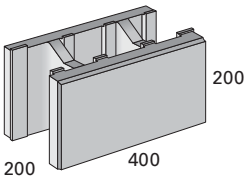
Connex™
Mortarless block wall system from Boral
The Boral Connex mortarless system comprises three modular components which key together eliminating the need for mortared joints above the first course.

- The system is quick and easy to install
- Can be laid quicker than a standard block wall
- Minimal need for mortar
- Reduced wet waste on site
- A DIY alternative
- Only three components no clips required

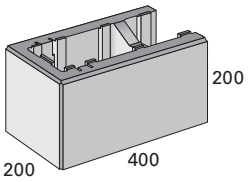
Components

Stretcher Unit



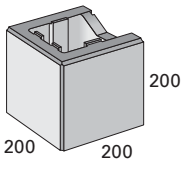
16kg (approx)
The Connex Stretcher is the main unit. It is called a 'stretcher' as it stretches between end blocks and corner blocks.

End and Corner Unit



16kg (approx)
The Connex End and Corner unit can be used for either left or right hand corners as well as a full end block.

Half Unit



9kg (approx)
The Connex Half unit, used as an end block allows wall lengths to be built in multiples of 200mm. It is also used on each 2nd course at window and door opening, alternating with the Connex End and Corner units.

Connex™ Blocks Additional Information

Sizes
Contact your nearest Boral Masonry sales office for the full range of Connex sizes available in your state. Not all sizes are available in all regions. Custom Connex sizes are available, however minimum order quantities apply.

Colour and Texture Variations
The supply of raw materials can vary over time. In addition, variation can occur between product types and production batches.

We reserve the right to change the details in this publication without notice. For a full set of Terms and Conditions of Sale please contact your nearest Boral Masonry sales office.

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Visit **www.boral.com.au/mdg**

02/06

Connex™

Mortarless Masonry Block System

Connex™ Mortarless Masonry Block System

Connex™ is a dry–stack masonry system

When reinforced and core-filled, Connex is ideal for load-bearing basement walls, blade walls and boundary retaining walls up to 2m high.

Connex can also be used for non load-bearing masonry when partially reinforced and surface bonded.

Planning

Check with your local council before commencement. Generally, they require reinforced walls and footings to be designed by a suitably qualified engineer.

Design

Wall heights and lengths should be in multiples of 200mm to avoid cutting.

Estimating

- There are 12.5 full Connex blocks per m^2
- There are 5 courses per vertical metre.
- There are 2.5 Half units per vertical metre at ends and openings.
- There are 2.5 Full end units per vertical metre of ends and openings.
- There are 5 Corner units per vertical metre at corners.
- One cubic metre of concrete grout fills 93 Connex blocks (7.44m^2)

Construction

Where starter bars are required (retaining walls), the first starter bar is 100mm in from all ends and corners.

The 2nd starter bar is 300mm from the 1st bar. See fig 1.

Other starter bars are spaced at 400mm or 200mm as required by the engineer.

A clean-out course is not required as there will be no mortar droppings, however the cores must be kept clear of rubbish.

The first course of Connex is laid with nibs on top, in a bed of conventional mortar as footings and floor slabs are seldom perfectly level.

The following courses are dry-stacked. Check each course is plumb and level. Use tile wedges to adjust, inserting them from inside the core.

Grout-fill Connex blocks with 20MPa concrete with a maximum aggregate size of 7mm and a minimum quantity of 300kg cement per cubic metre.

Walls over 1.5m high should be filled to half way, allowing half an hour before returning to start to fill the remainder. This is to give the first part of the pour enough time to firm, reducing the amount of hydrostatic pressure at the bottom of the cores.

Fire

The Connex system can achieve the highest Fire Resistance Level (FRL) required by the Building Code of Australia (BCA): 240/240/240

The BCA allows FRLs for building elements of masonry to be determined through accordance with AS3700, the Masonry Structures code.

When reinforced and core-filled, Connex system achieves a 240 (Srf < 36) / 240 / 240 FRL from the following:

The 240-minute Structural Adequacy FRL is achieved when these blocks are reinforced and the Slenderness ratio (Srf) of the wall is less than or equal to 36 as per Table 6.1

A typical basement wall of 3.6m high has an Srf of 15 from Formula 6.3.2.2(2) which is less than half the maximum allowed.

The 240-minute Integrity FRL is achieved as per Clause 6.4.2 which requires the other 2 FRLs to reach 240-minutes.

The 240-minute Insulation FRL is as per AS3700:2001, Table 6.3 which requires 180mm of concrete masonry material. The Connex block has 200mm of material.

Strength

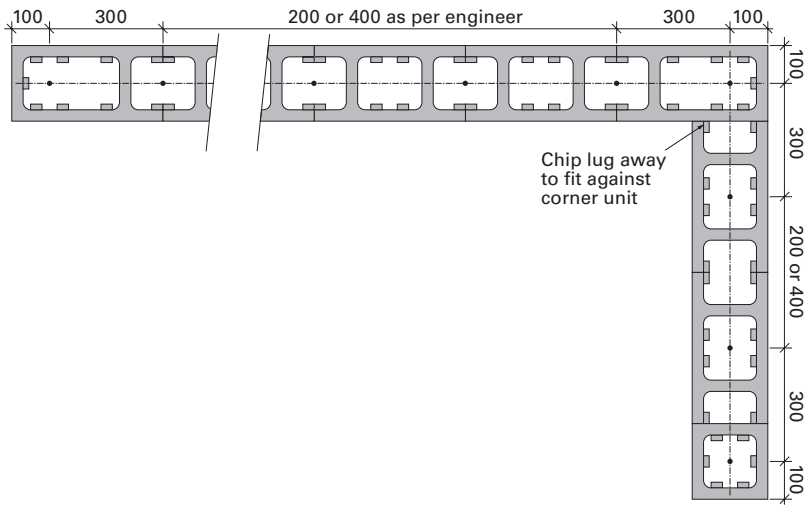
The minimum characteristic unconfined compressive strength (*f'*uc) of Connex masonry units is 15MPa when tested as per AS4456.4:2003.

