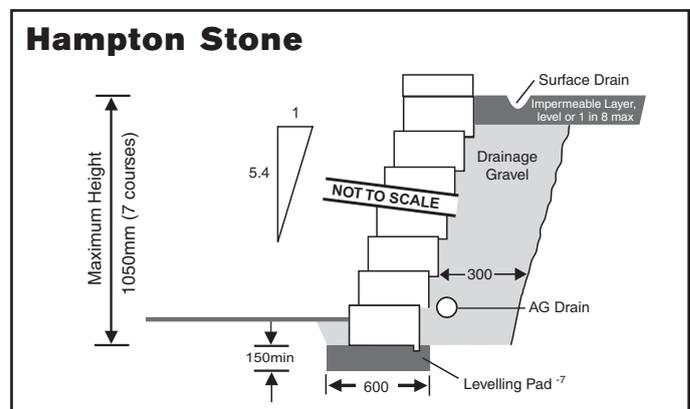
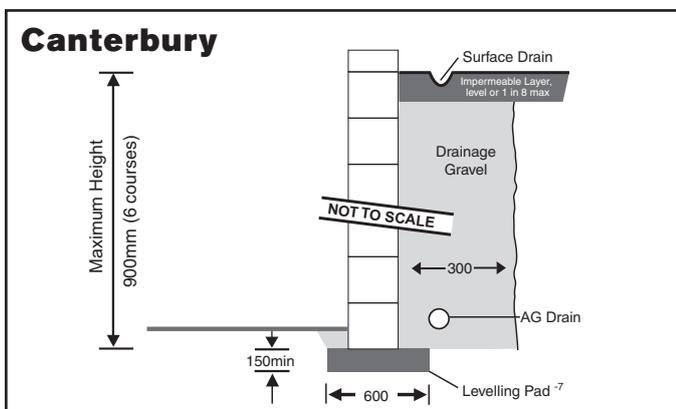
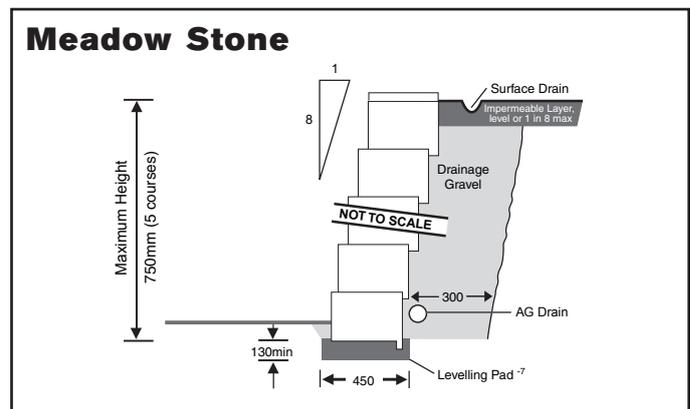
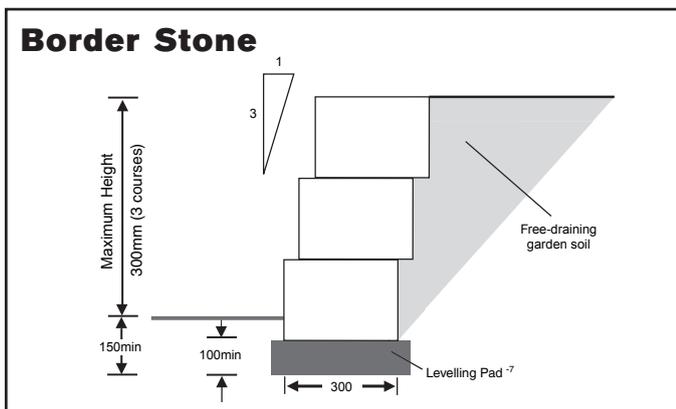
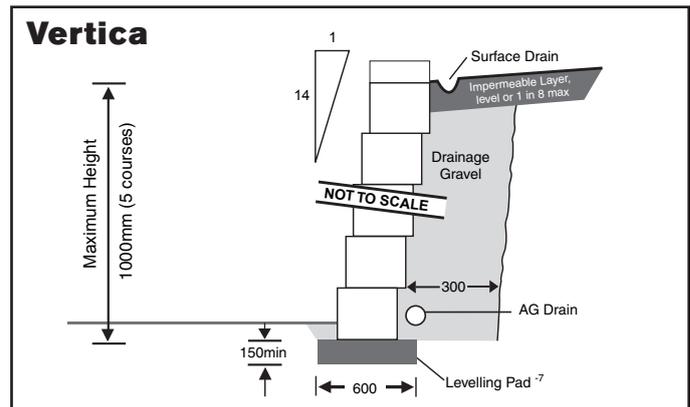
