

# Approved Building Consent Documents

**Please Note: A copy of the stamped approved documents must be available on site for all inspections.**

Inspection booking timeframes

Call received	before 3pm inspection will be done	after 3pm inspection will be done
Monday	Wednesday	Thursday
Tuesday	Thursday	Friday
Wednesday	Friday	Monday
Thursday	Monday	Tuesday
Friday	Tuesday	Wednesday

Building inspections and enquiries phone: 03 347 2839

**Please ensure all work for inspection is ready the day before. Incomplete work requiring re-inspection will incur an additional inspection fee.**



Generation Homes Christchurch South Ltd

# SPECIFICATION

of work to be done and materials to be used in carrying out the works shown on the accompanying drawings

## Lot 33 Branthwaite

(project name)

## Lot 33 Branthwaite Drive, Branthwaite, Rolleston, New Zealand

(project address)

## Generation Homes Christchurch South Ltd.

(client)

Project Ref: EC691

Date: 21 November 2019

## FOR BUILDING CONSENT

Documents prepared by:



E-CAD Limited

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# 1220 PROJECT

## 1 GENERAL

This general section describes the project including:

- A description of the work
- Site description, features and restrictions
- Design parameters for design by contractor
- Archaeological discovery

### 1.1 READ ALL SECTIONS TOGETHER

Read all general sections together with all other sections.

### Description of the work

### 1.2 SCOPE OF THE WORK

Erect a new single storey residential dwelling. Constructed of raft foundation, timber framed walls clad in brick veneer cladding with aluminium window and door joinery and trussed roof with pressed metal tile roofing.

This specification shall be read with the accompanying drawings.

Job No. EC691 sheets 01-18 inclusive.

Should any information in this specification vary from the drawings then the contractor shall take the drawings as being correct.

Use only figured dimensions, i.e. DO NOT SCALE OFF THE DRAWINGS.

It shall be the responsibility of the contractors on site to check and verify all dimensions on site, particularly how foundation plan relates to floor plan, any discrepancies designer to be contacted immediately for verification

Where the project requires Developer Approval of the setout, Generation Homes Contract Site Manager is to coordinate this in conjunction with preliminary setout work prior to constructing the floor slab. In the event of any inconsistency being discovered, the designers should be contacted immediately for verification.

### 1.3 RESTRICTED BUILDING WORK

This project includes Restricted Building Work.

### Site

### 1.4 SITE

The site consists of: Relatively level site as shown on the elevations and site plan.

### 1.5 LEGAL DESCRIPTION

The site of the works, the street address and the legal description are shown on the drawings.

### 1.6 EXISTING SERVICES

The following are the network utility services:

Electrical:	Determine on site
Telecommunication:	Determine on site
Water:	Connection point on site
Gas:	None – LPG bottles to be supplied
Stormwater:	None – Soakpits required
Foul water:	Connection point on site

The services are also shown on drawing(s) no(s) EC691 - dwg 10.

### 1.7 SITE FEATURES

Relatively flat site with no significant features.

### Site environment - Wind



## 1.8 WIND DESIGN PARAMETERS - NON SPECIFIC DESIGN

The design wind pressures are to [NZS 3604](#), Table 5.4 Determination of wind zone, up to and including Extra High Wind Zone.

Building wind zone A (High 44 m/s) (refer to [NZS 3604](#), table 5.4)

### Site environment - Durability

## 1.9 EXPOSURE ZONE

The exposure zone is to [NZS 3604](#), Section 4 Durability, 4.2 Exposure zones and [NZBC E2/AS1](#).

The site zone is: Zone B (Low)

### Site environment - Seismic

## 1.10 EARTHQUAKE ZONE - NON SPECIFIC DESIGN

The zone is to [NZS 3604](#), Section 5 Bracing design, 5.3 Earthquake bracing demand.

The earthquake zone is: Zone 2

### Archaeological discovery

## 1.11 ANTIQUITIES AND ITEMS OF VALUE

Report the finding of any fossils, antiquities and other items of value, to the Contract Administrator. All to remain undisturbed until approval is given for removal.

Pre-1900, items or evidence of human activity on the site, come under the Historic Places Trust Act 1993. If such items or evidence is discovered work must stop immediately and the Contract Administrator must be notified immediately. The site maybe classified as an Archaeological Site under the Act, and the Contract Administrator or Owner must contact the NZ Historic Places Trust for authority to proceed.

Post-1900 items remain the property of the owner, pre-1900 items may remain the property of the owner or the Crown subject to what is found.

# 1222 PROJECT PERSONNEL

## 1 GENERAL

This general section provides a list of the parties who are involved with the project. Communications to these personnel are to be sent to them at the address as listed. Refer to the construction contract for:

- the roles that they have under the contract; and
- address details for notices being given under the contract.

### Principal

#### 1 1 PRINCIPAL

Name: Jaspreet Singh & Inderjeet Kaur  
Postal: 5 Brookside Terrace, Bryndwyr, Christchurch 8053  
Street: As above  
Telephone: 027 391 1611  
Represented by: Evan Beker of Generation Homes Christchurch South Limited  
Mobile: 021 84 00 88  
Email: evanb@generation.co.nz

### Contractor

#### 1 2 COMPANY

Name: Generation Homes Christchurch South Limited  
Postal: PO Box 37163, Halswell, Christchurch, 8245  
Street: 19 Holmes Hanover Lane, Halswell, Christchurch, 8025  
Represented by: Evan Beker (Director)  
Mobile: 021 84 00 88  
Email: evanb@generation.co.nz

#### 1 3 CONTRACT / SITE MANAGER

Person: Michael Sands on behalf of Generation Homes Ltd.  
Mobile: 0278396035  
Email: michael@s@generation.co.nz

### Consultants

#### 1 4 ARCHITECTURAL DESIGNER

Practice: E-CAD Limited  
Postal: PO Box 652, Palmerston North  
Street: 85 Lombard Street, Palmerston North  
Telephone: (06) 353-0217  
Represented by: Phil Stanfield  
LBP number: BP113024  
Licence Class: Design 2  
Email: office@emerge-arch.co.nz

#### 1 5 STRUCTURAL ENGINEER

Practice: Procerto Group Limited  
Postal: PO Box 36258, Merivale, Christchurch 8146  
Street: Level 1, 182 Papanui Road, Merivale, Christchurch  
Telephone: (03) 669 3349  
Represented by: Roy Hamilton  
CPEng no: 127491  
Licence Class: Civil  
Mobile: 021 968 613  
Email: roy@procerto.co.nz

## **Territorial Authority**

### **1.6 BUILDING CONSENT AUTHORITY**

Name: Selwyn District Council  
Postal: PO Box 90, Rolleston, 7643  
Street: 2 Norman Kirk Drive, Rolleston, 7614  
Telephone: (03) 347-2800  
Email: admin@selwyn.govt.nz

# 1222L PROJECT PERSONNEL - LBP'S

1 TO

BCA: Selwyn District Council  
Address: PO Box 90, 2 Norman Kirk Drive, Rolleston, 7614

## Copy to Contractor administrator

Name: Evan Beker (Director)  
Company/address: Generation Homes Christchurch South Limited  
19 Holmes Hanover Lane, Halswell, Christchurch  
Email: evanb@generation.co.nz

## Project details

Project: Lot 33 Branthwaite  
Location: Lot 33 Branthwaite Drive, Rolleston  
Building Consent: T.B.C

## GENERAL

Provide to the Building Consent Authority the names of the Licensed Building Practitioners who are carrying out Restricted Building Work on this project. In compliance with s87 of the Building Act, the names of LBP's who will be carrying out Restricted Building Work must be provided to the BCA before that work commences. Provide a copy to the Contract Administrator.

## SITE

Name: Michael Sands  
LBP number: BP113226  
Areas of practice: Site 2  
Licence Classes: Carpentry  
Site  
Address: 4 McKenzie Place  
Mobile: 0278396035  
Email: michael@generation.co.nz

## BRICK LAYING AND BLOCK LAYING

Name: Generation X Bricks - Hayden Raimona  
LBP number: BP130558  
Area of practice: Veneer  
Licence Classes: Bricklaying and block laying  
Address: -  
Mobile: 0273522382  
Email: haydenraimona@gmail.com

## CARPENTRY

Name: Ironstone Builders – Guy Abraham  
LBP number: BP117022  
Qualification: National Certificate in Carpentry  
Licence Class: Carpentry  
Address: -  
Mobile: 0274988114  
Email: guy@ironstone.co.nz

## 2.4 EXTERNAL PLASTERING

Name: W.A.S.P Plastering Ltd – Wayne Allison  
LBP number: BP 113731  
Area of practice: Proprietary Plaster Cladding Systems (PPCS)  
Details of RBW: External Plastering  
Address: -  
Mobile: 0276981898  
Email: waspplastering@xtra.co.nz

## 2.5 FOUNDATIONS

Name: Gotta Digg - Michael Curtis  
LBP number: BP118005  
Area of practice: Site 1  
Licence Class: Carpentry  
Site  
Address: RD4, Christchurch, 7674  
Mobile: 0274432118  
Email: gottadiggbd@gmail.com

## 2.6 ROOFING

Name: Canterbury Roofing - Kevin Crawford  
LBP number: BP107181  
Area of practice: Metal Tile Roof  
Licence Class: Roofing  
Address: PO Box 16227, Hornby, Christchurch  
Mobile: 0272417601  
Email: k.crawford@xtra.co.nz

## 2.7 TILER

Name: Exquisite Tiles – Carl Franklin  
Tiling Registration Number: 2033  
Address: -  
Email: -

## 2.8 ELECTRICIAN

Name: Laser Electrical Rolleston - Zane Adams  
Electrical Workers Number: E241934  
Licence Class: Electrician  
Address: 726 East Street, Ashburton, 7700  
Email: z.adams@laserelectrical.co.nz

## 2.9 DRAINLAYER

Name: McKay & Moore Drainage – Dane Willis  
Plumbers, Gas Fitters & Drainlayers Registration No.: 2413  
Licence Class: Certifying Drainlayer  
Contact Number: 0273275015  
Email: dane@mmdl.co.nz

## 2.10 PLUMBER

Name: Laser Plumbing Christchurch West - Andrew Shaw  
Plumbers, Gas Fitters & Drainlayers Registration No.: 10554  
Licence Class: Certifying Plumber  
Contact Number: (03) 348 6920  
Email: a.shaw@laserplumbing.co.nz

# 1231 CONTRACT

## 1 GENERAL

This GENERAL section refers to contract related matters.

### 1.1 NOMINATED SUBCONTRACTORS

Refer to Generation Homes Sale and Purchase Agreement.

### 1.2 SEPARATE CONTRACTORS

Refer to Generation Homes Sale and Purchase Agreement for any Owner coordinated works.

### 1.3 PRINCIPAL SUPPLY ITEMS

Refer to Generation Homes Sale and Purchase Agreement for any Owner coordinated works.

### 1.4 MONETARY ALLOWANCES

Monetary allowances are as defined and quantified in the Generation Homes Sale and Purchase Agreement.  
Additionally further sums are specified and agreed in the Generation Homes Variations List forming part of the building contract.

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# 1232 INTERPRETATION & DEFINITIONS

## 1 GENERAL

This general section relates to definitions and interpretation that are used in this specification.

### Definitions

#### 1 DEFINITIONS

Required:	Required by the documents, the New Zealand Building Code or by a statutory authority.
Proprietary:	Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
Provide and fix:	"Provide" or "fix" or "supply" or "fix" if used separately mean provide and fix unless explicitly stated otherwise.
Review:	Review by the contract administrator is for general compliance only. Review does not remove the need for the contractor to comply with the stated requirements, details and specifications of the manufacturers and suppliers of individual components, materials and finishes. Neither can the review be construed as authorising departures from the contract documents.
Working day:	Working day means a calendar day other than any Saturday, Sunday, public holiday or any day falling within the period from 24 December to 5 January, both days inclusive, irrespective of the days on which work is actually carried out.
Workplace:	Workplace means the place where work is being carried out, or is customarily carried out, for a business or undertaking including any place where a worker goes, or is likely to be, while at work (under <a href="#">Health and Safety at Work Act 2015</a> ).
Hold point:	A stage of the construction where the Contract administrator requires notice to be given that particular work is to be carried out. Work may not proceed on that particular part until the Contract administrator or other nominated person has advised that work can continue. A notice period of 2 Working Days is required unless stated otherwise.
Notification point:	A stage of the construction where the Contract administrator requires notice to be given that particular work is to be carried out. Work may continue and the Contract administrator may choose whether or not they wish to witness the particular work being carried out. A notice period of 2 Working Days is required unless stated otherwise.

#### 2 PERSONNEL

Owner:	The person defined as "owner" in the <a href="#">New Zealand Building Code</a> .
Principal:	The person defined as "principal" in the conditions of contract.
Contractor:	The person contracted by the principal to carry out the contract.
Contract administrator:	The person appointed by the principal to administer the contract on the principal's behalf. Where no person has been appointed by the Principal, it means the Principal or the Principal's representative.

### 1.3 ABBREVIATIONS

The following abbreviations are used throughout the specification:

AAMA	American Architectural Manufacturers Association
AS	Australian Standard
AS/NZS	Joint Australian/New Zealand Standard
ASTM	American Society for Testing and Materials
AWCINZ	Association of Wall and Ceiling Industries of New Zealand Inc.
BCA	Building Consent Authority
BRANZ	Building Research Association of New Zealand
BS	British Standard
COP	Code of practice
CSIRO	Commonwealth Scientific and Industrial Research Organisation
HERA	Heavy Engineering Research Association
LBP	Licensed Building Practitioner
MBIE	Ministry of Business, Innovation and Employment
MPNZA	Master Painters New Zealand Association Inc
NZBC	<a href="#">New Zealand Building Code</a>
NZS	New Zealand Standard
NZS/AS	Joint New Zealand/Australian Standard
NZTA	New Zealand Transport Agency
NUO	Network Utility Operator
PCBU	Person Conducting a Business or Undertaking (under <a href="#">Health and Safety at Work Act 2015</a> )
OSH	Occupational Safety and Health
TA	Territorial Authority
TNZ	Transit New Zealand (Transit New Zealand is now New Zealand Transport Agency NZTA - some specifications are still prefixed TNZ)
RBW	Restricted Building Work
SARNZ	Scaffolding and Rigging New Zealand Inc
SED	Specific Engineering Design

### 1.4 DEFINED WORDS

Words defined in the conditions of contract, New Zealand Standards, or other reference documents, to have the same interpretation and meaning when used in their lower case, title case or upper case form in the specification text.

### 1.5 WORDS IMPORTING PLURAL AND SINGULAR

Where the context requires, words importing singular only, also include plural and vice versa.



# 1233 REFERENCED DOCUMENTS

## 1 GENERAL

### 1.1 REFERENCED DOCUMENTS

Throughout this specification, reference is made to various [New Zealand Building Code](#) Compliance Documents (NZBC \_\_\_), acceptable solutions (\_\_\_ AS\_) and verification methods (\_\_\_ VM\_) for criteria and/or methods used to establish compliance with the [New Zealand Building Code](#).

Reference is also made to various standards produced by Standards New Zealand (NZS, AS/NZS, NZS/AS), overseas standards and to listed Acts, Regulations and various industry codes of practice and practice guides. The latest edition (including amendments and provisional editions) at the date of this specification applies unless stated otherwise.

It is the responsibility of the contractor to be familiar with the materials and expert in the techniques quoted in these publications.

Documents cited both directly and within other cited publications are deemed to form part of this specification. However, this specification takes precedence in the event of it being at variance with the cited documents.

### 1.2 DOCUMENTS

Documents referred to in the GENERAL sections are:

<a href="#">NZBC F5/AS1</a>	Construction and demolition hazards
<a href="#">AS/NZS 1170.2</a>	Structural design actions - Wind loads
<a href="#">NZS 1170.5</a>	Structural design actions - Earthquake actions - New Zealand
<a href="#">AS/NZS 3012</a>	Electrical installations - Construction and demolition sites
<a href="#">NZS 3109</a>	Concrete construction
<a href="#">NZS 3114</a>	Specification for concrete surface finishes
<a href="#">NZS 3602</a>	Timber and wood-based products for use in building
<a href="#">NZS 3604</a>	Timber-framed buildings
<a href="#">NZS 4210</a>	Masonry construction: Materials and workmanship
<a href="#">AS/NZS 5131</a>	Structural steelwork - Fabrication and erection
<a href="#">NZS 6803</a>	Acoustics - Construction Noise
<a href="#">Building Act 2004</a>	
<a href="#">Building Regulations 1992</a>	
<a href="#">Health and Safety at Work Act 2015</a>	
<a href="#">Health and Safety at Work (General Risk and Workplace Management) Regulations 2016</a>	
<a href="#">Health and Safety at Work (Hazardous Substances) Regulations 2017</a>	
<a href="#">Health and Safety in Employment Regulations 1995</a>	
<a href="#">New Zealand Building Code</a>	
<a href="#">Heritage New Zealand Pouhere Taonga Act 2014</a>	
<a href="#">Resource Management Act 1991</a>	
<a href="#">Smoke-free Environments Act 1990</a>	
<a href="#">WorkSafe NZ</a>	<a href="#">Guidelines for the provision of facilities and general safety in the construction industry</a>
<a href="#">WorkSafe NZ</a>	<a href="#">Good Practice Guidelines - Excavation Safety</a>
<a href="#">WorkSafe NZ</a>	<a href="#">Scaffolding in New Zealand - Good Practice Guidelines</a>

# 1234 DOCUMENTATION

## 1 GENERAL

This general section relates to documentation required by the Territorial Authority/Building Consent Authority for compliance with the [New Zealand Building Code](#). It also includes documentation relating to:

- Substitutions
- Manufacturers documents

### Building Consent Authority documentation

#### 1.1 BUILDING CONSENT

Obtain the building consent forms and documents from the owner and keep them on site. Liaise with the BCA for all notices to be given and all inspections required during construction to ensure compliance. Return the consent form and documents to the owner on completion.

#### 1.2 BUILDING CONSENT COMPLIANCE

It is an offence under the [Building Act 2004](#)

- to carry out any work not in accordance with the building consent.
- to carry out Restricted Building Work by anyone other than a Licensed Building Practitioner licensed for that type of work.

The resolution of matters concerning building code compliance to be referred to the contract administrator for a direction and then if required to the BCA for consent.

Where any alteration is requested by the territorial authority or any other authority, do not undertake such alteration until the matter has been referred to the contract administrator for direction.

#### 1.3 PROJECT PERSONNEL

Provide names and contact details of the contractor's key personnel and tradespersons who are involved with the project. Review the list once a month and reissue it if changes have been made.

### Licensed Building Practitioner documentation

#### 1.4 LICENSED BUILDING PRACTITIONERS

Provide LBP details. Provide names, LBP numbers, areas of practice and contact information.

Provide this information to the BCA before commencing work on the Restricted Building Work in the form required by the BCA. Advise the BCA of any change to an LPB previously advised.

Include the following as applicable

- Site LBP
- Carpenter
- Foundations 1 Concrete foundation walls and concrete slab-on-ground constructor
- Bricklaying and block laying 1 Brick / masonry veneer
- Roofing 3 Metal tile roofer

Also provide names and contact details of the following

- Registered drainlayer
- Registered plumber
- Registered gasfitter
- Registered electrician

#### 1.5 PRODUCER STATEMENTS

When producer statements verifying construction are required, provide copies to both the Building Consent Authority and the Contract Administrator. Provide producer statements in the form required by the BCA.

#### 1.6 RECORD OF WORK

Where Restricted Building Work is carried out by a LBP, on completion provide a Record of Work. Provide copies to both the BCA and the Contract Administrator.

### Compliance information

## 1.7 DOCUMENTATION REQUIRED FOR CODE COMPLIANCE

Information may be required either as a condition of the contract documents or as a condition of the building consent. It may include the following:

- Applicators approval certificate from the manufacturer / supplier
- Manufacturer's / supplier's warranty
- Installer / applicator's warranty
- Producer Statement - Construction from the applicator / installer
- Producer Statement - Construction review from an acceptable suitably qualified person

Refer to the general sections for the requirements for compliance information to be provided by the contractor.

Refer to the building consent for the requirements for compliance information to be provided by the contractor.

Obtain required documents from the relevant parties for delivery to the contract administrator after the final inspection has been carried out by the BCA.

## 1.8 DOCUMENTATION REQUIRED ON COMPLETION

As soon as practicable after completion of the building work, provide in writing the following information and documentation to the client and the relevant territorial authority.

Information and documentation relating to:

- The identity of the building contractor and the subcontractors who carried out the work.
- Maintenance requirements for any products incorporated in the building.

If applicable also provide any guarantee or insurance obtained by the building contractor in relation to the building work.

### **Substitutions**

## 1.9 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

Where a product or material supplier is named in SELECTIONS, the product/material must be provided by the named supplier. Where more than one named supplier, any one of the named suppliers will be acceptable.

## 1.10 NO SUBSTITUTIONS

Where specifically stated in a section, substitutions are not permitted to any of the specified systems, components and associated products listed in that section.

## 1.11 PROPOSED SUBSTITUTIONS

A substitution may be proposed where specified products are not reasonably available. A substitution may also be proposed by the contractor where the contractor considers a proposed substitution to be an alternative to the specified product. Except where a specified product is not available, the contract administrator is not bound to accept any substitutions. Where branded work sections are included in this specification, substitution of those products or systems will not be allowed.

## 1.12 NOTIFICATION OF SUBSTITUTIONS

Notify proposed substitution of specified products. Notification to include but not be limited to:

- Product identification
- Manufacturer's name, address, telephone number, website and email address
- Detailed comparison between the properties and characteristics of the specified product and the proposed substitution
- Statement of NZBC compliance including durability
- Details of manufacturer warranties

Plus an assessment of:

- Any changes required to the programme including any extension of time required
- Any consequential effects of the proposed substitution
- Any effect the substitution may have on Health & Safety requirements
- Allowance for time and cost for re-design and documentation (if applicable)
- Allowance for time and cost for obtaining an amendment to the Building Consent (if applicable)
- Any change in cost associated with the proposed substitution

and if requested:

- All current manufacturer's literature on the product
- Accreditations and appraisals available
- Reference standards
- Product limitations
- Samples
- List of existing installations in the vicinity of the project

## 1.13 ACCEPTANCE OF SUBSTITUTIONS

The Contract administrator must advise of acceptance of substitutions in writing.

### **Variations to issued Building Consent**

## 1.14 CONTRACTOR VARIATION TO BUILDING CONSENT

Where the contractor has sought acceptance of a substitution or a variation which is for the contractor's own convenience and the substitution or variation requires an amendment to the Building Consent, the contractor must apply for and obtain the required amendment.

The contractor must:

- Obtain approval for substitutions from the contract administrator.
- Prepare and provide to the BCA all documentation required for the variation.
- Pay all fees and other costs associated with this amendment.
- Where the amendment affects other approved plans, also amend those plans.

## 1.15 PRINCIPALS VARIATION TO BUILDING CONSENT

Where the principal is proposing a substitution or a variation which requires an amendment to the Building Consent, the contractor must provide to the principal information that the contractor has that is required for the amendment.

The principal will:

- Prepare and provide to the BCA all documentation required for the amendment.
- Pay all fees and other costs associated with this amendment.
- Where the amendment affects other approved plans, also amend those plans.

### **Manufacturer's documents**

## 1.16 BRANDED WORK SECTIONS

Branded sections may be included in this specification relating to specific products and systems to be installed as part of the contract works. Where branded sections are included, substitutions to the branded products and systems will not be allowed.

## 1.17 MANUFACTURER'S AND SUPPLIER'S INSTALLATION REQUIREMENTS

Manufacturers and supplier's requirements, instructions, specifications or details means those issued by them for their particular material, product or component and are the latest edition.

#### 1.18 CONTRACTOR TO OBTAIN CURRENT DOCUMENTATION

Where manufacturer's installation, application and execution requirements are referred to in this specification, the Contractor must ensure they are fully aware of this documentation. Whenever necessary obtain and keep on site the relevant latest version of such documentation and make it available to workers carrying out that part of the work.

#### 1.19 DOCUMENTATION PROVIDED FOR BUILDING CONSENT

Documentation including manufacturer's installation instructions, specification data sheets, producer statements, BRANZ and similar appraisals may be included in the issued Building Consent. These documents have been provided only to demonstrate compliance with the NZBC.

#### **Branded work sections**

#### 1.20 CROSS REFERENCED WORK SECTIONS

If any related work is cross referenced to a generic work section, but only the equivalent branded section is included in the specification, use that branded section. Confirm with the contract administrator if there is any doubt.

# 1237 WARRANTIES

## 1 GENERAL

This general section refers to the requirements for warranties/guarantees as listed in this section, as referred to within the body of this specification, and as referred to within separate specifications/documents relating to this project. It includes:

- Warranties for parts of the work required by the principal in a required form
- Installer/applicator warranties for parts of the work in the installer's/applicator's standard form
- Manufacturer/supplier warranties provided with products, appliances and the like in the manufacturer's/supplier's standard form
- Guarantees provided by contractor in the contractor's standard form

These guarantees/warranties are in addition to any warranties, implied warranties, or guarantees that are required by the Building Act, the Building Regulations, or the building consent.

### Warranties

#### 1 1 PROVIDE WARRANTIES

Provide executed warranties in favour of the principal in respect of, but not limited to, materials, components, service, application, installation and finishing called for in that specified section of work. The terms and conditions of the warranty in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability under the terms of the warranty called for in that specified section of work.

- Conform to the WARRANTY AGREEMENT form included in the specification/conditions of contract.
- Commence warranties from the date of practical completion of the contract works (unless otherwise stated).
- Maintain their effectiveness for the times stated.
- Provide executed warranties prior to practical completion.

#### 1 2 WARRANTIES - INSTALLER/APPLICATOR

Where installer/applicator warranties are offered covering execution and materials of proprietary products or complete installations, provide such warranties to the contract administrator. These warranties may be provided in lieu of the warranties that are otherwise required provided that these warranties are subject to similar conditions and periods.

Provide warranties in favour of the principal. The terms and conditions of such warranties in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability for execution and materials for that part of the work.

#### 1 3 WARRANTIES - MANUFACTURER/SUPPLIER

Where warranties are offered covering materials, equipment, appliances or proprietary products, provide all such warranties to the contract administrator.

Provide warranties in favour of the principal. The terms and conditions of such warranties in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability for execution and materials for that part of the work.

### Submission

#### 1 4 REVIEW BY CONTRACTOR

Obtain the warranties from the installers, applicators, manufacturers and suppliers at the earliest possible date and review to ensure that they are correctly filled out and executed. Where warranties are executed as a deed, ensure that a duplicate copy is provided for execution by the owner/principal. Keep safe and secure until required for submission.

## 1.5 WARRANTIES - REQUIRED BY BUILDING CONSENT AUTHORITY

Obtain copies of warranties required as a condition of the building consent in the form required for submission to the BCA. Keep safe and secure until required at the time of the BCA final inspection and Code Compliance Certificate.

## 1.6 WARRANTIES - REQUIRED BY CONTRACT

Obtain copies of warranties listed in the contract documents. Provide all warranties at the same time. If the project has an operations and maintenance documentation provision, present the warranties with the operations and maintenance information. If no operations and maintenance documentation provision exists, present the warranties to the contract administrator in a loose-leaf binder with a contents index suitably labelled and including the project name and details. Provide a title on the binder edge "Warranties for (project name)"

## 1.7 WARRANTIES - SUBMISSION CONTRACT

Refer to the contract conditions for any requirement relating to the time for submission for warranties and guarantees. Submit all warranties to the architect no later than the date of the contractor's advice of achieving practical completion.

## SELECTIONS

### Guarantees - Contractor - Master Build Services Ltd

#### 2.1 MASTER BUILD SERVICES LTD - 10 YEAR STANDARD GUARANTEE

Provide a 10 Year Standard Guarantee (including all optional cover), include all costs in the contract price. Detach the guarantee application form from the guarantee agreement. Complete the form, obtain all required signatures (builder and owner). Send the completed form to Master Build Services for approval along with a copy of the building contract (include a full scope of work for any addition/alteration work), prior to any work commencing. Obtain the Master build Services acceptance letter and provide this to the owner along with the guarantee document. On completion of the building work complete the notice of practical completion form, obtain all required signatures (builder and owner) and forward the form to Master Build Services.

### Weathertightness and watertightness warranty

#### 2.2 WEATHERTIGHTNESS AND WATERTIGHTNESS WARRANTY

A warranty is required from the contractor for a minimum period of 2 years, covering the weathertightness of the complete building envelope and the watertightness of all liquid supply and disposal systems and fittings. This general warranty is in addition to any specific warranties required.

Provide this warranty in favour of the principal. The terms and conditions of this warranty in no case negate the minimum remedies available under common law as if no warranty had been offered.

Failure to provide the warranty does not reduce liability for execution and materials for that part of the work.

- Conform to the standard form WARRANTY AGREEMENT included in the contract documents.
- Commence the warranty from the date of Practical Completion.
- Maintain its effectiveness for the time stated.

## SCHEDULES

### Schedule of work section warranties



### 3.1 SCHEDULE OF WORK SECTION WARRANTIES

Refer to the following sections:

4161M	Tekton Weatherization System
4161T	Thermakraft Underlays, Foils & DPC
4171HR	James Hardie® Rigid Air Barriers
4239JH	James Hardie® Soffits
4323MT	Metrotile Metal Roofing Tiles
4521	Aluminium windows and doors
4610	Glazing Residential
4711P	Pink Batts & BIB Insulation
6221	Tiling Systems
6511	Carpeting
6700D	Dulux painting general
6811	Waterproofing & Acoustic Underlay System
7123	Hot & Cold Water System
7212	Gas system LPG cylinders
7411C	Continuous Spouting Rainwater Systems
7411MA	Marley Rainwater Disposal Systems
7421MO	Marley Optim DWV Sanitary System
7673	Split Unit Heat Pump systems
7701	Electrical basic

#### **Schedule of additional items**

### 3.2 SCHEDULE OF ADDITIONAL ITEMS

Provide the Warranties and Guarantees as listed in each work section and as required by Generation Homes Sale and Purchase Agreement.



# 1250 TEMPORARY WORKS & SERVICES

## 1 GENERAL

This general section relates to temporary works and services required for the construction of the contract works. It includes

- Temporary works and services including temporary fencing and hoardings
- Scaffolding and shoring
- General care and protection

### Temporary works

#### 1.1 COSTS RELATING TO TEMPORARY WORKS

Pay all rates/fees in respect of temporary works.

#### 1.2 MAINTENANCE OF TEMPORARY WORKS

Maintain alter, adapt and move temporary works and services as necessary. Clear away when no longer required and make good.

#### 1.3 SAFEGUARD THE SITE, THE WORKS AND MATERIALS

Take reasonable precautions to prevent unauthorised access, including access outside working hours, to the site, the works and adjoining property. Safeguard the site, the works, materials and plant from damage and theft.

#### 1.4 SITE FENCING

Provide and maintain a site fence, 2 metres high from ground level on the side accessible to the public. Construct to comply with [NZBC F5/AS1](#) Construction and demolition hazards. Construct as required for public areas and as shown on the drawings.

Construct the fence with:

- galvanized chain link netting with a 50mm x 50mm maximum grid size
- posts at 2.5 metre centres maximum
- gap at the bottom of the fence no greater than 100mm

#### 1.5 SITE HOARDINGS

Provide and maintain hoardings, 2 metres high from ground level on the side accessible to the public. Construct to comply with [NZBC F5/AS1](#) Construction and demolition hazards. Construct as required for public areas and as shown on the drawings.

Construct hoardings with continuous cladding of:

- close butted timber at least 19mm thick; or
- 6mm exterior grade plywood on studs at 600mm centres maximum; or
- 9mm exterior grade plywood on studs at 1 metre centres maximum; or
- continuous metal cladding suitably supported to provide strength and rigidity

#### 1.6 SITE FENCING - NON-PUBLIC AREAS

Provide and maintain a 1 metre high site fence to non-public areas. Construct using:

- warratah stakes at 1.5 metre centres fitted with safety caps
- plastic safety mesh

## 1.7 PROVIDE SEDIMENT AND SILT RUN OFF PROTECTION

Provide appropriate measures to prevent or minimise sediment generation and silt run off. Comply with territorial and other authority requirements relating to carrying out earthworks.

Prevent silt run off by:

- exposing only as much ground as required at any time
- providing run off channels, contour drains or earth bunds to divert clean water away from the site on to stable sealed or grassed ground
- capture silt by the use of silt fences, vegetation buffer strips, sediment ponds or earth bunds.

Provide sediment control by:

- earth bunds constructed across the slope to control and detain run off
- silt fences constructed using filter fabric stretched between posts at a maximum of 1 metre spacing.

Pump water from trenches and other areas of the site using methods to prevent sediment entering any drain or watercourse. Filter dirty water before discharging into drainage system.

## 1.8 PROVIDE CONCRETE WASHWATER RUN OFF PROTECTION

Provide appropriate measures to prevent cement/concrete washwater or slurry run off to; drains or waterways, landscaped areas new or remaining and adjoining public or private properties. Comply with territorial and other authority requirements relating to cement/concrete washwater.

Control run off from:

- Cement/concrete based material production, placing and finishing.
- Hosing down and cleaning of, tools and equipment, fresh material, and spilt or surplus material, pumps and mixers etc.
- Wet cutting or grinding.
- Slab watering etc.
- Water cleaning of new concrete elements, fresh used formwork etc.

Small project with relatively large exposed ground areas - prevent run off by:

- directing small amounts of washwater onto the area of ground closest to the work.
- for larger amounts provide run off channels, and small soak pits
- very small amounts of washwater with no aggregate and only a small amount of sand may be spread over existing lawns.

Large project and those without suitable ground area - prevent run off by:

- plan and implement washwater control measures based on the expected volumes, allow for the timely removal and safe disposal of liquids and solids.
- Limit the volume of water used for washing down to the extent required.
- Control the flow of washwater so that it is directed to proper catchments.
- providing watertight bunds, pits or tanks, filtered washwater is not to be discharged to drains.

Spilt or surplus material:

- if possible allow to set and either use or dispose of as hardfill.
- pre-made concrete items, either use or dispose of as hardfill.

Pump washwater away from drains, waterways and adjoining property.

## 1.9 EXCAVATION SAFETY

To the [Health and Safety at Work Act 2015](#).

