# HOW-TO Link Block Walls

This guide has been written and compiled for the home handyperson. Following these instructions will help you achieve an excellent result that you will be proud of.

However, for a truly professional finish, we suggest you contract a professional landscaper to do the job for you. The method followed in this guide is used by many professional landscapers but many will have their own individual variations or in some cases completely different approaches. Please remember, this is not the only method for building a link block retaining wall, just the method we have found to offer the greatest balance of cost and labour.



## STEP ONE Planning

If you're planning to build a retaining wall or even a small garden wall there are some details you will need to consider:

- Plan where you are going to build the walls - get an idea of their overall length and height, straight or curved etc. This will influence your design and blocks choice.
- Is the ground where the wall is to be build firm, stable and natural ground?
- Will there be any surcharge behind the wall such as buildings, swimming pools, driveways etc?
- Does your site have adequate storm water solutions installed or have problems with underground or surface water drainage?
- Check with your local council to see if you need to get a building permit for the works required. Heights of the wall and other site conditions can influence this requirement.
- Don't cut corners - build the wall properly! Make sure you are fully aware of the scope of works before undertaking such a job. If you're in doubt, seek the advice of a professional. There are a number of factors that will need to be thought through including drainage, design and labour.
- If the retaining wall is outside the scope of this brochure or you have questions left unanswered then it will be necessary to obtain the services of a engineer or landscaping professional.

## STEP TWO Area Calculations

Most retaining walls are a relatively simple rectangle whose area is easily calculated.

The area of a rectangle = Length x Height

For example: a wall 10m long and 1m high = 10 x 1 = 10m$^2$ (square metres - not to be confused with metres squared which is technically 10m x 10m in this case).

In some cases your wall may step up or down as it travels along a slope. In this case you will be determining the area of a Trapezium.

The area of a trapezium = Length x (Lowest Height + Tallest Height ) ÷ 2

For example: a wall 10m long and 1m high at one end and 0.5m high at the other = 10 x (1 + 0.5) ÷ 2 = 7.5m$^2$

Once you have a face area for your wall, the quantity of blocks, caps and corner required are easily determined by referencing your chosen link block system product guide.

### CHECK OFF YOUR EQUIPMENT

To build a basic wall you will need:

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

To split blocks you will need:

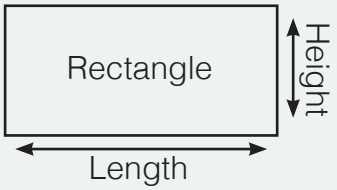
- ☐ Hammer & bolster
- ☐ Safety glasses

For larger jobs you may also require:

- ☐ Bobcat
- ☐ Circular wet saw (masonry)
- ☐ Plate Compactor
- ☐ Ear muffs
- ☐ Geosynthetic reinforcement mesh

### SAFETY

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

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# **STEP THREE** Selecting Your Link Wall

When it comes to selecting which link wall block is right for your project there are a couple of things you will need to consider from with both function and form. Not all link wall blocks are suitable for every application.

Things to consider:

- Wall height.
- Site access.
- The possible surcharge behind the wall.
- Will the wall curve or be straight.
- Do you want a flush face finish or a traditional link style.

Various walls will be suitable in different scenarios and we recommend discussing your specific project requirements with the Centenary Landscaping Supplies Sales Team.

**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.

# **STEP FOUR** Construction

## 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 a tap on and the spray nozzle off, as the water pressure will form a more uniform curve.

## DIG A TRENCH

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

## ADD LEVELLING PAD

Spread road base or pour concrete along the bottom of your trench (refer to product specifications to determine the appropriate material and depth of 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 mechanical whacker packer.

## LAY 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.

## BACKFILL

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

## INSTALL THE DRAIN

If required, place a 100mm drainage pipe behind the first course of blocks on the bed of drainage gravel. 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.

