

DESIGNA BASALT BRICKS

laying guidelines

Guidelines for laying Designa Basalt Bricks

These guidelines are to provide a best practice guide to laying Designa Basalt bricks, which, when followed will reduce common problems.

Compliance

Austral Bricks Designa Basalt is a natural stone product for use as an external cladding or as an internal walling material. Designa Basalt is manufactured to AS/NZS 4455.1 Masonry Units. As such, Designa Basalt is a masonry material that complies with the performance requirements of the National Construction Code, NCC, Volume 2 Clause 3.3.1 unreinforced masonry when designed and constructed in accordance with AS 3700.

Designa Basalt meets the requirements of NCC Clause 3.3.4 weatherproofing of masonry when designed and constructed in accordance with AS 3700. This is based on the service history of masonry in cavity or veneer construction with a drained and vented cavity.

Initial rate of absorption

Austral Bricks manufactures Designa Basalt to satisfy the requirements of the Australian and New Zealand Standard for Masonry Units and Segmental Pavers, AS/NZS 4455. All products, including Designa Basalt, are tested to the Australian and New Zealand Standard for Masonry Units and Segmental Pavers – Methods of Test, AS/NZS 4456. The testing is carried out in Austral Bricks NATA accredited laboratory.

Laying Designa Basalt

Designa Basalt is to be constructed to AS 3700 and the following should be adhered to:

- Designa Basalt bricks shall be full bedded.
- Mortar shall comply with AS 3700 Table 11.1 and be of M4 classification.
- Mortar joints should be 10mm +/- 2mm.
- Masonry wall ties shall comply with AS 2699.1
- Face fixed ties are to be screw fixed. Side fixed ties can be screw or nail fixed.
- Damp courses, weep holes, lintels should be installed in the same way as standard brickwork.
- During installation, use clean water and brush to promptly remove any fresh mortar that splashes onto the brickwork.

Designa Basalt Mortar

Designa Basalt needs to be laid with a bonding polymer addition to the mortar. The acrylic additive is combined with water, in the ratio specified by the manufacturer, and added to the mortar mix. Lanko 752 Bondit is a suitable bonding polymer (Davco Construction Materials www.davco.com.au).

Cleaning

Being a natural stone, care should be taken to ensure a minimal amount of mortar gets on the face of the bricks, and all the mortar haze should be thoroughly removed during the initial installation process.

It is recommended that strong acids such as hydrochloric acid (HCl) are NOT used, as this could create an irreversible reaction in the stone.

Technical Data

Austral Bricks manufactures Designa Basalt to satisfy the requirements of the Australian and New Zealand Standard for Masonry Units and Segmental Pavers, AS/NZS 4455. All products, including Designa Basalt, are tested to the Australian and New Zealand Standard for Masonry Units and Segmental Pavers – Methods of Test, AS/NZS 4456. The testing is carried out in Austral Bricks NATA accredited laboratory.

The properties of the Designa Basalt bricks exceed the minimum requirements:

- Dimensional Category is DW2
- Characteristic Compressive Strength is > 50MPa
- Durability Classification is exposure grade
- Cold Water Absorption is < 3%
- Coefficient of Expansion is 0 mm/m

The technical data for Austral Bricks Designa Basalt are provided in table 5 below:

Table 1. Designa Basalt Technical Specifications.

	Product Name					
	Chisel Stone 76	Chisel Stone 162	Lava Stone 76	Lava Stone 162	Shadow Stone 76	Shadow Stone 162
Dimensions L x W x H (mm)	470x70x76	470x70x162	470x70x76	470x70x162	470x70x76	470x70x162
Dimensional Category	DW2	DW2	DW2	DW2	DW2	DW2
Weight (kg)	5.2	11.1	4.8	8.9	5.2	11.2
F _{uc} (MPa)	> 50	> 50	> 50	> 50	> 50	> 50
α Factor (mm/m)	0	0	0	0	0	0
Durability	Exposure Grade	Exposure Grade	Exposure Grade	Exposure Grade	Exposure Grade	Exposure Grade
Initial Rate of Absorption (kg/m ² .min)	0.05 - 0.15	0.05 - 0.15	0.2 - 0.5	0.2 - 0.5	0.05 - 0.15	0.05 - 0.15
Cold Water Absorption (%)	< 3	< 3	< 3	< 3	< 3	< 3

Design Considerations of Designa Basalt

Designa Basalt can be used as an external cladding material in a brick veneer or a cavity wall. Wall ties are used to secure the Designa Basalt to either the building frame or to another layer of masonry. Typical details are shown below.