Carry out excavation to WorkSafe NZ, [Good Practice Guidelines - Excavation Safety](#). This may include, deep excavation, trenching, and areas behind unfilled retaining walls.

Carry out excavation using plant and equipment suitable for the purpose.

### Temporary services

## 1.10 WATER

Provide clean, fresh water for the works and make arrangements for distributing about the site.

## 1.11 ELECTRICITY

To AS/NZS 3012.

Nominate the person to install and be responsible for the complete temporary electrical installation. The name and designation of the person responsible is to be displayed prominently and close to the main switch or circuit breaker.

Inspect and overhaul the installation at such intervals as are prescribed by the network utility operator but not exceeding three monthly intervals.

## 12 TELEPHONE

Provide on-site temporary telephone facilities.

## 13 COMPUTER

Provide on-site temporary computer facilities complete with an email and internet connection capable of sending, receiving and printing site communications.

### Scaffolding and shoring

## 14 SCAFFOLDING

Provide scaffolding for the efficient execution of the works.  
Comply with:

- [Health and Safety at Work Act 2015](#)
- [Health and Safety in Employment Regulations 1995](#)
- Health and Safety at Work (General Risk and Workplace Management) Regulations 2016
- Worksafe - [Scaffolding in New Zealand - Good Practice Guidelines](#)

### Care and protection

## 15 PROTECT ACCESS ROUTES

Protect access routes through the building and areas adjacent to the work area that are to remain in place. These include lifts and stairs. Comply with all fire egress requirements at all times.

## 16 MAKE GOOD - SITE

Make good all damage to existing roads, footpaths, grounds, services, landscape elements and site features caused in carrying out the contract works.

## 17 CONSTRUCTION KEYING AND SECURITY

Provide locksets with temporary keying, or install with the cylinders removed.

## 18 TEMPORARY STORAGE

Provide temporary storage areas and protective covers and screens. Fillet stack and protect all framing and structural members from moisture and contamination. Completely protect finishing materials from the weather and damage and store in accordance with the manufacturer's requirements. Protect fabricated elements from the weather and damage, and store in accordance with suppliers' requirements.

## 19 PERIODIC SITE CLEANING

Carry out periodic site cleaning during the contract period. Place waste material in appropriate storage pending removal from the site.

## 20 PERIODIC RUBBISH REMOVAL

Maintain on site appropriate means for the storage and removal of construction waste material. Where required or appropriate provide for the separate storage of recyclable waste and other materials requiring special disposal. Keep food waste separate from construction waste.

# 1270 CONSTRUCTION

## 1 GENERAL

This GENERAL section relates to common requirements for construction issues including: -

- Quality assurance
- Noise and nuisance
- Set out
- Common execution requirements
- Common materials requirements
- Supply of spare materials
- Common requirements for samples and prototypes
- Final presentation and cleaning
- Commissioning

### Quality control and assurance

#### QUALITY ASSURANCE

Carry out and record regular checks of material quality and accuracy, including:

- Concrete quality and finish.
- Dimensional accuracy of structural column locations (following completion of foundations).
- All perimeter columns and frames for plumb.
- Levels of all floors relative to the site datum.
- Framing timber moisture content.

Where any material, quality or dimension falls outside specified or required tolerances, obtain written direction from the contract administrator. Where building consent approval is affected, confirm remedial action with the Building Consent Authority.

Provide all materials, plant, attendances, supervision, inspections and programming to ensure the required quality standards are met by all project personnel.

### Noise and nuisance

#### LIMIT CONSTRUCTION NOISE

Minimise the effects of noise generation by including in the planning of the work such factors as placing of plant, programming the sequence of operations and other management functions. Limit construction noise to comply with the requirements of [NZS 6803](#), the requirements of the Resource Management Act sections 326, 327 and 328 and the [Health and Safety in Employment Regulations 1995](#) clause 11.

#### ACCEPTABLE NOISE LEVELS

Refer to [NZS 6803](#) Tables 2 and [NZS 6803](#), tables 3 for the upper limits of construction work noise in residential and industrial areas over the various time periods, particularly 0730 to 1800 hours.

Note also the allowed adjustments and exemptions in [NZS 6803](#), 6. Do not exceed these limits.

#### PROVIDE INFORMATION TO NEIGHBOURS

Provide information to neighbours of any noise generation from the site liable to constitute a problem. Explain to them the means being used to minimise excessive noise and establish with them the timings most suitable for the noise generating work to be carried on.

Discuss with any complainant the measures being used to minimise noise. Where possible modify these measures to accommodate particular circumstances. Finally, determine the sound level at the location under discussion using methods and observation reporting as laid down in [NZS 6803](#). If the noise level is above the upper limits of [NZS 6803](#), table 2 and table 3, cease the noise generating operation and remedy the problem.

#### 1.5 INCONVENIENCE TO OTHERS

When the works are to be carried out in or around occupied premises, ascertain the nature and times of occupation and use. Carry out the works in a manner to minimise inconvenience, nuisance and danger to occupants and users.

## 1.6 DIRT AND DROPPINGS

Remove dirt and droppings deposited on public or private thoroughfares from vehicles servicing the site to the satisfaction of the appropriate authorities and the contract administrator.

## 1.7 DAMAGE AND NUISANCE

Take all precautions to prevent damage and nuisance from water, fire, smoke, dust, rubbish and all other causes resulting from the construction works.

### Set-out and tolerances

## 1.8 SURVEY INFORMATION

Locate and verify survey marks and datum points required to set out the works. Record and maintain their position. Re-establish and replace disturbed or obliterated marks.

## 1.9 SET-OUT AND DATUM

Set out the work to conform with the drawings. Establish a permanent site datum to confirm the proposed building ground floor level and its relationship to all other existing and new building levels.

## 1.10 SET-OUT BY LICENSED CADASTRAL SURVEYOR

Before commencing construction provide the contract administrator with a certificate prepared by a licensed cadastral surveyor that the set-out is complete and that the building is accurately placed on the site.

During construction provide the contract administrator with a certificate, prepared by the same licensed cadastral surveyor confirming the set-out of the foundations and grid lines. Necessary adjustments are to be determined and agreed to by the contract administrator before proceeding further.

## 1.11 CONFIRM HEIGHT IN RELATION TO BOUNDARY

Provide a certificate prepared by a licensed cadastral surveyor that the building has been constructed within the allowed height in relation to boundary. Provide the certificate to the local authority. Provide a copy of the certificate to the contract administrator.

## 1.12 USE OF SET-OUT INSTRUMENTS

Permit without charge, the use of instruments already on site for checking, setting out and levels.

## 1.13 CHECK DIMENSIONS

Check all dimensions both on drawings and site, particularly the correlation between components and work in place. Take all dimensions on drawings to be between structural elements before linings or finishes, unless clearly stated otherwise.

## 1.14 TOLERANCES

All work to be level, plumb, and true to line and face. Unless otherwise specified in specific work sections of this specification, tolerances for structural work shall comply with the following:

Concrete construction:	To <a href="#">NZS 3109</a> Concrete construction Clause 3.9 Tolerances for reinforcement Table 5.1 Tolerance for precast components Table 5.2 Tolerance for in situ construction To <a href="#">NZS 3114</a> Concrete surface finishes
Masonry construction:	To <a href="#">NZS 4210</a> Masonry construction: Materials and workmanship Clause 2.6.5 Tolerances Table 2.2 Maximum tolerances
Structural steelwork:	To <a href="#">NZS 3404.1:1997</a> Steel structures standard Section 14.4 Tolerances (after fabrication) Section 15.3 Tolerances (erection)
Timber framing:	To <a href="#">NZS 3604</a> Timber-framed buildings Clause 2.2 Tolerances Table 2.1 Timber framing tolerances

Refer to work sections for tolerance requirements for finishes.

### Execution

## 1.15 EXAMINE PREVIOUS WORK

Before commencing any part of the work carefully examine the previous work on which it may depend. Report in writing to the contract administrator defects that may affect the quality of the proposed work and obtain instructions. Commencing work on any part means that previous work is accepted as being satisfactory for work of the required standard.

## 1.16 MINIMISE DELAYS DUE TO WEATHER

Use appropriate techniques and methods to prevent damage and minimise delays due to weather.

### **Materials**

## 1.17 NEW PRODUCTS AND MATERIALS

Materials and products to be new unless stated otherwise, of the specified standard, and complying with all cited documents.

## 1.18 COMPATIBILITY OF MATERIALS AND FINISHES

Ensure all parts of a construction or finish are compatible and their individual use approved by the manufacturers and suppliers of other parts of the system. Source all parts of a system from a single manufacturer or supplier.

## 1.19 SUBSTRATE CONDITIONS

Ensure substrate conditions are within the manufacturer's or supplier's stated guidelines both before and during the installation of any material, product or system. Obtain written instructions on the necessary action to rectify unsatisfactory conditions.

## 1.20 INSTALLING PRODUCTS AND MATERIALS

Install in accordance with the manufacturer's or supplier's technical literature. Ensure that all installers are familiar with the required substrate conditions and the manufacturer's or supplier's specified preparation, fixing and finishing techniques.

## 1.21 COMPLY WITH STANDARDS

Comply with the relevant and/or cited Standard for any material or component. Obtain certificates of compliance when requested by the contract administrator.

## 1.22 CONDITION OF MATERIALS AND COMPONENTS

To be in perfect condition when incorporated into the work.

## 1.23 INCOMPATIBLE MATERIALS AND METALS

Separate incompatible materials and metals with separation layers, sleeves or gaskets of plastic film, bituminous felt or mastic or paint coatings, installed so that none are visible on exposed surfaces.

### **Samples**

### **Spares**

## 1.24 SPARES

Collect, protect and store safely all spare materials required under the contract. Give the contract administrator an inventory of all spares.

## 1.25 CLEANING BY CONTRACTOR

Clear the contract works of all construction materials, waste, dirt and debris. Clean the contract works including:

- Wipe all surfaces to remove construction dust
- Clean out service ducts and accessible concealed spaces
- Clean out all gutters and rainwater heads
- Wipe dust from both sides of glass. Take particular care when removing paint or cementitious materials to not damage the glass.
- Remove adhesive residue left by labels and other temporary protection/markings
- Clean out the interior of all cabinetry
- Wash down external concrete including driveways and concrete masonry. Take care when waterblasting to not cause damage to the surface or allow water to enter the building.
- Remove rubbish and building material from the area immediately adjacent to the contract works



## 1.26 CLEANING BY COMMERCIAL CLEANER

Use a commercial cleaning firm to clean the whole of the interior of the building, including all appliances, equipment, fittings, surfaces and finishes to leave it without any blemish. Cleaning to include:

- Clean and wash down all external surfaces to remove dirt, debris and marking.
- Clean all interior surfaces including cabinetwork, joinery, sanitary and hardware items.
- Vacuum or polish all floor finishes.
- Clean and polish all glass, both sides.

## Commissioning

### 1.27 MOVING PARTS

Adjust, ease and lubricate all doors, windows, drawers, hardware, appliances, controls and all moving parts to give easy and efficient operation.

### 1.28 TESTS AND CERTIFICATION

Ensure all electrical fittings such as lighting and ventilation/heat pumps and also water pressure are all in good working order.

### 1.29 SECURITY AT COMPLETION

Remove any temporary lock cylinders and complete final keying prior to handing over keys to the principal on completion of the works. Leave the works secure with all accesses locked. Account for all keys/cards/codes and hand to the principal along with an itemised schedule, retaining a duplicate schedule signed by the principal as a receipt.

# 2241 EXCAVATION

## 1 GENERAL

This section relates to the excavating required for the building works, removing surface soils and the disposal of excavated material.

### Documents

#### DOCUMENTS REFERRED TO

Documents referred to in this section are:

[NZS 4402](#) Methods of testing soils for civil engineering purposes  
WorkSafe NZ [Good Practice Guidelines - Excavation Safety](#)

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

### Requirements

#### ARCHAEOLOGICAL DISCOVERY

If fossils, antiquities and other items of value are found refer to the general section 1220 PROJECT for actions to be taken with archaeological discovery.

### Performance

#### GROUND CONDITIONS

Foundation investigations and drilling have been carried out. Place your own interpretation on this information as no warranty is implied that the information is truly representative or complete. Make such extra investigations as considered necessary.

Refer to attached Geotechnical Report or Soil Investigation Report.

#### PROOF DRILLING

Site bores already carried out indicate underlying layers of unsuitable material in certain areas. For the foundations designated on the plan, hand augered proof holes may be required to determine the extent of such material. Include for this work in programming and adjust against provisional quantities scheduled.

#### ACCESS FOR MACHINES

Determine working conditions and access for machines. Take into account the time of year, the nature of the ground and subsoil to be excavated, the ground water table and all matters influencing the carrying out of the work.

#### SAFE WORKING CONDITIONS

Provide safe working conditions and adequate support to excavations at all times to WorkSafe NZ, [Good Practice Guidelines - Excavation Safety](#). Cover holes and fence off trenches and banks.

#### FOUNDATION BEARING

Request written instructions if a natural bearing is:

- reached at a lesser depth or
- not reached at the depth shown on the drawings.

In made-up ground excavate down to a natural bearing. Remove unsuitable material that is exposed and replace with compacted backfill.

#### INSPECTION

Arrange for inspections and before placing any new work. If bearing becomes inadequate due to any cause then stop work and request further instructions.

#### SITE MEASUREMENT, ROCK

Where rock is shown to be part of the site condition by the bore logs, all rock removed to be solid measured and the quantity recorded and agreed to in writing as the excavation proceeds.



## 1.10 SITE MEASUREMENT, OTHER FORMATIONS

If for any reason the excavations have to vary from the drawings, those affected to be solid measured and the quantity recorded and agreed to in writing as the excavation proceeds.

## 2 PRODUCTS

### Materials

#### 2.1 TOPSOIL

Weathered soil, with organic inclusions capable of supporting the growth of vegetation.

#### 2.2 CUT MATERIAL

Consisting of sands, gravels, sedimentary materials, clays, scoria and similar deposits.

#### 2.3 ROCK

Defined as material encountered in excavations which because of its size or position can be removed only by breaking up by explosives or mechanical plant such as jack hammers or percussion drills.

#### 2.4 UNCONTROLLED FILL

Variable fill material placed with little or no compaction control.

#### 2.5 EXCAVATED FILL

Material from other formations in the excavation which may be selected and approved as suitable for filling and complying with [NZS 4402](#) by having grading and moisture content properties that will allow compaction to 95% of maximum density.

## EXECUTION

### Conditions

#### 3.1 REPORT

Report any survey pegs, bench marks, and the like on any features, leaving them undisturbed until approval is given for removal.

#### 3.2 COMPLY

Comply with the requirements of WorkSafe NZ, [Good Practice Guidelines - Excavation Safety](#).

#### 3.3 WORK BY OTHERS

Before taking over work done on the site by others check all levels and conditions and report any discrepancies affecting further work.

#### 3.4 EXISTING SERVICES AND FOUNDATIONS

Locate underground services and foundations before work is started. Any information provided regarding the location of these services and foundations is given from available records but with no guarantee of accuracy as regards alignment or depth. Furthermore no guarantee is given or implied that the information provided covers all existing services and foundations. Make good at no extra cost damage to existing services to the satisfaction of the appropriate network utility operator.

Protect existing roads, footpaths, gutters, crossings etc from damage during work.

#### 3.5 KEEP FREE OF WATER

Keep excavations free from water and keep water from excavations clear of other construction work.

#### 3.6 TERRITORIAL AUTHORITY REQUIREMENTS

Obtain from the territorial authority requirements for the method of discharging water from the site.

#### 3.7 FORM SUMPS

Form sumps outside the line of foundations and deep enough to drain excavations. Pump from sumps without disturbing excavations or any material in place.

#### 3.8 SILT CONTROL

Undertake silt control measures required by territorial authorities and network utility operators in relation to design, location and discharge into the drainage system.

## **Application**

### **3.9 STRIP TOPSOIL**

Strip topsoil carefully over the whole site and stockpile where directed on the site, on the prepared subgrade, for re-spreading at the completion of the contract.

### **3.10 STRIP TO SUBGRADE**

Strip the soil over the whole site to form a subgrade generally, but at a minimum of 200mm below the original ground level. Leave the subgrade level, clear of all loose material and with no impediment for the excavation work.

### **3.11 DIVERT DRAINS AND SERVICE LINES**

Divert services, drains and field drains encountered in the excavations to new routes clear of the building and reconnect to the requirements of the network utility operator.

### **3.12 BREAK OUT**

Break out and remove old foundations, floor slabs, drains, manholes and septic tanks, seal up connections and remove contaminated soil. Grub out roots in excess of 75mm diameter to a minimum of 500mm below the bottom level of footings or paving. Backfill with selected excavated material, well rammed in layers.

Take special care when working close to retained trees and shrubs.

### **3.13 EXCAVATION GENERALLY**

Excavate for pads, strip foundations and tie beams to the profiles and levels shown on the drawings. Allow clearance for working space and formwork as necessary. Trim to required profiles, falls and levels. If pouring against natural ground excavate an extra 25mm that side to provide 75mm minimum cover to reinforcement horizontally. Bench surface of sloping ground to receive filling. Use plant and equipment suitable for the purpose.

### **3.14 OVER EXCAVATION**

Make good with well compacted backfill.

### **3.15 EXCAVATED BACKFILL**

Stockpile selected excavated backfill on site where directed so that it does not impede continuing works until it is required.

## **Finishing**

### **3.16 BATTERS, TEMPORARY PROTECTION**

Protect batters with a change of level between crest and toe of more than 1.5 metres from weather erosion with a waterproof covering of either hessian and tar, or heavy duty black polythene sheet. Seal at joints and securely fix down at crest and toe. Maintain coverings in good condition until the ground is secured by permanent construction.

## **Completion**

### **3.17 LEAVE**

Leave work to the standard required by following procedures.

### **3.18 SURPLUS TOPSOIL**

Remove unwanted stripped soil from the site continually as the work proceeds. Clean up continually any soil if dropped on footpaths or roads.

### **3.19 SURPLUS MATERIAL**

Remove surplus excavated material from the site continually as the excavation proceeds. Clean up continually any excavated material dropped on footpaths or roads.

## **4 SELECTIONS**

### **4.1 BORE LOGS**

Refer to attached Geotechnical Report or Soil Investigation Report.

# 3155 RAFT FLOOR SYSTEM

## 1 GENERAL

This section relates to a raft floor system, an engineered design reinforced concrete waffle raft floor slab-on-ground.

### 1.1 RELATED WORK

Refer to 4161T THERMAKRAFT UNDERLAYS, FOILS AND DPC for damp-proof membrane.  
Refer to Procerto Group Ltd drawings for structural design calculations, notes, plans and details, PS1 and Design Memorandum Certificate.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following definitions apply specifically to this section:

ACRS Australian Certification Authority for Reinforcing Steels - An independent certification scheme for reinforcing steel and structural steel, by product and manufacturer/processor. Certifies compliance with Australia/New Zealand Standards.  
ACRS Web site - [www.steelcertification.com](http://www.steelcertification.com)

### 1.3 DOCUMENTS

Documents referred to in this section are:

NZBC B1/VM1	Structure
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber-framed buildings
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4671	Steel reinforcing materials

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

### Requirements

### 1.4 QUALIFICATIONS

Tradespeople to be competent, experienced and familiar with the raft floor system materials and techniques specified.

### 1.5 STEEL REINFORCING COMPLIANCE

Steel reinforcing materials for concrete to [AS/NZS 4671](#). Steel to be manufactured in New Zealand, or by an overseas manufacturer holding a current valid (or equivalent) NZ S Mark or ACRS certificate for that type of steel. Confirm compliance and provide evidence if requested.

### 1.6 QUALITY RECORDS

Keep accurate records relating to strength and quality of materials used during construction.  
Include records of workmanship during construction and photographs of as-built details. Make the information available to the Building Consent Authority inspector on request.

### Performance

## 1.7 INSPECTION NOTIFICATION REQUIREMENTS

Procerto Group Ltd state on their drawings;

*"Further to the provision of our Design Producer Statement (PS1) for the works above, we advise that the following inspections will be required to allow us to establish that the works have been constructed in accordance with our design proposals and that any design assumptions that we have made are appropriate. The inspections will be required before we can issue the Construction Review Producer Statement (PS4) for inclusion with the application for the Code Compliance Certificate for the works.*

*The required inspections include:*

- 1. An inspection during the foundation construction to confirm that the foundation conditions are consistent with the geotechnical report.*
- 2. Inspection of the reinforcing steel before concrete is poured.*

*Please ensure that we are advised of the status of the works at least three days in advance of the above activities occurring to allow us to book the required inspections into our schedule."*

## 1.8 INSPECTIONS BY BUILDING CONSENT AUTHORITY

Check the Building Consent Conditions for any inspections that are required by the Building Consent Authority.

## 2 PRODUCTS

### Materials

#### 2.1 BLINDING

50mm maximum compacted GAP 7.

#### 2.2 TIMBER FORMWORK

No. 2 framing and dressing or merchantable grade radiata pine boards to [NZS 3631](#).

#### 2.3 DAMP-PROOF MEMBRANE

0.25mm minimum polyethylene to [NZS 3604](#): clause 7.5.4, Damp-proof membrane (DPM). Refer to SELECTIONS.

#### 2.4 POLYSTYRENE PODS

Proprietary purpose made 1100 x 1100 x 220mm polystyrene pods.

#### 2.5 REINFORCEMENT

Bars to [AS/NZS 4671](#). Grade 500E deformed, other than for ties, stirrups and spirals, unless shown otherwise on the drawings.

#### 2.6 INTERNAL CORNER REINFORCEMENT

Minimum 2 x HD12 bars Grade 500E to [AS/NZS 4671](#).

#### 2.7 MESH

Welded reinforcing mesh to [AS/NZS 4671](#) as modified by NZS B1/VM1, generally, Class E, minimum to [NZBC B1/AS1](#) - Grade 500E, 2.27kg/m<sup>2</sup> (1.14kg/m<sup>2</sup> in each direction). Minimum SE62 500E mesh or the equivalent.

#### 2.8 TYING WIRE

Mild drawn steel wire not less than 1.2mm diameter.

#### 2.9 CONCRETE - RAFT APPLICATIONS

20 MPa 100mm slump mix in either 13mm or 19mm nominal aggregate size.

#### 2.10 NORMAL CONCRETE - NON RAFT APPLICATIONS

Normal concrete 20 MPa grade, maximum aggregate size 19mm to [NZS 3104](#).

### Components

#### 2.11 SPACERS

Proprietary spacers. Refer to SELECTIONS for size.

### 3 EXECUTION

#### Conditions

#### 3.1 STORAGE

Take delivery of and accept all materials and accessories dry and undamaged. Store on timber fillets on hard ground protected from weather, contamination and damage in a secure area clear of any building operation.

Handle and store reinforcing steel and accessories without damage or contamination. Ensure reinforcement is clean and remains clean so that at the time of placing concrete it is free of all loose mill scale, loose rust and any other contamination that may reduce bonding capacity. Store steel fabric flat.

#### 3.2 HANDLING

Avoid distribution and contact with damaging substances. Do not drag sheets across each other and other materials. Protect edges and surface finishes from damage.

#### Application - raft floor system

#### 3.3 SITE CLEARANCE

Clear the slab area of any vegetation and topsoil down to the subgrade level.

#### 3.4 BUILDING PLATFORM

Create a building platform to a level surface approximately 330mm below finished floor level. Cut and/or fill sloping sites. Confirm finished floor level.

#### 3.5 POST-CUT INSPECTION

Inspect and confirm that the soil conditions are as anticipated by the geotechnical investigation and report and conform to the requirements of the raft system supplier manual.

#### 3.6 TEMPORARY BUILDING PLATFORM DRAINAGE

Construct suitable drainage to keep excessive ground water off the building platform during and after construction as required.

#### 3.7 HARDFILL

Place hardfill and ensure it is spread and compacted with mechanical compaction.

#### 3.8 UNDERGROUND SERVICES

Ensure underfloor services are installed in the subsoil or hardfill in locations as shown on the drawings and according to the raft floor system manufacturer's requirements.

#### 3.9 BLINDING LAYER

Spread GAP 7 blinding layer to a minimum 500mm past the outside edge of the slab, compact to a level layer no greater than 50mm thick and no higher than 305mm below finished floor level.

#### 3.10 FORMWORK

Construct formwork as required, well braced and tied to remain in position, straight and plumb during construction. Ensure formwork will provide for the topping depth, including rebates and the required concrete finish.

#### 3.11 INSTALL DAMP-PROOF MEMBRANE

Apply DPM to the prepared basecourse extending to the outside of all edge beams or fold and staple up the inside of the formwork. Overlap all joints in the DPM sheets a minimum 150mm. Tape laps and penetrations with 50mm wide pressure sensitive plastic tape. Ensure DPM is not damaged during the construction process. Repair all damage to DPM before proceeding with following procedures.

#### 3.12 PLACE POLYSTYRENE PODS

Place polystyrene pods in a regular waffle pattern using the spacers in the specified grid pattern to fit the floor plan. Cut pods on site with a saw or suitable hot wire as required. Cut holes for services and trim around piles as required on site.

### 3.13 INSTALL SPACERS

Install spacers and locations to the raft floor system manufacturer's requirements.

Form standard ribs between pods using 100mm spacers. Place the spacers at a minimum of one spacer along each edge of each pod or part pod. The ribs in both directions form a waffle pattern throughout the slab.

Form the edge beam using 300mm spacers. Place the spacers at 1200mm centres maximum along the perimeter of the slab at least and one spacer per pod or part pod.

Form ribs to support load bearing walls using 300mm spacers. Place the spacers at a minimum of one spacer along the edge of each pod or part pod.

### 3.14 PLACE REINFORCING STEEL: RIB STEEL

Place rib reinforcing steel in the bottom of the internal ribs and supported in the correct position by spacers. Lap all steel 480mm minimum, and hook all plain bars. At the junction with the edge beam, each rib steel bar shall sit on top of the edge beam bars and extend to the outermost bar.

Allow for 75mm cover to the edge of the beam. Place 1 x HD12 bar in each 100mm wide rib and 2 x HD12 bars in each 300mm wide rib.

**CHECK ALL REINFORCING AGAINST ENGINEERS DRAWINGS.**

### 3.15 PLACE REINFORCING STEEL: EDGE BEAM STEEL

Place the two edge beam reinforcing bars in the bottom of the edge beam and supported in the correct position by the spacers. Tie one edge beam bar below the mesh at the perimeter of the area covered by the polystyrene pods. Lap all steel 480mm minimum, and hook all plain bars. At corners, the inner bottom bars and the top bars cross each other and extend to 75mm from the outside face of the edge beam. Tie these bars together where they cross. Tying of edge beam steel is only required at corners.

**CHECK ALL REINFORCING AGAINST ENGINEERS DRAWINGS.**

### 3.16 PLACE REINFORCING STEEL: RE-ENTRANT CORNER STEEL

Place two HD12 bars, 1200mm in length across the corner. Tie to the top of the mesh at re-entrant corners at 200mm centres with 50mm side cover from the internal corner.

Install specified steel to raft floor system manufacturer's requirements. Ensure specified minimum cover requirements are maintained.

### 3.17 PLACE REINFORCING MESH AND CHAIRS

Place reinforcing mesh over the pods and support on the mesh chairs spaced at 1200mm centres minimum, with two mesh chairs minimum placed per pod and with one mesh chair minimum per part pod.

### 3.18 MESH LAPS

Welded reinforcing mesh to be lapped and tied, such that the outermost wires overlap by the greater of:

- the spacing of the cross wires plus 50mm
- 150mm or
- manufacturer's requirements

Do not count bar extensions beyond the outermost cross wire.

### 3.19 FORM SLAB AND OPENING REBATES

Form rebates, as detailed on drawings.

Form a minimum 50mm rebate in slab for masonry veneer construction with a width dependent on the veneer width, cavity width and overhang. Waterproof the rebate with a bituminous sealer on both the vertical and horizontal faces.

### 3.20 UNDERFLOOR HEATING

Where underfloor inslab heating system is required ensure installation is completed to manufacturer's requirements.

### 3.21 TOPPING SLAB DEPTH

85mm minimum plus additional cover as required for infloor heating.



### 3.22 PRE-PLACEMENT INSPECTION

Arrange for excavations, formwork and reinforcement to be inspected and passed by the Building Consent Authority.

### 3.23 CONCRETE PLACEMENT AND COMPACTION

Ensure the rib and edge beam canals are clean, free of debris. Pour the floor in a single pour ensuring that the pods remain in position during placing. Pour concrete onto the top of each pod prior to filling the ribs around the pod to help prevent them from floating and lifting.

Compact concrete using a suitable poker vibrator for the ribs and ground beams and into all corners of the formwork. Screed as required. Confirm levels with a laser level.

### 3.24 CONCRETE FINISHING

Float and trowel to provide a U3 finish to [NZS 3114](#): table 2, Classes of floor, exterior pavement and invert finishes.

### 3.25 CONCRETE CURING

Curing of the concrete slab must take place immediately after finishing the concrete to [NZS 3109](#) by one of the following curing methods:

- ponding or continuous sprinkling of water
- placing a wet covering or plastic membrane over the slab
- the use of liquid membrane curing compounds

### 3.26 SHRINKAGE CONTROL JOINTS

Cut shrinkage control joints as shown on the plans after hardening to a minimum depth of 25mm within 24 hours in summer or 48 hours in winter.

Where shrinkage control joints have not been shown on the plans, position the shrinkage control joints to coincide with major changes in the floor plan. Agree position of shrinkage control joints with the designer.

Bay dimensions formed by the shrinkage control joints to be limited to a maximum ratio of length to width of 2 to 1 with a maximum dimension of 6 metres. Place the shrinkage control joints over the 100mm wide internal ribs wherever possible. Where a shrinkage control joint runs along the line of a 300mm wide loadbearing rib, locate the cut directly above one edge of the 300mm rib. Do not place supplementary reinforcing bars (including re-entrant corner steel) across any shrinkage control joints.

### 3.27 CLEAN OUT SHRINKAGE CONTROL JOINTS

Clean out control joints. If required fill with suitable flexible sealant.

#### **Application - other concrete work**

### 3.28 PLACE CONCRETE

Do not place fresh concrete against the preceding layer after more than 45 minutes, or such lesser time as required by the circumstances, to [NZS 3109](#): clause 7.4, Handling and placing.

### 3.29 SCREED THE SURFACE

Screed the concrete surface by straight edge or vibrating screed immediately after compaction and to tolerances in [NZS 3109](#): table 5.2, Tolerances for in situ construction.

### 3.30 OTHER CONCRETE FINISHING

Screed and provide a U3 finish to [NZS 3114](#): table 2, Classes of floor, exterior pavement and invert finishes.

#### **Finishing**

### 3.31 STRIKE FORMWORK

Strike formwork at least 12 hours after the slab has been finished without damaging or overloading structure.

### 3.32 SURFACE DEFECTS

Make good surface defects immediately after forms are stripped. Make good hollows or bony areas with suitable patching mortar, finished to the same tolerances as the parent concrete. Fill any tie rod holes with 1:2 mortar.

## Completion

- 3.33 LEAVE  
Leave work to the standard required by following procedures.
- 3.34 CLEAN UP  
Clean up surrounding areas following completion of the concrete placement.
- 3.35 REMOVE  
Remove debris, unused materials and elements from the site.

## SELECTIONS

- 4.1 DAMP-PROOF MEMBRANE  
Type: Thermathene Black polyethylene film
- 4.2 POLYSTYRENE PODS  
Brand: Expol  
Size: 1100mm x 1100mm x 220mm
- 4.3 SPACERS  
Brand: As specified by engineers, refer to engineers drawings for details  
Size: Refer to engineers drawings for details
- 4.4 CONCRETE SURFACE FINISH  
Location: Total slab  
Finish class: U3 (interior)



# 3821 TIMBER FRAMING

## 1 GENERAL

This section relates to the supply and erection of timber framing, as a framed structure, or as part of a partitioning system.

### 1.1 RELATED WORK

Refer to 4161T THERMAKRAFT UNDERLAYS, FOIL AND DPC for underlays, foils and DPC.  
Refer to 4171M TEKTON WEATHERIZATION SYSTEM for wall wrap.  
Refer to 4171HR JAMES HARDIE RIGID AIR BARRIERS for rab board.  
Refer to Placemakers Truss Design and Certificate for truss layout and members.  
Refer to the appropriate concrete section for floor slabs.  
Cladding, roofing and lining sections used in the project, particularly if bracing is involved.  
Refer to the appropriate tile roofing section for tile battens etc.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:  
SG Structural grade to [NZS 3604](#), 1.3 **Definitions**

### Documents

#### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

<a href="#">NZBC B2/AS1</a>	Durability
<a href="#">AS/NZS 2904</a>	Damp-proof courses and flashings
<a href="#">NZS 3602</a>	Timber and wood-based products for use in building
<a href="#">NZS 3603</a>	Timber structures standard
<a href="#">NZS 3604</a>	Timber-framed buildings
<a href="#">NZS 3622</a>	Verification of timber properties
<a href="#">NZS 3631</a>	New Zealand timber grading rules
<a href="#">NZS 3640</a>	Chemical preservation of round and sawn timber
WorkSafe NZ	<a href="#">Guidelines for the provision of facilities and general safety in the construction industry.</a>
BRANZ BU 582	Structurally fixed cavity battens
<b>*A copy of <a href="#">NZS 3604</a> Timber-framed building, must be held on site.</b>	

#### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:  
**MiTek** Structural Fixings On-Site Guide For Building Code Compliance

Manufacturer/supplier contact details

Company:	MiTek New Zealand Limited
Web:	<a href="http://www.mitek.nz.co.nz">www.mitek.nz.co.nz</a>
Email:	<a href="mailto:design@miteknz.co.nz">design@miteknz.co.nz</a>
Telephone:	(09) 274-7109

Manufacturer's and supplier's documents relating to this part of the work:  
**Ramset** Specifiers Resource Book

Manufacturer/supplier contact details

Company:	Ramset New Zealand
Web:	<a href="http://www.ramset.co.nz">www.ramset.co.nz</a>
Email:	<a href="mailto:info@ramset.co.nz">info@ramset.co.nz</a>
Telephone:	0800-726-738

### 1.5 DIMENSIONS

All timber sizes except for roof battens are actual minimum dried sizes.

