



## 0331 Brick and Block Construction

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## Table of contents

<b>0331 Brick and Block Construction .....</b>	<b>0</b>
Table of contents.....	1
List of tables .....	1
List of figures .....	1
00 Design Principles .....	2
0.1 Main considerations .....	2
Specification .....	2
01 General.....	2
1.7 Submissions Samples .....	2
02 Products .....	3
2.2 Materials .....	3
03 Execution.....	5
3.2 Facework .....	5
3.3 Subfloor Work.....	6
3.4 Cavity Work .....	6
3.5 Damp Proof Courses .....	6
3.6 Flashings .....	6
3.7 Wall Ties .....	6
3.8 Control of Movement .....	7
3.17 Termite Shields.....	7
04 Selections.....	8

## List of tables

Table 01: Control joints schedule .....	7
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## List of figures

**No table of figures entries found.**

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# 00 Design Principles

## 0.1 Main considerations

It is a requirement to undertake the [00 PLANNING AND DESIGN/0001R - DESIGN REFERENCE](#) and [GLOSSARY OF TERMS](#) information into all aspects of design, detailing and delivery when developing the content here within. Clear demonstration of adherence to these requirements is part of the services and will be called upon at key points in the project and during at the discretion of the Department of Education (DoE).

## Specification

### 01 General

As per current NATSPEC except as follows:

#### 1.7 Submissions Samples

##### Facework sample panels

GUIDE NOTE: Delete subclause "Facework Sample Panels" nominated in NATSPEC Building Template/Worksection and replace with the following

Internal face brickwork: Prepare a separate sample of single leaf face brickwork and build in a single gang electrical wall box of the pattern specified in this Minimum Contract, in the vertical position and with conduit attached.

- size (face of panel): 1800 x 1200 mm
- Footings: two courses of 230mm brickwork

Incorporation into the works: An approved panel, if suitably located, may be permitted to be incorporated in the works. Otherwise protect any approved sample panel from damage and retain until completion of brickwork, then remove all traces.

##### Mortar samples

GUIDE NOTE: Add if final selection of mortar colour is to be made on the site from several alternatives

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Sample panels: Construct two sample panels, 900 x 900 mm in stretcher bond using different selected shades of mortar. Footings: 2 Courses of 230 mm brickwork

## 02 Products

As per current NATSPEC except as follows:

### 2.2 Materials

#### Strength

The characteristic compressive strength of bricks used is to be 20 MPa minimum and mortar composition for new work shall be no leaner than 1:1:6. Where making good existing masonry, mortar strength should not exceed that of the adjacent masonry.

The characteristic compressive strength of concrete blocks used is to be 12 MPa minimum. Show design data on the drawings.

#### Materials Requirements

Nominate materials complying with AS's. Do not use bush sand, silicone coated bricks or mortar admixtures

#### Brick Growth

Design brickwork to consider the effects of dimensional changes due to variations in temperature, wetting and drying and long-term chemical changes associated with moisture.

The Characteristic Expansion shall not exceed 0.8mm/m for which compliance certification is to be obtained from the brick supplier.

#### Bed Joint Reinforcement

Nominate masonry mesh reinforcement in bed joints in the courses below the top and above the bottom of walls, below and above openings, and at every fifth course. Lap reinforcement around corners. Refer to AS /NZS 2699 Built-In Components for masonry construction, Parts 1 and 2.

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## Drainage

Design and document adequate drainage behind retaining walls at all levels where there is possibility of hydrostatic pressures being built up, unless the walls can cater for such pressures.

## Capping

Provide capping to all blockwork walls exposed to weather to avoid water stagnation at the top.

## Corrosion Protection

Provide suitable corrosion protection for all metal items built into or in contact with masonry.

Steel products, including reinforcement, used in masonry shall have a corrosion resistance rating of not less than R2 as per AS 3700. Provide a higher rating as the design requires for the service conditions.

## Plate Fixing

Fixing of timber wall plates to masonry is to be by either straps or bolts.