In general, wall ties must have 50mm embedment and 15mm cover to external surface of mortar. To achieve this with a 40 to 50mm cavity the maximum raking permitted is 5mm.

When face fixed ties are used, they are to be screw fixed. Alternatively, side fixed ties can be screw or nail fixed.

In a stretcher bonded brick veneer wall or a cavity wall, wall ties must be installed at maximum 600mm centres both horizontally and vertically. In a stack bonded brick veneer wall or a cavity wall, wall ties must be installed at maximum 450mm centres horizontally.

Cavity Brick

Figure 1 – Typical Eave Detail

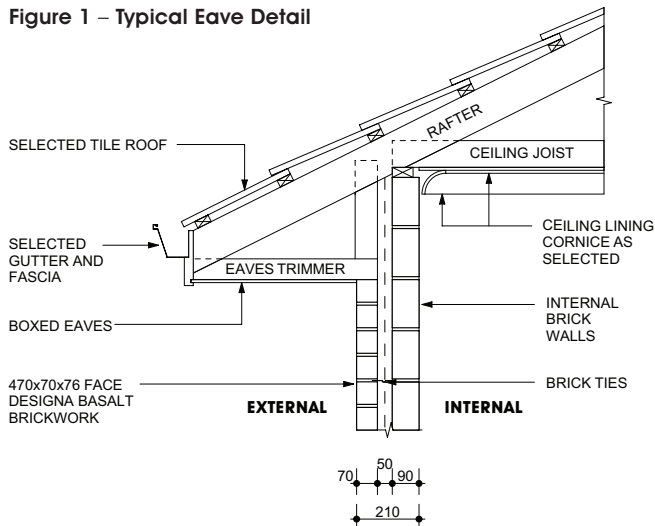
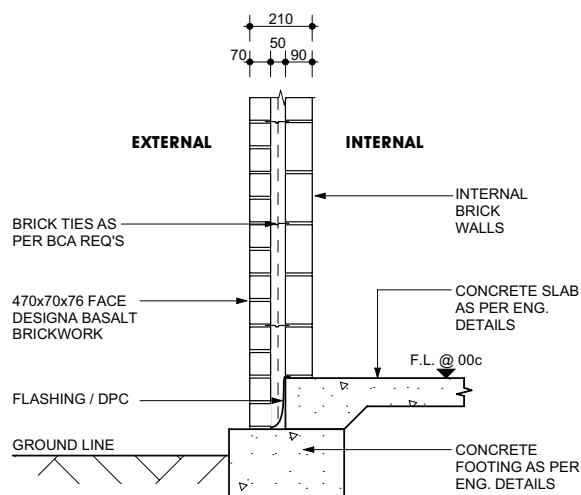