## 2 PRODUCTS

### Materials

#### 2.1 TIMBER FRAMING, TREATED

Species, grade and in service moisture content to [NZS 3602](#), [NZBC B2/AS1](#) and treatment to [NZS 3640](#), [NZBC B2/AS1](#). Structural grade (SG) to [NZS 3604](#), [NZS 3622](#) with properties to [NZS 3603](#).

#### 2.2 TIMBER FRAMING, CHEMICAL FREE

Species, grade and moisture content in service as set out in [NZS 3602](#), [NZBC B2/AS1](#).

#### 2.3 APPEARANCE TIMBERS

Graded to [NZS 3631](#), treated where required by [NZBC B2/AS1](#), [NZS 3602](#), table 1, and treatment to [NZS 3640](#).

#### 2.4 DPC

Refer to 4161T THERMAKRAFT UNDERLAYS, FOIL AND DPC for underlays, foils and DPC section

### Components

#### 2.5 NAILS

Type to [NZS 3604](#), section 4, **Durability**, and of the size and number for each particular types of joint as laid down in the nailing schedules of [NZS 3604](#), sections 6-10.

#### 2.6 BOLTS AND SCREWS

Bolts and screws of engineering and/or coach type complete with washers, to the requirements of [NZS 3604](#), section 4, **Durability**, and of the number and form required for each particular junction to [NZS 3604](#), sections 6-10.

#### 2.7 THREADED RODS

Use stainless steel threaded rods of the required length, with washers and nuts at both ends, when stainless steel bolts of the required length are not available.

#### 2.8 TIMBER CONNECTORS AND FIXINGS

Supply for each particular joint the connectors and fixings as noted on the drawings. Comply with the requirements of the manufacturer, [NZS 3604](#), section 4, **Durability**, and of the number and form required for each particular junction to [NZS 3604](#), sections 6-10.

#### 2.9 BRACING STRAPS

Nail-on type to the requirements of [NZS 3604](#), section 4, **Durability**, and of the number and form required for each particular application to [NZS 3604](#), sections 6-10.

#### 2.10 POWDER ACTUATED FASTENERS

To type, size and charge required by the powder actuated tool manufacturer for each particular member and the substrate.

#### 2.11 CORROSION RISKS

For interior timber, treated with copper-based timber preservatives (H3.2 or higher), use a minimum of hot-dipped galvanized steel fixings and fasteners.

For exterior timber, timber in damp areas and timber subject to occasional wetting, use only stainless steel (or equivalent) fixings and connectors, when the timber is treated with; Copper Azole (CuAz, Preservative code 58), Alkaline Copper Quaternary (ACQ, Preservative code 90), Micronise Copper Azole (code 88) or Micronised Copper Quaternary (code 89).

## 3 EXECUTION

### Conditions

#### 3.1 PROTECT TIMBER

Protect all timber against damage and from inclement weather. Ensure that any variation in moisture content is kept to a minimum, before and after erection and before enclosure.

### 3.2 EXECUTION

Execution to comply with [NZS 3604](#), except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

### 3.3 SEPARATION

Separate all timber framing timbers from concrete, masonry and brick by: -

- a full length polyethylene damp-proof membrane overlapping timber by at least 6mm; or
- a 12mm minimum free draining air space

### 3.4 FRAMING MOISTURE CONTENT

Maximum allowable equilibrium moisture content (EMC) for non air-conditioned or centrally heated buildings, for framing to which linings are attached.

- At erection: 24% EMC maximum
- At enclosure: 20% EMC maximum
- At lining: 16% EMC maximum

### 3.5 TOLERANCES

Permissible deviations from established lines, grades and dimensions equal to or less than the following. Multiples of given limits are not cumulative.

- Deviation in plan, up to 10 metres, 5mm
- Deviation in plan, over 10 metres, 10mm total
- Deviation from horizontal, up to 10 metres, 5mm
- Deviation from horizontal, over 10 metres, 10mm total
- Deviation from vertical position per 3 metres, 3mm
- Deviation from horizontal and vertical, within openings, 3mm.

### Application

### 3.6 SET-OUT

Set-out framing generally in accordance with the requirements of [NZS 3604](#), to carry superimposed loads and as required to support sheet linings and claddings. Set back nogs 12.5mm from face of studs where required for back-blocking of plasterboard non-tapered ends or edges.

### 3.7 SET TIMBERS

Set timbers true to required lines and levels with mitres, butt joints, laps and housings cut accurately to provide full and even contact over the whole of the bearing surface.

### 3.8 TIMBER CUTTING

Select and cut spanning members to minimise allowable defects and avoiding knots and short grain on edges in the middle third, and shakes, splits and checks at mid-span and close to ends.

### 3.9 TIMBER PLATES AND FURRING

Fix to steelwork with bolts and washers or approved proprietary fastenings at 1 metre maximum spacing and not less than 2 fixings to each member, or to engineering specific design.

### 3.10 HOLES AND NOTCHES

Limit holes and notches, checks and half-housing for the structure to those allowable in [NZS 3604](#). Neatly form holes and notches for services without lessening the structural integrity of the member.

### 3.11 CUTTING

Cutting for straightening to comply with [NZS 3604](#), 8.5.3, **Straightening studs.**

### 3.12 EXPOSED TIMBER CONNECTORS AND FIXINGS

Do not use steel timber connectors and fixings on any structural framing exposed to view unless detailed on the drawings.

### 3.13 POWDER-ACTUATED FASTENING TOOLS

Comply with the requirements of WorkSafe NZ and the [Health and Safety at Work Act 2015](#). Powder-actuated fastening tool operators to have the appropriate current Certificate and/or Licence and tools to have the appropriate certificate of fitness if necessary.

### 3.14 ADDITIONAL FRAMING

Position and fix all necessary members for the fixing of all services, fittings, fixtures, edges of linings or claddings, and to provide lateral support to load carrying framing.

### 3.15 FORM NAILED JOINTS

Fully drive nails in all structural joints with the number and location for each particular joint, to the requirements of the nailing schedules of [NZS 3604](#). Where splitting could occur, pre-drill to 80% of nail diameter.

### 3.16 FORM BOLTED JOINTS

Drill for and set bolts to ensure full bearing and development of the joint strength, with tension to just set the washers into timber or to engineering specific design.

### 3.17 FIT CONNECTORS AND FIXINGS

Fit connectors and fixings to obtain full bearing over all contact surfaces and full development of the required loading capacity for that particular joint and in accordance with the manufacturer's requirements or to engineering specific design.

### 3.18 FIT BRACING

Fit and fix subfloor, wall and roof bracing elements to the requirements of the manufacturer or to [NZS 3604](#), to develop the full number of bracing units required.

### 3.19 DPC TO LOSP TREATED TIMBER

Refer to 4161T THERMAKRAFT UNDERLAYS, FOIL AND DPC for underlays, foils and DPC section

### 3.20 DPC TO TIMBER

Refer to 4161T THERMAKRAFT UNDERLAYS, FOIL AND DPC for underlays, foils and DPC section

## Completion

### 3.21 CLEAN UP

Clean up timber framing as the work proceeds so no offcuts, chips, sawdust or any other matter or items remain behind the claddings or linings.

### 3.22 LEAVE

Leave work to the standard required by following procedures.

### 3.23 REMOVE

Remove debris, unused materials and elements from the site.

## SELECTIONS

### 4.1 EXTERIOR WALL FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Exterior walls:	Radiata pine	SG8	H1.2

### 4.2 ROOF FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Soffit Framing:	Radiata pine	SG8	H1.2
Trusses:	Radiata pine	SG8	H1.2
Purlins:	Radiata pine	SG8	H1.2
Valley boards:	Radiata pine	Merch	H1.2

#### 4.3 INTERIOR WALL FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Non structural walls:	Radiata pine	SG8	H1.2
Structural and braced walls:	Radiata pine	SG8	H1.2

#### 4.4 DPC

Refer to 4161T THERMAKRAFT UNDERLAYS, FOIL AND DPC for underlays, foils and DPC section

#### 4.5 NAILS

Location	Type	Material	Finish
Joist hangers & Nailon plates, wall framing, weatherboard cladding, soffits, interior linings	Annular Grooved nails	Mild Steel	Hot dip galvanised*
Purlins	Blue Screw 80mm x 10g	Mild Steel	Hot dip galvanised*

\*Stainless steel for zone D and E exposure zone and/or within 600mm of ground.

#### 4.6 CONNECTORS

Location	Type	Material	Finish
Bricks to wall framing	Lumberlok Screw Tie	Mild Steel	Hot dip galvanised*
Top plate to external walls at right angles	Limberlok Nailon Plates	Mild Steel	Hot dip galvanised*

\*Stainless steel for zone D and E exposure zone and/or within 600mm of ground.

# 4161M TEKTON WEATHERIZATION SYSTEM

## 1 GENERAL

This section relates to the application of **Marshall Innovations Limited Tekton® Weatherization System** which consists of:

- **SUPER-STICK Building Tape®**
- **TRADE-SEAL** (penetration seal)

### 1.1 RELATED WORK

Refer to 4161T THERMAKRAFT UNDERLAYS, FOILS AND DPC for Roofing underlay, DPC and DPM.

Refer to 4171HR JAMES HARDIE RIGID AIR BARRIERS for pre-clad lining.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following definitions apply specifically to this section:

Wall underlay                      the same meaning as defined in [NZBC E2/AS1](#), covering kraft based and synthetic wall underlays, sometimes called, wall wraps, building wraps or building papers.

### Documents

#### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

[NZBC B2/AS1](#)                      Durability  
[NZBC E2/AS1](#)                      External moisture

#### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:

Specification for **SUPER-STICK Building Tape®**

Brochure for **SUPER-STICK Building Tape®** Specification for **TRADE-SEAL**

Brochure for **TRADE-SEAL**

[BRANZ Appraisal 846](#) - SUPER-STICK Flexible Flashing Tape

[BRANZ Appraisal 719](#) - Trade-Seal Pipe and Penetration Seal

Manufacturer/supplier contact details

Company: **Marshall Innovations Limited**

Web: [www.mwnz.com](http://www.mwnz.com)

Email: [headoffice@mwnz.com](mailto:headoffice@mwnz.com)

Telephone: 0800 776 9727

### Warranties

#### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:                      For **SUPER-STICK Building Tape®**  
15 years:                      For **TRADE-SEAL**

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

### Requirements

#### 1.6 QUALIFICATIONS

Work to be carried out by tradespeople experienced, competent and familiar with the **Marshall Innovations Limited** materials and techniques specified.

## 1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified **Marshall Innovations Limited** systems, components and associated products listed in this section.

## 2 PRODUCTS

### Materials

#### 2.1 TRADE-SEAL

**TRADE-SEAL**, a one piece self adhesive EPDM collar for pipes and conduits that penetrate the cladding/wrap/underlay. Provides secondary protection air and moisture seal, and is available in sizes to suit penetration diameters from 8mm to 220mm.

#### 2.2 SUPER-STICK BUILDING TAPE

**SUPER-STICK Building Tape®** utilizes a high tack pressure sensitive adhesive (PSA) combined with a high performance toughened film. Tape is supplied in 75mm, 150mm and 200mm wide x 23m long rolls.

## EXECUTION

### Conditions

#### 3.1 GENERAL REQUIREMENTS

To [NZBC E2/AS1](#) Table 23 Properties of Roof Underlays and Wall Underlays; and manufacturers technical literature.

Note: Care should be taken not to expose the underlay to continuous wet and windy conditions.

#### 3.2 STORAGE

Store all products under clean dry conditions that ensure no deterioration or damage. Store rolls in an upright position on a smooth floor and protected from sunlight, UV radiation and moisture. Rolls of **Tekton® Building Wrap** to be stored on end.

#### 3.3 PRE-INSTALLATION REQUIREMENTS

Before starting work, check that the framing will allow work of the required standard. The framing must be free from any sharp protrusions that may damage the wrap/underlay. Carry out remedial work identified before the installation of **Tekton® Weatherization System**.

### Installation - generally

#### 3.4 STANDARDS AND TOLERANCES

To [NZBC B2/AS1](#) and [NZBC E2/AS1](#). Refer to the general section 1270 CONSTRUCTION for general requirements.

### Installation - **SUPER-STICK Building Tape**

#### 3.5 SUPER-STICK BUILDING TAPE

To comply with Marshall Innovations Limited specification for **Tekton® Weatherization System**, [BRANZ Appraisal 621](#) - The **Tekton® Weatherization System** and [BRANZ Appraisal 846](#) - **SUPER-STICK Building Tape®**.

#### 3.6 PREPARATION

Ensure all surfaces are clean, dry and free of any foreign matter that may adversely affect adhesion. Do not install tape below -6°C. When used in conjunction with LOSP treated timber, allow solvent to evaporate for a minimum of 7 days prior to application. Extend building wrap/underlay over opening and cut on a 45° angle away from each corner. Fold flaps into opening and secure to the interior face of framing.

#### 3.7 SILL AREA – OVER RAB

Install tape over RAB in accordance with Marshall Innovations Limited **SUPER-STICK** specifications and the RAB manufacturers specifications.

#### 3.8 HEAD FLASHING

Install tape to head flashings using **SUPER-STICK** 75mm in accordance with Marshall Innovations Limited **SUPER-STICK** specification and RAB manufacturers specifications.



### 3.9 RAB JOINT SEALING

Cut a length of **SUPER-STICK 75** and apply evenly over RAB joint. Smooth all tape firmly into place to enhance adhesion. Only to be used on vertical joints and in accordance with Marshall Innovations Limited **SUPER-STICK** specification and RAB manufacturers specifications.

#### Completion

### 3.10 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused materials and elements from the site.

### 3.11 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Leave work to the standard required for following procedures.

## SELECTIONS

### Materials

#### 4.1 TEKTON WEATHERIZATION SYSTEM - SUPER-STICK BUILDING TAPE

Location:	Exterior of building
Wrap/underlay:	<b>James Hardie 4.5mm HomeRAB® PreClad™ Lining</b>
Seam tape:	<b>Tekton® Seam Tape</b>
Penetration seal:	<b>TRADE-SEAL</b>
Sill tape/system:	<b>SUPER-STICK Building Tape®</b>



# 4161T THERMAKRAFT UNDERLAYS, FOILS & DPC

## 1 GENERAL

This section relates to the application of **Thermakraft Ltd**, DPC, DPM, wall underlays, roofing underlays and accessories.

### 1.1 RELATED WORK

Refer to 4161M TEKTON WEATHERIZATION SYSTEM for pre-clad lining seal tape.  
Refer to 4171HR JAMES HARDIE RIGID AIR BARRIERS for pre-clad lining.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

NZMRM                      New Zealand Metal Roofing Manufacturers Inc.

The following definitions apply specifically to this section:

Wall underlay              the same meaning as defined in [NZBC E2/AS1](#), covering kraft based and synthetic wall underlays, sometimes called, wall wraps, building wraps or building papers.

### Documents

#### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

<a href="#">NZBC C/AS2</a>	Protection from fire
<a href="#">NZBC E2/AS1</a>	External moisture
AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials
<a href="#">NZS 2295</a>	Pliable, permeable building underlays
<a href="#">AS/NZS 2904</a>	Damp-proof courses and flashings
<a href="#">NZS 3604</a>	Timber-framed buildings
<a href="#">NZS 4214</a>	Methods of determining the total thermal resistance of parts of buildings
<a href="#">AS/NZS 4389</a>	Roof safety mesh
<a href="#">AS/NZS 4534</a>	Zinc and zinc/aluminium-alloy coatings on steel wire
<a href="#">NZMRM CoP</a>	NZ Metal Roof and Wall Cladding Code of Practice

#### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Thermakraft documents relating to work in this section are:

Thermakraft product manual and technical data sheets.

[BRANZ Appraisal 329](#) - Supercourse 500™ Damp-Proof Course and Concealed Flashing

Manufacturer/supplier contact details

Company:	Thermakraft Ltd
Web:	<a href="http://www.thermakraft.co.nz">www.thermakraft.co.nz</a>
Email:	<a href="mailto:info@thermakraft.co.nz">info@thermakraft.co.nz</a>
Telephone:	0800 806 595

### Warranties

#### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal environmental and use conditions against failure of materials and execution. Thermakraft Ltd warrant performance of products if design and installation complies with relevant technical literature, NZBC, and recognised industry Codes of Practice. Copy of Thermakraft™ Product Warranty available on request.

## Requirements

### 1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified materials, or associated products, components or accessories.

### 1.7 INSTALLATION SKILL LEVELS

Installers to be experienced in the installation of Thermakraft™ products and familiar with Thermakraft™ technical literature and the related documents listed in this design i.e. [NZMRM CoP](#) NZ Metal Roof and Wall Cladding Code of Practice.

## PRODUCTS

### Materials

#### DPC

### 2.1 EMBOSSED POLYETHYLENE

Supercourse 500™ hi-impact polyethylene film to [AS/NZS 2904](#) and embossed on both sides. Thickness 500 microns minimum, manufactured for use as a damp-proof course and concealed flashings around doors and windows and to [BRANZ Appraisal 329](#). Refer to SELECTIONS for type of jointing tape.

#### DPM

### 2.2 DAMP-PROOF MEMBRANE - MEDIUM DUTY, BLACK

Thermathene Black™, a minimum of 250 microns polyethylene film. Complies with [NZS 3604](#), 7.5.4, Damp-proof Membrane, to [NZBC E2/AS1](#). Refer to SELECTIONS for type of jointing tape.

### Roofing underlays

### 2.3 BITUMINOUS SELF-SUPPORTING ROOFING UNDERLAY

Thermakraft 215™, bituminous self-supporting roofing underlay to [NZS 2295](#).

### Accessories

### 2.4 GUTTER AND UNDER FLASHINGS

Thermakraft 215™, bituminous breather type underlay to [NZS 2295](#) cut to width for use under valley, apron flashing and internal gutters. Soffit liner cut to width from Thermakraft 215™ bituminous breather type underlay. Refer to SELECTIONS.

### 2.5 TAPE

Thermakraft™ tapes to compliment the underlay. Pressure sensitive aluminium foil tapes for joining foil insulation and vapour barriers. These include:

- Thermakraft™ White General Purpose Underlay Tape
- Thermakraft™ Foil Tape 150
- Thermakraft™ Window Sealing Tapes, used to repair damaged bituminous underlays

## EXECUTION

### Conditions

### 3.1 GENERAL REQUIREMENTS

Design application and installation of Thermakraft Building products to [NZBC E2/AS1](#), BRANZ Appraisals, Thermakraft Technical Literature and Industry Codes of Practice.

### 3.2 STORAGE

Store building underlays and accessory materials, under conditions that ensure no deterioration or damage. Store rolls in an upright position on a smooth floor and protected from sunlight, UV radiation and moisture.

### 3.3 INSPECTION

Before starting work, check that the building construction phase will allow work of the required standard. Carry out remedial work identified before laying underlay.

#### **Application DPC**

### 3.4 DPC TO LOSP/CCA TREATED TIMBER

Lay Supercourse 500™ DPC under LOSP or CCA treated bottom plate of all timber framed walls on concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier.

#### **Application - DPM**

### 3.5 DPM TO CONCRETE FLOOR

Lay DPM under concrete floor substrate over sand blinding, in a single layer with 150mm overlaps at joints to provide a waterproof barrier. Refer to SELECTIONS for type. Tape all joints and penetrations with Thermakraft™ White GP Tape 60mm.

#### **Application - roofing underlay**

### 3.6 ROOF UNDERLAY

Lay vertically over purlins on wire netting with a 150mm side lap. Fix securely to purlins with galvanized fixings. Lay underlay to avoid excessive dishing between purlins. When used vertically, limit individual runs to 10 metres for bituminous underlays. Do not lay vertically on roof pitches under 10° without support.

Horizontally lay across the rafter/trusses starting at the gutter line with succeeding sheets in true alignment and lapping 150mm. Scribe around and fit neatly to all penetrations and avoid prolonged exposure by installing the roof immediately.

### 3.7 GUTTER AND UNDER FLASHINGS

Lay Thermakraft 215™ bituminous breather type underlay cut to width by manufacturer for use as an underlay to valley, apron flashings, and internal gutters. Lap under flashings with adjoining underlays. Fix Thermakraft 215™ bituminous breather type underlay soffit liner from top plate down 150mm past ribbon plate.

#### **Completion**

### 3.8 CLEAN UP

Clean up as the work proceeds.

### 3.9 LEAVE

Leave work to the standard required by following procedures.

### 3.10 REMOVE

Remove debris, unused materials and elements from the site.

## **SELECTIONS**

For further details on selections go to [www.thermakraft.co.nz](http://www.thermakraft.co.nz).

Substitutions are not permitted to the following, unless stated otherwise.

#### **Damp Proof Course**

### 4.1 THERMAKRAFT - SUPERCOURSE 500™ DPC

Location: Suitable between concrete and timber, primary the external bottom plate. DPC in brick veneer coursing and around windows and door units in brick veneer as a concealed flashing

Type: Supercourse 500™ DPC

Jointing tape: Thermakraft window sill tape 75mm Aluband™

#### **Damp Proof Membrane**

#### 4.2 THERMATHENE BLACK™

Location: under slab  
Type: Thermathene Black™  
Jointing tape: Thermakraft™ White General Purpose Underlay Tape

#### Roofing Underlays

#### 4.3 THERMAKRAFT ROOFING UNDERLAYS

Location: over roof framing/trusses  
Type: Thermakraft 215™ bituminous self supporting roofing underlay  
Jointing tape: Thermakraft window sill tape 75mm Aluband™

#### Gutter and Under Flashing

#### 4.4 GUTTER AND UNDER FLASHINGS

Type: Gutter flashing underlay 300mm wide  
Jointing tape: Thermakraft window sill tape 75mm Aluband™

# 4171HR JAMES HARDIE® RIGID AIR BARRIERS

## 1 GENERAL

This section relates to the supply and fixing of James Hardie® rigid air barrier products;

- HomeRAB™ Pre-Cladding

### 1.1 RELATED WORK

Refer to 4161M TEKTON WEATHERIZATION SYSTEM for pre-clad sealing tapes and flashings

4239JH JAMES HARDIE SOFFITS for soffit lining

Refer to 4261 BRICK VENEER CLADDING for brick veneer

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

FRR	Fire resistance rating
SED	Specific engineering design

### Documents

#### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS2-AS6	Protection from fire
NZBC E2/AS1	External moisture
AS/NZS 1170.2	Structural design actions - Wind actions
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings

#### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:

James Hardie® Rigid Air Barriers Installation Manual

James Hardie® Bracing Design Manual

James Hardie® Fire and Acoustic Design Manual

[BRANZ Appraisal 611](#) - James Hardie® Rigid Air Barriers

Manufacturer/supplier contact details

Company: James Hardie® New Zealand

Web: [www.jameshardie.co.nz](http://www.jameshardie.co.nz)

Email: [info@jameshardie.co.nz](mailto:info@jameshardie.co.nz)

Telephone: Ask James Hardie™ on 0800 808 868.

### Warranties

#### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For HomeRAB™ Pre-Cladding and RAB™ Board (refer to James Hardie® product warranty)
15 years:	For accessories supplied by James Hardie® (refer to James Hardie® product warranty)
From:	Date of purchase

- Provide this warranty on the manufacturer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

### Requirements

## 1.6 QUALIFICATIONS

Workers / Installers / applicators to be experienced, competent trades people familiar with the materials and techniques specified.

## 1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

### Performance - Wind

## 1.8 PERFORMANCE, WIND

The design wind pressures are to [NZS 3604](#), up to and including Very High Wind Zone. This is within the scope of the manufacturer's literature and details.

## 2 PRODUCTS

### Materials

### 2.1 HOMERAB PRE-CLADDING

James Hardie® HomeRAB™ Pre-Cladding, 4.5mm thick, manufactured from treated cellulose fibre, Portland cement, sand and water, cured by high pressure autoclaving manufactured to [AS/NZS 2908.2](#), face and edge sealed.

### Components

### 2.2 FASTENER TYPE

Fasteners to minimum durability requirements of the NZBC. Refer to [NZS 3604](#), section 4 Durability, for requirements for fixings material to be used in relation to the exposure conditions.

Refer to [NZBC E2/AS1](#), Table 20, Material selection, and [NZBC E2/AS1](#), Table 21, Compatibility of materials in contact, for selection of suitable fixing materials and their compatibility with other materials.

Zone	Fixings Material
Zone D, Zone E	Grade 316 Stainless
Zone B, Zone C	Hot-dipped galvanized or Grade 316 Stainless

### 2.3 GALVANIZED NAILS

Hot-dip galvanized nails to James Hardie® requirements. Refer to SELECTIONS.

### 2.4 STAINLESS STEEL NAILS

316 Stainless Steel nails to James Hardie® requirements. Refer to SELECTIONS.

### 2.5 HORIZONTAL FLASHING - HOMERAB™ PRE-CLADDING

HomeRAB™ 4.5 Horizontal Flashing (uPVC) for horizontal joints.

### Accessories

### 2.6 SEALING TAPE - VERTICAL JOINTS/CORNER JOINTS WITHOUT BATTENS OVER

SUPER-STICK Building Tape® (75mm wide) or 3M™ All Weather Flashing Tape 8067 (75 mm wide).

### 2.7 FLASHING TAPE / WINDOW FLASHING TAPE

SUPER-STICK Building Tape® or 3M™ All Weather Flashing Tape 8067.

### 2.8 BRACING ELEMENT HOLD DOWN - CONCRETE FLOOR

Ramset bracing anchor kit Concrete or GIB Handibrac® with 15kN anchor to suit brace type.

## 3 EXECUTION

### Conditions

### 3.1 STORAGE

Take delivery of products dry and undamaged on pallets, and keep on pallet. Protect edges and corners from damage and covered to keep dry until fixed.

### 3.2 HANDLING

Avoid distortion and contact with potentially damaging surfaces. Do not drag sheets across each other, or across other materials. Protect edges, corner and surface finish from damage.

### 3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

### 3.4 FRAMING - HOMERAB™ PRE-CLADDING

Provide framing plumb, level, in true alignment and in accordance with [NZS 3604](#) requirements.

Stud and nog spacing must not exceed James Hardie® requirements. Moisture content of timber framing must not exceed the requirements specified by [NZS 3602](#) to minimise shrinkage and movement after sheets are fixed.

#### **Application - particular installations**

### 3.5 BRACING SYSTEM HOMERAB™ PRE-CLADDING

Fix sheets in accordance with the James Hardie® Bracing Design Manual. Refer to the bracing manual bracing table for specific requirements.

#### **Application - generally**

### 3.6 PENETRATIONS AND FLASHINGS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding. Required preparatory work includes the following:

- Openings formed in accordance with the James Hardie® Rigid Air Barriers installation manual.
- Materials lapped in a way that water tracks down to the exterior face of the Rigid Air Barrier.
- Underlay / tapes to openings finished and dressed off ready for the installation of window and door frames and other penetrations.
- Required holes in cladding accurately formed and cut to James Hardie® requirements, ensure (if required) services penetration grommets/sleeves/seals/tapes are in place prior to cladding installation.

### 3.7 CUT EDGES

Cut edges where exposed (not covered by flashing or sealing tape) must be primed prior to installation. Refer to SELECTIONS for primer.

#### **Install Rigid Air Barriers**

### 3.8 SHEET LAYOUT

Refer to the James Hardie® Rigid Air Barriers installation manual for sheet layouts to suit general installations.

### 3.9 VERTICAL JOINTS

Join sheets to the James Hardie® Rigid Air Barriers Installation Manual.

### 3.10 HORIZONTAL JOINTS

Join sheets to the James Hardie® Rigid Air Barriers Installation Manual.

### 3.11 EXTERNAL AND INTERNAL CORNERS

Form in accordance with the James Hardie® Rigid Air Barriers installation manual using a 75mm minimum wide sealing tape.

### 3.12 FIXING SHEETS

Fix in accordance with the James Hardie® Rigid Air Barriers installation manual with the sealed face towards the external cladding and unsealed face towards the framing. Fix sheets to suit installation requirements for general fixing, bracing and fire rating requirements. Refer to SELECTIONS for fixing type. Use hand-driven nailing for fixing bracing sheets.



### 3.13 PENETRATIONS

Form in accordance with the James Hardie® Rigid Air Barriers installation manual.

### 3.14 OPENINGS

Form in accordance with the James Hardie® Rigid Air Barriers installation manual. Exposed timber framing around window, door, meter box and other penetrations must be covered with a 150mm wide minimum flashing tape or sealing tape. Flashing tapes must be lapped over the HomeRAB™ Pre-Cladding or RAB™ Board by 50mm minimum.

### 3.15 FLASHINGS AND JUNCTIONS

Form in accordance with the James Hardie® Rigid Air Barriers installation manual. Install flashing tape over any flashings and at all junctions with other materials or building elements.

### 3.16 AT SOFFITS

Form in accordance with the James Hardie® Rigid Air Barriers installation manual.

### 3.17 BASE CLEARANCES

Form in accordance with the James Hardie® Rigid Air Barriers installation manual. Lining is required to extend below the bottom plate / floor joist by 15mm minimum to form a drip edge and must finish a minimum 100mm clear of finished ground. Where base of sheets are cut to suit site requirements seal the bottom edge with primer.

## Completion

### 3.18 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal of all debris, unused and temporary materials and elements from the site.

### 3.19 REPLACE

Replace all damaged or marked elements.

### 3.20 LEAVE

Leave work to the standard required for following procedures.

### 3.21 REMOVE

Remove debris, unused materials and elements from the site.

## SELECTIONS

For further details on selections go to [www.jameshardie.co.nz](http://www.jameshardie.co.nz)

Substitutions are not permitted to the following, unless stated otherwise.

### 4.1 HOMERAB® PRE-CLADDING - RIGID AIR BARRIER

Brand/type: James Hardie HomeRAB® Pre-Cladding  
Sheet length 2450mm or 2750mm (check wall height on drawings)  
Nails: 50 x 2.8mm round head gun nails (galvanised or stainless steel)  
Primer: Dulux® Primacryl to exposed cut edges

**NOTE:** Where the cladding is expected to meet 50 year durability, HomeRAB® Pre-Cladding must be fixed with stainless steel nails.

Use 40 x 2.8mm HardieFlex™ nails (galvanised or stainless steel) hand-driven nailing for fixing bracing sheets.

### 4.2 HOMERAB™ PRE-CLADDING - BRACING SYSTEMS

Refer to James Hardie® Bracing Design Manual. For bracing element location refer to drawn documentation.



# 4239JH JAMES HARDIE® SOFFITS

## 1 GENERAL

This section relates to the supply and fixing of James Hardie products to the underside of exterior soffits, verges and eaves. It includes:

- James Hardie HardieSoffit™ Lining

### 1.1 RELATED WORK

Refer to painting section/s for the protective coating required to meet the NZBC durability requirements.

### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
AS/NZS 1170.2	Structural design actions - Wind actions
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NASH Standard Part 2	May 2019 Light Steel Framed Buildings

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

James Hardie® documents relating to this part of the work:  
James Hardie® Eaves and Soffits Installation Manual  
James Hardie® Fire and Acoustic Design Manual.

Manufacturer/supplier contact details

Company: James Hardie New Zealand Limited  
Web: [www.jameshardie.co.nz](http://www.jameshardie.co.nz)  
Email: [info@jameshardie.co.nz](mailto:info@jameshardie.co.nz)  
Telephone: 0800 808 868

### Warranties

### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years: For James Hardie® HardieSoffit™ Lining  
(refer to James Hardie® product warranty)

15 year: For accessories supplied by James Hardie® (refer to James Hardie® product warranty)

From: Date of purchase

- Provide this warranty on the manufacturer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

### Requirements

### 1.5 QUALIFICATIONS

Workers / Installers / applicators to be experienced, competent trades people familiar with the materials and techniques specified.

### 1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

## 1.7 INFORMATION FOR OPERATION AND MAINTENANCE

Provide relevant James Hardie maintenance requirements at completion of the work.

### Performance

## 1.8 PERFORMANCE - UP TO AND INCLUDING VERY HIGH WIND ZONE

The design wind speeds/zones are to [NZS 3604](#), up to and including Very High Wind Zone. James Hardie® Eaves and Soffits Installation Manual requirements are suitable for these conditions.

## PRODUCTS

### Materials

#### HARDIESOFFIT™ LINING

James Hardie® HardieSoffit™ Lining, 4.5mm thick cellulose fibre reinforced cement sheet. Manufactured to [AS/NZS 2908.2](#) from Portland cement, ground sand, cellulose fibre and water.

### Components

#### FASTENER TYPE

Fasteners to minimum durability requirements of the NZBC. Refer to [NZBC E2/AS1](#), Table 20, Material selection for fixing material, and [NZBC E2/AS1](#), Table 21, Compatibility of materials in contact, for selection of suitable fixing materials and their compatibility with other materials.

Exposure	Fixing	Fixing Material	Zone
Sheltered	Nail	Hot-dip galvanized steel	B

Check against SED (specific engineering design) requirements for microclimate conditions. Refer to SELECTIONS for fastener type.

### Components - HardieSoffit™ Lining

#### SOFFIT JOINTERS AND MOULDS

Extruded uPVC jointer, capping and scotia mould.

#### HARDIEFLEX™ NAILS

HardieFlex™ Nail, 40 x 2.8mm stainless steel or galvanized nail, Refer to SELECTIONS.

#### FASTFIX FASTENERS

38 x 12mm, Nylon / White Fastfix Fasteners.

#### ADHESIVE

Refer to SELECTIONS.

#### INSEAL TAPE

Inseal® 3259, 1.5mm thick x 50mm wide black compressible medium density closed cell foam tape.

### Components - General

#### FLEXIBLE JOINT SEALANT

Refer to SELECTIONS.

## EXECUTION

### Conditions

#### STORAGE

Take delivery of products dry and undamaged. Store on site, lay flat on a smooth level surface clear of the ground. Protect materials, finished surfaces, edges and corners from damage, water and moisture.

### 3.2 HANDLING

Move/handle goods in accordance with James Hardie® requirements. Avoid distortion and contact with potentially damaging surfaces. Do not drag sheets across each other, or across other materials. Protect edges, corner and surface finish from damage. Reject and replace goods that are damaged or will not provide the required finish. Install materials in a dry state.

### 3.3 SUBSTRATE - TIMBER FRAMING

Do not commence work until the substrate is of the standard required for the specified finish; plumb, level and in true alignment. Moisture content of timber framing must not exceed the requirements specified by [NZS 3602](#) to minimise shrinkage and movement after sheets are fixed.