## CONTINUE TO LAY

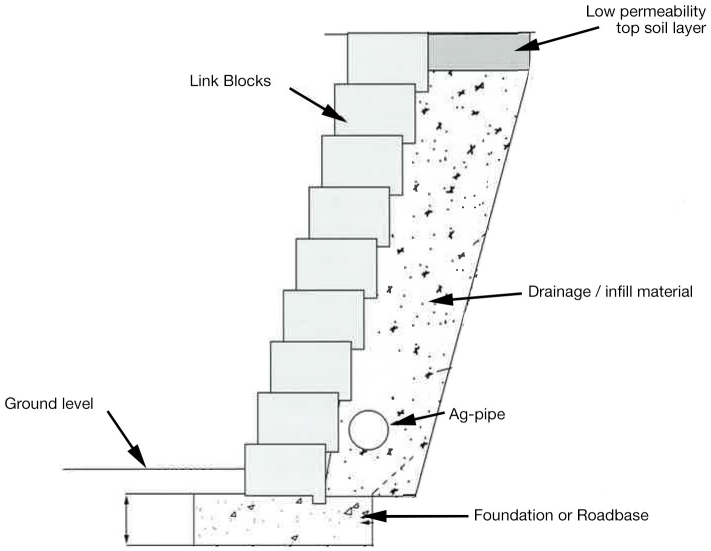
Simply add your subsequent block courses to a maximum height stated in the cross sectional diagrams on the product specifications. Remember to backfill with drainage gravel as you go, and compact it when 300mm deep. Sweep the top of each course before laying the next to remove all foreign particles.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

## 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 course using construction epoxy like Liquid Nails. Capping units (if applicable) should also be glued to the top course using the same construction epxoy.

# **FURTHER** Reading

## Typical link block wall cross section.




Link Blocks: Link blocks come in a variety of shapes and sizes. A traditional diamond style link block tapers back layer by layer. Most councils will require certification for walls built over 1m in height. Link walls such as the Windsor Block from Adbri Masonry are engineered to be built up to 1 m in height.

Ground Level: The first layer of the retaining wall should be partly buried to add extra strength the wall itself.

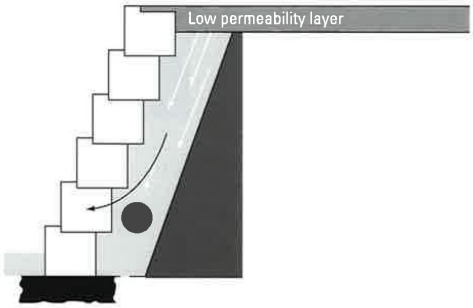
Low permeability top soil layer: This is the layer of garden bed, paving, turf, concrete or other surface treatment you intend to have meeting up to the back of your new wall.

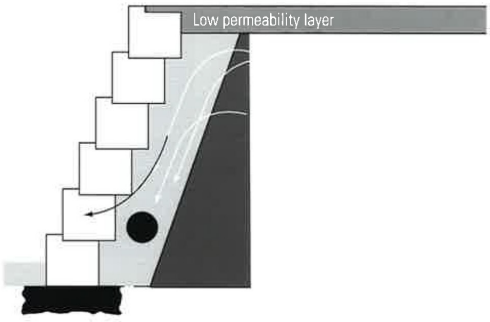
Drainage / infill material: Drainage material for most residential retaining walls under 1 metre is a 20mm Drainage Gravel. Some cases there may be a requirement for No Fines Concrete (NFC) which is a specialty mix of gravel and cement which is strong whilst still maintaining its drainage characteristics. NFC mixture is a 6:1 ratio by volume of 20mm (max) clean aggregate and cement. Water content should be such that the cement slurry evenly coats the aggregate and retains a wet/glossy appearance without excess slurry running off. This is typically around 40 Litres per 100kg of cement.

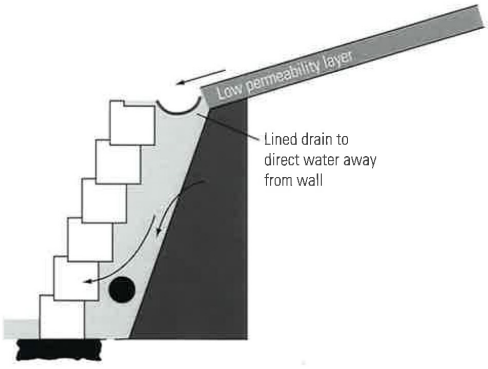
Ag-pipe: In most cases the requirement will call for a 100mm socked ag-pipe.

Foundation or Road base: The foundation can be either solid concrete or compacted Road base. This will depend on your final specification.

## Drainage and Backfill Considerations




Before a link block wall is constructed consideration must be given to the need for and the means of drainage. Each individual site needs to be assessed and measures taken appropriate to the source and the volume of water expected behind the wall. The following general guidelines will help assist in deciding on the type of drainage required, but are not intended to replace more tailored advice.