Figure 2 – Typical Footing Connection



Brick Veneer

Figure 3 – Typical Eave Detail

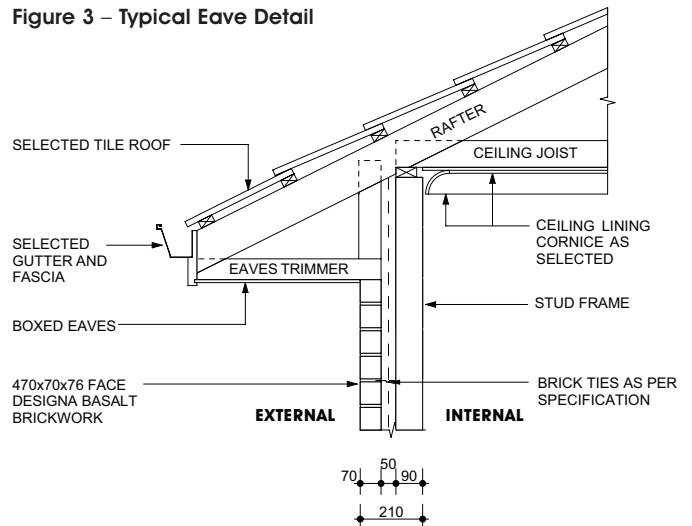
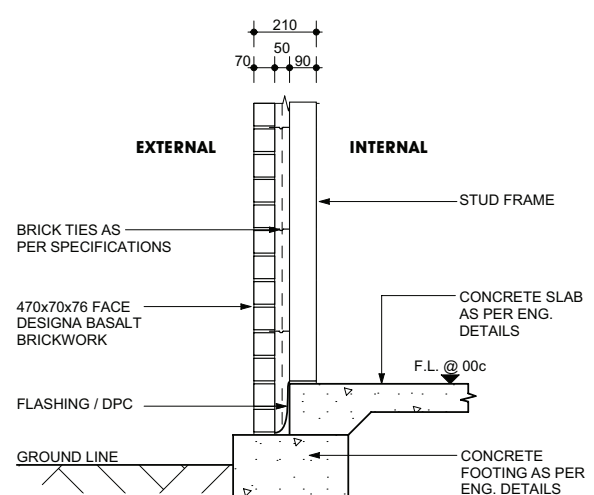


Figure 4 – Typical Footing Connection



Wall Tie Requirements

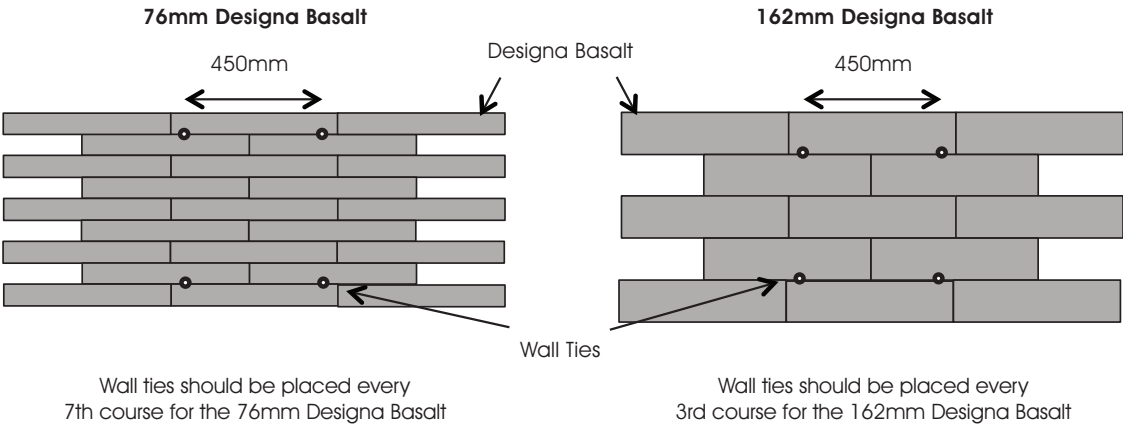
In a stretcher bonded brick veneer wall or cavity wall, when wall ties are placed at a vertical spacing of 600mm centres, the grade of wall ties in each wind class is dictated by their horizontal spacing as shown below.

Table 2 – Wall Tie Spacing - 600mm vertical centres

	Maximum horizontal spacing (mm)					
	General area			Within 1200mm of corners		
Wind class	300	450	600	300	450	600
N1	L	M	M	M	M	H
N2	L	M	M	M	H	H
N3	M	H	H	H	H	-
N4/C1	H	H	H	H	-	-
N5/C2	H	-	-	-	-	-
N6/C3	H	-	-	-	-	-
C4	-	-	-	-	-	-

Note: "L" = light duty, "M" = medium duty, "H" = heavy duty, "-" = no ties suitable.
 Refer to Table 3.5 of AS3700 for mean tie strength for each duty rating.