Sound Rating

The highest sound rating required by the BCA is Rw + Ctr 50. This is for party walls between home units.

Mass Law calculations and similar tests show this can be achieved with the addition of 10mm of render to each face of the Connex block. If the party wall divides a wet area from a habitable room in the other unit, a stud wall, (no wall ties) around the wet area, with plumbing between studs can be added to achieve the required impact rating.

Fig 1. Starter bar spacing from ends and corners



Connex™ Mortarless Masonry Block System
Construction Steps

01 **Starter bars**
Where starter bars are required (retaining walls) the first starter bar is 100mm in from all ends and corners. The second starter bar is 300mm from the first bar. Other starter bars are spaced at 400mm or 200mm as required by the engineer. Please see Fig 1. A clean out course is not required as there will be no mortar droppings, however the cores must be kept clear of rubbish.

02 **The first course**
The first course of Connex is laid with nibs on top, in a bed of conventional mortar as footings and floor slabs are seldom level.

03 **90° corners**
To form a 90^0 corner, lay one Connex Corner/End unit.

04 **Remove nib**
Chip the vertical nib off the end of a Connex Stretcher unit to fit flush with the side of the Connex Corner/End unit.

05 **Half units and corner/end units**
Half units and corner/end units are laid to alternate courses to form an end or opening.

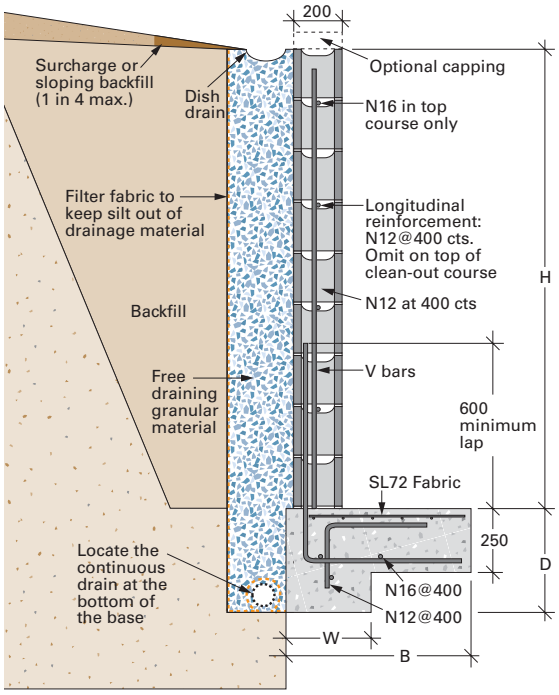
06 **Following courses**
The following courses are dry-stacked. Check each course is plumb and level. Use tile wedges to adjust, inserting them from inside the core.

07 **Horizontal reinforcing**
Horizontal reinforcing steel bars can be easily positioned into the block recess. After chipping away a recess between the knock-out grooves in the side of Connex 92 block.

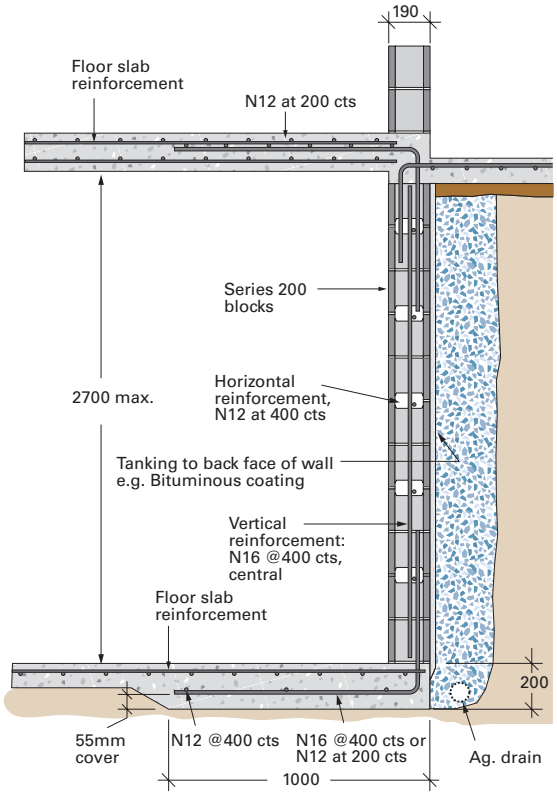
08 **Grout fill**
Grout fill Connex blocks with 20MPa concrete with a maximum aggregate size of 7mm and a minimum quantity of 300kg cement per cubic metre.

Connex™ Mortarless Masonry Block System
Typical Details

Section through Retaining Wall



Fully Propped Wall



Connex Design Guidelines

			Base dimensions			
Wall height	**Steel details**		**Level backfill**		**Sloping Backfill max 1:4**	
Total height (mm) H	Reinforcement V-bars	Heel width (mm) W	Base width (mm) B	Heel depth (mm) D	Base width (mm) B	Heel depth (mm) D
800	N12 at 400	450	600	500	800	500
1000	N12 at 400	450	800	500	1000	500
1200	N12 at 40	450	1000	500	1200	600
1400	N16 at 400	450	1200	500	1400	600
1600	N16 at 400	450	1400	600	1600	700
1800	N16 at 400	450	1600	700	1800	800
2000	N16 at 400	600	1800	700	2000	800