

# + Firth Two Storey Brick Veneer Solutions

FIRTH FOCUS® BRICK  
FIRTH STRATA® BRICK  
FIRTH DEVONSTONE® BRICK  
FIRTH MANORSTONE® BRICK  
FIRTH 10 SERIES® MASONRY



# GENERAL INFORMATION

FIRTH 10 SERIES MASONRY, MANORSTONE®, DEVONSTONE®, STRATA® AND FOCUS BRICK VENEERS HAVE BEEN BRANZ APPRAISED FOR USE IN TWO STOREY CONCRETE BRICK VENEER SYSTEMS WITHIN THE FOLLOWING SCOPE.

## SCOPE

- 1 The maximum height of the Firth concrete brick veneer shall be 7.5m above the supporting foundation, except that at gable ends this height maybe up to 10m, and the maximum height above a roof line of 4m.
- 2 The risk score when calculated in accordance with NZBC acceptable solutions E2/AS1 shall be in the range 0-20.
- 3 With the exception of the brick veneer height (specified above) weathertight detailing, shall be as described in E2/AS1, or the BRANZ Weathertight solutions Vol 4.
- 4 The structure shall comply with, and be within the scope of, NZS3604.
- 5 Joinery shall meet the requirements of NZS4211 for the relevant wind zone.
- 6 The products are used as “fair faced” and are not used as a substrate for plaster.
- 7 Installation of masonry is in accordance with NSNZ HB 4236 by or under the supervision of a Licenced Building Practitioner with the relevant Licence Class.
- 8 The minimum width of a panel shall be 390mm.
- 9 Bricks shall not be stack bonded. Bricks shall be at least quarter bonded, but preferably half (stretcher) bond.
- 10 In addition to the above the contents of this document shall be complied with.
- 11 Installation to comply with Firth Brick Veneer Technical Guide.
- 12 Locations of control joints shall give consideration to any vertical alignment of windows above.

The designer must ensure that all other aspects of the supporting structure, including, but not limited to; site bearing capacity & wind speed, stud heights, wall bracing, beam or lintel spans & sizes, veneer lintel bar sizes, structure durability, etc, are all compliant with NZS3604.

Any parts of the structure that do not comply with the requirements of NZS3604 will require specific design.

## Brick Veneer Weights

The approximate weights for products covered by this document are:



This weight is less than the maximum prescribed weight of 220kg/m<sup>2</sup> for “Heavy” claddings in NZS3604, meaning that Firth brick veneers can be used and detailed in accordance with NZS3604 for any building complying with the requirements of this document.

## Wall Framing Studs

Framing shall be as specified in NZS 3604. The maximum spacing of framing supporting shelf angles (see below) shall be 400mm centres.

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## Firth Brick Veneer Construction Shelf Angles Above Lower Roof

Where the Firth brick veneer continues above a lower roof line, provide a galvanised steel shelf angle and 90x70 blocking between studs as required, refer figure 1 and 2 for details. The shelf angle shall be:

**100x75x6mm for Focus® veneers, Strata® and Devonstone®  
125x75x6mm for Manorstone® and 10 Series veneers**

The bottom brick course shall sit on 10mm of mortar bedding.

This angle may rake along a slope as required. In this case the base block shall be cut to the required angle also.

Apron flashings shall be provided between roof and wall in accordance with clause 5 of NZBC E2/AS1 complete with specified stop ends.

The shelf angle shall not be installed until the brick veneer below has reached its full height so that the brick veneer is correctly aligned.

Temporary support shall be provided to the shelf angle until the mortar has gained strength.

The height of brick veneer above the shelf angle shall not exceed 4m.

All wall framing supporting a shelf angle, shall continue to the foundations or an internal slab thickening.

If required, beams to support floor, wall, or roof, shall be subject to specific engineering design unless they fall within the scope of NZS3604.

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## Weepholes and Ventilation over a Shelf Angle

Provide drainage/weep holes at 800mm centres above a shelf angle in accordance with E2/AS1.