Figure 5 – Example showing bed course location for wall ties placed at a vertical spacing of 600mm centres and a horizontal spacing of 450mm centres



In a stretcher bonded brick veneer wall or cavity wall, when wall ties are placed at a vertical spacing of 450mm centres, the grade of wall ties in each wind

class region is dictated by their horizontal spacing as shown below.

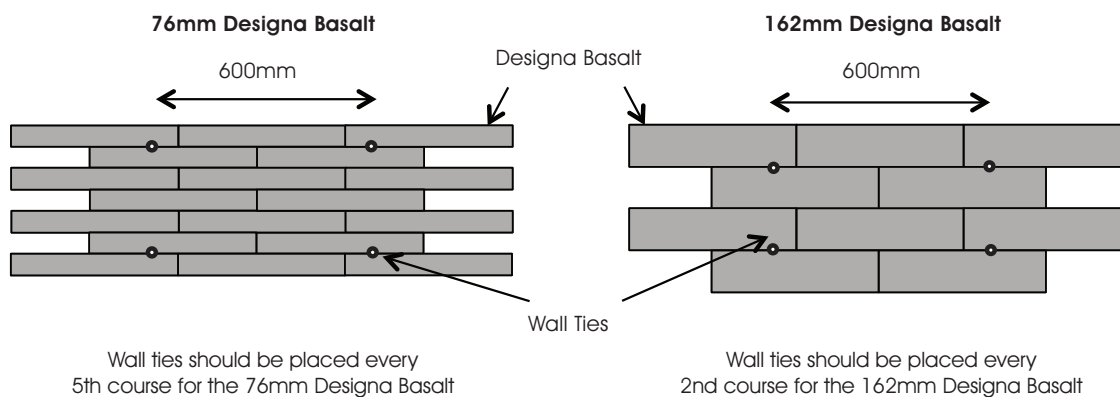
Table 3 – Wall Tie Spacing - 450mm vertical centres

	Maximum horizontal spacing (mm)					
	General area			Within 1200mm of corners		
Wind class	300	450	600	300	450	600
N1	L	L	M	L	M	H
N2	L	M	M	M	M	H
N3	M	M	H	H	H	-
N4/C1	M	H	H	H	-	-
N5/C2	H	H	-	H	-	-
N6/C3	H	-	-	-	-	-
C4	-	-	-	-	-	-

Note: "L" = light duty, "M" = medium duty, "H" = heavy duty, "-" = no ties suitable.

Refer to Table 3.5 of AS3700 for mean tie strength for each duty rating.

Figure 6 – Example showing bed course location for wall ties placed at a vertical spacing of 450mm centres and a horizontal spacing of 600mm centres



For stack bond brickwork, the maximum horizontal spacing of wall ties is 450 mm. The grade

of wall ties in each wind class region is dictated by their vertical spacing as shown below:

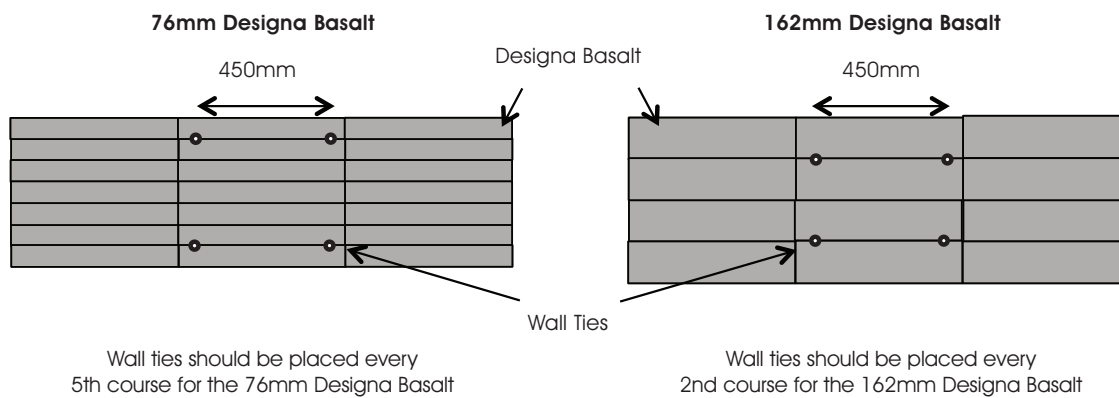
Table 4 – Wall Tie Spacing - for stack bond brickwork at 450mm horizontal centres