### 3.4 COMMENCE WORK

Do not commence work until the roof has been installed.

#### **Application - general**

### 3.5 SHEET LAYOUT

All sheet edges must be fully supported by framing or rebates in fascia and barge boards.

### 3.6 CUTTING SOFFIT CLADDING

Cut sheets dry using score and snap method, hand guillotine method or fibreshear heavy duty method. If these methods are not feasible, use an alternative manufacturer approved method.

### 3.7 CIRCULAR HOLE FORMING

Mark the centre of the hole on the sheet, pre-drill a pilot hole. Use the pilot hole as a guide for a hole saw fitted to a heavy duty electric drill.

### 3.8 IRREGULAR HOLE FORMING

Drill a series of small holes around the perimeter of the proposed hole, tap out the waste piece from the sheet face.

### 3.9 INSTALL HARDIESOFFIT™ LINING

Install in accordance with James Hardie® installation manual requirements. Refer to SELECTIONS for fixing and jointing methods.

### 3.10 CONTROL JOINT

Install control joint to James Hardie® installation manual requirements.

### 3.11 FASTENER - SIZE AND LAYOUT

Fix sheets to framing using fasteners as nominated in SELECTIONS. Fix to James Hardie® installation manual requirements.

### 3.12 SEALANTS

Application and use of sealants to manufacturer's instructions. Check with sealant manufacturer prior to coating over sealants.

### 3.13 PAINTING

Refer to painting section/s for protective coating system.

#### **Completion**

### 3.14 COMPLETE

Ensure the work is complete with all components, accessories, trim, sealant and finishing properly installed so the soffit cladding system is completely weathertight.

### 3.15 REPLACE

Replace all damaged or marked elements.

### 3.16 CLEAN

Clean surfaces.

### 3.17 LEAVE

Leave work to the standard required for following procedures.

### 3.18 REMOVE

Remove debris, unused materials and elements from the site.

## 4 SELECTIONS

For further details on selections go to [www.jameshardie.co.nz](http://www.jameshardie.co.nz)

Substitutions are not permitted to the following, unless stated otherwise.

### Materials

#### 4.1 HARDIESOFFIT™ LINING

Location:	All soffit areas
Brand/type:	James Hardie HardieSoffit™ Lining
Thickness:	4.5mm
Width:	600mm
Fixing Method:	HardieFlex nails (usual fixing method)
Fixing type:	Galvanized HardieFlex Nail, 40 x 2.8mm
Joint detail:	Hardiejointer™ 5mm - for 4.5mm thick sheet.

### Painting

#### 4.2 PAINTING

Refer to painting section/s for details.

# 4261 BRICK VENEER CLADDING

## 1 GENERAL

This section relates to clay brickwork as a veneer cladding.  
It includes:

- Standard brick veneer cladding

### 1.1 RELATED WORK

Refer to 4161M TEKTON WEATHERIZATION SYSTEMS for pre-cladding.  
Refer to 4171HR JAMES HARDIE RIGID AIR BARRIERS for James Hardie HomeRAB®  
Pre-Cladding and RAB® Board for pre-cladding.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

### Documents

#### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
NZBC B1/AS3	Structure
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 2699.1	Built-in components for masonry construction - Wall ties
AS/NZS 2699.3	Built-in components for masonry construction - Lintels and shelf angles (durability requirements)
AS/NZS 2918	Domestic solid fuel burning appliances - Installation
NZS 3103	Sands for mortars and plasters
NZS 3604	Timber-framed buildings
NZS 4210	Masonry construction: materials and workmanship
SNZ HB 4236	Masonry veneer wall cladding
AS/NZS 4455.1	Masonry units, pavers, flags and segmental retaining wall units - Masonry units
BRANZ Appraisal 690	Two Storey Brick Veneer System
BRANZ	Good practice guide: Masonry veneer

### Requirements

#### 1.4 QUALIFICATIONS

Bricklayers to be experienced, competent and familiar with the materials and the techniques specified.

All work to be installed or supervised by a Registered Mason or licensed building practitioner (LBP):  
Licensed for Bricklaying and Blocklaying 1: Brick/masonry Veneer. RBW must be supervised by an LBP.

#### 1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

### Compliance information

#### 1.6 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Other information required by the BCA in the Building Consent Approval documents.

### Performance

## 1.7 DESIGN PARAMETERS - NON SPECIFIC DESIGN

Design the installation to the seismic parameters of [NZS 4210](#) Masonry construction: materials and workmanship.  
Refer to SELECTIONS for details.

## 1.8 COMPLIANCE

Brickwork to comply with [SNZ HB 4236](#) Masonry veneer wall cladding.

# 2 PRODUCTS

### Materials

#### 2.1 CLAY BRICKS

To [AS/NZS 4455.1](#).

#### 2.2 SILL TILES

Refer to SELECTIONS for type.

#### 2.3 VERMIN STOP

Galvanized hexagon 10mm mesh of 1mm diameter steel wire 100mm wide, complete with galvanized steel staples.

#### 2.4 DAMP-PROOF MEMBRANE

Heavy kraft, strip laminates saturated and coated with bitumen, butyl rubber sheet with adhesive, or equivalent.

#### 2.5 DAMP-PROOF COURSE

Polyethylene based strip used as a damp-proof course and flashing, also for slip joints between brick courses.

### Components - standard brick veneer

#### 2.6 WALL TIES

To [AS/NZS 2699.1](#). Veneer ties screw fixed to framing.

#### 2.7 REINFORCEMENT

Galvanised wire joint reinforcement

### Accessories

#### 2.8 SAND FOR MORTAR

To [NZS 3103](#). Chloride levels to not exceed 0.04% by dry weight of sand.

#### 2.9 MORTAR

Composed of Portland cement, sand and water with an admixture to the provisions of [NZS 4210](#): 2.2 Mortar. Obtain written approval of admixture being used. Obtain written approval if intending to use hydrated lime in the mortar.

#### 2.10 MORTAR COLOUR

Add mineral oxide pigment conforming to requirements of [NZS 4210](#), clause 2.2.2.2(f).

#### 2.11 ADMIXTURES

To [NZS 4210](#).

#### 2.12 WATER

Clean, fresh and free from excess alkali, salt, silt and organic materials.

# 3 EXECUTION

### Conditions

#### 3.1 TOLERANCES

To [NZS 4210](#), table 2.2 Maximum tolerances.

### 3.2 HANDLING AND STORAGE OF MATERIALS

To [NZS 4210](#) for aggregates, cement, bricks and reinforcement.

### 3.3 CONCRETE BASE

Check vertical and horizontal alignment. Any discrepancies exceeding the permitted tolerances shall be corrected before units are laid.

### 3.4 TIMBER FRAMING

Check timber framing stud spacing is in accordance with [NZS 3604](#).

### 3.5 PENETRATIONS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the brick veneer. Required preparatory work includes the following:

- brick veneer wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- brick veneer neatly finished off to all sides of openings
- installation of flashings (those required to be installed prior to installation of penetrating elements).

### 3.6 MEASURE MATERIALS

Measure materials for mortar accurately by weight or volume using suitably calibrated equipment.

### 3.7 WET WEATHER

Keep bricks dry at all times prior to laying. Protect the top row of uncompleted brick walls. Protect freshly laid brickwork during interruption through rain and at completion of each day's work. Protect brickwork for a minimum of 6 hours.

### 3.8 COLD WEATHER CONSTRUCTION

When air temperature is below 5°C take the precautions required by [NZS 4210](#): 2.18 Cold weather construction.

### 3.9 HOT WEATHER CONSTRUCTION

When air temperature is above 25°C or there is a drying wind, or lower temperatures, take the precautions required by [NZS 4210](#): 2.19 Hot weather construction.

### 3.10 KEEP FACE WORK CLEAN

Keep clean during erection and until completion of the contract works. Turn back scaffold boards at night and during heavy rain. Do not rub face work to remove stains.

## Installation - general

### 3.11 COLOUR MIXING

Check all bricks delivered to site for colour variation, prior to commencing work. Ensure bricks are thoroughly blended from several pallets to ensure an even colour spread throughout the work.

### 3.12 UNIFORMITY

Carry up work with no portion more than 1500mm above another at any time, raking back between levels.

### 3.13 BONDING

Lay bricks to the required bonding in the various locations. Refer to SELECTIONS/drawings.

### 3.14 PROVIDE WEEPHOLES

Provide weepholes at the bottom of cavities and cells to [SNZ HB 4236](#) and [NZBC E2/AS1](#), 9.2.6, **Cavities**, and as necessary to drain moisture to the outside air. Provide vent gap at the top of the veneer.

### 3.15 INSTALL VERMIN STOP

Fold and staple one edge of the mesh to the substrate and with the mesh sloping outwards, set the other edge half the thickness of the veneer or 50mm, whichever is less, into the mortar joint.

### 3.16 CAVITY VENTILATION

Ventilate to outside air with top and bottom openings to the requirements of [SNZ HB 4236](#) and [NZBC E2/AS1](#), 9.2.6, **Cavities**. Seal cavity off from roof space.



### 3.17 FORM OPENINGS

Unless detailed otherwise form openings to typical details from BRANZ Masonry veneer - Good practice guide.

### 3.18 SEPARATION JOINTS

Provide for wall movements of veneer with control joints to [NZS 4210: 2.10](#) Methods of controlling wall movements. Weatherproof as necessary.

### 3.19 FORM REVEALS

Form lintels, jambs and sills as detailed complete with flashings and all ready for following work.

### 3.20 HEAD FLASHINGS

Provide a flexible flashing extending 200mm beyond ends of the opening and sloping to weepholes over all openings in cavity walls, in accordance with E2/AS1, 9.2.4, **Flashings**.

### 3.21 JAMB FLASHINGS

Provide a flexible flashing to jambs of openings in cavity walls, fully lapped with horizontal damp-proof courses at head and sill, in accordance with E2/AS1, 9.2.4, **Flashings**.

### 3.22 SILL FLASHINGS

Provide a flexible flashing under jointed sills, turned up at back and ends, in accordance with E2/AS1, 9.2.4, **Flashings**.

### 3.23 REBATE DAMP PROOFING

Provide damp-proof course to stepped rebates supporting brick veneer in accordance with E2/AS1, 9.2.5, **Foundation support and damp-proofing**.

#### Installation - standard brick veneer

### 3.24 CAVITY WIDTH

No cavity width less than 40mm or more than 75mm.

### 3.25 PLACE TIES

Place ties to: -

- [NZS 4210: 2.9.5](#) Tie anchorage, cover and fixing; and
- [NZS 4210: 2.9.6](#) Placing of ties
- [NZS 4210: 2.9.7](#) Tie classification and spacing
- [NZBC E2/AS1, 9.2.7](#), **Wall ties**, for requirements, spacing, embedment, placement and materials

At unsupported edges and at all openings through veneered walls or non-grouted cavity walls, wall ties to be provided:

At the top and bottom of the opening:

- Not more than 300mm or 2 courses, whichever is the smaller

At the sides of the opening or at an unsupported edge:

- Not more than 300mm
- Where the veneer wall continues above or is interrupted by a damp-proof course or waterproof membrane, wall ties shall be provided in each of the first two courses above the membrane.

#### Installation - ancillary work

### 3.26 BUILD IN FIXINGS

Build in necessary fixing bricks or blocks for trims.

### 3.27 BUILD IN ELEMENTS

Build in sills, copings, lintels, steps and other elements using mortar similar to that in adjacent walls.

### 3.28 BUILD IN DOORS AND WINDOWS

Build in door and window frames as the work proceeds and bed in mortar similar to that in adjacent work.

#### Completion

### 3.29 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused and temporary materials and elements from the site.

### 3.30 EFFLORESCENCE, WATER CLEANING

To remove deposits, brush with a stiff-bristle broom and take away brushings from the locality. Remove remaining deposit with a damp sponge. Wash wall thoroughly with a plentiful supply of clean water. Repeat this process every 4 weeks from appearance through to the completion of the contract works.

### 3.31 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Leave work to the standard required for following procedures.

## SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise.

### Performance - seismic

#### 4.1 DESIGN PARAMETERS - NON SPECIFIC DESIGN

Building seismic zone: A (High) (refer to [NZS 4210](#))

### Materials - standard brick veneer

#### 4.2 CLAY BRICKS FOR STANDARD BRICK VENEER SYSTEM

Brand/size: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

Laying pattern: stretcher bond

Pointing: recessed

### Components - general

#### 4.3 SILLS

Type/colour: Standard brick

#### 4.4 COLOURING PIGMENTS

Colour: to suit selected brick

### Components - standard brick veneer

#### 4.5 WALL TIES

Brand/type: Lumberlok Screw Tie

Material: Galvanised steel\*

\*Stainless steel for zone D and E exposure zone.

# 4323MT METROTILE METAL ROOFING TILES

## 1 GENERAL

This section relates to **Ross Roof Group Ltd** interlocking pressed metal roofing tiles complete with underlay, battens and accessories.

It includes ten Metrotile profiles composed of a Zincalume protected steel substrate covered with either;

- a natural stone granular finish (textured finish)
- an acrylic satin finish

### 1.1 RELATED WORK

Refer to 7411C CONTINUOUS RAINWATER SPOUTING SYSTEMS for rainwater disposal.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

NZMRM	New Zealand Metal Roofing Manufacturers Inc.
OSB	Orientated Strand Board

### Documents

#### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

<a href="#">NZBC E2/AS1</a>	External moisture
<a href="#">NZBC G12/AS1</a>	Water supplies
<a href="#">AS/NZS 1170.2</a>	Structural design actions, Wind actions
<a href="#">AS/NZS 1859.1</a>	Reconstituted wood-based panels – Specifications- Particleboard
<a href="#">AS/NZS 2269</a>	Plywood – structural
<a href="#">NZS 3604</a>	Timber-framed buildings
<a href="#">NZS 4217</a>	Pressed metal tile roofs
<a href="#">NZMRM CoP</a>	NZ Metal Roof and Wall Cladding Code of Practice

#### 1.4 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:

Metrotile Company Brochure  
Metrotile Roofing Tile Installation Manual; Bond/Classic/Roman/Shake  
Metrotile CF Slate Installation Manual; CF Slate, CF Shingle  
Technical Specification for Antica Tile  
Technical Specification for Bond Tile  
Technical Specification for Classic Tile  
Technical Specification for Shake Tile  
Technical Specification for Roman Tile  
Technical Specification for CF Slate Tile  
Technical Specification for CF Shingle Tile  
Technical Specification for Royal Tile  
Technical Specification for Tudor Tile

Manufacturer/supplier contact details

Company: **Ross Roof Group Ltd**  
Web: [www.metrotile.com](http://www.metrotile.com)  
Email: [info@metrotile.com](mailto:info@metrotile.com)  
Telephone: 09 2999498

### Warranties

## 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

- 50 years (25+25): For Metrotile Zincolume® roofing tiles (paint or chip):  
 manufacturer's 25 year weatherproof warranty plus a subsequent  
 25 years diminishing pro-rata weatherproof warranty  
 For Metrotile roofing tiles (paint or chip)  
 20 years: For surface coating - textured stone-coated tile  
 15 years: For surface coating - satin acrylic-coated tile

- Provide this warranty on the Metrotile Roofing Systems standard form (if unavailable, use the standard form in 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of Practical Completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements (if necessary).

## 1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

- 5 years: For installation of Metrotile roof

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of installation

Refer to the general section 1237 WARRANTIES for additional requirements.

### Requirements

## 1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Ross Roof Group Ltd** system, or associated components and products.

## 1.8 QUALIFICATIONS

Installers to be **Ross Roof Group Ltd** trained fixers employed or contracted to a registered Metrotile Roofing Systems installer.

## 1.9 MAINTENANCE INFORMATION

Provide one copy of all relevant **Ross Roof Group Ltd** maintenance information on completion of the roofing work.

### Performance - Wind

## 1.10 FIXINGS, WIND - NON SPECIFIC DESIGN

Design and use the fixings appropriate to **Ross Roof Group Ltd** requirements and as appropriate for the project wind design stated above. To [NZS 3604](#), table 10.12 Tile Battens for all Wind Zones. Refer to **Ross Roof Group Ltd** Profile Specifications Summary for the selected profile, finish and uplift requirements.

### Performance - General

## 1.11 CO-ORDINATE

Co-ordinate to ensure substrate and preparatory work is complete and other work programmed in the order required for access and completion of the roof.

## 1.12 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed roofing system, including all penetrations through the roof and junctions with walls and parapets. Comply with [NZMRM CoP](#), for performance, loadings, design, flashings, penetrations and installation recommendations, and section 15.3, **Pressed metal Tiles**.

## 1.13 DRINKING WATER

Rainwater collected from Metrotile roofs will meet the provisions of [NZBC G12/AS1](#).

# 2 PRODUCTS

## Materials

### 2.1 PRESSED METAL TILES - SATIN FINISH

**Ross Roof Group Ltd** pressed metal tiles to [NZS 4217](#) and [NZBC E2/AS1](#), 8.3 'Pressed Metal Tiles'. Fabricated from Zinalume® - protected steel with acrylic top coat. Refer to SELECTIONS for type.

### 2.2 PRESSED METAL TILES - TEXTURED FINISH

**Ross Roof Group Ltd** pressed metal tiles to [NZS 4217](#) and [NZBC E2/AS1](#), 8.3 'Pressed Metal Tiles'. Fabricated from Zinalume® - protected steel with natural stone granules embedded in an acrylic base coat and final clear acrylic over glaze applied before being oven cured. Refer to SELECTIONS for type.

## Components

### 2.3 UNDERLAY

Self supporting breather type. Refer to 4161T THERMAKRAFT UNDERLAYS, FOIL AND DPC for underlays.

### 2.4 BATTENS

To [NZS 3604](#), 10.2.1.16 'Purlins and Tile Battens'. Radiata pine or Douglas Fir, SG6, treated H1.2. Moisture content to [NZS 3602](#). Size, spacing and fixing to [NZS 3604](#), table 10.12, 'Tile Battens for All Wind Zones' and to **Ross Roof Group Ltd** installation instructions.

### 2.5 BATTENS – FOR CF SLATE INSTALLATION

To be Ex 75mm x 25mm adjacent to fascia and Ex 150mm x 25mm there after, Radiata pine or Douglas Fir, SG6, treated H1.2. Moisture content to [NZS 3602](#). Spacing and fixing to **Ross Roof Group Ltd** installation instructions.

### 2.6 FIXINGS GENERALLY

Fixings and fasteners are to be compatible with all materials, the environment and meeting the requirements of the NZ Building Code. Installation is to be in accordance with [NZBC E2/AS1](#) and/or [NZS 3604](#) and **Ross Roof Group Ltd** Profile Technical Summary. For fixing patterns refer to **Ross Roof Group Ltd** Profile Technical Summary for the selected profile.

### 2.7 NAILS

Nails for batten fastening to **Ross Roof Group Ltd** installation instructions, sized and installed to [NZS 3604](#) and [NZS 4217](#). In 'Extra High Wind Zone' areas secure the roof battens with 1x 10g C 2.4kN 80mm purlin screw.

## Accessories

### 2.8 FLASHINGS, CAPPINGS AND COVERS

To [NZBC E2/AS1](#), 4.0 'Flashing', [NZBC E2/AS1](#), 8.2.4, 'Flashing and Fixings', and [NZBC E2/AS1](#), Table 7, 'Metal Flashings - General Dimensions'. Use ridge and hip caps, barge covers, general purpose malleable-edged flashings and side flashings supplied by **Ross Roof Group Ltd** as part of the selected tile roofing system.

## EXECUTION

### 3.1 STARTER STRIP

Proprietary starter strip supplied by **Ross Roof Group Ltd** as part of the selected tile roofing system.

## Conditions

### 3.2 INSPECTION

Inspect the roof framing and supporting structure and do not start work until it is complete and fully braced ready for tiling, all to the requirements of [NZS 3604](#).

### 3.3 STORAGE

Stack tiles on a level, hard base, ventilated and protected from damage and weather. Do not allow moisture to build up between sheets in a stack.

### 3.4 HANDLING

Unload and handle tiles without soiling, scratching, crushing or other damage. Protect edges from damage.

### 3.5 COMPLY

Comply with the preparation, laying and fixing requirements of [NZBC E2/AS1](#), and [NZS 4217](#), or Ross Roof Group Ltd requirements where these are of a higher standard.

## Application

### 3.6 SET-OUT

Carefully set out the roof with a measuring rod to position the battens accurately taking account of rafter lengths, overhangs into gutters and spouting and verge overhangs, all to minimise tile cutting.

### 3.7 LAY UNDERLAY

Refer to 4161T THERMAKRAFT UNDERLAYS, FOIL AND DPC for the installation of self supporting breather type underlay.

### 3.8 FIX BATTENS

To [NZS 3604](#). Fix battens over the underlays in straight courses, spanning at least 3 rafters, between fascia and ridge and elsewhere to **Ross Roof Group Ltd** details. Nail at every crossing to the requirements of [NZS 3604](#), table 10.12. Square cut ends to form butt joint over rafters with joints staggered.

### 3.9 FIX BATTENS – FOR CF SLATE INSTALLATION

Fix Ex. 75mm x 25mm batten adjacent to fascia and Ex. 150mm x 25mm battens there after over the underlay in straight courses, spanning at least three rafters, between fascia and ridge, parallel to each hip and valley line and elsewhere to **Ross Roof Group Ltd** details. Nail at every crossing with 75mm x 3.15mm nails in accordance with **Ross Roof Group Ltd** requirements. Ensure all joins are centered over rafters.

### 3.10 INSTALL STARTER STRIP

Install and fix starter strip in accordance with Ross Roof Group Ltd recommendations.

### 3.11 LAY VALLEYS

Lay valleys over valley boards in accordance with **Ross Roof Group Ltd** recommendations.

### 3.12 LAYING

Do not take heavy equipment onto the roof. Plan work to minimise foot traffic. Work on the roof only using appropriate footwear. Inter-lock, lap and lay to **Ross Roof Group Ltd** requirements and finish to ridge, hip, valley, barge and eaves to [NZBC E2/AS1](#) 8.0 'Roof Claddings', 8.3 'Pressed Metal Tiles', and **Ross Roof Group Ltd** required details, if not detailed elsewhere.

### 3.13 NAILING

Nail tiles to battens / or solid substrate generally through the upstand and downturn of the tile lap as well as all elements to [NZBC E2/AS1](#) and **Ross Roof Group Ltd** details and to nail size, type and spacing in [NZS 4217](#), table 5. Fit neoprene washers under vertical nails for smooth-coated tiles.

### 3.14 CUTTING AND BENDING

Cut, bend and straighten tiles neatly to finish true to line and plane when in place, using installation equipment maintained in the proper condition, all to [NZS 4217](#) and as required by **Ross Roof Group Ltd**. A full 40mm high stop end should be made at any tile termination point.

### 3.15 FIT FLASHINGS, COVERS AND CAPPINGS

Cut, fit and fix all elements true to line and plane, to [NZBC E2/AS1](#): 4.0 'Flashing', [NZBC E2/AS1](#): 5.0 'Roof / Wall Junctions', to **Ross Roof Group Ltd** flashing specifications, and the [NZMRM CoP](#), section 15.3 **Pressed Metal Tiles**, if not detailed elsewhere.

### 3.16 INSTALL CLOSURE STRIP

Install Tetral Bitufoam™ 20mm x 20mm , bitumen impregnated polyurethane foam strip to hip and ridge lines in accordance with **Ross Roof Group Ltd** requirements.

### 3.17 INSTALL PEEL & STICK FLASHING

Install peel and stick 150mm wide waterproof membrane flashing to all hip and ridge lines in accordance with Ross Roof Group Ltd requirements.



### 3.18 PENETRATIONS

Form to [NZBC E2/AS1](#), 8.1.7, 'Roof Penetrations' and to [NZS 4217](#), with upstands ready for flashing / overflashing. Flash and overflash all penetrations through the roof.

### 3.19 PENETRATIONS AND JUNCTIONS

Check that adjoining walls and parapets are prepared ready for the installation of the roofing.

Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof. Required work includes the following:

- underlay turned up at wall and parapet lines
- underlay finished and dressed off to all openings, ready for the installation of skylights and other penetrations
- roofing installation neatly finished to all sides of openings and to all wall and parapet junctions
- installation of flashings (those required to be installed prior to installation of penetrating elements and/or wall linings)

#### Completion

### 3.20 MAKE GOOD

Seal vertical nails and touch-up all chipped coatings to **Ross Roof Group Ltd** instructions.

### 3.21 LEAVE

Leave this work complete with all necessary flashing, undercloaks, valleys, ridges and hips all properly installed as the work proceeds so the finished roof is completely weathertight.

### 3.22 REMOVE

Remove trade rubbish and unused materials from the roof and surrounds regularly during the work. Sweep down the completed roof and clean out spouting, gutters and rainwater pipes. Remove debris, unused materials and elements from the site.

### 3.23 CLOSURE STRIP

Tetral Bitufoam™ 20mm x 20mm , bitumen impregnated polyurethane foam. Available in 2m length.

### 3.24 PEEL & STICK FLASHING

Thermakraft Aluband™ Peel and Stick 150mm wide waterproof membrane, to hip and ridge flashing.

### 3.25 SEALANT

Neutral curing silicone or polymer sealant as required by Ross Roof Group Ltd and used as directed.

## 4 SELECTIONS

For further details on selections go to [www.metrotile.com](http://www.metrotile.com)

Substitutions are not permitted to the following, unless stated otherwise.

### 4.1 METROTILE PRESSED METAL TILES

Location: As indicated on the architectural plans

Manufacturer: Ross Roof Group Ltd

Profile: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

Roof Pitch: As indicated on the architectural plans

Finish: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

Colour: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

#### Accessories

### 4.2 CLOSURE STRIP

Location: To hip and ridge flashing

Manufacturer: Tetral Bitufoam

Size: 20mm x 20mm



#### 4.3 PEEL & STICK FLASHING

Location: To hip and ridge flashing  
Manufacturer: Thermakraft Aluband Peel & stick waterproof membrane  
Size: 150mm wide

#### 4.4 METROTILE FLASHINGS, CAPPINGS AND COVERS

Trim type: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

Finish: To match tiles

Tiles: To match tiles

# 4521 ALUMINIUM WINDOWS AND DOORS

## 1 GENERAL

This section relates to the manufacture, supply, and installation of:

- aluminium windows
- aluminium doors and frames
- hardware and furniture
- overhead glazing
- flashings

### 1.1 RELATED WORK

Refer to glazing sections for glass types

### 1.2 ABBREVIATIONS AND TERMS

SLS	Serviceability limit state
ULS	Ultimate limit state
WGANZ	Window & Glass Association NZ
PQAS	Powder Coating Quality Assurance System

### Documents

### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
NZBC F4/AS1	Safety from falling
NZBC H1/VM1	Energy efficiency
NZBC H1/AS1	Energy efficiency
AS/NZS 1170.2	Structural design actions - Wind loads
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1580.108.1	Methods of test for paints and related materials - Determination of dry film thickness on metallic substrates - Non destructive methods
AS/NZS 1734	Aluminium and aluminium alloys - flat sheets, coiled sheet and plate
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
NZS 3604	Timber-framed buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
AAMA 2603	Voluntary specification, performance requirements, and test procedures for pigmented organic coatings on aluminium extrusions and panels (with coil coating appendix)
AAMA 2604	Voluntary specification, performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels.
AAMA 2605	Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminium extrusions and panels.
BS 3900	Methods of tests for paints, Part C5: Determination of film thickness
BRANZ BU 636	Protecting Glass From Damage
Window & Glass Association NZ (WGANZ) documents:	
Window Installation Guide	Guide to Window Installation as described in E2/AS1 Amendment 7
PQAS	Powder Coating Quality Assurance System
SFA 3503-03	Anodic Oxide coatings on wrought aluminium for external architectural application (2005)

US Federal Specification:

TT-S-001543A	Sealing compound, silicone rubber base (for caulking, sealing and glazing in buildings and other structures)
TT-S-00230C	Sealing compound, elastomeric type, single component (for caulking, sealing and glazing in buildings and other structures)

#### Warranties

### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years: For fabrication

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

### 1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years: For installation

- Provide this warranty in the installer/applicator standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

## Requirements

### 1.6 QUALIFICATIONS

Work to be carried out by trades people experienced, competent and familiar with the materials and techniques specified.

### 1.7 COMPLIANCE

Windows and doors to be manufactured and installed to [NZBC E2/AS1](#).

### 1.8 SHOP DRAWINGS

Shop drawings to show the general arrangement of the aluminium joining including, but not be limited to:

Construction details (minimum scale 1:5) showing the interface between joinery elements and the building structure including: -

- Joining details and method of fixing between individual elements and between this installation and adjacent work
- Interaction between claddings and linings
- Flashing details
- Sealants and air seals
- Non standard fixing details including bracketing

And where required the following:

- Design calculations
- Producer Statement in the form PS1 Producer Statement Design
- Rebate sizes
- Dimensions of all typical elements and of any special sizes and shapes
- Provision for the exclusion and/or drainage of moisture
- Provision for adjustment of fixings to ensure true alignment of windows and doors
- Sealant types and full size sections of all sealants and backing rods
- Provision for thermal movement
- Provision for seismic movement and movement under wind loads
- Sequence of installation
- Glazing specification and details

Where requested provide the following additional information

- Information of Professional Indemnity Insurance held by the person providing the shop drawings

Refer to the general section 1235 SHOP DRAWINGS for the requirements for submission and review and the provision of final shop drawings.

Complete shop drawing review before commencing fabrication.

### 1.9 SEISMIC SUB-FRAMES

Where required units to have seismic sub-frames. Refer to [NZS 1170.5](#). Refer to SELECTIONS for requirements

### 1.10 CERTIFICATION

Provide evidence of a certificate by a laboratory accredited by International Accreditation of New Zealand that the windows and doors offered comply with the requirements of [NZS 4211](#).

## Performance

### 1.11 PERFORMANCE - WINDOWS AND DOORS

To [NZS 4211](#), including:

- deflection, opening sashes, air infiltration, water penetration, ultimate strength, torsional strength of sashes, marking.

Refer to SELECTIONS.

### 1.12 PERFORMANCE - STRUCTURAL/WEATHER-TIGHTNESS

The structural and weather-tight performance of the completed joinery, the glazing and infill panels is the responsibility of the window manufacturer.

## Performance - Wind (design by contractor)

## 1.13 WIND - NON SPECIFIC DESIGN

Design the installation to the wind zone parameters of [NZS 3604](#), table 5.4.  
Refer to SELECTIONS for wind zone.

### Finishes

## 1.14 CERTIFY COATINGS - POWDER COATING

Certify on request, compliance with this specification and support with control and sampling records.  
Test for film thickness to BS 3900, part C5, method No. 4, using method (b) or to AS/NZ 1580.108.1 for certifying thickness and method (a) where any dispute arises as to the thickness provided.  
The coating should be applied by an applicator who can certify that the coating has been applied in accordance with the specification.

## PRODUCTS

### Materials

## 2.1 WINDOWS

Refer to SELECTIONS for type and finish.

## 2.2 DOORS

Refer to SELECTIONS for type and finish.

## 2.3 ALUMINIUM EXTRUSIONS

Alloy designation to comply with [AS/NZS 1866](#). Branded and extruded for anodising or powder coating.

## 2.4 GLASS

Refer to the glazing section for glass types and installation.

## 2.5 REVEALS - TIMBER PAINTED

Timber reveals for paint finish with all sides primed grooved for wall linings or flush finished for architraves.

## 2.6 FLASHINGS GENERALLY

To [NZBC E2/AS1](#), 9.1.10 **Windows and Doors**. Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

### Components - for cavity systems

## 2.7 STANDARD CAVITY CLOSER

A perforated device constructed from either aluminium or PVC to close the cavity above the window or door unit, between the cladding and head flashing, to provide ventilation in accordance with [NZBC E2/AS1](#) to the spaces above the window or door.

## 2.8 SUPPORT BAR

WGANZ extruded aluminium support bar with built in drainage and ventilation to [NZBC E2/AS1](#), to provide continuous support to the window unit. Size to suit cladding type.

### Components

## 2.9 GLAZING GASKETS

Thermoplastic rubber. Do not stretch glazing gaskets during installation. Measure and cut gaskets 5-10% over length before installation.

## 2.10 HARDWARE AND FURNITURE

Hinges, stays, catches, fasteners, latches, locks and furniture as offered by the window and door manufacturer. Refer to SELECTIONS for type and finish. Key alike all lockable window hardware able to be keyed alike.

## 2.11 SAFETY STAYS

Stainless steel non releasable restrictors to limit window opening to [NZBC F4/AS1](#), Table 2, Acceptable opening sizes for barriers.

## Sealants

### 2.12 STRUCTURAL SEALANT

Silicone chemically curing sealant specifically formulated and tested or approved equivalent with not less than a  $\pm 40\%$  movement factor complying with US Federal Specification TT S 001543A.

### 2.13 WEATHERING / INSTALLATION SEALANT

Building sealant used in accordance with manufacturer's instructions for weather sealing aluminium frames to the cladding, complying with US Federal Specification TT S 0011534A, or a one-part polyurethane moisture curing, elastic joint sealant of medium modulus ( $\pm 25\%$  movement) to US Federal Specification TT S 00230C.

### 2.14 FOAM TAPE

Foam tape to [NZBC E2/AS1](#), 9.1.10.7 **Closed cell foam tape**.

## Finishes

### 2.15 POWDER COATED ALUMINIUM - EXTRA-DURABLE POLYESTER

Polyester powder organic coating in accordance with [WGANZ PQAS](#), AS 3715, and AAMA 2603

## EXECUTION

### Conditions - generally

#### 3.1 DO NOT DELIVER

Do not deliver to site any elements which cannot be unloaded immediately into suitable conditions of storage.

#### 3.2 UNLOAD WINDOW JOINERY

Unload, handle and store elements in accordance with the window manufacturer's requirements.

#### 3.3 AVOID DISTORTION

Avoid distortion of elements during transit, storage and handling.

#### 3.4 PREVENT DAMAGE

Prevent prefinished surfaces rubbing together, and contact with mud, plaster and cement. Keep paper and cardboard wrappings dry.

#### 3.5 PROPRIETARY ELEMENTS

Fix in accordance with the window manufacturer's requirements.

#### 3.6 PROTECTIVE COVERINGS

Retain protective coverings and coatings to BRANZ BU 636 and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades. Remove protection on completion.