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## Veneer Cavity Dimensions

The brick veneer cavity shall be in the range of 40mm (minimum) to 55mm (maximum). This is a departure from the maximum limit imposed by NZS3604. The maximum dimension is governed by minimum brick veneer seating on the shelf angle detail.

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## Lintels above windows and doors

Lintel to support brick veneers shall, where appropriate, comply with Table 18E of E2/AS1 with the modification below.

In applying Table 18E of E2/AS1, the column pertaining to a maximum veneer heights above the lintel of 2000mm can be used for unlimited brick veneer heights if the following conditions apply:

- 1 Lintels are propped until the mortar has reached sufficient strength.
- 2 The distance between the lintel and the jamb of any window/door directly above the lintel is greater than one quarter of the lintel span.
- 3 The width of the brick veneer either side, and supporting the lintel, is greater than 580mm.

The above points are required to ensure that a masonry arch mechanism can form above the lintel. Lintels shall be propped for a minimum of 7 days while the mortar attains sufficient strength.

## Control Joints

Control joints shall be provided and detailed in accordance with E2/AS1 or Firth slip joint.

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## Brick Veneer Ties and Fixings

Veneer ties and fixings shall comply with the requirements of E2/AS1. Ties shall be either hot-dip galvanised or Grade 316 stainless steel to comply with the durability requirements of E2/AS1. Screws shall be either hot-dip galvanised or Grade 316 stainless steel, 35 mm x 12g Type 17 hex head screws for timber.

Brick ties shall be laid as required by E2/AS1, but not exceeding the spacings below, and have a 5° down slope away from the wall frame to the brick veneer.

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## Brick Veneer Tie Spacing

Ties shall be placed at the following positions & centres:

**Table 1 For all Veneers**

At window or door openings	Ties to maximum of 200mm vertical and 600 horizontal to apply to first row of ties immediately above the lintel
Veneers up to 4m above foundations	Ties to maximum of 400mm vertical and 600 horizontal
Section of veneers above 4m	Ties to maximum of 200mm vertical and 600 horizontal
Veneers above shelf angles	Ties to maximum of 400mm vertical and 400 horizontal starting at first courses
Veneers above lintels	Ties to maximum of 200mm vertical and 600 horizontal up to a height or one quarter of the lintel span

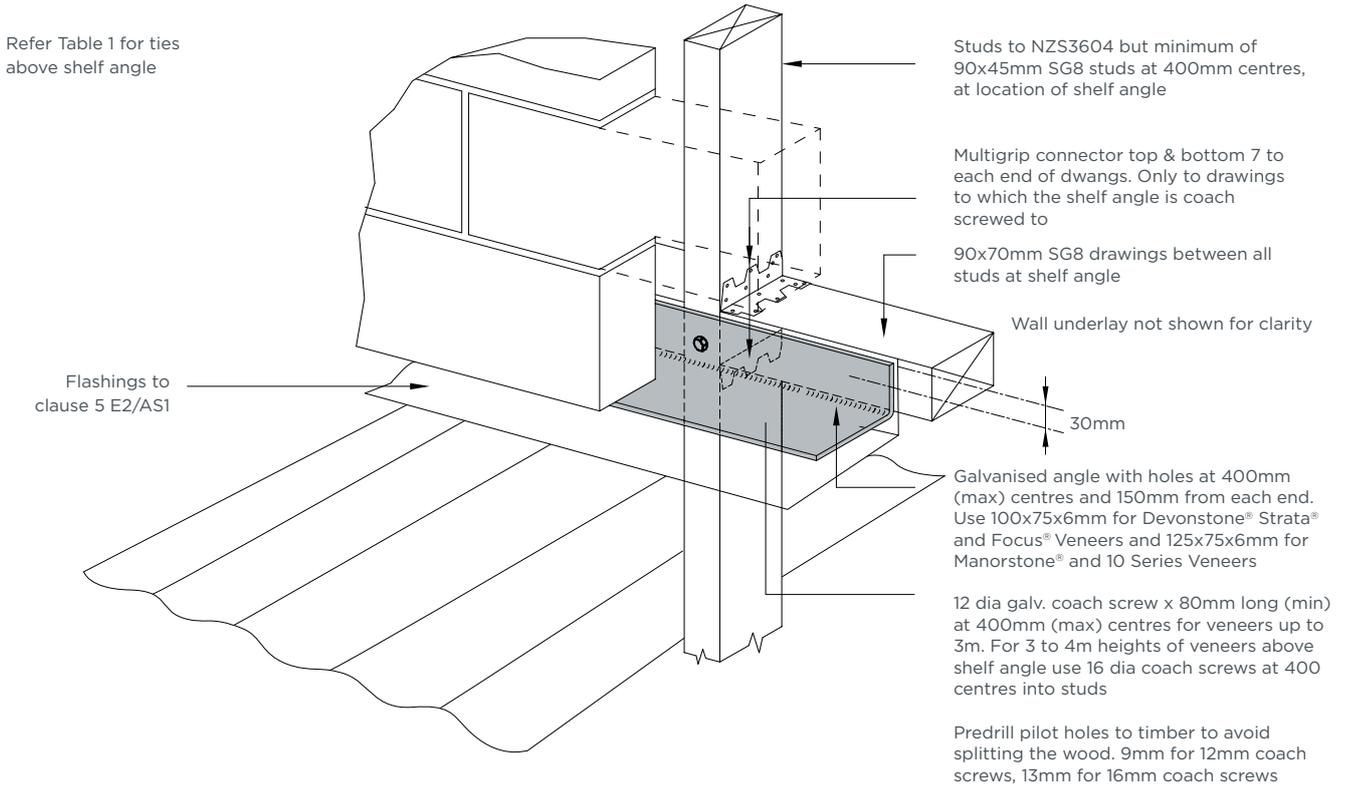
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## Wall Bracing Calculations