Wind Class	Wall tie vertical spacing of 600mm		Wall tie vertical spacing of 450mm	
	General area	Within 1200mm of corners	General area	Within 1200mm of corners
N1	M	M	L	M
N2	M	H	M	M
N3	H	H	M	H
N4/C1	H	-	H	H
N5/C2	-	-	H	-
N6/C3	-	-	-	-
C4	-	-	-	-

Note: "L" = light duty, "M" = medium duty, "H" = heavy duty, "-" = no ties suitable.

Refer to Table 3.5 of AS3700 for mean tie strength for each duty rating.

Figure 7 – Example showing bed course location for wall ties placed at a vertical spacing of 450mm centres and a maximum horizontal spacing of 450mm centres



Internal non-loadbearing wall

Designa Basalt at 70mm thick cannot be used as a single leaf internal wall. Internal non-loadbearing walls need to satisfy the 0.5kPa lateral load

requirements as set out in AS3700. To satisfy this requirement, Designa Basalt must be constructed as a solid wall combined with a 90mm brick. Typical details are shown below.

Figure 8 – Typical Internal Wall Suspended Slab Detail

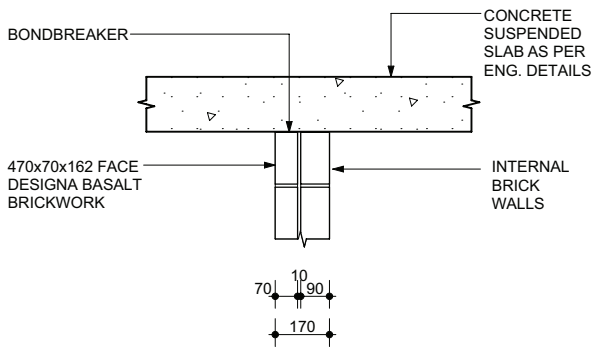
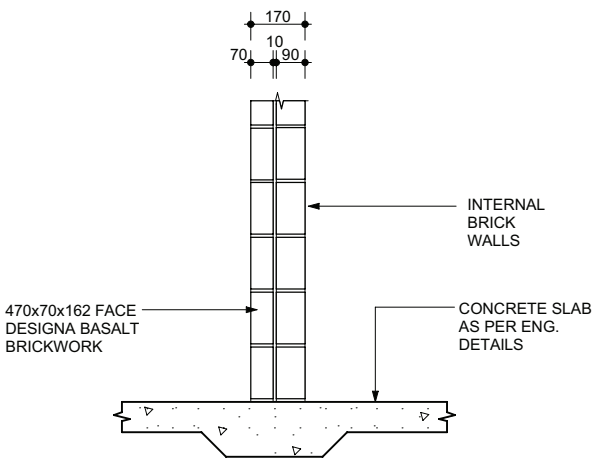


Figure 9 – Typical Internal Wall Detail



Internal Wall Design

When Designa Basalt is laid as a solid wall combined with regular 90mm bricks in a stretcher bond manner, the dimensions of the wall are dictated by the amount of support the wall has.

Consult graph 1-5 for the dimensions of the walls. For stack bond, only graph 1 "Laterally supported top only" applies.