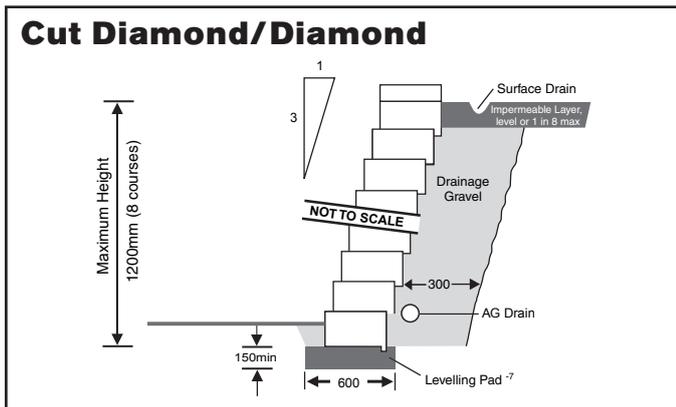
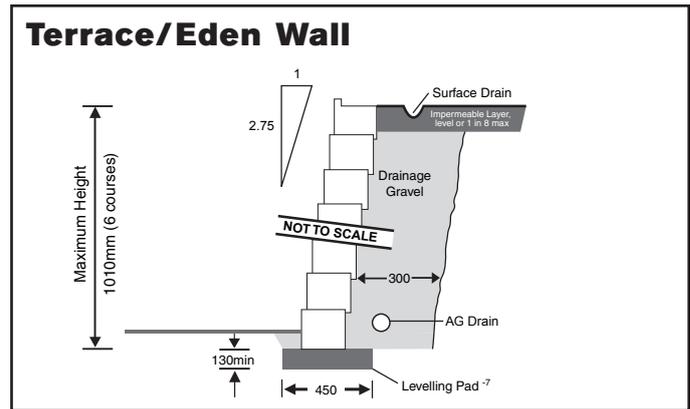
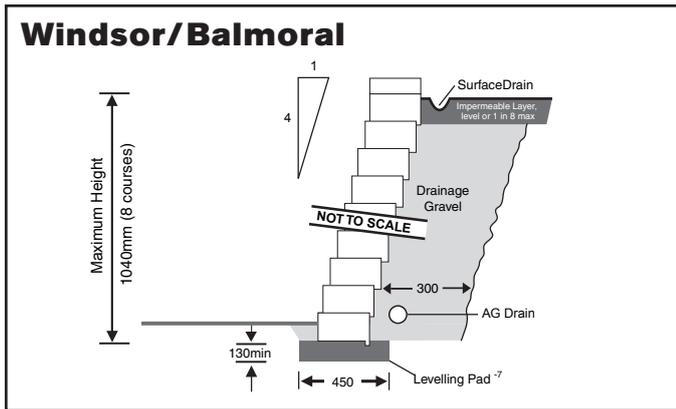
Alternate orientation of corner half units with each subsequent course