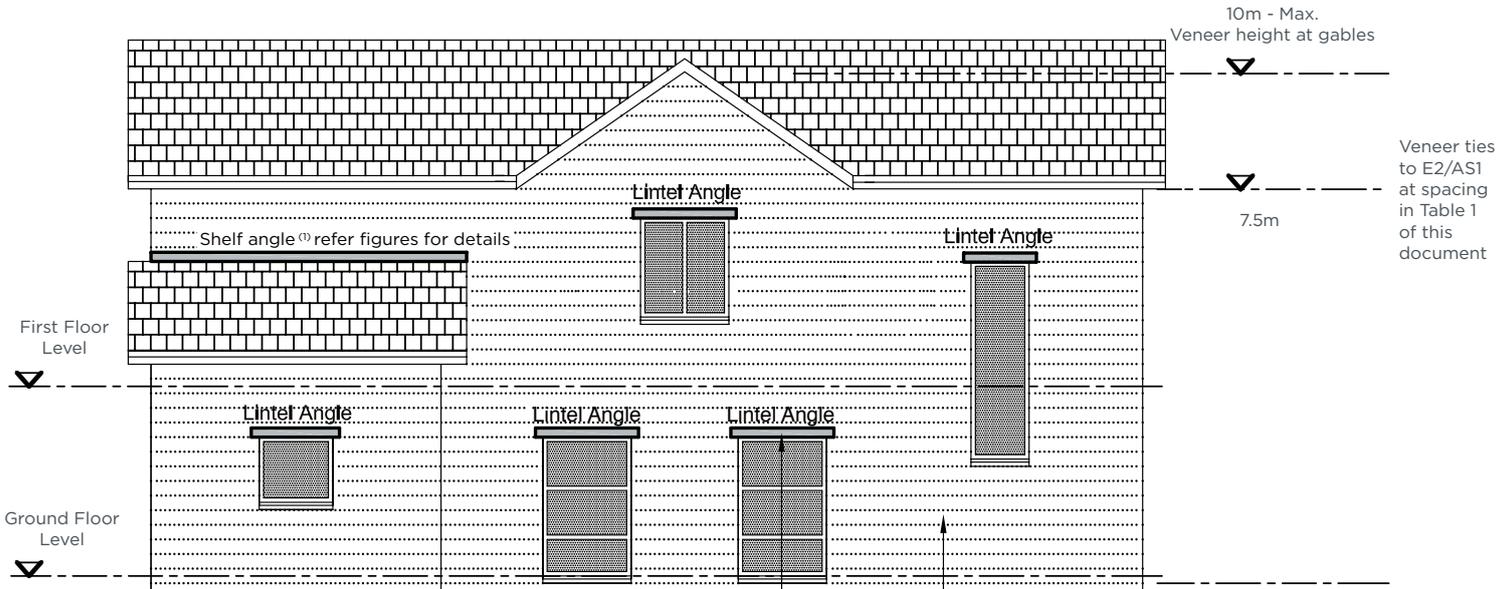
Bracing may be calculated using the methods specified in NZS 3604.