Chart 1 – Wall is laterally supported from the top only

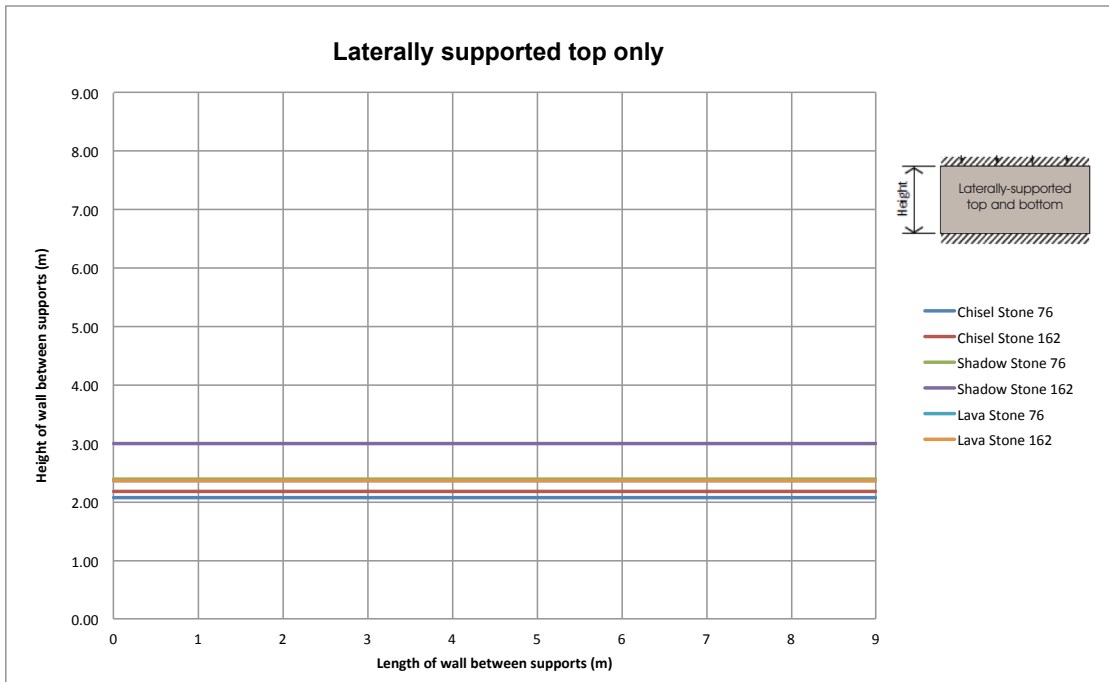


Chart 2 – Wall is laterally supported from both ends and the top

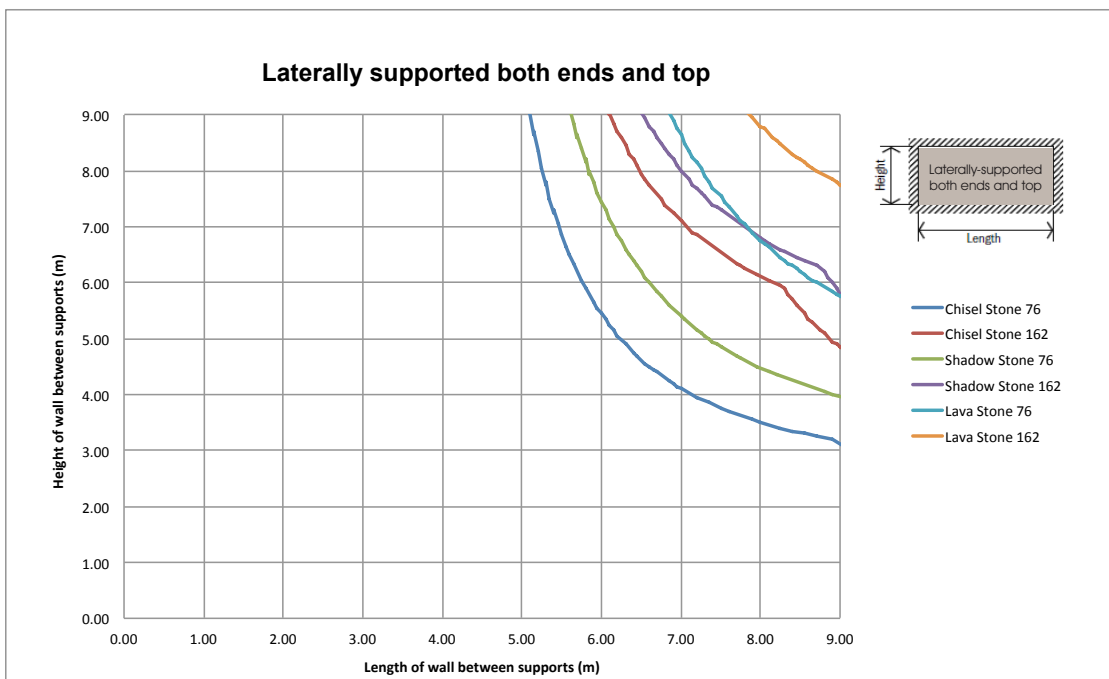