Use full blocks in the corner of inside corners

nd drainage. Pay special attention to getting your levelling pad (or
ur bed is compacted to the correct size. Drainage gravel should be 10-
blocks will dictate how the final wall looks, so lay them square and true,
of the blocks and tap them down with a rubber mallet. For walls that run
will be necessary to 'step' the foundation trench down in block height
: your local supplier.

Cross Sectional Diagrams



CONDITIONS:

- All retaining walls are designed to CMAA document .MA53 (Segmental Concrete Gravity Retaining Walls Design and Construction Guide)
- All retaining walls shall comply with AS 4678 Structure Classification A.
- These tables are only applicable to retaining walls that incorporate an impermeable surface membrane and drainage system such that there can be no ingress of any water into the soil behind the retaining wall.
- Structures that do not incorporate an impermeable surface membrane and drainage system such that there can be no ingress of any water into the soil behind the retaining wall are deemed to be outside the scope of this brochure and reference should be made to the Commercial Retaining Wall brochure.

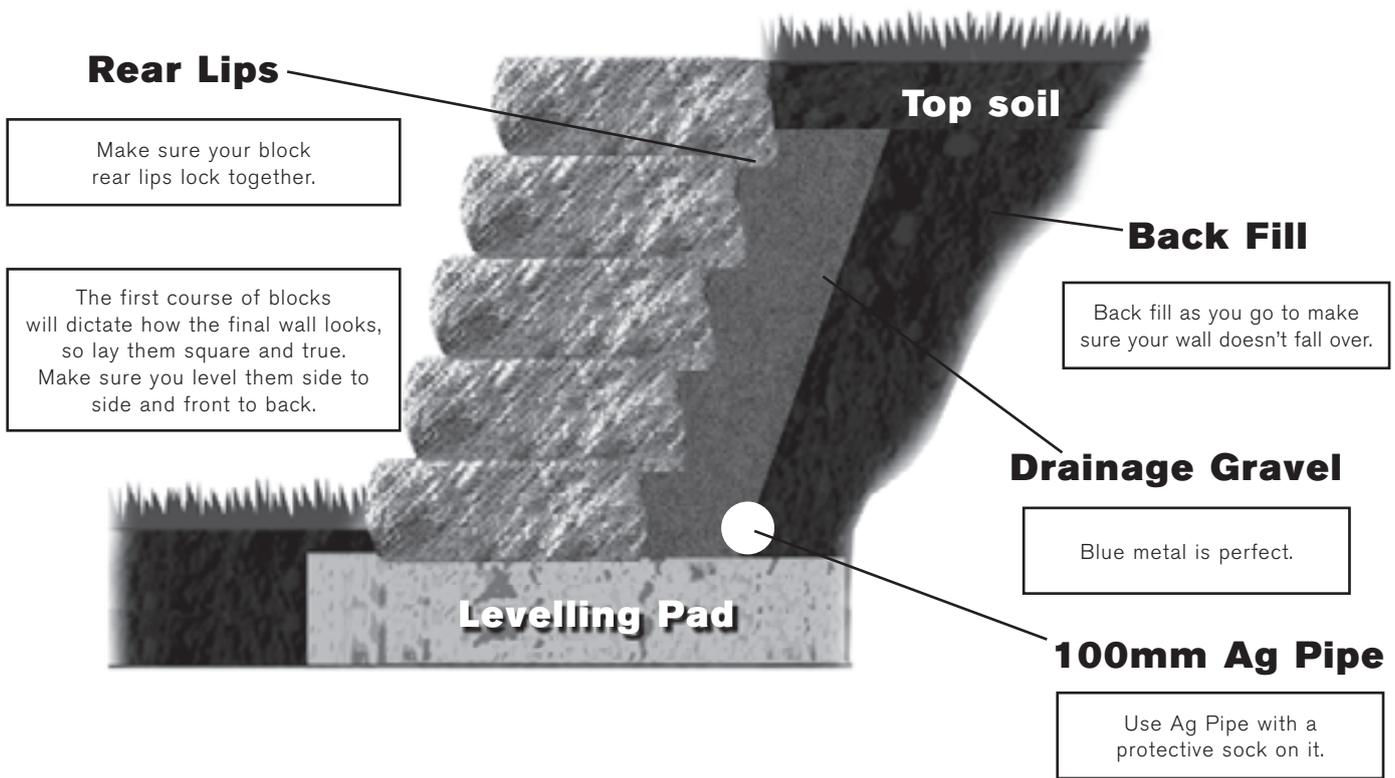
5. These tables are applicable to cuts in situ soils. The Tables are not applicable to cohesive fill.

6. All retaining walls are designed for an imposed surcharge load of 2.5 kPa. If imposed loads greater than 2.5 kPa are expected, these designs will not be appropriate.

7. Levelling pad: a levelling pad may consist of compacted material (5% cement stabilised crushed rock) for wall heights up to 800mm. Walls over 800mm high must use 20MPa concrete for the levelling pad.

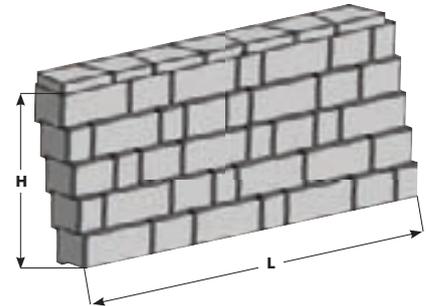
8. This design information is a guide only. For walls exceeding the nominated heights as above, please refer to the Retaining Wall Systems Technical Brochure. Walls exceeding maximum heights shown will need to be designed and certified by a qualified engineer. Please consult your local council to confirm if you require council approval for your proposed retaining wall. Terrace is known as Eden Wall in Tasmania.

