

GreenLock L9

Heavy Duty Retaining Wall Block (RWB)

Features and advantages of the L9 retaining wall block

- 1. The L9 RWB has the ideal weight to size ratio and is designed to build strong, heavy duty and high retaining walls.**
- 2. The overall dimensions of the L9 are :
330mm wide x 320mm deep x 200mm high, 12mm high front lip.
When laid with a 205mm open gap or with a slider, one needs 9 blocks/m² and when laid without a gap 15 blocks/m².**
- 3. For optimum tensile and compressional strength the block has an increased wall thickness of 50mm, tapered to 55mm. At high tensile areas the wall thickness of the block is increased to 70mm/75mm.**
- 4. The 320mm block depth provides important weight at the back of the wall where it is most needed for wall weight and stability.
Most of these type of lip blocks with an open face layout, lack that depth penetration into the embankment.**
- 5. The weight of the L9 RWB without the slider is 28kg. The slider weighs 6 Kg. The length of the slider is 205mm, which also determines the max. gap between the blocks when laid in an open face layout without a slider. The slider has an added advantage of providing a weep hole on top and in the centre of the slider.**
- 6. When the L9 is laid without a gap and direct next to each other in a straight line or in curves, the L9 has a unique positive interlocking feature between each block, guaranteeing intimate contact and perfect front face alignment between the blocks at all times.
This design registered interlocking feature will also increase the stability of each row laid and at the same time also strengthen the whole retaining wall. The positive interlocking between each block is achieved through female and male nibs placed vertically on the side of each block.**

- 7. To further increase wall stability the L9 is making use of the unique and revolutionary new GreenLock anchorage system. Two grooves run parallel to the front face of the block and are placed near the back of the block top surface. This groove arrangement enables one to place a inexpensive 6 to 12mm round steel bar, Y6 up to Y12 reinforcing rod or such, into the groove to anchor each block to each other. In addition each block row can be secured into the embankment by simply using a polyurethane, or 8 gauge galvanised wire, at predetermined intervals tied around the steel bar and at the embankment around an anchor/pipe driven into the soil/embankment, or wrapped around a L9 block filled with a weak cement mix, at any allowable distance, either into virgin soil, soilcrete or into the compacted backfill.**
- 8. Whether the L9 block is laid with or without a gap, each row of blocks is interlocked and anchored to each other through the steel round bar, Y-reinforcing rod or such. This type of anchorage is very effective, inexpensive and simple to use. The design has been registered and is unique to the GreenLock retaining wall blocks.**
- 9. Convex curves in retaining walls are usually weaker then concave curves. To be able to anchor the convex curved wall as well with a steel rod an indent has been placed at the back of the block centre on the top surface. This groove allows the polyurethane rope, or the 8 gauge galvanised wire tied around the round bar or a Y-6 (for easier bending into a curve) reinforcing bar, to pass through the block surfaces, because the gap provided for by the angled sides when the blocks are laid in a straight line, is now closed when the blocks are laid in a convex curve.**
- 10. The L9 has a 55mm wide x 12mm high front lip allowing a wall angle of approx. 70 degrees. When the blocks are laid with a slider the wall angle can be changed to either 62 degrees or 52 degrees. This is achieved because the slider has also a 12mm high lip in line with the block lip. The next block row laid on top of the slider can than rest against the lip of the slider. When the slider is placed back by one vertical groove/nib (the 4 vertical female and the 3 vertical male nibs at the side of the block) the wall angle is approx. 62 degrees and and when placed back by one more groove/nib, the wall angle is 52 degrees.**

- 11. The infill volume of the block is 0.012 m³. Please note that the L9 has on purpose no centre rib wall. The main reason is that the soil cavities of blocks with centre rib walls have smaller infill volumes and heat up the soil more through the sun and therefore hinder proper plant growth. In addition the weight of a three rib block is increased unnecessary. The increased wall thickness of the L9 block allow easier material fill during the manufacturing process, resulting therefore in a far better compaction rate, and the strength tests have proven an increased Mpa strength of the blocks.**
- 12. The L9 has a well defined floor at the front to prevent soil wash out when the blocks are laid with a gap and without a slider.**
- 13 For laying out a perfect and accurate convex curved wall, the blocks are tapered and maintain at all times intimate positive interlocking through the male and female vertical nibs placed vertically on the side of the blocks. Each consecutive block row laid will have a smaller radius and therefore the blocks can hinge around the 1 female and 1 male vertical lip placed at the back of the block. (see paragraph 14)**
- 14. For smaller wall curves less than the curve provided for by the angled sides, the blocks can "hinge" either around the single female and the single male nib positioned vertically right at the back of the block for convex curves, and for concave curves "hinge" around the first front female and male nib at the front of the block. That way the blocks are always aligned perfectly.**
- 15. The L9 can circumvent trees, manholes or other obstacles by simply using the vertical interlocking grooves/nibs to set back or set forward each block by either 40mm or 80mm (pitch of the male and female nibs is 40mm). The face of the blocks are thus always facing parallel to the wall face and provide a stronger, and perfect formed wall indent or protrusion.**
- 16. To set out a perfect convex curve when the blocks are laid with a gap, with or without a slider, one can place in the first "set out" row of blocks laid, a slider in the front and one at the back of the blocks. (the slider at the back is turned around with the lip facing downwards) Thus the slider acts as a spacer. That way the curve is perfectly formed and laid out. All consecutive block rows are simple laid against the block lip with either a slider placed at the front of the block or without a slider.**

- 17. Setting out the first block row when the blocks are laid with a gap**

and where a slider is not required, use a slider as a distance piece to form an exact gap length between each block.

There are 3 vertical inverted grooves placed on the front face of the block. The centre groove is a marker to lay each consecutive row of blocks exactly over the block joints of the block row underneath when the blocks are laid without a gap, or directly over the middle of the slider when the blocks are installed with a slider. For this purpose the slider has also a protruding vertical marker in the centre. The 2 outer grooves on the block face have a pitch of 205mm which is also the max. gap the blocks can be laid with an open face, either with or without a slider. The length of the slider is also 205mm. Each consecutive block row laid is then placed exactly in the centre over the 205mm gap using the 2 outer grooves on the block face as a template.

The 3 vertical marker grooves are there to help the installers to form an evenly distributed and fluted wall face resulting in a beautiful and balanced looking wall.

19. For extreme high, stable and solid walls the L9 can be designed and laid in double or multiple rows of blocks to increase the wall weight as well as to prevent over movement in extreme conditions. If required the blocks can easily be vertically reinforced and filled with concrete.
20. The L9 has been designed and engineered to be stacked and transported without pallets using a grab truck. Thus the stacks can be easily stored, counted, shrink wrapped or strapped, resulting in quick loading and off loading without pallets left behind. Building sites are kept tidy and free of unsightly collapsing stacks and unnecessary breakages. Trucks can offload and move off site quickly without hindering building activity.
21. The finished GreenLock L9 installed retaining wall, laid with or without a gap, with or without a slider, are stable, strong, durable structures and aesthetically pleasing to the eye.
22. The L9 can be planted in all possible layouts, except when the blocks are laid next to each other, without a gap.

22. We at GreenLock always advise to use the services of a qualified civil engineer to design any retaining wall higher than 1.2m.

That way you are sure the wall will last forever and importantly, falls within the required Municipal guide lines and regulations. A proper engineer designed retaining wall will further help to prevent any future possible wall failures due to wrong installation.

Updated 25.07.16/09.11.16/21.11.16/14.12.16/07.01.17/10.05.17/05.11.17