Chart 3 – Wall is laterally supported from both ends only

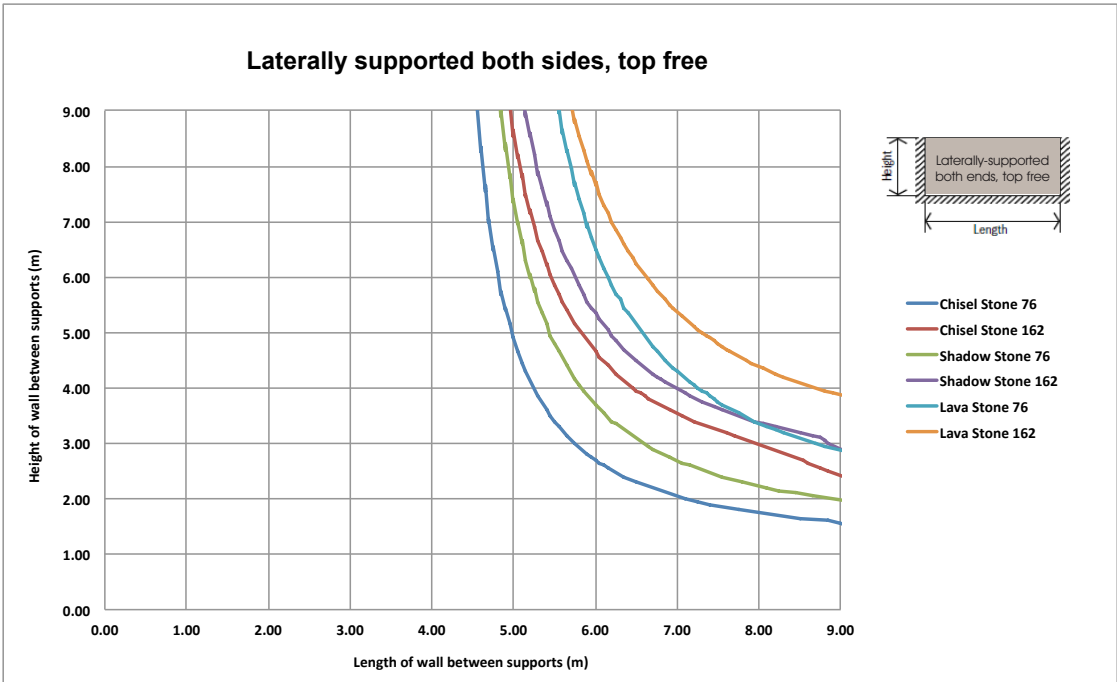


Chart 4 – Wall is laterally supported from one end and the top