#### 3.7 ADDITIONAL PROTECTION

Supply and fix additional protection as necessary to prevent marking of surfaces which will be visible on completed work.

### Conditions - fixings and fastenings

#### 3.8 SUPPLY OF FIXINGS

Use only fixings and fastenings recommended by the manufacturer of the component being fixed and to comply with the ULS wind pressure stated in SELECTIONS. Ensure fixings and fastenings exposed to the weather are of aluminium, or Type 316 stainless steel or if not exposed to the weather may they be hot-dip galvanized steel with a coating weight of 610 g/m<sup>2</sup> complying with [AS/NZS 4680](#).

### 3.9 INSTALLATION FIXING

To [NZBC E2/AS1, 9.1.10.8](#), **Attachments for windows and doors**. Fix windows/doors through reveal to frame with a pair of 75 x 3.15mm minimum galvanised jolt head nails or a pair of 8 gauge x 65mm minimum stainless steel screws. Fix at a maximum of 450 centres along all reveals and a maximum of 150mm from reveal ends. Ensure fixings do not penetrate metal flashings. Install packers between reveals and framing at fixing points, except at the head.

#### Assembly

### 3.10 FABRICATION

Fabricate frames as detailed on shop drawings. Install glazing, hinges, stays and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

### 3.11 TIMBER REVEALS

Before fixing to aluminium frames, ensure that timber reveals which are being painted have been primed on all surfaces.

### 3.12 HARDWARE GENERALLY

Factory fit all required and scheduled hardware. Account for all keys and deliver separately to the site manager.

### 3.13 SAFETY STAYS

Factory fit safety stays to all windows scheduled for safety stays and to all windows where safety stays are required to comply with [NZBC F4/AS1 4.0](#), Opening windows.

#### Installation - windows and doors

### 3.14 CORROSION PROTECTION

Before fixing, apply suitable barriers of bituminous coatings, stops or underlays between dissimilar metals in contact, or between aluminium in contact with concrete.

### 3.15 CONFIRM PREPARATION OF EXTERIOR WALL OPENINGS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames. Do not proceed with the window and door installation until required preparatory work has been completed.

Required preparatory work includes the following:

- wall underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames to [NZBC E2/AS1:9.1.5](#) **Wall underlays to wall openings**.
- Full height 20mm jamb battens to [NZBC E2/AS1](#) figure 72A (direct fix only)
- claddings neatly finished off to all sides of openings
- installation of flashings (those which are required to be installed prior to frames).

### 3.16 INSTALLATION

Fix to comply with the reviewed shop drawings and installation details including flashings and bedding compounds, pointing sealants and weathering sealants.

### 3.17 INSTALLATION CAVITY CONSTRUCTION

Install to [WGANZ Window Installation Guide](#) details and drawings including WGANZ sill support bars.

For thresholds with support bars fixed through membranes, pre-fill support bar screw holes with silicone sealant to [NZBC E2/AS1](#), figure 62(d).

### 3.18 INSTALL FLASHINGS

Install flashings to heads, jambs and sills of frames as supplied and required by the window manufacturer and as detailed on the drawings. Finish head flashings to match window finish.

Place all flashings so that the head flashing weathers the jamb flashings, which in turn weathers over the upstand of the sill flashing. Ensure that sill flashings drain to the outside air.

Except where window/door frames are recessed, ensure that head flashings over-sail unit by 20mm minimum plus any jamb scribe width at each end.



### 3.19 COMPLETE AIR SEAL

To [NZBC E2/AS1:9.1.6](#) Air seals. Form an air-tight seal by means of a proprietary expanding foam or sealants used with backing rods, applied between the window / door reveal and structural framing to a depth of 10 - 20mm, to provide a continuous air tight seal to the perimeter of the window or door.

### 3.20 FIX HARDWARE

Fix all sash and door hardware and furniture as scheduled.

### **Application - jointing and sealing**

#### 3.21 SEAL FRAMES ON SITE

Seal frames to each other and to adjoining structure and finishes, all as required by the window manufacturer and to make the installation weathertight. In very high and extra high or greater wind zones, seal between the window head and the head flashing. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.

#### 3.22 PREPARE JOINTS

Ensure joints are dry. Remove loose material, dust and grease. Prepare joints in accordance with the sealant manufacturer's requirements, using required solvents and primers where necessary. Mask adjoining surfaces which would be difficult to clean if smeared with sealant.

#### 3.23 BACK UP

When using back-up materials do not reduce depth of joint for sealant to less than the minimum required by the manufacturer of the sealant. Insert polyethylene rod or tape back-up behind joints being pointed with sealant.

#### 3.24 SEALANT FINISH

Tool sealant to form a smooth fillet with a profile and dimensions required by the sealant manufacturer. Remove excess sealant from adjoining surfaces, using the cleaning materials nominated by the sealant manufacturer and leave clean.

### **Completion - cleaning**

#### 3.25 REMOVE TRADE DEBRIS

Remove trade debris by appropriate means on a floor by floor basis as each floor is completed and again before any work is covered up by others. Arrange for general removal.

#### 3.26 TRADE CLEAN

Trade clean window frames, operable windows and doors, glass and other related surfaces inside and out at the time of installation to remove marks, dust and dirt, to enable a visual inspection of all surfaces.

### **Completion**

#### 3.27 PROTECTIVE COVERINGS

Retain protective coverings and coatings and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades.

#### 3.28 SAFETY

Indicate the presence of transparent glasses for the remainder of the contract period, with whiting, tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface. Masking tape must not be used for this purpose.

#### 3.29 IN SITU TOUCH-UP TO POWDER COATED ALUMINIUM

In situ touch-up of polyester or fluoropolymer coated aluminium is only permitted only to minor surface scratching. Otherwise replace all damaged material.

#### 3.30 REMOVE

At the appropriate stage of the project, remove safety indicators and protective coverings and wipe down all joinery thoroughly.

#### 3.31 REPLACE

Replace damaged, cracked or marked elements.

## 4 SELECTIONS

### Performance

#### 4.1 THERMAL PERFORMANCE

R-value: 0.26 (as determined from [NZBC H1/VM1](#) or H1/AS1)

### Performance - Wind (design by contractor)

#### 4.2 WIND - NON SPECIFIC DESIGN

Building wind zone A (High) (refer to [NZS 3604](#), table 5.4)

### Window and door system

#### 4.3 ALUMINIUM WINDOWS

Manufacturer: Refer to Generation Homes Standard Features and Variations Lists for selections.

Type/location: Refer to Generation Homes Standard Features and Variations Lists for selections.

#### 4.4 ALUMINIUM DOORS

Manufacturer: Refer to Generation Homes Standard Features and Variations Lists for selections.

Type/location: Refer to Generation Homes Standard Features and Variations Lists for selections.

#### 4.5 TIMBER REVEALS

Timber species: Radiata pine

Grade/treatment: SG6 / H3.1

Thickness: 19mm

Reveals: Flush finish for architraves

Finish: Preprimed

### Finishes

#### 4.6 ORGANIC POWDER COATING FINISH

Type: Polyester organic powder coating Extra Durable

System integrity: Minimum 10 years film integrity, 7 years colour integrity

Thickness: Average of 80 microns with a minimum of 50 microns

Colour: to be selected

#### 4.7 FLASHINGS

Material/type: 0.55mm powder coated aluminium

Pattern: Formed to suit details provided

#### 4.8 WEATHERING SEALANT

Brand/type: MS Sealant 1-part polyurethane moisture curing, elastic joint sealant

Colour: clear

#### 4.9 HARDWARE

	Brand/style	Material/finish
Sash fasteners:	Refer to Generation Homes Standard Features and Variations Lists for selections.	Refer to Generation Homes Standard Features and Variations Lists for selections.
Door furniture:	Refer to Generation Homes Standard Features and Variations Lists for selections.	Refer to Generation Homes Standard Features and Variations Lists for selections.

# 4610 GLAZING RESIDENTIAL

## 1 GENERAL

This section relates to the supply and fixing of glass products for external and internal joinery in residential type buildings and includes:

- windows and doors
- frameless shower and bath screens
- splashbacks, wall linings
- balustrade systems, pool fences
- mirrors and mirror frames

### 1.1 RELATED WORK

Refer to 4521 ALUMINIUM WINDOWS AND DOORS for aluminium joinery.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

PVB	Polyvinyl Butyral
CIP	Cast in place

### Documents

#### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC F4/AS1	Safety from falling
NZBC F9/AS1	Means of restricting access to residential pools
NZBC H1/AS1	Energy Efficiency
AS/NZS 1170.2	Structural design actions - Wind loads
NZS 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4218	Thermal insulation - Housing and Small Buildings
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.Supp1	Glazing in buildings - Supplement 1 to NZS 4223.1:2008 and NZS 4223.4:2008
NZS 4223.2	Glazing in buildings - Insulating glass units
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live action
AS/NZS 2208	Safety glazing materials in buildings
AS/NZS 4666	Insulating glass units
BRANZ BU 636	Protecting Glass From Damage

### Warranties

#### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Warrant glass under normal environmental and use conditions against failure of materials.

10 years:	for insulating glass units
10 years:	for laminated glass
10 years:	for toughened glass

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

### Performance

## 1.5 ENERGY EFFICIENCY

Provide glazing to meet the energy requirements of [NZS 4218](#) and [NZBC H1/AS1](#) for housing small buildings.  
Refer to SELECTIONS and schedules for location and type of glazing.

## 2 PRODUCTS

### Materials

#### 2.1 CLEAR FLOAT GLASS

Clear ordinary annealed transparent float glass for general window glazing. Thickness to [NZS 4223.1](#) and [NZS 4223](#). Supp 1.

#### 2.2 TEXTURED, PATTERNED OR OBSCURE GLASS

Translucent, annealed, rolled glass with a decorative pattern on one surface.

#### 2.3 TOUGHENED GLASS

Grade A Safety Glass to [AS/NZS 2208](#).  
Heat soaked toughened glass to [NZS 4223.1](#), Appendix E required for critical areas.  
Refer to SELECTIONS.

#### 2.4 TINTED FLOAT GLASS

Body tinted float glass.

#### 2.5 INSULATING GLASS UNITS (IGU'S)

To [AS/NZS 4666](#), [NZS 4223.2](#) and the IGU Manufacturers Association (IGUMA) requirements.  
Marking to [NZS 4223.2](#) as modified by [NZBC B2/AS1](#), 3.5.

### Materials, mirrors

#### 2.6 SAFETY MIRROR GLASS

4mm, 5mm and 6mm annealed float glass mirror vinyl back safety glazing material to [AS/NZS 2208](#).

### Materials, screens

#### 2.7 GLASS SCREENS SHOWER & BATH

Proprietary shower / bath screens, formed to shape before toughening, complete with matching hardware.

### Components, aluminium and uPVC glazing

#### 2.8 GLAZING TAPE AND GASKETS

Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes selected to suit the glazing detail to window manufacturers' requirements.

#### 2.9 SETTING BLOCKS

Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes.

### Components, wall mounted glass (mirrors and splashbacks)

#### 2.10 GLASS ADHESIVE

Adhesive mirror-mastic and double-sided adhesive tape.

#### 2.11 GLASS MOUNTING CHANNELS

Refer to SELECTIONS/drawings for type and finish.

#### 2.12 MIRROR DE-MISTER

Refer to BATHROOM AND TOILET FIXTURES for type.

## 3 EXECUTION

### Conditions

### 3.1 GENERAL REQUIREMENTS

To [NZS 4223.1](#), [NZS 4223.3](#), [NZS 4223.4](#). All external glazing to be wind and watertight on completion.

### 3.2 DELIVERY

Keep glass dry and clean during delivery and bring on to site when ready to glaze directly into place. Comply also with the storage requirements set out in BRANZ BU 636.

### 3.3 GLASS CONDITION

All glass to have undamaged edges and surfaces.

### 3.4 GLASS THICKNESS

If not specifically stated in the glazing schedule determine the minimum thickness of glass for each sheet as required by [NZS 4223.1](#), [NZS 4223.3](#), [NZS 4223.4](#) and [NZS 4223](#). Supp 1. For windows tested to [NZS 4211](#), ensure glass meets the requirements of the window testing. Determine the final glass thickness based on whether wind loading or human impact considerations govern.

### 3.5 REBATE DIMENSIONS

Provide rebates for glazing to the widths and depths necessary for each situation including minimum glass edge cover to [NZS 4223.1](#), Section 4 Glazing.

### 3.6 JOINTING, PUTTY AND SEALING MATERIAL COMPATIBILITY

Ensure jointing, putty and sealing materials are compatible with glass substrates. Confirm compatibility with laminated glass, IGUs and coatings.

#### **Conditions - human impact safety requirements**

### 3.7 SAFETY GLAZING, GENERAL REQUIREMENTS

Glazing of doors, side panels, low level and window seat glazing, bathrooms, stairwell landings and similar locations, to [NZS 4223.3](#) for thickness and maximum areas of safety glass.

### 3.8 SAFETY GLAZING MATERIAL

Use only safety glazing materials defined in [NZS 4223.3](#), that also comply with the relevant requirements of [AS/NZS 2208](#). Ensure material is permanently marked and if cut by the distributor or installer mark each piece to [NZS 4223.3](#), 2.8 Identification.

### 3.9 CONTAINMENT

Edge cover to comply with [NZS 4223.1](#), Section 4 Glazing, table 5. Otherwise to [NZS 4223.3](#), 2.3 Edge cover.

#### **Assembly**

### 3.10 WORKING OF GLASS

All working of glass as required in [NZS 4223.1](#).

### 3.11 EDGE WORK AND BEVELLING

Edgework other than a clean cut. Refer to SELECTIONS/drawings for type.

### 3.12 SURFACE TREATMENT

Refer to SELECTIONS/drawings for finish.

### 3.13 SURFACE CUTTING

Refer to SELECTIONS/drawings for finish.

### 3.14 INSTALL SAFETY GLASS

To [NZS 4223.3](#).

#### **Application aluminium**

### 3.15 INSTALL GLASS TO ALUMINIUM FRAMES

Install glass to NZS4223.1.

- Bead glaze to Section 4 Glazing.
- Channel glaze to Section 4 Glazing, and Section 5 for Framed, Unframed, Partly Framed Glass Assemblies.

#### **Application - wall mounted glass (mirrors and splashbacks)**

### 3.16 WALL MOUNTED GLASS, SCREW FIXED

For mirrors and splashbacks, fix with proprietary zinc-plated steel countersunk-head screws, fitted with black neoprene washers with fine-threaded upstands to receive chrome plated dome screw covers.

### 3.17 WALL MOUNTED GLASS, CHANNEL MOUNTED

For mirrors and splashbacks, fix with proprietary mounting channels, to the channel manufacturer's requirements.

### 3.18 WALL MOUNTED GLASS, ADHESIVE FIXED

For mirrors and splashbacks, fix with adhesive mirror-mastic and double-sided adhesive tape. Adhesive area 0.2 m<sup>2</sup> per 1 m<sup>2</sup> of glass to [NZS 4223.3](#).

#### **Application miscellaneous**

### 3.19 INSTALL GLASS SHOWER & BATH SCREENS

Install shower and bath screens and doors to manufacturer's requirements.

#### **Finishing**

### 3.20 SAFETY

Indicate the presence of transparent glass for the remainder of the construction period, with whiting, tape or signs compatible with the glass type.

#### **Completion**

### 3.21 TRADE CLEAN

Clean off or remove safety indicators at completion of the building.

### 3.22 REPLACE

Replace damaged, cracked or marked glass.

### 3.23 LEAVE

Leave work to the standard required by following procedures.

### 3.24 REMOVE

Remove debris, unused materials and elements from the site.

## **SELECTIONS**

#### **Performance - wind**

### 4.1 WIND ZONE - NON-SPECIFIC DESIGN

Building wind zone: A (High) (as determined from [NZS 3604](#), [NZS 4223.4](#))

#### **Glass by type**

### 4.2 CLEAR FLOAT GLASS

Location: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

Brand/type: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

Thickness: to NZS 4223

#### 4.3 TINTED FLOAT GLASS

Location:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Brand/type:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Tint:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Thickness:	to NZS 4223

#### 4.4 TEXTURED, PATTERNED OR OBSCURE GLASS

Location:	As indicated on drawings
Brand/pattern:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Pattern:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Thickness:	to NZS 4223

#### 4.5 TOUGHENED GLASS

Location:	As indicated on the drawings
Brand/type:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Thickness:	to NZS 4223

#### 4.6 INSULATING GLASS UNITS (IGU'S)

Location:	As indicated on the drawings
Brand/type:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Outer glass type:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Coated surface:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Outer glass:	to NZS 4223
Spacer width:	to NZS 4223
Space gas:	air
Inner glass type:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Coated surface:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Inner glass:	to NZS 4223

#### Mirrors

#### 4.7 MIRROR

Location:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Brand/type:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Dimensions:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Thickness:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Fixing method:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Screw holes:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Edgework:	Refer to Generation Homes Standard Features and Variations Lists for selections.

#### Splashbacks



#### 4.8 SPLASHBACKS

Location:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Brand/type:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Thickness:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Type:	Refer to Generation Homes Standard Features and Variations Lists for selections.

#### Glass mounting channels

#### 4.9 GLASS MOUNTING CHANNELS

Brand/type:	Refer to Generation Homes Standard Features and Variations Lists for selections.
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#### Bath and shower screens and doors

#### 4.10 FRAMELESS GLASS SHOWER SCREENS AND DOORS

Location:	As indicated on the drawings
Brand/type:	Toughened Safety Glass / Refer to Generation Homes Standard Features and Variations Lists for selections.
Glass name:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Thickness:	to NZS 4223.3
Hardware:	Refer to Generation Homes Standard Features and Variations Lists for selections.
Accessories:	Refer to Generation Homes Standard Features and Variations Lists for selections.

# 4711P PINK® BATTS® & BIB INSULATION

## 1 GENERAL

This section relates to Tasman Insulation **Pink® Batts®** insulation materials installed, laid, hung or fitted as thermal insulation:

It includes:

- **Pink® Batts® Wall Insulation (Pink® Batts® Classic and Pink® Batts® Ultra®)**
- **Pink® Batts® Ceiling Insulation (Pink® Batts® Classic and Pink® Batts® Ultra®)**

### 1.1 RELATED WORK

Refer to 4161M TEKTON WEATHERIZATION SYSTEM for wall underlay.

Refer to 4161T THERMAKRAFT UNDERLAYS, FOILS AND DPC for roofing underlay.

Refer to James Hardie Rigid Air Barrier for pre-clad lining.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

BIB Building Insulation Blanket

### Documents

#### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

[NZBC C/AS1-AS2](#) Protection from fire

[NZBC H1/AS1](#) Energy efficiency, 2.0 Building thermal envelope

[NZS/AS 1530.1](#) Methods for fire tests on building materials, components and structures - Combustibility test for materials

[AS/NZS 3000](#) Electrical installations

[NZS 4218](#) Thermal insulation - Housing and small buildings

[NZS 4220](#) Code of practice for energy conservation in non-residential buildings

[NZS 4243.1](#) Energy efficiency - Large buildings - Building thermal envelope

[NZS 4246](#) Energy efficiency - Installing bulk thermal insulation in residential buildings

[AS/NZS 4534](#) Zinc and zinc/aluminium-alloy coatings on steel wire

[AS/NZS 60598.2.2:2001](#) Luminaires- Particular Requirements - Recessed luminaires

[AS/NZS 60695.11.5](#) Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance

#### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents related to this section are:

Tasman Insulation New Zealand: Product Data Sheets and installation Instructions

[BRANZ Appraisal 238](#) - Pink® Batts® Insulation

[BRANZ Appraisal 632](#) - Pink® Batts® SnugFloor® Underfloor Insulation

[BRANZ Appraisal 767](#) - Pink® Batts® Skillion Roof Insulation

Manufacturer/supplier contact details

Company: **Tasman Insulation New Zealand**

Web: [www.pinkbatts.co.nz](http://www.pinkbatts.co.nz)

Telephone: 0800 746 522

### Warranties

## 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

Lifetime Warranty	For <b>Pink® Batts®</b> insulation products
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- Provide this Warranty on the **Pink® Batts® Lifetime Warranty Certificate** form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

### Requirements

#### 16 QUALIFICATIONS

Installers to be **PinkFit® - Preferred Pink® Batts® installers**. A list of approved installers can be obtained from the web, by telephone or from the local building supplies merchant.

Web: [www.pinkbatts.co.nz](http://www.pinkbatts.co.nz)

Telephone: Freephone 0800 746 534

#### 17 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Tasman Insulation **Pink® Batts®** insulation or associated products, components or accessories.

### Performance - combustibility

#### 18 FIRE PREVENTION

**Pink® Batts®** insulation materials are considered a non-combustible material to NZS/AS 1530.1 and need not be separated from heat sources such as fire places, heating appliances, flues and chimneys to [NZBC C/AS1](#) to [C/AS2](#), except if used in conjunction with or attached to other heat sensitive materials.

## 2 PRODUCTS

### Materials

#### 2.1 PINK® BATTS® CEILING INSULATION

**Pink® Batts® Ceiling Insulation (Pink® Batts® Classic and Pink® Batts® Ultra®)** is a light weight flexible bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular slabs. Refer to SELECTIONS for R-values and thickness options.

NOTE: When insulation abutting or covering recessed downlights is intended to be in contact with IC, CA 80, CA 135 luminaries the insulation must withstand a 30s Needle Flame test to [AS/NZS 60695.11.5](#). **Pink® Batts®** insulation meets this requirement.

#### 2.2 PINK® BATTS® WALL INSULATION

**Pink® Batts® Wall Insulation (Pink® Batts® Classic and Pink® Batts® Ultra®)** is a light weight flexible bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular slabs. Refer to SELECTIONS for R-values and thickness options.

### Components

#### 2.3 FASTENERS

Insulation anchors complete with retaining washer.

#### 2.4 TAPES

Proprietary plastic tape stapled across framing to retain insulation in unlined wall and ceiling locations.

#### 2.5 ADHESIVE TAPE

Pressure sensitive adhesive tape.

## 3 EXECUTION

### Conditions

### 3.1 STORAGE

Only accept materials undamaged and dry and store in a location that protects them from the weather and damage. Avoid distortion, stretching, compression, puncturing and damage to edges of materials. Do not use damaged or wet insulation materials.

### 3.2 HANDLING

Wear protective clothing as necessary and when handling, avoid delamination or distortion of the rectangular form. Maintain full thickness unless compression is an installation system requirement.

### 3 INSPECTION

Before starting installation of **Pink® Batts® Insulation** blankets and slabs, check that the location and framing are free from moisture, that the cavities are not interconnected and that mesh, wall underlays and vapour barriers are in place.

#### Application

### 3.4 INSTALL INSULATION - GENERAL

Lay, install, fit and fix to [NZBC H1/AS1](#): Energy efficiency, 2.0 Building thermal envelope, and to manufacturer's requirements. Install in housing to [NZS 4218](#) and [NZS 4246](#). Install in large buildings to [NZS 4243.1](#) and [NZS 4220](#). Allow insulation to re-loft/relax prior to installation. Do not cover vents. Confirm with fireplace manufacturer for clearances; **Pink® Batts®** insulation need not be separated except if used in conjunction with, or attached to other heat sensitive materials. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath.

### 3.5 RECESSED LIGHT FITTINGS - CLEARANCE

General applications;

The clearance between insulation and recessed downlights;

- 100mm gap to [AS/NZS 3000](#), figure 4.9
- Provide larger clearances where required by the light manufacturer.

Residential applications;

- Ensure new recessed downlights are one of the new classes classified in [AS/NZS 60598.2.2](#); CA 80, CA 135, IC and IC - F
- Classification type CA 80, CA 135, to [AS/NZS 60598.2.2](#); insulation can abut the sides (wrapping around the sides)
- Classification type IC and IC - F, to [AS/NZS 60598.2.2](#); insulation can abut and cover over the top of the downlight
- Provide larger clearance where required by the light manufacturer.
- In a retrofit situation where recessed downlights are unclassified or unknown, ensure 100mm clearance from the insulation to [AS/NZS 3000](#), figure 4.9

### 3.6 CHECK FOILS

Ensure foils are dry, clean, bright, undamaged and free of debris before installing insulation.

### 3.7 CHECK WALL AND ROOF UNDERLAYS

Ensure foils are dry, clean, bright, undamaged and free of debris before installing insulation.

### 3.8 CHECK VAPOUR BARRIERS

Ensure vapour barriers form a homogeneous sheet vapour barrier before installing insulation.

### 3.9 INSTALL PINK® BATTS® CEILING INSULATION

Ensure that the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5-10mm to ensure a friction fit. Insulate around vents (not over them) to allow unhindered ventilation.

Fit **Pink® Batts® Ceiling Insulation** beneath electrical wiring and plumbing. Install to the outer edge of the top plate. Maintain a 25mm gap clearance between the **Pink® Batts®** insulation and roof underlay. Refer to [NZS 4246](#) for installation guidelines and **Pink® Batts®** installation instructions for detailed information.

### 3.10 INSTALL PINK® BATTS® WALL INSULATION

Ensure the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5-10mm to ensure a friction fit. Fill gaps around windows and doors with off-cuts. Insulate around vents (not over them) to allow unhindered ventilation.

Fit **Pink® Batts® Wall Insulation** behind electrical wiring and plumbing. Ensure there are no gaps, folds or undesirable compression at edges.

Refer to [NZS 4246](#) for installation guidelines and **Pink® Batts®** installation instructions for detailed information.

#### Completion

#### 3.11 CLEAN UP

Clean up as the work proceeds, so no spare offcuts or any other matter or item remain behind claddings or linings.

#### 3.12 LEAVE

Leave work to the standard required by following procedures.

#### 3.13 REMOVE

Remove debris, unused materials and elements from the site.

#### SELECTIONS

For further details on selections go to [www.pinkbatts.co.nz](http://www.pinkbatts.co.nz). Substitutions are not permitted to the following, unless stated otherwise.

#### Thermal insulation

#### 4.1 PINK® BATTS® CLASSIC CEILING INSULATION

Location:	Ceiling spaces except garage
Brand:	<b>Pink® Batts® Classic Ceiling</b>
R value:	R3.6
Thickness:	180mm

#### 4.2 PINK® BATTS® ULTRA® WALL INSULATION

Location:	All exterior walls, except garage, and to interior wall between garage and house
Brand:	<b>Pink® Batts® Ultra® Wall</b>
R value:	R2.6
Thickness:	90mm

# 5113G GIB® PLASTERBOARD LININGS

## 1 GENERAL

This section relates to the supply, fixing and jointing of GIB® plasterboard linings and accessories to timber and steel framed walls and ceilings to form:

- standard systems
- bracing systems
- wet area systems

### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

AWCINZ                      Association of Wall and Ceiling Industries New Zealand

### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS2	Protection from fire
NZBC E2/AS1	External moisture
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
NZS 3604	Timber-framed buildings
AS/NZS 4600:2005	Cold-formed steel structures
ISO 5660.1	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 1: Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 2: Smoke production rate (dynamic measurement)
BRANZ Technical Paper P21	BRANZ Technical Paper P21: A wall bracing test and evaluation procedure (2010)
NASH Standard Part 2	May 2019 Light Steel Framed Buildings

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:

- GIB® Site Guide (Dec 2014)
- GIB Aqualine® Wet Area Systems (March 2007)
- GIB® Ezybrace® Systems (2016)
- GIBFix® Framing System (2016)
- GIB® Rondo® Metal Ceiling Batten Systems
- GIB-Cove®

BRANZ Appraisal 427 (2007) - GIB Aqualine® Wet Area Systems

BRANZ Appraisal 928 (2016) - GIB Ezybrace® Systems 2016

GreenTag Certification [WWLCG001-001-A-2015](#) - GreenTag™ GreenRate/Level B for:

- GIB® Standard (10mm & 13mm)

Copies of the above literature are available at

Company:                      Winstone Wallboards

Web:                            [www.gib.co.nz](http://www.gib.co.nz)

Telephone:                    0800 100 442

### Requirements

#### 1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

#### 1.5 INSTALLER WORK SKILLS AND QUALIFICATIONS

GIB® plasterboard fixers and plasterers to be experienced competent workers, familiar with GIB® plasterboard lining systems installation and finishing techniques. Submit evidence of experience on request. For example:

- National Certificate of Interior Systems; or
- Certified Business member of AWCINZ.

#### Performance

#### 1.6 INSPECTIONS AND ACCEPTANCE

Allow for inspection of the finished plasterboard surface:

- before applying sealer and
- before applying finish coatings or decorative papers,

so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

#### 1.7 BRACING REQUIREMENTS

Braced wall systems to [NZS 3604](#) when tested to BRANZ Technical Paper P21, using:

- GIB Ezybrace® Systems (2016) and/or GIB Ezybrace® Bracing Software (2016)

Refer to drawings for location and type (EC691 - dwg 09).

### PRODUCTS

#### Materials

#### 2.1 GIB® PLASTERBOARD

Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to [AS/NZS 2588](#). Refer to SELECTIONS for location, type, thickness and finish.

GIB® Standard plasterboard

GIB Aqualine® wet area plasterboard

#### 2.2 GIB® COVING

GIB-Cove® plasterboard coving. Refer to SELECTIONS for profile and size.

#### Components

#### 2.3 CEILING BATTENS

GIB® Rondo® metal ceiling battens, batten joiners and perimeter channel.

#### 2.4 SCREWS

GIB® Grabber® drywall type screws as follows:

Grabber® type	Used for fixing:
High Thread	GIB Ezybrace® or Standard systems to timber
Self Tapping	Standard systems to light gauge steel or timber
Dual Thread Screws	GIBFix®, GIB Ezybrace®, or Standard systems, to light gauge steel or timber
Wafer Head Needle Tip	Light gauge metal to timber not directly under plasterboard
Pancake Head Drill Tip	Light gauge metal to light gauge metal directly under plasterboard

Refer to GIB® requirements for appropriate details.

#### 2.5 NAILS

GIB® Nails (gold passivated).

Size: 30mm, 40mm



## 2.6 CONTROL JOINTS

GIB® Rondo® P35 control joints.  
GIB® Goldline™ tape-on trims  
GIB® plastic smooth control joints.  
GIB® plastic W-profile control joints.

### Accessories

## 2.7 ADHESIVE

Timber frame and/or steel frame:  
GIBFix® One ultra low VOC water based wallboard adhesive  
GIBFix® All-Bond solvent based wallboard adhesive

## 2.8 JOINTING COMPOUND

Bedding compound:	GIB Tradeset®, GIB Lite Blue®, GIB MaxSet®, GIB ProMix® All Purpose, GIB Plus 4®
Finishing compound:	GIB ProMix® All Purpose, GIB® Trade Finish®, GIB® Trade Finish® Lite, GIB ProMix® Lite, GIB® U-Mix, GIB Plus 4®, GIB Trade Finish® Multi
Cove:	GIB-Cove® Bond

## 2.9 JOINTING TAPE

GIB® jointing tape.

## 2.10 GAP FILLER

GIB® Gap Filler ultra low VOC multi-purpose acrylic flexible filler

## EXECUTION

### Conditions

## 3.1 STORAGE

Store GIB® plasterboard sheets and accessories in dry conditions stored indoors out of direct sunlight in neat flat stacks on either an impervious plastic sheet or clear of the floor with no sagging and avoiding damage to ends, edges and surfaces. Reject damaged material. Refer to GIB® Site Guide (September 2018).

## 3.2 LEVELS OF PLASTERBOARD FINISH

Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in [AS/NZS 2589](#).

## 3.3 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE

Before commencing work, agree in writing upon the surface finish assessment procedure towards ensuring that the quality of finish expectations are reasonable and are subsequently obtained and acceptable.

**Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the specified plasterboard Level of Finish has been achieved.**

"Levels of plasterboard finish" is a tool for specifying the required quality of finish when installing and flush stopping GIB® plasterboard **prior** to the application of a range of decorative finishes under various lighting conditions. Refer to **AS/NZS 2589**.

## 3.4 SUBSTRATE

Do not commence work until the substrate is plumb, level and to the standard required by the sheet manufacturer requirements. Refer to GIB® Site Guide (September 2018).

## 3.5 TIMBER FRAME MOISTURE CONTENT

Maximum allowable moisture content to [AS/NZS 2589](#) for timber framing at lining: 18% or less for plasterboard linings. Refer to [NZBC E2/AS1](#) and GIB® Site Guide (Sept 2018).

### 3.6 PROTECTION

Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB® Site Guide (Sept 2018).

#### Application

### 3.7 INSTALL CEILING BATTENS

Install to GIB® Rondo® Ceiling Batten Systems requirements.

### 3.8 LINING WALLS AND CEILINGS GENERALLY

Form to GIB® Site Guide (September 2018). Ensure bulk insulation thickness shall not exceed that of the wall framing.

### 3.9 BOARD ORIENTATION

Minimise joints by careful sheet layout using the largest sheet sizes possible, and generally fixing horizontally. Where part sheets are required for various stud heights they should be positioned so the cut sheet is as low as possible to keep joints below eye level.

### 3.10 FORM WET AREA SYSTEMS

Form to GIB Aqualine® Wet Area Systems requirements.

### 3.11 FORM BRACING SYSTEMS

Form bracing systems to:

- GIB Ezybrace® Systems (2016)

Refer to Bracing Plan (EC691 - dwg 09) for layout.

### 3.12 FORM CONTROL JOINTS

Form control joints to GIB® Site Guide (September 2018) requirements.

### 3.13 INSTALL COVES

Install to GIB-Cove® literature using GIB-Cove® Bond.

#### Finishing

### 3.14 FINISHING GENERALLY

To GIB® Site Guide (September 2018) and [AS/NZS 2589](#).

#### Completion

### 3.15 REPLACE

Replace damaged sheets or elements.

### 3.16 CLEAN DOWN

Clean down completed surfaces to remove irregularities and finally sand down with fine paper to the sheet manufacturer's requirements, to leave completely smooth and clean.

### 3.17 REMOVE

Remove debris, unused materials and elements from the site.

### 3.18 LEAVE

Leave work to the standard required by following procedures.