## Steel Lintels

Steel lintels are to be galvanised. Provide additional protective coating as the design requires.

## Masonry units schedule

GUIDE NOTE: Add subclause.

Describe brick types indirectly in terms of quality, texture, etc. excluding brand name or brickyard (project architect to choose brick colours from the nominated range after the issue of the letter of acceptance).

## Masonry Units

Masonry units are not to have a soft surface or to be of a porous nature in areas likely to be subject to graffiti.

Ensure that the specified masonry units are not silicone coated.

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## Mortar materials

GUIDE NOTE: Delete paragraph “Sand” nominated in NATSPEC, Building Template/Worksection and include the following

Sand: Fine aggregate to AS 2758, Part 1 and AS A123 Clause 1.5. Bush sand must not be used (Mandatory).

Premixed Mortar: Do not use.

Retempering of mortar: Prohibited. Discard any mortar that is not used within 90 minutes after adding cement.

GUIDE NOTE: In hot dry climates a shorter interval may be necessary

## Connections

Suitably fix all brickwork/ blockwork to all columns and beams.

Show clearly on the drawings walls to be used as lateral bracing to steel columns and beam superstructure.

## Temporary Bracing

Consider temporary bracing to steelwork until infill bracing walls are built.

## 03 Execution

As per current NATSPEC except as follows:

### 3.2 Facework

GUIDE NOTE: Add to subclause “Cleaning” nominated in NATSPEC Worksection.

## Cleaning

- High pressure water cleaning: Permitted only at external facework, excluding glazed facework

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## 3.3 Subfloor Work

### Air vent locations

GUIDE NOTE: Add the following to subclause "Air Vent Locations" nominated in NATSPEC Building Template/Worksection.

Install air vents as to AS 3660.1 (clause 2.7.4.5, Ventilation) to provide adequate cross ventilation to the space under suspended ground floors.

## 3.4 Cavity Work

Cavity wall insulation

GUIDE NOTE: Do not specify urea formaldehyde foam cavity insulation.

## 3.5 Damp Proof Courses

GUIDE NOTE: Polyethylene is subject to attack by ultra violet rays and should never be used as a DPC/Flashing. It is also subject to mechanical damage and should not be used to cross cavities where damage may occur in cleaning out mortar droppings.

## 3.6 Flashings

### Flashings material

GUIDE NOTE: Standard bituminous coated aluminium is not to be used as a roof flashing due to the fragile nature of the material. Extra super heavy bituminous coated aluminium flashing (min 0.70mm aluminium thickness) to be used.

## 3.7 Wall Ties

Include cavity ties or masonry veneer ties as appropriate to the service conditions and to the following minimum requirements;

- "Medium duty" for normal cavity construction and at abutments
- "Heavy duty" for wide cavities over 60 mm

- Specify stainless steel wall ties if the environment is very aggressive such as coastline

Type: Unless otherwise specified, Type R4 stainless steel wall ties to AS/NZS 2699.1 are to be used in all locations.

## Flexible Ties

Ties or anchors required to extend across control joints are to transfer the forces necessary to maintain the stability of the masonry without impairing the effectiveness of the joint. Similar performance is required for other ties such as those stabilising the top of walls.

## 3.8 Control of Movement

### Expansion and Control Joints

Determine the location of all joints in walls and show these clearly on the drawings. Provide joints at junctions of different materials.

### Mixed Construction

Take into consideration the different movement characteristics of clay bricks and concrete blocks, if used in the same building.

**Table 01: Control joints schedule**

Joint code	Joint width	Joint Filler		
		Primer	Backing rod	Sealant
			Closed cell, resilient, semi-rigid polyethylene bond breaking material recommended by the manufacturer for the location and services conditions	

## 3.17 Termite Shields

GUIDE NOTE: Add the following clause to the NATSPEC Building Template/Worksection



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## Requirement

Provide as specified in [01 GENERAL/0184 TERMITE MANAGEMENT](#)

## 04 Selections

As per current NATSPEC.