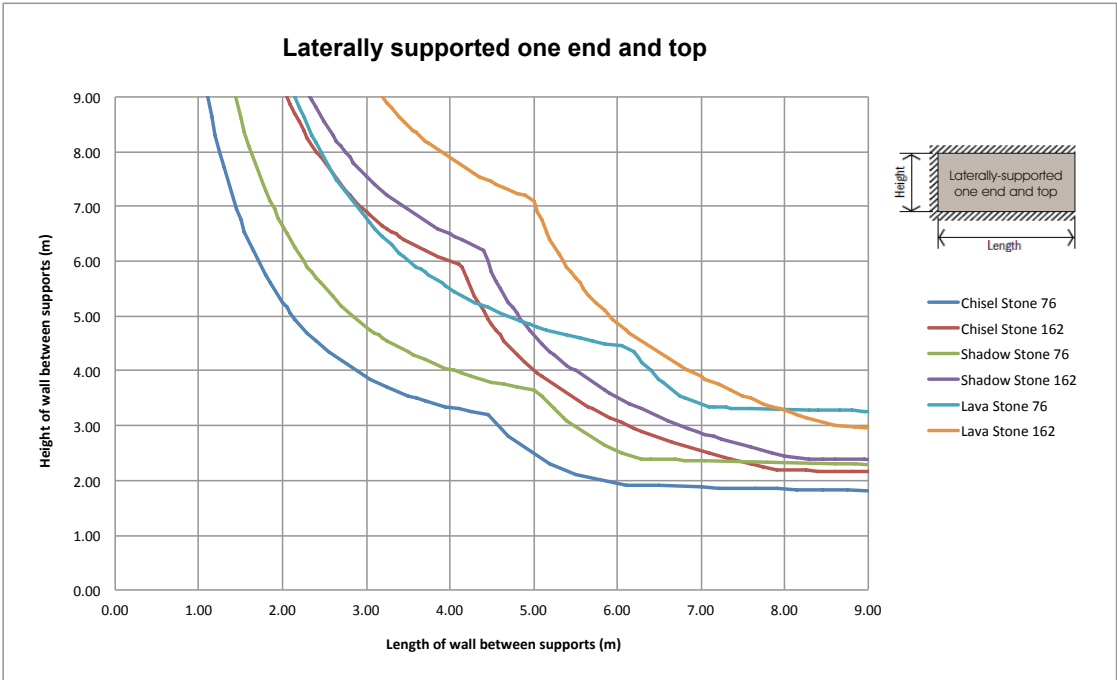
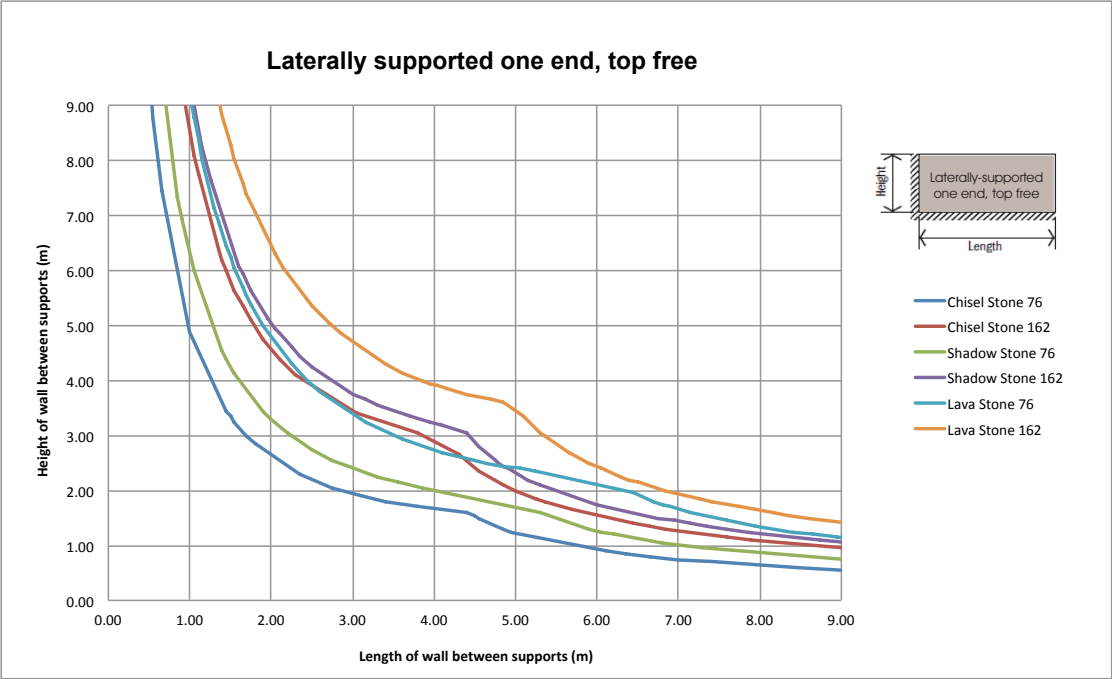


Chart 5 – Wall is laterally supported from one end only





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