## SELECTIONS

#### Plasterboard

### 4.1 GIB® STANDARD SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
All walls except in Bathroom and/or Ensuite	GIB® Standard plasterboard	10mm	Level 4
Bathroom and/or Ensuite except behind wet areas	GIB Aqualine® plasterboard	10mm	Level 4

## 4.2 GIB® STANDARD SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
All ceilings except in Bathroom and/or Ensuite	GIB® Standard plasterboard	13mm	Level 4
Bathroom and/or Ensuite	GIB Ultralite® PLUS plasterboard	13mm	Level 4

### Accessories

#### 4.3 GIB® COVE®

Size/brand/type:

**Refer to Generation Homes Standard Features and Variations Lists for selections.**

#### 4.4 GIB® RONDO® CEILING BATTENS

Brand/type:

GIB® Rondo® Ceiling battens

# 5151 INTERNAL TRIM

## 1 GENERAL

This section relates to simple lengths of trim fixed on site as of isolated internal members, with simple end joints.

It includes:

- MDF

### 1.1 RELATED WORK

Refer to 5113G GIB PLASTERBOARD LININGS for cornice.

### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS1-AS2	Protection from fire
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3610	Specification for profiles of mouldings and joinery

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:  
Customwood Mouldings Handling, Installation & Finishing

Manufacturer/supplier contact details

Company: Cater Holt Harvey Woodproducts New Zealand

Web: [www.chhwoodproducts.co.nz](http://www.chhwoodproducts.co.nz)

Telephone: 0800-746-399

## 2 PRODUCTS

### Materials

### 2.1 MDF TRIM

Refer to SELECTIONS for type.

### Components

### 2.2 NAILS

Bright steel to dimension requirements of [NZS 3604](#). Use galvanized where prone to dampness.

## 3 EXECUTION

### Conditions

### 3.1 GENERALLY

To comply with [NZS 3604](#), except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

### 3.2 STORAGE

Take delivery of trims undamaged and unmarked and store on site under cover, away from moisture, heat and direct sunlight in adequately ventilated area and clear of areas where work is in progress, to ensure materials are of the required standard when fixed in place.

### 3.3 ACCLIMATISE MATERIALS

Remove materials from packaging, separate and allow to acclimatise in the proposed installation area for 48 hours minimum prior to installation.

### 3.4 ENSURE

Ensure that the substrate to trims will allow work of the required standard. If it does not, do not proceed until the substrate has been remedied.

#### **Application - MDF trim**

### 3.5 NAIL FIX

Use full lengths. Fit with scribed internal joints, mitred external joints and returned on itself at stop ends. Fix plumb, level and true to line and face using 40mm or 50mm brads to suit, ensuring fixing to a minimum depth of 25mm into framing timber. Leave secure and with no movement possible. Punch brads and fill with stopping compound to maintain the smooth surface.

#### **Finishing**

### 3.6 PUNCH

Punch all nail heads below the face of trim ready to receive stopping, as specified under painting preparation.

#### **Completion**

### 3.7 LEAVE

Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following procedures.

### 3.8 PROTECTION

Protect the completed work and make good before any surface finish is applied.

### 3.9 REPLACE

Replace damaged or marked elements.

### 3.10 REMOVE

Remove debris, unused materials and elements from the site.

## **SELECTIONS**

### 4.1 INTERNAL MDF TRIM

Manufacturer: Customwood Mouldings  
Finish: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

Member	Code or description
Architrave	<b>Refer to Generation Homes Standard Features and Variations Lists for selections.</b>
Skirting	<b>Refer to Generation Homes Standard Features and Variations Lists for selections.</b>
Cornice	<b>Refer to Generation Homes Standard Features and Variations Lists for selections.</b>

Available in standard or MR MDF. Available prefinished In MR range.

Note, MR may be used in slightly wet areas, but generally not recommended for very wet areas.

# 5231 INTERIOR DOORS & WINDOWS

## 1 GENERAL

This section relates to the supply and installation of interior:

- doors
- doors and frames
- doorsets

### 1.1 RELATED WORK

Refer to painting sections for finishes

### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

- [AS/NZS 1170.1](#) Structural design actions - Permanent, imposed and other actions  
[NZS 3602](#) Timber and wood-based products for use in building  
[NZS 3604](#) Timber-framed buildings  
[NZS 3610](#) Specification for profiles of mouldings and joinery  
[NZS 4223.3](#) Glazing in buildings - Human impact safety requirements  
[WANZ PQAS](#): Powder Coating Quality Assurance System  
[WANZ SFA 3503-03](#): Anodic Oxide coatings on wrought aluminium for external architectural application (2005).

### 1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:  
Hume Products Interior Doors

Manufacturer/supplier contact details  
Company: Hume Doors & Timber NZ Ltd  
Web: [www.doors.co.nz](http://www.doors.co.nz)  
Telephone: (09) 277-4509

## 2 PRODUCTS

### Requirements

### Materials - door and window frames general

### 2.1 CERTIFIED SUSTAINABLE TIMBER

Refer to SELECTIONS for details of amount, type, suppliers.  
Certified Sustainable FSC- COC Certified (or similar pre-approved) timber from forest to installation.  
Contractor to obtain and track all timber FSC-COC certificates and receipts showing FSC-COC numbers, including signed FSC outsourcing agreements between parties (ie FSC timber broker and non-FSC door joiner).

FSC suppliers lists:- <https://info.fsc.org/certificate.php#result>

### 2.2 TIMBER DOORS AND WINDOWS

To [NZS 3602](#). Moisture content 10-14%. To [NZS 3610](#).

### Materials - doors general

### 2.3 TIMBER

To [NZS 3602](#). Moisture content 10-14%. To [NZS 3610](#). Solid or hollow core.

### Materials - doorsets

## 2.4 STANDARD DOORSETS, SLIDING

Frames to profile as detailed and dimensioned, fitted with solid or hollow core door.  
Refer to SELECTIONS.

### Components

## 2.5 SCREWS

Stainless steel or non-corrodible metal. Length sufficient to penetrate into the background support up to the shank. Screws for fixing hinges, hardware or furniture to match the item being attached.

## 2.6 NAILS

Length sufficient to penetrate into the background support at least half the nail length, except if into radiata pine then three-fifths their length.

## 2.7 DOOR HINGES

Size and gauge to carry door size and weight. 3 hinges per door.

Type: Loose pin  
Size: 89mm  
Material: Zinc-plated steel  
Pin: Loose-pin zinc-plated steel

## 2.8 INTERIOR SLIDING DOOR GEAR

To suit door size and weight and as detailed.

## 2.9 DOOR SKIN (FACINGS)

Doors skins as detailed and dimensioned.

### Finish

## 2.10 TIMBER - PAINT FINISH

Factory applied coating system.

## 2.11 SUSTAINABLE TIMBER

This project uses FSC Certified sustainable timber.

Abbreviations and definitions:

FSC

Forest Stewardship Council

FSC Forest Management (FM) Certification

A forest management unit independently FSC inspected and certified that it complies with the internationally-agreed FSC Principles.

FSC Chain of Custody (COC) Certification

COC certification applies to those who process, transform or trade forest products, providing a guarantee about the production and source of FSC-certified products and tracking the production and distribution of the products.

Organisation website details

FSC website:- <https://nz.fsc.org/en-nz>

FSC suppliers lists:- <https://info.fsc.org/certificate.php#result>

## EXECUTION

### Conditions

## 3.1 GENERALLY

Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

## 3.2 DO NOT DELIVER

Do not deliver any elements which cannot be unloaded immediately into suitable storage conditions.



### 3.3 HANDLE

Handle, unload and store elements without distortion and avoiding pre-finished surfaces rubbing together, and contact with mud, moisture and other damaging materials.

### 3.4 PROTECT

Protect all elements against damage to arrises and glazing beads. Store frames and doors flat and away from moisture or direct sunlight.

### 3.5 FABRICATE DOORSETS

Fabricate doorsets and windows in the factory with doors hung, provision for furniture made, finishes applied and fully operable.

### 3.6 FABRICATE DOORS

Fabricate doors in the factory, with provision for door furniture.

### 3.7 CHECK ALL OPENINGS

To [NZS 3604](#). Check all openings on site for size and standard of execution before installing window or door frames. Installation tolerances of windows subject to earthquake design to comply with [AS/NZS 1170.1](#).

#### **Assembly**

### 3.8 FABRICATION GENERALLY

Manufacture and fabricate frames and doors as detailed. Install hinges and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

#### **Application - generally**

### 3.9 FIXING FRAMES

Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion and with all opening sashes fully and easily operating. Fit architraves.

### 3.10 DISTORTION

Do not distort frames when wedging or other packing, or when tightening fixings. If necessary adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

### 3.11 FIXINGS

Fix frames so that nail heads are covered by applied stops and beads. Punch all nail heads below timber surfaces which will be visible in completed work. Ensure that at least one frame fixing is adjacent to each hanging point.

#### **Application - doorsets**

### 3.12 PROPRIETARY ELEMENTS

Fix in accordance with the door manufacturer's requirements.

### 3.13 INSTALLATION GENERALLY

Wedge frames into opening and fix through into the wall framing. Locate all wedges and fixing at hinge positions and opposite, with one fixing in the vicinity of the lock. Fixings concealed behind planted stops.

Hang doors on hinges, sliding or bi-fold gear as specified and to operate freely. Fit all hardware and door furniture.

### 3.14 TIMBER STUD WALLS - TIMBER FRAMES

Wedge into opening and nail through into the studs. All wedges and fixing to be at hinge positions and opposite, with one fixing in the vicinity of the lock.

### 3.15 BOTTOM CLEARANCE

Provide for specified floor coverings plus 5mm clearance at any point of swing. When floor covering is not specified, allow 25mm total.

For ventilated and/or air conditioned spaces allow 20mm clearance above finished floor coverings for supply/return air.

### 3.16 REMOVE DOORS

Remove doors from the frames if necessary to protect them, or for re-finishing, store safely and near completion refit them, all without any damage.

### 3.17 INSTALL PANELS

Prime rebates and beads, install sealant backing strips or silicone. Install dry beading to outside of panels as selected. Do not mitre corners of beads.

### 3.18 INSTALL FURNITURE

Install latches, locks and door furniture as scheduled.

### 3.19 CHECK

Check and adjust operation of all doors, hardware and furniture.

## Completion

### 3.20 PROTECTION

Protect all finishes against damage from adjacent and following work.

### 3.21 REPLACE

Replace damaged, cracked or marked elements.

### 3.22 TRADE CLEAN

Clean off or remove safety indicators at completion of the building.

### 3.23 LEAVE

Leave work to the standard required for following procedures.

### 3.24 REMOVE

Remove safety indicators and protective coverings, and wipe down all doorsets thoroughly to leave them perfectly clean. Remove all debris, unused materials and elements from the site.

## SELECTIONS

### Frames

#### 4.1 DOOR FRAMES - TIMBER

Location:	Refer to architectural drawings for locations
Door reference:	Refer to architectural drawings for locations
Timber species:	Radiata pine
Grade:	MDF
Treatment:	H1.2 and H3.1 to wet areas
Finish:	Paint
Leaf size:	1980mm high x 610/660/710/760/810/860mm wide
Thickness:	35mm

#### 4.2 DOOR LINERS - TIMBER

Location:	Refer to architectural drawings for locations
Door reference:	Refer to architectural drawings for locations
Timber species:	Radiata pine
Grade:	MDF
Treatment:	H1.2 and H3.1 to wet areas
Finish:	Paint
Leaf size:	1980mm high x 610/660/710/760/810/860mm wide
Thickness:	35mm

### Doors

#### 4.3 STANDARD DOORS

Manufacturer: Hume

Door type: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

Material: MDF

Door leaf size: 1980mm high x 610/660/710/760/810/860mm wide

Door finish: Paint

#### 4.4 CAVITY SLIDING DOOR GEAR

Brand/type: Hume Statesman Cavity Slider Units or similar

#### 4.5 SLIDING DOOR GEAR

Brand/type: Hume Smartrobe door system or similar

#### Finish

#### 4.6 PAINT FINISH

Finish/colours: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

#### Hardware

#### 4.7 HARDWARE SCHEDULE

Location	Type of hardware
All interior doors	<b>Refer to Generation Homes Standard Features and Variations Lists for selections.</b>

# 5511 JOINERY & CABINETRY FIXTURES

## 1 GENERAL

This section relates to custom joinery fittings and cabinetwork, purpose made in a factory and fitted on site.

### Documents

#### 1.1 DOCUMENTS REFERRED TO

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

AS/NZS 1859.1	Reconstituted wood based panels - Specifications - Particleboard
AS/NZS 1859.2	Reconstituted wood based panels - Specifications - Dry processed fibreboard
AS/NZS 1859.3	Reconstituted wood based panels - Specifications - decorative overlaid wood panels
AS/NZS 4386.1	Domestic kitchen assemblies - Kitchen units
AS/NZS 4386.2	Domestic kitchen assemblies - Installation

## 2 PRODUCTS

### Requirements

#### Materials

##### 2.1 CERTIFIED SUSTAINABLE TIMBER

Refer to SELECTIONS for details of amount, type, suppliers.

Certified Sustainable FSC-COC Certified (or similar pre-approved) timber from forest to installation. Contractor to obtain and track all timber FSC-COC certificates and receipts showing FSC-COC numbers, including signed FSC outsourcing agreements between parties (ie FSC timber broker and non-FSC door joiner).

FSC suppliers lists:- <https://info.fsc.org/certificate.php#result>

##### 2.2 MEDIUM DENSITY FIBRE BOARD

Urea-formaldehyde resin bonded wood fibre sheet to [AS/NZS 1859.2](#).

##### 2.3 MEDIUM DENSITY FIBRE BOARD - PRINTED

Urea-formaldehyde resin bonded wood fibre sheet to [AS/NZS 1859.2](#) with a dry stamping foil of polyester film with barrier and adhesive layers impregnated with a decorated photogravure print.

##### 2.4 MEDIUM DENSITY FIBRE BOARD - MELAMINE VENEER

Urea-formaldehyde resin bonded wood fibre sheet to [AS/NZS 1859.2](#) and [AS/NZS 1859.3](#) veneered both sides with melamine sheet.

##### 2.5 MEDIUM DENSITY FIBRE BOARD - WOOD VENEER

Urea-formaldehyde resin bonded wood fibre sheet to [AS/NZS 1859.2](#) and [AS/NZS 1859.3](#) veneered with selected wood veneer.

### Components

#### 2.6 BENCHTOPS

As detailed on the drawings and as required for specified fittings and appliances.

#### 2.7 CARCASE CONNECTORS

As approved by the manufacturer for the selected product.

#### 2.8 CARCASE FASTENERS

As approved by the manufacturer for the selected product.

#### 2.9 BUTT HINGES

As approved by the manufacturer for the selected product.

## 2.10 CONCEALED HINGES

As approved by the manufacturer for the selected product.

## 2.11 DRAWER RUNNERS

As approved by the manufacturer for the selected product.

### Accessories

## 2.12 ADHESIVES

As approved by the manufacturer for the timber product or pre-finished timber product joint being used.

### Finishes

## 2.13 COATING SYSTEM

As approved by the manufacturer for the selected product.

## 2.14 SUSTAINABLE TIMBER

This project uses FSC Certified sustainable timber.

Abbreviations and definitions:

FSC

- Forest Stewardship Council

FSC Forest Management (FM) Certification

- A forest management unit independently FSC inspected and certified that it complies with the internationally-agreed FSC Principles.

FSC Chain of Custody (COC) Certification

- COC certification applies to those who process, transform or trade forest products, providing a guarantee about the production and source of FSC-certified products and tracking the production and distribution of the products.

Organisation website details

FSC website:- <https://nz.fsc.org/en-nz>

FSC suppliers lists:- <https://info.fsc.org/certificate.php#result>

## EXECUTION

### Conditions

## 3.1 JOINERY FIXTURES GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs). Take responsibility for the completed joinery fixtures including fittings included within fixtures and the on site installation.

## 3.2 DOMESTIC KITCHEN ASSEMBLIES

Unless otherwise specified / detailed, domestic kitchens to be constructed to [AS/NZS 4386.1](#) and installed to [AS/NZS 4386.2](#)

## 3.3 SITE MEASURE

Site check and confirm dimensions after wall linings have been fixed. Verify positions of electric power outlets, wiring to light fittings included in joinery fixtures, water supplies and waste pipe locations.

## 3.4 SHRINKAGE

Arrange jointing and fixing so that shrinkage in any part and direction does not impair the strength or appearance of the finished work or damage the adjoining work.

## 3.5 TOLERANCES

Provide reasonable tolerances at connections between the joinery fittings and the building fabric so that any irregularities are adequately compensated for in the site fixing.

### 3.6 PRE-FINISH WOOD VENEER

Select veneer board for match or uniformity, or symmetry of colour or grain of adjacent pieces. Finish to same standard on all faces. Clash exposed edges with solid matching timber strips.

### 3.7 PRE-FINISH MELAMINE VENEER

Select and match all adjacent pieces. Clash exposed edges of wood grains with solid matching timber strips and with selected PVC strips to other patterns.

#### Conditions - site

#### 3.8 TRANSIT

Load, transport and unload fittings without distortion or damage and keep covered to protect from the weather.

#### 3.9 DELIVERY

Deliver fittings to the site only when floor, wall and ceiling surfaces are in place and the fittings can be immediately placed in their final location.

#### Assembly

#### 3.10 MACHINING

Carry out machining within the practices required for the particular timber, wood product or pre-finished wood product being used. Machine drill holes, cut recesses and form joints ready for assembly to the componentry manufacturer's requirements. Ensure work is accurate, square and true to line.

#### 3.11 MAKE CUT OUTS FOR APPLIANCES AND FITTINGS

Obtain fitting templates from the appliances and other fittings to be installed within joinery fixtures and bench tops. Ensure appliances and fittings can be installed with the required tolerances and clearances. Where bench tops are being provided under other work sections, provide templates and confirm dimensions to others.

#### 3.12 ASSEMBLY

Carry out gluing, dowelling, and other operations necessary for the proper assembly of the fittings as detailed with fixings concealed unless detailed otherwise. Scribe fit adjustable shelves with 4 shelf pins to each and with force fit pin holes at 50mm maximum centres in solid cheeks. Construct drawers and using groove mounting runners, fit them with 3mm clearance into drawer space. Hang doors on concealed hinges with 115 degree openings except where detailed for 170 degrees.

#### 3.13 GLUE JOINTS

Use glue joints where provision for shrinkage is not required. Cross-tongue or otherwise reinforce. Surfaces in contact to have an even sawn or planed finish and be free of contamination. Mix, apply and set to the glue manufacturer's requirements with adequate pressure applied to ensure intimate contact that will be maintained while the glue sets.

#### 3.14 CONNECTOR JOINTS

Locate and drive connectors to the board manufacturer's requirements. Fit plastic trim cap where detailed. Conceal or hide from sight other connector heads.

#### 3.15 FASTENER JOINTS

Locate and drive connecting bolts to the board manufacturer's requirements. Form joint and fit and rotate centric sphere connector to finish it rigid and tightly fitting over the whole length of the joint.

#### Application

#### 3.16 FIXING ON SITE

- Scribe fit and conceal fix rigidly in place square, level, plumb and true to line and face as detailed and to the required standard.
- Assemble fittings on-site if brought in sections.
- Fit counter and bench tops and upstands.
- Complete with moveable parts in place and freely moving in their proper range.

#### Finishing

### 3.17 COATING SYSTEM - PREPARATION

- Fill timber defects with proprietary wood filler. (e.g. cracks, holes, etc)
- Sand timber to a smooth even finish using 180 grit paper.
- Remove all sanding dust using air guns and tack rags.
- Ensure substrate is free from dust, grease, dirt and other contaminants.
- Ensure moisture content of the timber is less than 15% immediately before commencing coating operations.

### 3.18 COATING SYSTEM - APPLICATION

To coating manufacturer's requirements.

### 3.19 PROTECT

Protect finished surfaces from damage, particularly benchtops.

#### **Completion**

### 3.20 REPLACE

Replace damaged or marked elements.

### 3.21 LEAVE

Leave work complete, clean and without blemish and to the standard required by following procedures.

### 3.22 REMOVE

Remove debris, unused materials and elements from the site.

#### **SELECTIONS**

### 4.1 KITCHEN JOINERY

All kitchen and scullery joinery, including bench tops, to be designed and fabricated by selected kitchen manufacturer.

All joinery carcass work and counter top finishes such as melamine, laminate or other are to be in accordance of NZBC G2/AS1 and NZBC G3/AS1 for hygiene and prevention of contamination.

**Refer to Generation Homes Standard Features and Variations Lists for selections.**

### 4.2 CUPBOARDS

**Refer to Generation Homes Standard Features and Variations Lists for selections.**



# 6221 TILING SYSTEMS

## 1 GENERAL

This section relates to the supply and installation of interior and exterior floor and wall tiles. It includes:

- Underlays
- Screeds and levelling compounds
- Primers
- Waterproofing systems
- Tile adhesives
- Grouts and sealants
- Tiles
- All other required components and accessories necessary to complete installation

### 1.1 RELATED WORK

Refer to 6811 WATERPROOFING AND ACOUSTIC UNDERLAY SYSTEM for waterproofing and/or acoustic membranes.

### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC D1/AS1	Access routes
NZBC E3/AS1	Internal moisture
AS 3740	Waterproofing of wet areas within residential buildings
AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
NZS 4121	Design for access and mobility - Buildings and associated facilities
AS/NZS 4586	Slip resistance classification of new pedestrian surface materials
AS/NZS 4671	Steel reinforcing materials
AS ISO 13007.1	Ceramic tiles - Grouts and adhesives: Terms, definitions and specifications for adhesives
AS ISO 13007.3	Ceramic tiles - Grouts and adhesives: Terms, definitions and specifications for grouts
BRANZ	Good practice guide: Tiling

### Warranties

### 1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty per the manufacturers specification outline.

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

### 1.4 WARRANTY - INSTALLER/APPLICATOR - FOR WATERPROOFING SYSTEMS

Provide an installer/applicator warranty:

5 years: For installation of waterproofing systems

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

### Requirements

### 1.5 QUALIFICATIONS - TILING SYSTEMS

Tilers to be experienced, competent trades people familiar with the materials and techniques specified.

## 1.6 QUALIFICATIONS - WATERPROOFING SYSTEMS

Waterproofers to be experienced, competent trades people familiar with the materials and techniques specified.

## 1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

## 1.8 DEFLECTION CRITERIA FOR SUSPENDED FLOORS

Check that the floor is rigid enough for the tiling. Deflection of suspended floors should not exceed 1/360th of the span under dead load and live load.

## 1.9 ADHESIVES COMPATIBILITY

Adhesives selected for use on proprietary substrates or waterproof membranes to have documented compatibility approval from the respective manufacturers.

## 1.10 INTERNAL / EXTERNAL MOISTURE

Wet area membranes under tiled areas to AS 3740, [NZBC E2/AS1](#) (exterior), [NZBC E3/AS1](#) (interior) and to BRANZ Good Practice Guide: Tiling.

### Performance - Slip resistance

## 1.11 SLIP RESISTANCE – SURFACES EXEMPT FROM TESTING

Slip resistance for walking surfaces comply with [NZBC D1/AS1](#), Table 2.

## 2 PRODUCTS

### Materials

## 2.1 TILES

Refer to SELECTIONS for product selection.

### Materials - preparation & underlays

## 2.2 PROPRIETARY SCREED

Manufactured screed systems.

### Materials - adhesive and grout

## 2.3 TILE ADHESIVE

To AS ISO 13007.1.

## 2.4 SAND AND CEMENT GROUT

1 part Portland cement to 2-3 parts fine, washed sand, mixed to a paste consistency with a minimum of clean, potable water.

## 2.5 PROPRIETARY GROUT

Cement based, compressible and to suit particular location/use. To AS ISO 13007.3.

### Components

## 2.6 MOVEMENT AND EXPANSION JOINTS - RIGID JOINTS

Either, proprietary aluminium/brass with rubber or foam and compound infill, or rigid stabilised PVC sides with flexible central section.

Refer to SELECTIONS for product selection

## 2.7 MOVEMENT JOINT SEALANT

To BRANZ Good practice guide: Tiling, section 5.0.

- Neutral cured sealant for areas where waterproof membranes are used or where used against aluminium.
- Acid cured sealant except for areas where waterproof membranes are used or where used against aluminium.

Note: Check compatibility of membrane and sealant, use bond breaking tape to separate them if required.

### Accessories

## 2.8 UNDERFLOOR HEATING

Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for underfloor heating section for electric undertile heating system.

## 2.9 TILE EDGE TRIMS

Refer to SELECTIONS for product selection

## EXECUTION

### 3.1 DELIVERY, STORAGE AND HANDLING

Take delivery of materials and goods and store on site and protect from damage.

Protect finished surfaces, edges and corners from damage.

Move/handle goods in accordance with manufacturer's requirements.

Reject and replace goods that are damaged or will not provide the required finish

### 3.2 CHECK TILES

Check tiles to ensure that they are as specified, from the same batch, of a consistent colour and pattern and sufficient to complete the work. Reject tiles that vary widely in colour or pattern. Reject tiles that are damaged.

### 3.3 CONFIRM LAYOUT

Before commencing work confirm the proposed layout of tiles and expansion joints and other visual considerations of the finished work.

### 3.4 SETTING OUT

Before commencing the setting out confirm the number and location of cut tiles. Minimise in number with no cut tiles less than half size and only at the perimeter of the work.

### 3.5 GENERALLY

Prepare surface and complete tiling work in accordance with AS 3958.1, as modified by BRANZ Good practice guide: Tiling.

### Conditions

### 3.6 INSPECT BACKGROUND CONDITIONS

Ensure that all services and accessories are in place and located to suit the tile layout, and that the substrate, background and adjoining surfaces (with the preparation called for in this section) are of the quality necessary to allow tiling of the required standard.

Inspect background and substrate materials for any conditions unsuitable for tiling over.

Substrate material must be even and true with a maximum variation in plane of no greater than 4mm in every 2m, in accordance with AS 3958.1, section 4.

Do not commence work until the affected area is rectified. Commencement of installation constitutes acceptance of site conditions.

### 3.7 SUBSTRATE TEMPERATURE

Do not carry out tiling where the substrate temperature is below 5°C or above 40°C.

### 3.8 MOISTURE CONTENT

Ensure concrete floors & concrete and/or concrete block walls are cured and dry. Ensure moisture content is such that shrinkage is complete and thermal movement has been accommodated.

If in doubt check for moisture content by hygrometer. Do not proceed with tiling work until readings for the whole area show 75% relative humidity or less.

### 3.9 LIGHTING

Light the tile work as closely and clearly as possible to that of the finished lighting, to ensure that differences in plane surface are highlighted during installation.

#### **Application - preparation**

### 3.10 PREPARE SUBSTRATES

Prepare backgrounds as described in AS 3958.1, Section 4 as modified by BRANZ Good practice guide: Tiling. All surfaces to be structurally sound, dry, clean and free from movement, dirt, dust, oil, grease, wax, curing compounds, release agents and any other loose or contaminating materials.

Ensure surfaces are flat and true to a tolerance of  $\pm 4\text{mm}$  in 2 metres from the required plane. Remove projections, unevenness and loose material to leave a clean dust and dirt free surface.

Suitably prepare backgrounds and substrates in accordance with the manufacturer's instructions of the tiling installation products for the relevant substrate type.

### 3.11 PRIME SUBSTRATES

Surfaces should be primed as per manufacturer's instructions for the selected products and substrate types. Refer to SELECTIONS.

#### **Application - movement joints**

### 3.12 FORM MOVEMENT AND EXPANSION JOINTS

Install movement joints to go right through the tile and bed to the background, maintaining any waterproofing. Ensure any slip layer backing (bond breaker) required, is installed.

Joint width minimums:

- 4-6mm interior tiles on concrete (with low moisture content)
- 6-8mm interior tiles on dry timber structure
- 8-10mm exterior tiles on concrete (with low moisture content)
- 10-12mm exterior tiles on dry timber structure
- To match grout width, if equal/larger than above
- Larger to suit joint infill requirements (preformed jointers)

In wall tiling provide joints at; internal vertical corners, as well as joints at, floors, columns/beams, nibs, hobs and similar. Provide joints around sanitary fixtures, around fixtures interrupting the tile surface, at junctions with joinery fixtures, including window and door frames and built in cupboards, and at changes in substrate or background. In large area wall tiling provide vertical joints at not more than 3.6 metres spacing along the length of a wall and horizontal joints at each storey rise in the height of a wall, and over all existing substrate expansion joints.

In large areas of floor tiling provide joints at not more than 4 metres spacing in both directions and 3.6 metres externally. Provide expansion joints, at the perimeter of tile floors, at changes of level or slope, around structural features, changes in substrate, around sanitary fixtures and other fixtures interrupting the tile surface, and over all existing substrate expansion joints.

### 3.13 MOVEMENT AND EXPANSION JOINTS, INSTALL RIGID JOINTS

Metal or plastic joints, refer to SELECTIONS.

Accurately locate as detailed and fix joints in situ, with the bedding, or on top of the bedding, to finish flush with the installed tile and to the tile manufacturer's requirements. Fit and fix rubber/rubber compound inserts to finish flush.

### 3.14 MOVEMENT AND EXPANSION JOINTS, INSTALL COMPOUND/SEALANT FILL

Carefully clean out the joint, insert the backing rod if required and fill with compound/sealant placed by gun. After the correct interval, finish the surface off smooth, and flush on flat areas or concave in corners, to the compound/sealant manufacturer's requirements.

### 3.15 FLOOR SCREEDS

Form screeds to manufacturer's instructions with a deviation from plane of not more than 5mm over 3 metres.

### 3.16 FLOOR FALLS

Form screeds, to manufacturer's instructions, in areas where water is used in significant amounts with a deviation from plane of not more than 5mm over 3 metres. Unless otherwise specified form screeds with the following falls:

Unless stated otherwise provide minimum fall gradients to BRANZ Good Practice Guide - Tiling, clause 6.5 Falls in floors.

1 : 40 minimum	For tiled decks which also acts as a roof
1 : 60 minimum	For paving over ground
1 : 50 minimum	For unenclosed shower bases (to <a href="#">NZBC E3/AS1</a> , 3.3.5)
1 : 60 minimum	For enclosed shower bases
1 : 50 minimum	For shower bases for people with disabilities (to <a href="#">NZS 4121</a> , 10.5.11.3 (b).)
1 : 60 minimum	For commercial kitchens or similar

#### Application - Undertile heating

### 3.17 INSTALL UNDERTILE FLOOR HEATING

Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for electric undertile heating system.

#### Application –tile installation generally

### 3.18 FITTING TILES

Setting out, cutting and fitting of tiles to be as described in AS 3958.1. Ensure cut edges are smooth and installed without jagged or flaked edges. Always use whole tiles or if tiles have to be cut the largest portion of a cut tile possible. Maintain the heights of wall tile work in full courses to the nearest dimension. Within allowed tolerances, ensure corners of tiles are flush and level with corners of adjacent tiles. Keep joint lines, including mitres, straight and of an even width. Fully bed trim units, moulded or shaped pieces and other accessories with an appropriate bedding material. Fix accessories level, plumb and true to the designated projection at detailed locations and heights.

### 3.19 TILE FINISH AND JOINTS

Ensure finished surfaces are flat and true to a tolerance of  $\pm 4\text{mm}$  in 2 metres from the required plane. Clean surplus bedding material from joint spaces and tile surface. Ensure joint widths are consistent throughout the installation, measured at the tile face. Ensure joint alignment is consistent throughout the installation and to a tolerance of  $\pm 4\text{mm}$  in 2 metres from the detailed joint alignment.

### 3.20 ADHESIVE APPLICATION

Apply and float thick or thin bed of modified cement based adhesive to bed thickness to the adhesive manufacturer's requirements. Ensure that the whole of the back of the tile is in good contact with the adhesive with no voids. Remove a tile periodically during installation to ensure correct coverage. Do not fix tiles over skinned adhesive. If required, mix adhesive to manufacturer's instructions.

#### Notched trowel method

- Adhesive application to be as described in AS 3958.1, clause 5.6.2(a). Notched trowel sizes shall be 4.5mm x 4.5mm x 4.5mm (mosaics) 6mm x 6mm x 6mm, 10mm x 10mm x 10mm, 12mm x 12mm x 12mm. Use an appropriately notched trowel to achieve full coverage.

#### Buttering method

- Adhesive application to be as described in AS 3958.1, Clause 5.6.2(c).

#### Tiles in awkward locations

- The buttering method may be required, or fixing might be necessary to achieve full bedding, even though the notched trowel method is used generally.

### 3.21 INSTALL TRIMS

Accurately locate and fully bed edge trim units, dividing strips, moulded or shaped pieces and other accessories with an appropriate bedding material. Fix accessories level, plumb and true to the designated projection at detailed locations and heights.

## **Application - grouting**

### **3.22 APPLY GROUTING**

Grout tiling to AS 3958.1, clause 5.7. Remove spacers. Apply grouting mix to as large an area as can be worked before setting commences. Work with a grouting tool back and forth until joints are completely filled with no adhesive showing. Avoid damage to the surface of tiles, using masking tape where necessary. Finish to depth of cushion and flush with surface to cushion edge and square-edge tiles. Remove surplus grout with a damp sponge and tool the joints to finish the grout uniform in colour, smooth and without voids, pinholes or low spots.

### **3.23 APPLY PROPRIETARY GROUTING**

Remove spacers. Prepare joints, mix and apply grout and finish off to the grout manufacturer's requirements, to finish the grout uniform in colour, smooth and without voids, pinholes or low spots.

## **Application - sealing**

### **3.24 SEALING**

Apply selected sealer to tiling in accordance with manufacturer's requirements.

## **Cleaning**

### **3.25 CLEAN TILES**

Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave them completely clean and without blemish. Finally polish glazed tiles with a clean dry cloth.

## **Completion**

### **3.26 ROUTINE CLEANING**

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused and temporary materials and elements from the site.

### **3.27 DEFECTIVE OR DAMAGED WORK**

Repair damaged or marked tiles. Replace damaged or marked tiles where repair is not possible or will not be acceptable. Leave work to the standard required for following procedures. Ensure tiles are not disturbed by foot traffic for at least 24 hours after laying and after grouting.

### **3.28 PROTECTION**

Provide the following temporary protection of the finished work:  
Provide protection to floor tiles by laying sheet material such as insulating board for the period between completion of laying and completion of the contract works.

## **SELECTIONS**

Substitutions are not permitted to the following, unless stated otherwise.