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**FIGURE 1 SHELF ANGLE ABOVE LOWER ROOF DETAIL**



**FIGURE 2 TWO STOREY BRICK VENEER DETAILS**



<sup>(1)</sup> For Manorstone® and 10 Series use a 125x75x6mm galvanised angle

<sup>(1)</sup> For Focus®, Strata®, Devonstone®, use a 100x75x6mm galvanised angle

Firth Focus®, Strata®, Devonstone®, Manorstone® or 10 Series veneers

Masonry Veneer lintels to Table 18E/NZBC E2/AS1, as modified by this document

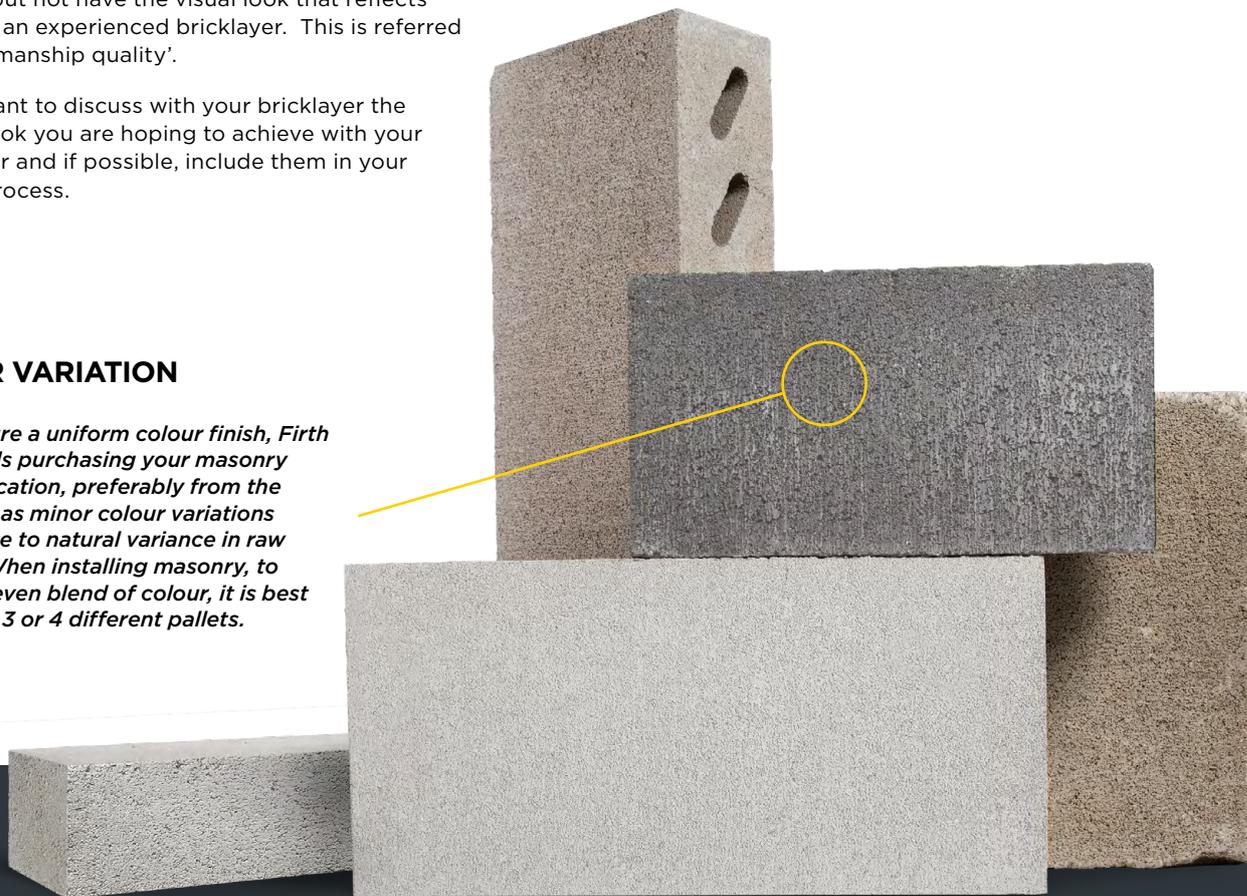
## BRICK TOLERANCES AND AESTHETIC APPEARANCE