A. Only direct rain on backfill

Where there is a small width of backfill, drainage gravel is sufficient. Where there is a large width of backfill a low permeability layer may be required such as concrete, pavers, heavy clay soil to stop the backfill becoming saturated.

B. Sub-soil seepage entering backfill

In this case it will be necessary to intercept the water and direct it away. This can usually be achieved by providing a layer of gravel behind the wall to collect the water and an ag-pipe at the base to carry they water away.

C. Areas of heavy rainfall or surface run-off water

In this case the surface must be sealed with a low permeability layer to prevent saturation of the backfill and a surface drain provided to direct water away in order to proven scouring.

Drainage is one of the most important aspects of a well built retaining wall and it should not be taken lightly. If your wall is to be built in situations handling high water volumes, carrying large surcharges (less than 1 metre from a driveway or structure) or over 1 metre in height, we recommend contracting a professional to help you with your project.

# TRICKY BITS

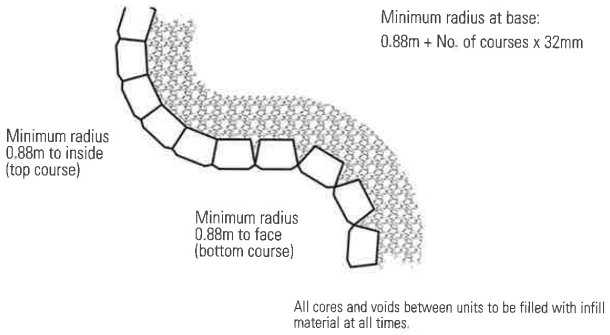
## ROUND CORNERS

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 the string. Many products guides will give clear specification of the tightest diameter available for their block design.

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 adhesive.

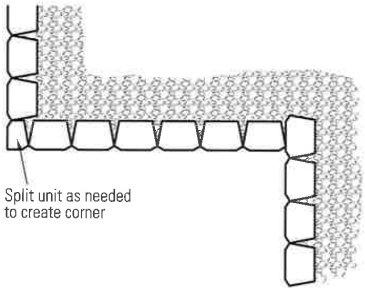
Handy Tips: save on material costs by chiselling partial units from damaged or chipped blocks.



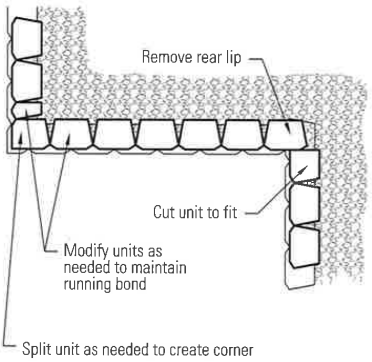

All cores and voids between units to be filled with infill material at all times.

## 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 (e.g. 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.




## CARE AND MAINTENANCE

Avoid using acids on masonry blocks, particularly Hydrochloric Acid unless you are 100% certain of the correct application and removal process. In the wrong hands, acid can and will destroy the surface of your masonry products. There is a full range of products specifically designed to clean, rejuvenate and protect masonry products available in-store.

Generally, retaining wall blocks do not get sealed after installation due to their vertical nature but it can be a relatively simple process and you will keep your blocks looking great for many years. There are a number of sealing products available and for a vertical application a water based sealer would be the most straight forward option. They can be applied using a garden variety pump pressure sprayer. Using water based means the equipment can be easily cleaned and used again. If you would prefer to seal your blocks with a solvent based sealer, which does provide superior protection, we recommend purchasing a cheap pressure pack with the intention to discard after use. You can purchase heavy duty pressure sprayers with stainless steel fittings, but for a one off treatment the expense is unnecessary.

In most cases cleaning can be carried out using a high pressure hose or gurney. Most soiling or staining is caused by dirty water contact, moss and mold caused by moisture in and around the blocks and general atmosphere pollution like dust and dirt in the air and rain. For more stubborn soiling, heavy duty alkaline or chlorine based masonry cleaners similar to what one would use to treat pavers is sufficient.



We recommend before completing any retaining wall project you visit the Brisbane City Council website and submit a Level of Assessment Inquiry Form which is a free and easy way to find out if you need to submit an application to council for building works and or obtain engineering for your wall.