## **Materials - Tiles**

### **4.1 FLOOR & WALL TILES**

Selected tiles as per Generation Homes Variation List/Signed Contract.  
All works to be carried out under professional standards with edge finishes as selected. With grout colours as agreed. Over manufacturer approved tile adhesive.



# 6511 CARPETING

## 1 GENERAL

This section relates to the supply and installation of carpet laid conventionally (stretched), direct stuck or double bonded (double direct stuck).

It includes:

- carpet underlay
- woven sheet carpet

### Documents

#### 1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

- |                               |   |
|-------------------------------|---|
| <a href="#">NZBC C/AS2</a>    | Protection from fire                                      |
| <a href="#">AS/NZS 2455.1</a> | Textile floor coverings - Installation practice - General |

### Warranties

#### 1.2 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

1 year: For materials

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

#### 1.3 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year: For execution

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

### Requirements

#### 1.4 QUALIFICATIONS

Carpet layers to be experienced, competent trades people familiar with the materials and the techniques specified, and with [AS/NZS 2455.1](#).

#### 1.5 MOISTURE CONTENT OF CONCRETE SLAB

Concrete slab is to be cured and dried to a relative humidity of not exceeding 75% or until the moisture content does not exceed 5.5%, in accordance with [AS/NZS 2455.1](#), refer to section 6192 FLOORING SUBSTRATE PREPARATION.

#### 1.6 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

Where a product or material supplier is named in SELECTIONS, the product/material must be provided by the named supplier. Where more than one named supplier, any one of the named suppliers will be acceptable.

#### 1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

#### 1.8 SAMPLES

Provide samples of each carpet for review of colour, design and quality. Submit on request samples of underlay and accessories offered.



- 1.9 RESERVE MATERIAL  
Supply reserve carpet, all suitably packaged for delivery and storage. Refer to SELECTIONS.

## 2 PRODUCTS

### Materials

- 2.1 UNDERLAY  
To [AS/NZS 2455.1](#) Soft underlay and underlays manufacturer's requirements.  
Refer to SELECTIONS for product selection.

- 2.2 CARPET  
To [AS/NZS 2455.1](#) Textile floor coverings.  
Refer to SELECTIONS for product selection.

### Components

- 2.3 BINDER BARS  
Anodised aluminium section with fluted face.
- 2.4 EDGE GRIPPER  
To [AS/NZS 2270](#).  
Timber/plywood with steel grippers to carpet manufacturer's requirements, constructed of sufficient pins and nails so as to withstand a minimum stretching force of 6580N over a 1220 mm length.

### Accessories

- 2.5 TAPE  
To carpet manufacturer's requirements.

## 3 EXECUTION

### Conditions

- 3.1 DELIVERY  
Take delivery of materials and goods and store on site and protect from damage.  
Accept rolls of carpet and accessories undamaged and dry.
- 3.2 HANDLE AND STORE  
Handle carpet on flat dollies using carpet cradles, with probes on fork- lifts and without sharp bending or folding. Store carpet in flat bins with a maximum height of three rows. Keep dry. Protect from damage.
- 3.3 INSPECTION  
Before starting work inspect the substrate to ensure that it will allow work of the required standard, and that all fittings and fixtures around which the carpet is to be scribed are in place.
- 3.4 PROTECTION  
Protect adjoining work surfaces and finishes during the carpet installation.
- 3.5 TAPE  
Tape for binding and seaming using type and width required by the carpet manufacturer to suit the specified carpet and the standard of performance required.

- 3.6 LAYOUT  
Plan the general layout so that:
- seams run lengthways
  - traffic runs along the seam
  - light from windows is not across the seam
  - pile faces away from the light source.

- 3.7 TEMPERATURE  
Acclimatise carpet to a room temperature above 15°C through the whole of the installation.

## Application - substrate preparation

### 3.8 PREPARING NEW CONCRETE FLOOR

To be level, smooth, clean, cured and dry. Remove loose material and dust. Refer to 6192 FLOORING SUBSTRATE PREPARATION.

## Application - carpet laying

### 3.9 INSTALLATION, UNDERLAY

Installation to underlay manufacturer's requirements. Lay at right angles to the carpet direction.

### 3.10 INSTALLATION, CONVENTIONAL SYSTEM

Tape carpet joints, fix grippers to floor and install underlay and carpet to [AS/NZS 2455.1](#), section 3. Stretch carpet tight in both width and length evenly without bowing, square with walls.

### 3.11 FIXING TRIMS

Fix binder bars, carpet to carpet bars, and trims to all junctions with other materials and to carpet edges, to the carpet manufacturer's requirements. Ensure that junctions with other materials are neatly formed, with bars and trim securely fastened to the substrate, 20mm from each end and at a maximum of 100mm centres.

## Completion

### 3.12 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused and temporary materials and elements from the site.

### 3.13 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Leave work to the standard required for following procedures.

## SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise.

### 4.1 UNDERLAY SELECTIONS

Location	Brand/type/thickness/weight
under all carpeted areas	Refer to Generation Homes Standard Features and Variations Lists for selections.

### 4.2 CARPET SELECTIONS

Location	Brand/type/weight/code	Installation method
refer to architectural drawings for locations	Refer to Generation Homes Standard Features and Variations Lists for selections.	conventional system

### 4.3 BINDER BARS

Brand/Colour: Refer to Generation Homes Standard Features and Variations Lists for selections.

### 4.4 RESERVE MATERIAL

Carpet type: Refer to Generation Homes Standard Features and Variations Lists for selections.

Quantity: Refer to Generation Homes Standard Features and Variations Lists for selections.

# 6700D DULUX PAINTING GENERAL

## 1 GENERAL

This section relates to the general matters related to painting work.

- 6711D DULUX PAINTING EXTERIOR
- 6721D DULUX PAINTING INTERIOR

### 1.1 RELATED WORK

Refer to 6711D DULUX PAINTING EXTERIOR for exterior paint systems.  
Refer to 6721D DULUX PAINTING INTERIOR for interior paint systems.

### 1.2 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

APAS	Australian Paint Approval Scheme
MPNZA	Master Painters New Zealand Association Inc.
VOC	Volatile organic compound

### Documents

### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

<a href="#">AS/NZS 2311</a>	Guide to the painting of buildings
<a href="#">AS/NZS ISO 9001</a>	Quality management systems - Requirements
<a href="#">WorkSafe NZ</a>	<a href="#">Guidelines for the provision of facilities and general safety in the construction industry</a>
<a href="#">WorkSafe NZ</a>	<a href="#">Guidelines for the management of lead-based paint</a>
MPNZA	Specification manual
MPNZA	Health and Safety Programme
<a href="#">Health and Safety at Work Act 2015</a>	

### 1.4 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:

**Dulux** DuSpec specification sheets and product data sheets

Copies of relevant literature are available from **Dulux**

Web: [www.dulux.co.nz/specifier](http://www.dulux.co.nz/specifier) or [www.duspec.co.nz](http://www.duspec.co.nz)

Email: [specifier@dulux.co.nz](mailto:specifier@dulux.co.nz)

Telephone: 0800 800 424

Facsimile: 0800 801 424

### Warranties

### 1.5 WARRANTY

Warrant this work under normal environmental and use conditions against failure of materials and execution.

Product warranty: Products must be applied in accordance with application and preparation procedures according to **Dulux** DuSpec Specifications and Product Data Sheets. Contact a Dulux Trade Representative for project specific warranties.

Refer to the general section 1237WA WARRANTY AGREEMENT for the required format and details of when completed warranty must be submitted.

### Requirements

## 1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Dulux** system, or associated components and products.

If in the applicator's own expertise and judgement an amendment to this specification is required, or where a substrate preparation or required painting system is not covered in this specification, this shall be brought to the attention of the contract administrator and any amendment agreed before work proceeds any further.

## 1.7 QUALIFICATIONS

Painters to be members of MPNZA and experienced competent workers, familiar with the materials and the techniques specified.

The applicator is to have the necessary skill, experience and equipment to undertake the work. The applicator remains responsible for ensuring proper completion of the work.

## 1.8 HEALTH AND SAFETY

Refer to the [Health and Safety at Work Act 2015](#) and WorkSafe NZ: [Guidelines for the provision of facilities and general safety in the construction industry](#). If the elimination or isolation of potential hazards is not possible then minimise hazards in this work on site by using the proper equipment and techniques as required in the MPNZA Health and Safety Programme. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put in place procedures for dealing with emergencies.

Refer to WorkSafe NZ: [Guidelines for the management of lead-based paint](#) for the required procedures and precautions when:

- treating/removing lead-based paint
- burning off paint
- sanding off paint
- using solvent based paint removers.

## 1.9 PRIOR TO WORK COMMENCING

Before any work commences painters should verify with architect or specifying authority, that their paint matches a previously supplied standard card or panel. Differently coloured paints will vary in price, opacity and durability. Dulux normally only specify two coats of colour but with certain colours such as bold, brights and some corporate colours, three coats may be needed.

## 1.10 MATERIAL SAFETY DATA SHEETS

Refer to **Dulux** for the material safety data sheets for every applicable product and comply with the safety procedures listed. Keep sheets on the site. Refer to [www.dulux.co.nz/specifier](http://www.dulux.co.nz/specifier).

### Performance

## 1.11 DULUX INSPECTION

Permit representatives of **Dulux** to inspect the work in progress and take samples of their products from site if requested.

## 1.12 INSPECTION OF THE WORK

Inspection of the whole of the work at each of the stages set out in SELECTIONS may be made. Agree a programme that will facilitate such inspection, including notification when each part and stage of the work is ready for inspection.

## 2 PRODUCTS

### Materials

### 2.1 PAINT TYPES

Use the manufacturer's complete system and only the products specified.

### 2.2 MATERIALS GENERALLY

Use only **Dulux** products which are guaranteed for their consistency and performance under [AS/NZS ISO 9001](#) and APAS approval, prepared, mixed and applied as directed in the **Dulux** Duspac specification sheets, specification manuals and product data sheets.

## 2.3 THINNERS/ADDITIVES

Use only if and when expressly directed by **Dulux** for their particular product in a particular application.

### Accessories

## 2.4 FILLERS

For recommendations on; fillers, stopping, paint strippers, cleaning agents, etching solutions, mould inhibitors, rust inhibitors, knotting and other commodities used for the surface preparation, refer to the manufacturer of the specified preparation system.

## 2.5 GYPSUM FILLER - INTERIOR

Finishing compound to match the plasterboard stopping system and finishing grade gypsum plaster to match the fibrous plaster system. For interior surfaces such as paper faced plasterboard use **Dulux Professional Ultra 5 Surface Prep & Finish** as an aid to achieving a Level 5 finish.

## EXECUTION

### Conditions

### 3.1 EXECUTION

To conform to manufacturer's requirements and those methods, practices and techniques contained in [AS/NZS 2311](#), the MPNZA Specification manual, and WorkSafe NZ: [Guidelines for the provision of facilities and general safety in the construction industry](#).

### 3.2 PREPARE

Prepare surfaces to Dulux's requirements.

### 3.3 COATED SURFACES

Ensure that substrate surfaces are able to achieve the specified finish.

### 3.4 PRE-PRIMED SURFACES

Sand down any breakdown or damage of the primer to a sound surface and immediately re-prime.

### 3.5 BRUSH DOWN

Brush down surfaces immediately before application, to remove dust, dirt and loose material.

### 3.6 COMPATIBILITY

Check that materials are as required by the paint manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other. Use paint from the same manufacturer for each paint system. If not compatible, obtain instructions before proceeding.

### 3.7 TREATED SURFACES

Where surfaces have been treated with preservatives or fire retardants, check with the treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance. If they are not compatible, obtain instructions before proceeding.

### 3.8 ANCILLARY SURFACES

The coatings listed in schedules and elsewhere are of necessity simplified. Coat ancillary exposed surfaces to match similar or adjacent materials or areas, except where a fair-faced natural finish is required or items are completely prefinished. In cases of doubt obtain instructions before proceeding.

### 3.9 LEAD-BASED PAINT, ASBESTOS

Handle cautiously lead-based paint and asbestos, if present, as required in the MPNZA Health and Safety Programme and WorkSafe NZ: [Guidelines for the management of lead-based paint](#).

### 3.10 HARDWARE

Do not paint hinges or hardware that cannot be removed. If items can be removed, carefully remove hardware, fixtures and fittings before commencing work. Set aside where they cannot be damaged or misplaced and replace on completion.

### 3.11 PROTECTION

Use dropsheets, coverings and masking necessary to protect adjoining fixtures, fittings and spaces from paint drops, spots, spray and damage.

#### Preparation

### 3.12 PREPARATION

Refer to the DuSpec specification sheets for detailed substrate preparation notes relating to SELECTIONS contained in:

- 6711D DULUX PAINTING EXTERIOR, 6721D DULUX PAINTING INTERIOR, 6711DE DULUX ENVIRONMENTAL PAINTING EXTERIOR and 6721DE DULUX ENVIRONMENTAL PAINTING INTERIOR.
- [www.duspec.co.nz](http://www.duspec.co.nz).

#### Application - before applying final coatings

### 3.13 OFF-SITE WORK

Carry out off-site preparation and coating under cover, in a suitable environment and with adequate lighting. Store items both before and after coating in a clean, dry area, protected from the weather and mechanical damage, properly stacked and spaced to permit air circulation and to prevent sticking of surfaces.

### 3.14 PRIMING JOINERY

Before priming preservative treated timber ensure that any cut surfaces have been retreated. Liberally coat end grain, allow to soak in and then recoat. Ensure LOSP. treated joinery has dried sufficiently to lose odour.

### 3.15 CONCEALED JOINERY SURFACES

Apply off-site coatings to all surfaces including those which will be concealed when incorporated into the building.

### 3.16 CONCEALED METAL SURFACES

Apply primer to suit the coating system to all metal surfaces which will be concealed when incorporated into the building.

### 3.17 DOORS

Prime or seal and paint all six faces of doors before hanging.

### 3.18 BEAD GLAZING

Before glazing apply the first two coats, or the primer and one undercoat, to rebates of stained, varnished or painted joinery and beads.

### 3.19 PUTTY FRONTING

According to the putty manufacturer's instructions allow putty to set, then prime with an appropriate Dulux primer, either **Dulux** 1 Step Acrylic Primer Sealer & Undercoat or 1 Step Oil Based Primer, Sealer & Undercoat. Fully protect the putty by completing the **Dulux** coating system as soon as it is sufficiently firm.

#### Application - generally

### 3.20 PAINTING GENERALLY

Comply with the **Dulux** DuSpec specification sheets, product data sheets and the additional requirements of this work section.

### 3.21 MIXING

Thoroughly mix paints. Lift any settled pigment and ensure the paint is homogenous.



### 3.22 ENVIRONMENT

Paint exterior surfaces only in favourable weather conditions:

- warm dry days without frost or heavy dews
- avoid painting in direct sunlight any surfaces that absorb heat excessively
- as far as possible apply paint in the temperature range 15°C to 25°C
- do not paint if temperatures fall outside the range of 10°C and 35°C unless paints with the necessary temperature tolerance have been specified
- do not apply solvent borne paint if moisture is present on the surface

### 3.23 SEQUENCE OF OPERATIONS

Painting work to generally the following sequence:

- Back-painting and pre-installation painting, then post-installation exposed-face painting
- Complete surface preparation before commencing painting
- Apply primers, sealers, stains, undercoats, paints and clear coatings in the sequences laid down by **Dulux**
- Allow the full drying times between coats laid down by **Dulux**
- Do not expose primers, sealers and undercoats beyond a few days before applying the next coat
- Finish broad areas before painting trim
- Ensure batch numbers of tins are matched for whole areas
- Internally paint ceilings before walls and walls before joinery, trim and other items.

### 3.24 PAINT APPLICATIONS

Select brush, roller, or pad and apply paint to the requirements of **Dulux** and to obtain a smooth even coating of correct thickness, uniform gloss and colour.

### 3.25 DRYING TIME

Before handling or applying the next coat of paint, give each coat the full drying time as required by the paint manufacturer. Ensure that surfaces are dry and that condensation does not occur before the paint reaches surface-dry condition.

### 3.26 LIGHTLY SAND

Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. Remove dust immediately before applying the next coat.

### 3.27 DEFECTIVE WORK

Correct defective work immediately and re-coat as required, following precisely the **Dulux** paint system specified.

### 3.28 EACH COAT

Each coat of paint and the completed paint system to have the following qualities and properties:

- uniform finish, colour, texture, sheen and hiding power
- the specified number of coats applied
- no blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, brush marks, ladder marks and blistering
- proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application

Note that some colours may require more than two top coats and/or the use of a tinted undercoat.

This is particularly relevant when using bright or high chromatic coloured paints (e.g. colours derived off True Red, Bold Yellow, Orange, and Extra Bright base) or when painting over existing dark colours.

#### Completion

### 3.29 CLEAN

Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at completion of the building works. Clean glass inside and out to a shining finish.

### 3.30 CLEAN EQUIPMENT

Use **Dulux** EnviroWash system for the cleaning of water-based paint and plasters from brushes, rollers, plastering or spray equipment to separate the solids from the water component for safe disposal. Phone 0800 800 424 for information regarding this system.



3.31 LEAVE

Leave the whole of this work uniform in gloss and colour, of correct thickness, free from painting defects, clean and unmarked and to the standard required by following procedures.

3.32 REMOVE

Remove dropsheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.

3.33 REPLACE HARDWARE

Replace hardware without damage to it or the adjoining surface. Leave properly fitted and in working order.

**SELECTIONS**

Substitutions are not permitted to the following, unless stated otherwise.

**SELECTIONS**

Refer to 6711D DULUX PAINTING EXTERIOR and 6721D DULUX PAINTING INTERIOR for selections.

Refer to 6711DE DULUX ENVIRONMENTAL PAINTING EXTERIOR and 6721DE DULUX ENVIRONMENTAL PAINTING INTERIOR for selections.

# 6711D DULUX PAINTING EXTERIOR

## 1 GENERAL

This section relates to the surface preparation and painting of new and existing exterior substrates using **Dulux** exterior paint systems.

### RELATED WORK

Refer to 6700D DULUX PAINTING GENERAL for general matters related to painting work.

### PRODUCTS

#### PRODUCTS

Refer to 6700D DULUX PAINTING GENERAL for product clauses.

### EXECUTION

#### EXECUTION

Refer to 6700D DULUX PAINTING GENERAL for execution clauses.

### SELECTIONS

Refer to **Generation Homes Standard Features and Variations Lists** for selections.

For further details on selections go to [www.dulux.co.nz/specifier](http://www.dulux.co.nz/specifier).

Substitutions are not permitted to the following, unless stated otherwise.

Refer to DULUX DuSpec for up to date VOC levels as these are subject to change.

#### **Masonry and cementitious substrates - new walls**

##### EXTERIOR MASONRY NEW -- WALLS - WATER REPELLENT SYSTEM

Gloss level:	Matt
Coating type:	Water based masonry sealer
System:	Performance Solutions (supplied by Dulux)
1st coat:	MicroSeal

#### **Fibre cement sheet substrates - new cladding**

##### EXTERIOR FIBRE CEMENT SHEET NEW - CLADDING - PAINT

Gloss level:	Semi Gloss
Coating type:	Water based
System:	<a href="#">DuSpec NZ_SD09169</a>
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer Undercoat @ 14 m²/L
2nd coat:	DULUX Weathershield X10 @ 16 m²/L
3rd coat:	DULUX Weathershield X10 @ 16 m²/L

#### **Timber substrates - new cladding**

##### EXTERIOR TIMBER NEW - CLADDING - PAINT

Gloss level:	Semi Gloss
Coating type:	Water based
System:	<a href="#">DuSpec NZ_SD09216</a>
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer Undercoat @ 14m²/L
2nd coat:	DULUX Weathershield X10 @ 16 m²/L
3rd coat:	DULUX Weathershield X10 @ 16 m²/L

#### **Timber substrates - new fences, pergolas, etc**

#### 4.4 EXTERIOR TIMBER NEW - FENCES AND PERGOLAS - PAINT

Gloss level: Low Sheen  
Coating type: Water based  
System: [DuSpec NZ\\_SD09236](#)  
Preparation: CABOT'S Deck Clean @ 12-16 m<sup>2</sup>/L  
1st coat: DULUX Timbacryl @ 16.4 m<sup>2</sup>/L  
2nd coat: DULUX Timbacryl @ 16.4 m<sup>2</sup>/L  
3rd coat: DULUX Timbacryl @ 16.4 m<sup>2</sup>/L

#### 4.5 EXTERIOR TIMBER NEW - FENCES AND PERGOLAS - SOLVENT BASED STAIN

Gloss level: Matt  
Coating type: Solvent based stain  
System: [DuSpec NZ\\_SW09226](#)  
Preparation: CABOT'S Deck Clean @ 12-16 m<sup>2</sup>/L  
1st coat: CABOT'S Deck & Exterior Stain Oil Based @ 10 m<sup>2</sup>/L  
2nd coat: CABOT'S Deck & Exterior Stain Oil Based @ 10 m<sup>2</sup>/L  
3rd coat: CABOT'S Deck & Exterior Stain Oil Based @ 10 m<sup>2</sup>/L (optional)

#### 4.6 EXTERIOR TIMBER NEW - TRIM, DOORS AND FRAMES - SOLVENT BASED ENAMEL

Gloss level: Gloss  
Coating type: Solvent based enamel  
System: [DuSpec NZ\\_SD09238](#)  
1st coat:: DULUX 1 Step Prep Acrylic Primer Sealer Undercoat @ 14 m<sup>2</sup>/L  
2nd coat: DULUX Super Enamel @ 16.1 m<sup>2</sup>/L  
3rd coat: DULUX Super Enamel @ 16.1 m<sup>2</sup>/L

# 6721D DULUX PAINTING INTERIOR

## 1 GENERAL

This section relates to the surface preparation and painting of new and existing interior substrates using **Dulux** interior paint systems.

### RELATED WORK

Refer to 6700D DULUX PAINTING GENERAL for general matters related to painting work.

### PRODUCTS

#### PRODUCTS

Refer to 6700D DULUX PAINTING GENERAL for product clauses.

### EXECUTION

#### EXECUTION

Refer to 6700 PAINTING GENERAL for execution clauses.

### SELECTIONS

**Refer to Generation Homes Standard Features and Variations Lists for selections.**

For further details on selections go to [www.dulux.co.nz/specifier](http://www.dulux.co.nz/specifier).

Substitutions are not permitted to the following, unless stated otherwise.

Refer to DULUX DuSpec for up to date VOC levels as these are subject to change.

#### **Paperfaced plasterboard substrates - new ceilings**

##### INTERIOR PAPERFACED PLASTERBOARD NEW - CEILINGS - PAINT

Gloss level:	Flat
Coating type:	Water based
System:	<a href="#">DuSpec NZ_SD09005</a>
Fire rating:	Group Number 1-S, Report Number 5054, <a href="#">NZBC C/VM2 A1.5</a>
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer & Undercoat @ 14 m²/L
2nd coat:	DULUX Professional Ceiling Flat @ 12.8 m²/L
3rd coat:	DULUX Professional Ceiling Flat @ 12.8 m²/L

##### INTERIOR PAPERFACED PLASTERBOARD NEW - CEILINGS - WET AREAS - PAINT

Gloss level:	Flat
Coating type:	Water based
System:	<a href="#">DuSpec NZ_SD12409</a>
Fire rating:	Group Number 1-S, Report Number 5054, <a href="#">NZBC C/VM2 A1.5</a>
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer & Undercoat @ 14 m²/L
2nd coat:	DULUX Ceiling White Plus Kitchen & Bathroom @ 12 m²/L
3rd coat:	DULUX Ceiling White Plus Kitchen & Bathroom @ 12 m²/L

#### **Paperfaced plasterboard substrates - new walls**

##### INTERIOR PAPERFACED PLASTERBOARD NEW - WALLS - PAINT

Gloss level:	Low Sheen
Coating type:	Water based
System:	<a href="#">DuSpec NZ_SD09023</a>
Fire rating:	Group Number 1-S, Report Number 5054, <a href="#">NZBC C/VM2 A1.5</a>
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer & Undercoat @ 14 m²/L
2nd coat:	DULUX Wash & Wear 101 @ 16 m²/L
3rd coat:	DULUX Wash & Wear 101 @ 16 m²/L

#### 4.4 INTERIOR PAPERFACED PLASTERBOARD NEW - WALLS - WET AREAS - PAINT

Gloss level: Low Sheen  
Coating type: Water based  
System: [DuSpec NZ\\_SD09011](#)  
Fire rating: Group Number 1-S, Report Number 5054, [NZBC C/VM2 A1.5](#)  
1st coat: DULUX 1 Step Prep Acrylic Primer Sealer & Undercoat @ 14 m<sup>2</sup>/L  
2nd coat: DULUX Wash & Wear Plus Kitchen & Bathroom @ 16 m<sup>2</sup>/L  
3rd coat: DULUX Wash & Wear Plus Kitchen & Bathroom @ 16 m<sup>2</sup>/L

#### Fibre cement sheet substrates - new walls

#### 4.5 INTERIOR FIBRE CEMENT SHEET NEW - WALLS - WET AREAS - PAINT

Gloss level: Low Sheen  
Coating type: Water based  
System: [DuSpec NZ\\_SD08966](#)  
Fire rating: Group Number 1-S, Report Number 5054, [NZBC C/VM2 A1.5](#)  
1st coat: DULUX 1 Step Prep Acrylic Primer Sealer & Undercoat @ 14 m<sup>2</sup>/L  
2nd coat: DULUX Wash & Wear Plus Kitchen & Bathroom @ 16 m<sup>2</sup>/L  
3rd coat: DULUX Wash & Wear Plus Kitchen & Bathroom @ 16 m<sup>2</sup>/L

#### Timber substrates - new trim, doors, frames, etc - paint

#### 4.6 INTERIOR TIMBER NEW - TRIM, DOORS AND FRAMES - SOLVENT BASED PAINT

Gloss level: Semi Gloss  
Coating type: Solvent based enamel  
System: [DuSpec NZ\\_SD08886](#)  
Fire rating: Group Number 3, Report Number 5352, [NZBC C/VM2 A1.5](#)  
1st coat: DULUX 1 Step Oil Based Primer Sealer & Undercoat @ 1.6 m<sup>2</sup>/L  
2nd coat: DULUX Super Enamel @ 16 m<sup>2</sup>/L  
3rd coat: DULUX Super Enamel @ 16 m<sup>2</sup>/L

# 6811 WATERPROOFING AND ACOUSTIC UNDERLAY SYSTEM

## 1 GENERAL

This section relates to a waterproofing membrane and an acoustic underlay as a system:

- applied to floor and wall surfaces to provide a waterproof and noise reducing barrier
- under internal wet area wall and floor finishes

### 1.1 RELATED WORK

Refer to the appropriate drainage section for water outlets.  
Refer to 6221 TILING SYSTEMS for tiles

Refer to 8991 APPENDIX B for product Technical Data Sheet and Branz Appraisals.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

IIC impact insulation class

### Documents

#### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
NZBC E3/AS1	Internal moisture
NZBC G6/VM1	Airborne and impact sound
NZS 4121	Design for access and mobility - Buildings and associated facilities
BRANZ	Good practice guide: Tiling

#### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:  
Tile Installation Systems - CTA Aqua Block Manual June 2015

Manufacturer/supplier contact details

Company: Sika (NZ) Limited

Web: [www.sika.co.nz](http://www.sika.co.nz)

Telephone: 0800 745 269

### Warranties

#### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

#### 1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

### Requirements

## 1.7 QUALIFICATIONS

Applicators to be experienced, competent trades people familiar with the materials and techniques specified.

## 1.8 MAINTENANCE CONTRACT PROPOSAL

Provide a proposed contract for the certified installer to inspect annually to ensure weather tightness and durability of waterproofing System.

### Compliance information

## 1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Applicators approval certificate from the manufacturer / importer / distributor
- Manufacturer's, importer's or distributors warranty
- Installer's / applicator's warranty
- Producer Statement - Construction from the applicator / installer
- Producer Statement - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

### Performance

## 1.10 QUALITY ASSURANCE

Maintain quality necessary to assure that work is performed in accordance with this specification and the qualifying requirements of the Manufacturer.

## PRODUCTS

### Materials

## 2.1 WATERPROOFING UNDERLAY

Liquid applied or sheet waterproofing membrane. Refer to SELECTIONS.

### Accessories

## 2.2 ADHESIVE

Standard acrylic adhesive to suit the material and substrate and to the membrane manufacturer's requirements.

## 2.3 PRIMER AND SEALER

To the adhesive manufacturer's requirements for the particular substrate.

## 2.4 DETAIL TAPE

To the adhesive manufacturer's requirements tape used for detailing internal corners, drains, posts and penetrations. Installed prior to installation of the membrane.

## 2.5 MASTIC

To the mastic manufacturer's requirements, a rubberised adhesive, semi liquid membrane used to seal at membrane terminations and at end laps; for seam sealing and for membrane repairs.

## 2.6 TILE ADHESIVE

Refer to the tiling section(s) for compatible tile adhesive.

## EXECUTION

### Conditions

## 3.1 GENERALLY

Comply with the requirements and instructions of the membrane Manufacturer.

## 3.2 DELIVERY AND STORAGE

Store all materials in a dry place at temperatures between 10° C and 32° C. Do not store in direct sunlight. Confirm the shelf life of from date of manufacturer and adhere to this. Materials must not be removed from the packaging until ready to use.



### 3.3 CHECK SUBSTRATE

Ensure that the substrate is in a suitable condition to allow work of the required standard and will comply with the requirements of the [NZBC E2/AS1](#) or [NZBC E3/AS1](#) for the relevant substrate and membrane requirements.

Ensure that the substrate construction is well braced against movement and deflection and structurally sound. Ensure that the substrate falls to the rainwater/water outlets and water must not pond. Ensure all surfaces are clean, dry and free from dust and dirt, oils or grease with no projections of sharp materials. Complete any remedial work identified before commencing any work.

### 3.4 CURING OF NEW CONCRETE

Allow concrete to fully cure before applying membranes. Maximum moisture content of concrete 75%.

### 3.5 SURFACE PREPARATION - GENERAL

Ensure surface to receive the membrane is clean, dry and free of any foreign matter that may adversely affect the adhesion of the membrane. Do not use the products in the following situations:

- Areas subject to negative hydrostatic pressure or rising damp
- When the substrate is wet
- Where the membranewill be left exposed to the weather or UV for a prolonged period of time as specified by the manufacturer.
- Where the surface temperature is below 10°C or above 35°C

### 3.6 FILM THICKNESS

Ensure that the dry film thickness specified in the membrane manufacturer's installation documents is achieved. Film thickness is an important factor to the waterproofing performance of the membrane and its long term durability.

### 3.7 SAFETY PRECAUTIONS

Take extra precautions when applying the membrane and associated products, in areas where there is insufficient ventilation. Do not breathe fumes. Avoid contact with skin, wear eye /face protection.

#### **Substrate**

### 3.8 SUBSTRATE - CONCRETE

Concrete must have a smooth steel trowel finish and be allowed to cure for a minimum of 28 days prior to installation of membrane. Any imperfections in the concrete must be removed and any voids filled with cementitious filler before installing the membrane. The relative humidity of the concrete surface must be 75% RH or less.

### 3.9 SUBSTRATE - FIBRE CEMENT SHEETING

Ensure fibre cement sheeting is wet area grade and is suitable for installing the membrane (refer to Sheet manufacturers details for correct fixing, thicknesses and sheet layout).

### 3.10 SUBSTRATE - PLASTERBOARD

Plasterboard must be wet area plasterboard, manufactured and installed to manufacturer's instructions.

### 3.11 FALLS FLOOR

All floors must have adequate falls either built into the substrate or achieved with a sand/cement screed prior to the installation of the membrane.

Unless stated otherwise minimum fall gradients to wastes to be provided to BRANZ Good Practice Guide - Tiling, clause 6.5 Falls in floors.

- |                |  |
|----------------|--|
| 1 : 50 minimum | unenclosed shower bases (to <a href="#">NZBC E3/AS1</a> , 3.3.5)                         |
| 1 : 60 minimum | enclosed shower bases  |
| 1 : 50 minimum | shower bases for people with disabilities (to <a href="#">NZS 4121</a> , 10.5.11.3 (b).) |
| 1 : 60 minimum | commercial kitchens or similar   |
| 1 : 40 minimum | For tiled decks which also act as a roof   |

### 3.12 WASTE/DOWN PIPE OUTLETS

Drainage and waste outlets to be flange type. Ensure outlet pipes are fixed securely and the top surface set flush with the surface receiving the membrane application, to the membrane manufactures installation instructions.

Where falls are required ensure that the substrate falls to the outlets and water will not pond.  
NOTE: Fitting the outlet is the responsibility of the contractor or plumber.

### 3.13 TILES

Tiles to be direct bonded to the membrane.

#### **Installation - waterproof membrane - general**

### 3.14 PRIMING - INTERIOR

Apply water based primer for interior applications. Shake the bottle well before tipping into a paint tray. Apply primer with either a brush or roller. Allow primer to cure fully before installing the detail tape or membrane. Do not install membrane over wet primer. Clean up with water.

### 3.15 PREPARATION

Prime all surfaces with selected primer and allow to cure.

### 3.16 DETAILING - CORNERS (FLOOR, WALL)

Cut required lengths of detail tape. Fold 150mm wide tape in half along its length with the backing paper to the outside. Remove backing paper from one half of the tape and apply along the floor or along one side of the corner and tightly into the junction. Remove remaining backing paper and adhere remaining half of the tape to the other side of the corner.

Ensure the detail tape is pressed tight into the corner, being sure to keep voids from occurring behind the detail tape. When joining detail tape allow for a 100mm overlap. Do not remove the protective plastic film from face of the detail tape until ready to lay the membrane.

### 3.17 INSTALL MEMBRANE

Install the membrane to manufacturer's requirements.

### 3.18 OVER JOINING STRIP

Position over the joining strip to manufacturers requirements.

### 3.19 MEMBRANE TO DRAINAGE/WASTE OUTLETS

Install the membrane over the installed detail tape to manufacturer's instructions. Star cut the membrane and fold down into the drain. Trowel smooth a bead of selected mastic around the inner lip of the drain at the termination of the membrane.

#### **Installation - waterproof membrane - internal detailing**

### 3.20 WALLS, INTERNAL CORNERS, TRANSITIONS

Apply the membrane 1800mm up the walls or to a height of 300mm above the shower rose if higher. For unenclosed showers the membrane must extend a minimum of 1500mm out from the shower rose.