It is possible for a brick veneer to be building code compliant but not have the visual look that reflects the skills of an experienced bricklayer. This is referred to as 'workmanship quality'.

It is important to discuss with your bricklayer the aesthetic look you are hoping to achieve with your brick veneer and if possible, include them in your selection process.

### COLOUR VARIATION

*TIP: To ensure a uniform colour finish, Firth recommends purchasing your masonry from one location, preferably from the same batch as minor colour variations do occur due to natural variance in raw materials. When installing masonry, to achieve an even blend of colour, it is best to mix from 3 or 4 different pallets.*



### HONING GREY MASONRY

If deciding to hone ordinary grey masonry walls, when constructed, it's likely there will be medium to extreme colour variation between units. This variation can result in overall colour variation across the wall, which becomes enhanced, when honed and sealed.

### VIEWING DISTANCE

Due to the nature of bricks no two bricks are the same and no brick is perfect when examined close-up. ASTM C90 has been adopted as the industry standard for viewing brickwork - it states that 'for exposed wall construction chips and imperfections shall not be evident when viewed from a distance of not less than 6.1m in diffused light'.

### RESOURCES

For further resources please refer to:

BBFNZ Best Practise Guide at <http://bbfnz.co.nz/building-with-brick/brick-veneer-best-practice-guide/>

Or visit the Firth website [www.firth.co.nz/resources/technical-documents/](http://www.firth.co.nz/resources/technical-documents/) for the following:

- Firth Brick Veneer Technical Guide

### GENERAL

Customers should ensure that all delivered products are acceptable, and any concerns about products are notified to Firth prior to laying. All warranty claims should be made prior to the product being laid.



## CONCRETE & MASONRY PRODUCTS: A SUSTAINABLE BUILDING OPTION & SOLUTION

- ✓ Environmentally compliant manufacturing plants
- ✓ Surplus water and some aggregates recycled
- ✓ Low transport impacts
- ✓ Leftover concrete returned from construction sites
- ✓ Passive solar heated thermal mass makes completed buildings more energy-efficient
- ✓ Most wash water returned from construction sites
- ✓ Highly durable, low maintenance buildings and no rot
- ✓ High degree of noise control
- ✓ Inherent fire resistance
- ✓ Overall longer effective building life
- ✓ Demolished concrete can be recycled as hard fill or aggregate

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Colours and finishes are subject to change. Please keep in mind when you are choosing Designer Bricks, you are dealing with a natural material that can be influenced by a number of factors. While every care has been taken to obtain an accurate representation, the aggregates and oxides used to create the Firth Designer Brick and Architectural Masonry samples are natural products and as a result some variations will occur. ©Firth Industries 2018. All rights reserved. Content in this document is protected under the Copyright Act 1994. No material may be reproduced in whole or in part without the written consent of the copyright holder. Firth/Dricon supplies products on the assumption that they are always used in accordance with the product's instructions/specifications, good trade practice and any relevant New Zealand Standards.