the components to a retaining wall



how many blocks you will need

1. Determine the length (L) and height (H) of the wall
 2. For wall units, multiply the L x H x the number of block units per m²
 3. For capping units, multiply L by the number of units per lineal metre
- Please refer to the Product and Colour range brochure for this information



how to plan for curves

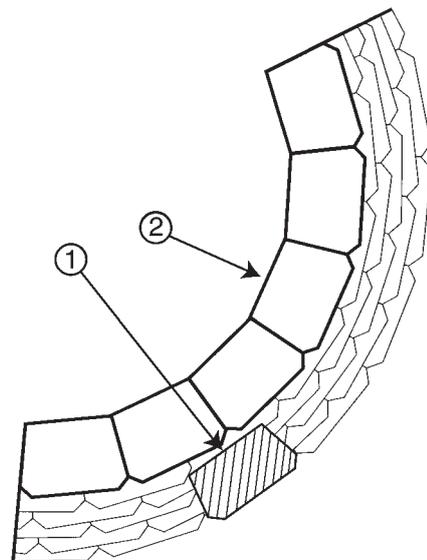
MINIMUM RADIUS AT THE BASE ①

Balmoral/Windsor = 880 mm + 32mm x No. of courses installed
 Cut Diamond / Diamond = 820 mm + 50 x No. of courses to be installed
 Border Stone = 500mm + 19mm x No. of courses to be installed
 Canterbury = 1600mm

Curves will cause the bond pattern to shift.
 The required bond pattern should be planned before commencement of placing first units.

MINIMUM RADIUS OF TOP COURSE ②

Balmoral / Windsor = 880 mm
 Cut Diamond / Diamond = 820 mm
 Border Stone = 500mm
 Canterbury = 1600mm



additional information for:

Meadow Stone walls

Meadow Stone differs from other Hanson retaining walls in that it comes in three different facing widths. These small, medium and large width blocks are laid either in a repeating three pattern - or at random to break up the formal look.

The split faces of the blocks are not bevelled thus preventing the 'picture frame' effect. No mortar means the blocks butt neatly and seamlessly together on all sides. Importantly, as the wall can be built as little as eight degrees back from vertical, the Meadow Stone wall face doesn't look 'stepped' to the passer-by. The effect is of a seemingly continuous wall of natural stone.

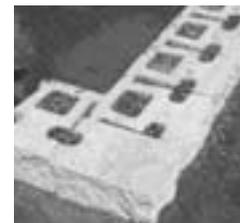
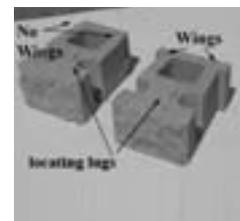


Canterbury walls

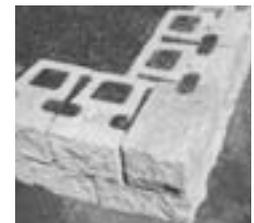
The standard wall units in the Canterbury product have locating lugs which must be laid facing up on all courses except for the top course. This will ensure they fit inside the cut-out recesses of the blocks above. Make sure you backfill the cores of each block using 10-20mm blue metal drainage aggregate to give the wall the required stability. Every block needs to have the cores filled. For the top course, lay your blocks upside down so it hides the locating lugs.

The Canterbury system allows you to easily building both 90° internal and external corners as it comes with a purpose built corner unit. This corner unit can be used for both left and right hand corners by simply turning the unit upside down. To lay a corner unit, place the two rough-sides facing out. Then on either side of this corner unit, lay standard units. For each subsequent course of a corner, you need to alternate the direction of the corner unit to achieve bond. As the corner unit does not have locating lugs, each corner unit must be glued down with construction epoxy.

For curved walls, knock off the 'wings' from the back the block using a bolster.



First course of a corner



Second course of a corner

building steps

1. Dig out the area to be stepped. The slope should lean back at around 20 - 30° to horizontal and allow for the block volume and backfill.
2. Lay the first course of blocks (either one or two rows front-to-back depending on block size) as per the wall instructions.
3. Backfill using road base to the top of this course and compact firmly. Alternatively you can backfill with concrete or simply lay 2 blocks back-to-back. It is important that any material used as your next step foundation is exactly level with the top of the first course of blocks.
4. When using Diamond blocks lay the second course with the blocks lipped over the first course by 35 - 50mm. Secure these in place with concrete adhesive. With Balmoral, Windsor and Meadow Stone, lay two rows front-to-back to make the step or use capping stones or gravel infill to get a front-to-back step dimension of around 250mm.
5. Repeat steps 3 and 4 to reach the required height.