A trowelled bead of selected mastic should be placed at all membrane terminations, on internal corner seams and at vertical to horizontal transitions. End joints must be lapped a minimum of 150mm and sealed using selected mastic.

NOTE: For maximum performance, 100% contact of the membrane to the primed surface must be achieved by lightly rolling the membrane.

### 3.21 COVER ENTIRE FLOOR

Cover the entire floor in the wet area with the membrane.

### 3.22 BOND BREAKER TAPE/SEALANT

Silicones must not come into direct contact with the membrane. A bond breaker tape or bond breaker sealant must be in place under all silicone joints as per Tiling Best Practice Guidelines.

### 3.23 UNDERFLOOR HEATING

Co-ordinate with underfloor heating installation.

### 3.24 UPSTANDS, INTERNAL CORNERS, TRANSITIONS

Ensure a trowelled bead of mastic is placed at all membrane terminations, on internal corner seams and at vertical to horizontal transitions.  
End joints must be lapped a minimum of 150mm and sealed using mastic.

#### Finishing

### 3.25 REPAIRS - TRAPPED AIR

When air becomes trapped under the membrane during installation, puncture with a sharp instrument and press flat expelling all air. Prime the area at least 150mm beyond the damaged area and allow to dry. Apply a patch of membrane as big as the primed area. Press on the patch and roll firmly. Trowel smooth a bead of mastic around the joining edge.

#### Completion

### 3.26 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused materials and elements from the site.

### 3.27 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Leave work to the standard required for following procedures.

### 3.28 PROTECTION

It is the responsibility of the main building contractor to ensure all sub-trades likely to be working in the vicinity of the membrane are aware that a waterproofing membrane has been installed and all care must be taken to protect the membrane from damage.  
The tiler must lay tiles in accordance with best practice guidelines.

#### Commissioning

### 3.29 WATERPROOF TESTING

Conduct a flood test before tiling commences, to ensure membrane is watertight and suitable for use as a waterproofing membrane for wet areas. Meet the BCA compliance requirements for the test and documentation of the test.

## SELECTIONS

### 4.1 WATERPROOFING UNDERLAY

Location:	As indicated on the drawings
Brand/type:	<b>Aqua Blok™ SBR</b>
Substrate:	Concrete floor and/or wall linings
Primer:	Aqua Blok Moisture Seal

# 7123 HOT & COLD WATER SYSTEM

## 1 GENERAL

This section relates to piped potable water supply systems from the network utility supply authority water main to designated points and appliances, the installation of hot water heating appliances, distributing piped hot water to other appliances, and the installation of valves.

### 1.1 RELATED WORK

Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures and tapware selections.

Refer to 7212 GAS SYSTEM LPG CYLINDERS for gas supply from LPG twin cylinder systems.

### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
NZBC C/AS1-AS2	Protection from fire
NZBC G4/AS1	Ventilation
NZBC G12/VM1	Water supplies
NZBC G12/AS1	Water supplies
NZBC H1/AS1	Energy Efficiency
AS/NZS 2492	Cross Linked Polyethylene (PE-X) pipe for pressure applications
AS/NZS 2537.2	Mechanical joining fittings for use with crosslinked Polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations - Crosslinked Polyethylene (PE-X) - Fittings
AS/NZS 2642.1	Polybutylene pipe systems - Polybutylene (PB) pipe extrusion compounds
AS/NZS 2642.2	Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications
AS/NZS 2642.3	Polybutylene pipe fittings - Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications
AS/NZS 2845.1	Water supply - Backflow prevention devices - Materials, design and performance requirements
AS 2845.3	Water supply - Backflow prevention devices - Field testing and maintenance
AS/NZS 3500.1	Plumbing and drainage - Water services
AS/NZS 3500.4	Plumbing and drainage - Heated water services
NZS 3501	Specification for copper tubes for water, gas and sanitation
AS/NZS 4130:2009	Polyethylene (PE) pipes for pressure applications
NZS 4305	Energy efficiency domestic type hot water systems
NZS 4602	Low pressure copper thermal storage electric water heaters
NZS 4607	Installation of thermal storage electric water heaters: valve vented Systems
NZS 4617	Tempering (3-port mixing) valves
AS/NZS 5601.1	Gas installations - general installations
DIN 8077	Polypropylene (PP) Pipes - PP-H, PP-B, PP-R, PP-RCT - Dimensions
DIN 8078	Polypropylene (PP) Pipes - PP-H, PP-B, PP-R, PP-RCT - General quality requirements and testing.
Gas (Safety and Measurement) Regulations 2010	
Plumbers, Gasfitters and Drainlayers Act 2006	
NZ Backflow Testing Standard:	NZ Backflow Testing Standard 2011, Field testing of backflow prevention devices and verification of air gaps

### Requirements

### 1.3 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying plumber under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

### 1.4 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

#### Warranties

### 1.5 WARRANTY

Provide warranty for:

2 years: For the supply and installation of the plumbing system and fixtures

- Provide the warranty in the standard form in the general section 1237WA WARRANTY AGREEMENT.
- Commence the warranty from the date of practical completion of the contract works.

#### Performance

### 1.6 TESTING - TO NZBC G12/AS1

Test to [NZBC G12/AS1](#), 7.5, **Watertightness**, for hot and cold water.

- Test to a pressure of 1500 kpa for period not less than 15 minutes.

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Slowly fill service pipes with water to exclude air. Test and ensure there is no measurable loss of pressure for the minimum period. Slowly fill distribution pipes with water to exclude air. Ensure that with draw-off taps closed the system must remain water-tight.

### 1.7 GAS CERTIFICATE OF COMPLIANCE

Provide a Certificate of Compliance (CoC) as required by the Gas (Safety and Measurement) Regulations 2010 to the owner, and when required provide a copy to the energy supplier before connection.

### 1.8 GAS SAFETY CERTIFICATION

Provide a Gas Safety Certificate (GSC) as required by the Gas (Safety and Measurement) Regulations 2010 and provide a copy to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.

### 1.9 GAS APPLIANCE COMPLIANCE

Supplier to provide a Supplier Declaration of Compliance (SDoC) in accordance with the requirements of the Gas (Safety and Measurement) Regulations 2010.

## 2 PRODUCTS

#### Materials

### 2.1 POLYBUTYLENE PIPE

Polybutylene tubing to [AS/NZS 2642.1](#), [AS/NZS 2642.2](#) and [AS/NZS 2642.3](#) complete with fittings and accessories brand-matched with durability to [NZBC B2/AS1](#), table 1 and [NZBC G12/AS1](#), table 1. Protect from sunlight.

### 2.2 TEMPERING VALVE

Tempering valve to [NZS 4617](#) to [NZBC G12/AS1](#).

#### Materials - Hot water heating appliances

### 2.3 GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE

Continuous flow unit with an integral gas burner and flue to [NZS 4305](#).

#### Components

## 2.4 INSULATION

Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements and to [NZBC H1/AS1](#).

## 2.5 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

# 3 EXECUTION

## 3.1 EXECUTION GENERALLY

Generally carry out the whole of this work and tests to [NZBC G12/VM1](#) or [NZBC G12/AS1](#).

## 3.2 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress.

Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.

## 3.3 CORE HOLES AND SLEEVES

Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.

## 3.4 CONCEAL

Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

## 3.5 CORROSION

Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

## 3.6 THERMAL MOVEMENT

Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

## 3.7 PIPE SIZE

Flow rates to each outlet to be no less than those given in [NZBC G12/VM1](#) or [NZBC G12/AS1](#), table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in [NZBC G12/AS1](#), table 4, Tempering valve and nominal pipe diameters.

## 3.8 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

## 3.9 EXCAVATE

Excavate for the water main to a firm, even trench base in straight runs. Allow to backfill.

### Application - Jointing

## 3.10 JOINTING POLYBUTYLENE PIPE

Aluminium clamped, seal ring compression or push fit "O" ring seal jointing to pipe system manufacturer's requirements.

### Application - Pipework installation



### 3.11 POTABLE WATER SUPPLY PIPEWORK INSTALLATION

From connection point, run pipes complete with all fittings, support and fixing, joins and install to manufacturers specifications. Size the pipes and branches in straight runs to deliver the acceptable flow rate to [NZBC G12/VM1](#) or [NZBC G12/AS1](#), table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures and size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Pipework support spacing to be firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with machine made 3 diameter bends, complete with necessary valves and fittings. Conceal pipework and pressure test before the wall linings are fixed.

### 3.12 HOT WATER PIPEWORK

Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to [NZBC G12/VM1](#) or [NZBC G12/AS1](#), table 7 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, and preformed 3 diameter bends, complete with all necessary valves and fittings.

Lag all pipes with rigid insulation to the manufacturer's requirements and [NZBC G12/VM1](#) or [NZBC G12/AS1](#).

### 3.13 EQUIPOTENTIAL BONDING

Earth metallic water supply pipe and metallic sanitary fixtures to [NZBC G12/AS1](#), 9.0.

### 3.14 IN-LINE FILTER

Install an in-line filter immediately adjacent to the main isolating valve at the point of entry to the building, in an accessible position to allow for easy cleaning.

### 3.15 PENETRATIONS

Provide and fit collars and escutcheon plates to match the pipework at all penetrations through constructions.

#### **Application - Hot water systems**

### 3.16 SEISMIC RESTRAINTS - GAS WATER HEATING APPLIANCES

Gas appliances to be restrained to manufacturer's requirements, [AS/NZS 5601.1](#) and [NZBC C/AS1-AS2](#), 7.2 Gas-burning Appliances.

### 3.17 INSTALLING HOT WATER PIPE INSULATION

Insulate all hot water pipes to [NZBC H1/AS1](#) Energy Efficiency, [AS/NZS 3500.4](#), 8.2 Thermal Insulation, and to the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of steel studs.

### 3.18 INSTALL GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE

Install complete with the necessary fittings to the manufacturer's requirements and in accordance with [NZBC G12/AS1](#), 6. 11, Water heater installation. Install flue in accordance with the manufacturer's details and requirements and, [AS/NZS 5601.1](#) (for internal or external appliances) or [NZBC G4/AS1](#) (internal appliances). Refer to section 7221 GAS APPLIANCES for installation of gas appliances.

### 3.19 INSTALL TEMPERING VALVE

Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install copper pipework for 1 metre minimum downstream of tempering valve prior to connection of non-metallic pipework.

#### **Installation - valves**

### 3.20 INSTALLING APPLIANCE ISOLATING VALVES - CONCEALED

Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.

#### **Completion**

### 3.21 LABEL

Label all pipework with permanent adhesive markers at 3 metre minimum intervals.



- 3.22 CLEAN IN-LINE FILTER  
Clean all in-line filters on completion of works.
- 3.23 REPLACE  
Replace damaged or marked elements.
- 3.24 LEAVE  
Leave work to the standard required by following procedures.
- 3.25 REMOVE  
Remove debris, unused materials and elements from the site.

## SELECTIONS

### Pipework

- 4.1 POLYBUTYLENE PIPE  
Manufacturer/brand: to be selected by plumber

### Hot water systems

- 4.2 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

Brand: Rheem  
Model size: 250 Litre

- 4.3 GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE

Brand: Rheem  
Model size: Rheem 24/7  
Remote controller: **Refer to Generation Homes Standard Features and Variations Lists for selection.**  
Gas type: LPG

### Valves and accessories

- 4.4 APPLIANCE ISOLATING VALVES - CONCEALED

Appliance: dishwashers, washing machines and refrigerators with icemakers.

- 4.5 APPLIANCE ISOLATING VALVES - EXPOSED

Appliance: Washing machine  
Brand/type: Refer to tapware selections

- 4.6 TEMPERING VALVE

Location: to be determined by plumber  
Brand/type: to be determined by plumber

# 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES

## 1 GENERAL

This section relates to the supply and installation of sanitary fixtures, tapware and sanitary accessories.

### Documents

#### 1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E3/AS1	Internal moisture
NZBC F2/AS1	Hazardous building materials
NZBC G1/AS1	Personal hygiene
NZBC G12/VM1	Water supplies
NZBC G12/AS1	Water supplies
NZBC G13/AS1	Foul water
NZBC G13/AS3	Plumbing and drainage
AS/NZS 1730	Washbasins
AS/NZS 2023	Baths for ablutionary purposes
AS/NZS 3500.1	Plumbing and drainage - water services
AS/NZS 3500.2	Plumbing and drainage - sanitary plumbing and drainage
AS/NZS 3662	Performance of showers for bathing
NZS 4223.3	Glazing in buildings - Human impact safety requirements
Plumbers, Gasfitters and Drainlayers Act 2006	

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

### Requirements

#### 1.2 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a Certifying Plumber under the Plumbers, Gasfitters and Drainlayers Act 2006.

#### 1.3 SAMPLES

Submit samples on request of nominated tapware, along with the relevant manufacturers' technical literature for review.

#### 1.4 SUPPLIER

A specialist in the supply of tapware, and employing experienced architectural representatives available to assist during the course of the installation.

## 2 PRODUCTS

### 2.1 SANITARY FIXTURES

Refer to **Generation Homes Standard Features and Variations Lists** for product selection.

### 2.2 TAPWARE

Refer to **Generation Homes Standard Features and Variations Lists** for product selection.

### 2.3 SANITARY APPLIANCES

Refer to **Generation Homes Standard Features and Variations Lists** for product selection.

### 2.4 SANITARY ACCESSORIES

Refer to **Generation Homes Standard Features and Variations Lists** for product selection.

## 2.5 ELECTRICAL SANITARY ACCESSORIES

Refer to **Generation Homes Standard Features and Variations Lists** for product selection.

## 3 EXECUTION

### Conditions - sanitary fixtures

#### 3.1 DELIVERY

Only deliver to the site fixtures or fittings that can be immediately unloaded into suitable storage or be placed for direct installation.

#### 3.2 STORAGE AND HANDLING

Take delivery of and store components complete with protective casings and coverings in areas that are enclosed, clean and dry and where no work is being done. Remove protection only to the extent that will allow installation.

#### 3.3 QUALITY STANDARDS INCLUDING NZBC G13/AS1

Installation work to comply with [NZBC G1/AS1](#), [NZBC G12/VM1](#), [NZBC G12/AS1](#), [NZBC G13/AS1](#) and the fixture manufacturer's requirements.

#### 3.4 SUBSTRATE

Ensure substrate and fixings will allow work of the specified standard.

#### 3.5 CO-ORDINATION

Do not proceed if the points of supply and drainage services do not match the points of the fixtures without force or distortion.

#### 3.6 INSTALLATION REQUIREMENTS INCLUDING NZBC G13/AS1

Install to [NZBC G1/AS1](#), [NZBC G12/VM1](#), [NZBC G12/AS1](#), [NZBC G13/AS1](#), [NZBC E3/AS1](#) and to the fixture manufacturer's installation requirements for each component. Carry out preparatory and assembly work, including connections to supply and drainage services and the application of slurries and sealants in sequence.

Seal between all sanitary fixtures and wall linings, fixtures and the tops they are in, the tops and wall linings, to [NZBC E3/AS1](#), 3.2.2. Fixtures include baths, basins, tubs or sinks, Tops include, vanities, bath surrounds, sink benches, etc, and there upstands.

#### 3.7 PROVIDE SUPPORT

Confirm fixing points needed for each unit and provide solid blocking at each fixing bracket location.

### Conditions - tapware

#### 3.8 RETAIN

Retain tapware in the manufacturer's original packaging and ensure that units are complete with fixings and installation instructions. Label each unit separately with its fitting name and space number.

#### 3.9 STORE

Store tapware packages in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.

### Conditions - sanitary accessories

#### 3.10 RETAIN

Retain fixtures, fittings and hardware in the manufacturer's original packaging and ensure that units are complete with associated fixings and installation instructions. Label each unit separately to match the submitted and approved schedule.

#### 3.11 PACKAGE

Package fixtures, fittings and hardware units required in clear plastic and label each to match the drawings and the submitted schedule. Place packages in cartons selected for 'level', 'location', and/or 'sector' and label the packages and the cartons similarly.

### 3.12 STORE

Store items in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.

### 3.13 INSPECTION

Before starting the installation of proprietary items, check relevant spaces and wall and floor finishes for any condition that would not allow the proper installation of any unit. Do not proceed until such conditions have been remedied.

#### Installation - sanitary fixtures

#### 3 14 INSTALLING TOILET PAN

Carry out preparatory and assembly work, including connections to supply and drainage services and the application of slurries/bedding and sealants in sequence. Fit the toilet pan in position, plumb, level, flush and rigid without stressing the attachment points of the component. Fixings to be corrosive resistant. Fit seat.

#### 3 15 INSTALLING CISTERNS

Fit firmly in place and connect the specified cisterns from the supply services through the flush pipes to the relative fixtures in the positions as detailed all plumb and level.

#### Installation - Basins

#### 3 16 INSTALLING WASHBASINS

Install to [NZBC G1/AS1](#), [AS/NZS 1730](#). Set basins firmly to walls or vanities as detailed and to comply with [NZBC E3/AS1](#). Connect to supply and drains through trap to the drainage system.

#### 3 17 INSTALLING VANITIES - BLANK TOP

Install in accordance with the manufacturer's requirements. Cut out basin profile to basin manufacturer's template. Make penetrations for supply and drainage. Fix securely with corrosive resistant fixings. Seal top and upstand to wall surface to comply with [NZBC E3/AS1](#).

#### 3 18 INSTALLING VANITIES - INTEGRAL BASINS

Install in accordance with the manufacturer's requirements. Connect to supply and drains through trap to the drainage system. Seal top and upstand to wall surface to comply with [NZBC E3/AS1](#).

#### Installation - Showers

#### 3 19 INSTALLING SHOWER FITTINGS

Shower waste, mixer and rose to be install to [NZBC G1/AS1](#) and to [AS/NZS 3662](#).

#### 3 20 INSTALLING SHOWER CUBICLE

Install to [NZBC G1/AS1](#) and to [NZS 3662](#) and in accordance with shower manufacturer's details and requirements. Ensure that doors fit closely and accurately. Test for water egress around sides and base. Lining materials and finishes to comply with [NZBC E3/AS1](#).

#### 3 21 INSTALLING SHOWER ENCLOSURES AND WALL LININGS

Install in accordance with [NZBC E3/AS1](#). Sit tray firmly in place as detailed, to levels shown and connect to drainage service, ready for following work. Fit screen and door unit to manufacturer's details. Lining materials and finishes to comply with [NZBC E3/AS1](#).

#### 3 22 INSTALLING SHOWER DOOR AND SCREEN

To [NZS 4223.3](#) and to the product manufacturer's requirements. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating.

#### Installation - Baths

### 3.23 INSTALLING BATHS

Install to [NZBC G1/AS1](#). Set firmly in cradle with required points fully supported, level and flush. Connect to supply and drainage services.

#### Installation - Sinks

### 3.24 INSTALLING SINK BENCHES

Install in accordance with manufacturer's/supplier's requirements. Connect to supply and drainage services.

### 3.25 INSTALLING CLEANERS SINKS AND TUB UNITS

Install in accordance with manufacturer's requirements. Connect to supply and drainage services.

#### **Installation - Miscellaneous**

### 3.26 INSTALLING STAINLESS STEEL FIXTURES

Carry out preparatory work and fit elements in position plumb, level, flush and rigid without stressing the attachment points in sequence. Connect to supply and drainage services.

#### **Application - tapware**

### 3.27 GENERAL

To [AS/NZS 3500.1](#) and in accordance with the manufacturer's requirements. Maintain safe water temperatures to comply with [NZBC G12/AS1](#).

#### **Application - sanitary accessories**

### 3.28 INSTALLING ACCESSORIES

Fit specified fittings firmly in place at required dimensions relative to floor and adjoining sanitaryware fittings, all plumb and level.

### 3.29 LOCATE

Locate units at heights and/or locations shown on the drawings, or as required to comply with [NZBC G1/AS1](#). For any dimension not shown or known, request direction before proceeding.

### 3.30 CUTTING AND FITTING

Where cutting and fitting of the substrate is necessary for installing any unit, carry out this work before the painting or finishing of that surface. Remove any hardware when required for painting, placing it in the packaging or carton originally supplied and returning it to the secure store until ready for re-installation.

### 3.31 INSTALLING UNITS

Install each unit in accordance with the proprietary fixture manufacturer's requirements, using the templates and tools supplied or recommended by them. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating. Do not make any modifications to supplied units.

#### **Completion**

### 3.32 REPLACE

Replace damaged or marked elements.

### 3.33 PROTECTIVE COVERINGS

Leave fixtures, fittings and accessories clean and unblemished with stickers and protective coverings removed, with supply and drainage connections and all parts fully operating and working. Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following work.

### 3.34 REMOVE

Remove debris, unused materials and elements from the site.

# 7212 GAS SYSTEM LPG CYLINDERS

## 1 GENERAL

This section relates to Installation and maintenance of a 45kg LPG twin cylinder system and associated piping systems.

### 1 RELATED WORK

Refer to 7123 HOT AND COLD WATER SYSTEM for gas continuous flow.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

WorkSafe: WorkSafe New Zealand.

HSNO: Hazardous Substances and New Organisms Act 1996.

LPGA LPG Association of New Zealand Inc.

The following definitions apply specifically to this section:

Condensate: The liquid that separates from the gas downstream of any regulator due to the reduction in temperature resulting from pressure reduction.

Condensate trap: (also known as a drip leg or tailpipe) a device installed in a gas line to trap the condensate liquid

Enclosure: A compartment, an enclosed area or a partitioned-off space primarily used for the installing of a gas cylinder meter, or gas pressure regulator.

LAB number: Number allocated by WorkSafe when a cylinder is approved.

POL fitting: (Prest-O-Lite) The common name given for a standard union with left hand thread, used for connection to a 45 Kg cylinder.

Pigtail: A short length of flexible tube or copper pipe completed with end couplings. Use for connecting the cylinder to the manifold or the changeover valve.

Twin cylinder installation: A cylinder installation where two cylinders are connected separately to the system. Each cylinder is connected to a change over valve that can be operated manually or automatically, to change over the cylinder which is supplying LPG to the installation. Connection may be made using flexible rubber or copper pigtails, or pipe fittings.

### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC G10/AS1 Piped services

NZBC G11/AS1 Gas as an energy source

AS/NZS 1596 The storage and handling of LPG.

AS/NZS 4129 Fittings for polyethylene pipes for pressure applications

AS/NZS 4130:2009 Polyethylene (PE) pipes for pressure applications

AS 4176 Polyethylene/aluminium and cross linked polyethylene/aluminium macrocomposite pipe systems for pressure applications

AS/NZS 5601.1 Gas Installations - general installations

LPGA CoP No.2 Installation and maintenance of twin 45kg cylinder systems

Electricity (Safety) Regulations 2010

Gas (Safety and Measurement) Regulations 2010

Plumbers, Gasfitters and Drainlayers Act 2006

### Warranties



## 1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years: For the complete gas system

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

### Requirements

#### 1.5 COMPLY

Comply with the Gas (Safety and Measurement) Regulations 2010 and Electricity (Safety) Regulations 2010.

#### 1.6 QUALIFICATIONS

Work to be carried out by gasfitters experienced, competent and familiar with the materials and techniques specified. Carry out all work under the direct supervision of a certifying gasfitter under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

#### 1.7 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

Where a product or material supplier is named in SELECTIONS, the product/material must be provided by the named supplier. Where more than one named supplier, any one of the named suppliers will be acceptable.

#### 1.8 AS BUILT DOCUMENTS

Refer to the general section 1238 AS BUILT DOCUMENTATION for the requirements for submission and review of as built documents and records.

Provide the following as built documents and records:

1:100 scale as-built plan of the gas pipe runs, sizes componentry and fittings.

Provide as built information prior to practical completion.

#### 1.9 DESIGN

Design the piping system to [AS/NZS 5601.1](#), with pipe sizes to give a minimum pressure at any appliance inlet, to [AS/NZS 5601.1](#), Table 5.1, of 2.75 kPa for LPG. Include pressure regulators if required.

#### 1.10 LOCATION OF CYLINDERS

Cylinders and associated equipment to be installed external to buildings, except where [AS/NZS 1596](#) permits. Location and clearances to [AS/NZS 5601.1](#). Ensure location allows good accessibility for cylinder replacement to [AS/NZS 5601.1](#). Coordinate with electrical installations to ensure clearances are maintained.

### Compliance information

#### 1.11 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -  
Manufacturer's, importers or distributors warranty

- Installer / applicator's warranty
- Gasfitting Certificate of Compliance - from the installer

#### 1.12 GAS CERTIFICATE OF COMPLIANCE

Provide a Certificate of Compliance (CoC) as required by the Gas (Safety and Measurement) Regulations 2010 to the owner, and when required provide a copy to the energy supplier before connection.

## 1.13 GAS SAFETY CERTIFICATION

Provide a Gas Safety Certificate (GSC) as required by the Gas (Safety and Measurement) Regulations 2010 and provide a copy to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.



## 1.14 GAS APPLIANCE COMPLIANCE

Supplier to provide Supplier Declaration of Compliance (SDoC) in accordance with the requirements of the Gas (Safety and Measurement) Regulations 2010.

## 2 PRODUCTS

### Materials

#### 2.1 PIPEWORK GENERAL

Pipework requirements to [AS/NZS 5601.1](#), particularly [AS/NZS 5601.1](#), Section 4, **Means of compliance - materials fittings and components**.

#### 2.2 POLYETHYLENE PIPE

Polyethylene pipes to [AS/NZS 4130:2009](#) Series two, or [AS/NZS 4130:2009](#) Series three. Fittings to [AS/NZS 4129](#). Range of use to [AS/NZS 5601.1](#), table 4.1 **Consumer Piping Materials**. For use in ground but not beneath a building.

#### 2.3 ISOLATING VALVES

Manual shut-off valves to [AS/NZS 5601.1](#).

#### 2.4 CYLINDERS

Full 45kg cylinders to be supplied by the LPG supply company.

### Components

#### 2.5 AUTOMATIC CHANGEOVER REGULATOR

To the requirements of [AS/NZS 5601.1](#).

Automatic changeover regulator including a gas pressure regulator and non-return valve on each pigtail connection. The valve must comply with the requirements of [HSNO](#) and WorkSafe.

Changeover valves may be comprised of a first and second stage regulator system in a single body, or as a combination of separate component items.

Changeover valves complete with all components necessary for the operation of the bottle gas system including: -

- Flexible Pigtails
- Regulators
- Condensate trap
- Over pressure shut off
- All required valves

Protect from weather.

### Accessories

#### 2.6 ANCHORS AND CHAINS

To the requirements of [LPGA COP No.2](#).

All cylinders larger than 25 litres capacity shall be securely held in place by galvanized chains and brackets. The brackets shall be fastened to a wall or similar robust anchorage. The cylinder's fastenings must be capable of withstanding a steady applied load equal to four times the weight of the filled cylinder.

## EXECUTION

### Conditions

#### 3.1 GENERALLY

Carry out the whole of this work to the requirements of [NZBC G10/AS1](#), [NZBC G11/AS1](#) and [AS/NZS 5601.1](#).

#### 3.2 BURIED PIPES

Pipes to be bedded in a trench, backfilled, marker taped and separated from other services, to [AS/NZS 5601.1](#), 5.4 **Installation of consumer piping underground**.

## Application

### 3.3 INSTALL PIPING

Run the system, completely concealed, in the most suitable type of pipe for each part of the installation, bent, supported, jointed and complete with all fittings to [AS/NZS 5601.1](#). Confirm the type of pipe and its location. Label pipework to distinguish it from other services to [AS/NZS 5601.1](#), 5.1.12 **Identification of pipework**.

### 3.4 PRESSURE TEST

Pressure test the system for leakage to [AS/NZS 5601.1](#) before pipework is concealed by linings.

### 3.5 LOCATION OF CYLINDERS

Cylinders and associated equipment to be installed external to buildings, except where [AS/NZS 1596](#) permits. Location and clearances to [AS/NZS 5601.1](#), Appendix J, **LP Gas cylinder locations**.

## Installation of cylinders

### 3.6 GENERAL

Cylinders shall be installed upright with the valve uppermost to ensure the inlet to the safety valve remains in the vapour space clear of the liquid content of the cylinder.

- Clearances around cylinders shall comply with CLEARANCES AROUND CYLINDER clause.
- Where two or more exchange cylinders are installed, a manual or automatic changeover valve shall be fitted immediately upstream of the regulator. This valve may be an integral part of an automatic changeover regulator.

### 3.7 SUPPORT

Cylinders shall not be supported by other cylinders.

Cylinders shall be installed on supporting bases that are firm, level, of non-combustible material, and with a finished surface that prevents ponding of water and at least 50mm above the surrounding surface. Soil is not considered an acceptable supporting base.

All cylinders to be securely held in place by galvanized chains and anchor brackets. The brackets shall be fastened to a wall or similar robust anchorage. Fixings shall be galvanised or stainless steel.

### 3.8 CYLINDER CONNECTION

Cylinders should be connected directly to the changeover valve assembly by flexible pigtails.

An excess flow valve, to prevent cylinder venting if hose fails, shall be fitted immediately upstream of the piping or hose assembly. This excess flow valve may be an integral part of the POL fitting.

Pigtails connecting cylinders to changeover valves or manifolds should not exceed 1 metre in length.

A non-return valve must be fitted in the supply between each cylinder and the changeover valve, or in a manifold system, between each cylinder and its manifold connection, to prevent flow across the changeover system to [AS/NZS 5601.1](#).

### 3.9 CLEARANCES AROUND CYLINDER

Cylinders should be installed with clearances complying with the [AS/NZS 5601.1](#), Appendix J, **LP Gas cylinder locations**, figure J3 **Minimum clearance to ignition sources**, and figure J4 **Minimum clearance to a drain or opening into a building**, and at least 1 metre from any readily ignitable material. Readily ignitable materials include paper, dry grass or oily substances.

### 3.10 CYLINDER SAFETY VALVE DISCHARGE

The discharge point of the cylinder safety valve shall be directed away from any other cylinder, piping, building, drain, approach path to cylinders and any opening into or under a building.

### 3.11 TEST POINTS

A pressure test point should be installed immediately downstream of each second stage regulator. Such test point may be an integral part of the regulator.

## Completion

### 3.12 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused materials and elements from the site.

### 3.13 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Leave work to the standard required for following procedures.

## Commissioning

### 3.14 FINAL INSPECTION AND TESTING

Check cylinders are working and ensure all connected appliances are operating correctly. Carry out final inspections and testing, pressure test the system for leakage to [AS/NZS 5601.1](#). Leave system shut off at the cylinders until practical completion.

### 3.15 HANDOVER

Provide a copy of the system operating and maintenance instructions.

## Completion

### 3.16 REPLACE

Replace damaged, cracked or marked elements.

### 3.17 LEAVE

Leave appliances clean and in full working order to the standard required by following procedures.

### 3.18 REMOVE

Remove debris, unused materials and elements from the site.

## SELECTIONS

### Materials

#### 4.1 LPG CYLINDER SYSTEM

Location:	Refer to architectural drawings
LPG supplier:	to be selected
Cylinder Number/size:	Not be more than 2 cylinders in one group/one property
Changeover valve supply:	LPG supplier
Cylinder restraint:	Anchors and chain with padlock

# 7411C CONTINUOUS SPOUTING RAINWATER SYSTEMS

## 1 GENERAL

This section deals with **Continuous Spouting NZ Ltd** rainwater disposal systems including spouting and downpipes, in various metal substrates.

### 1.1 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc.

### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E1/AS1	Surface Water
NZBC E2/AS1	External moisture
BS EN 988	Zinc and zinc alloys. Specification for rolled flat products for building
AS 1566	Copper and copper alloys - Rolled flat products
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

Documents listed above and cited in the clauses that follow are part of this specification. However this specification takes precedence in the event of it being at variance with the cited document.

### 1.3 MANUFACTURER'S DOCUMENTS

**Continuous Spouting New Zealand Ltd** documents relating to work in this section are: Continuous Spouting, Fascia, Spouting, Downpipes.

Copies of the above literature are available from

Copies of the above literature are available from **Continuous Spouting NZ Ltd:**

Web: [www.continuous.co.nz](http://www.continuous.co.nz)  
Email: [sales@continuous.co.nz](mailto:sales@continuous.co.nz)  
Telephone: 0800 50 1993

### Area Contact

Auckland  
Northland  
Hamilton  
Taranaki  
Gisborne  
Hawkes Bay  
Wellington  
Christchurch  
Otago  
Nelson

### E-mail

[auckland@continuous.co.nz](mailto:auckland@continuous.co.nz)  
[northland@continuous.co.nz](mailto:northland@continuous.co.nz)  
[Waikatobayofplenty@continuous.co.nz](mailto:Waikatobayofplenty@continuous.co.nz)  
[westcoastnorthisland@continuous.co.nz](mailto:westcoastnorthisland@continuous.co.nz)  
[gisborneeastcoast@continuous.co.nz](mailto:gisborneeastcoast@continuous.co.nz)  
[centralnorthisland@continuous.co.nz](mailto:centralnorthisland@continuous.co.nz)  
[wellington@continuous.co.nz](mailto:wellington@continuous.co.nz)  
[info@canterburycontinuous.co.nz](mailto:info@canterburycontinuous.co.nz)  
[info@otagocontinuous.co.nz](mailto:info@otagocontinuous.co.nz)  
[topofthesouth@continuous.co.nz](mailto:topofthesouth@continuous.co.nz)

### Warranties

## 1.4 WARRANTY

Provide **Continuous Spouting NZ Ltd** warranty covering material and installation in the standard form.

Product performance, life expectancy and warranty are dependent upon environment, maintenance and material selection. Refer to **Continuous Spouting NZ Ltd** for the appropriate warranty terms, conditions and environmental considerations based on performance requirements to [AS/NZS 2728](#).

Refer to the general section 1237 WARRANTIES for details of when completed warranty must be submitted.

### Requirements

#### NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

#### QUALIFICATIONS

**Continuous Spouting NZ Ltd** installers and local agents to be experienced competent trades people, familiar with the materials and the techniques specified.

### Performance

#### TEST

Test the completed rainwater disposal system with water to ensure spoutings are laid to correct falls, that both spouting and downpipes are unobstructed and that no ponding occurs in spoutings.

#### DESIGN

Layout, falls and capacity of spouting to falls and the size and position of downpipes to comply with [NZBC E1/AS1](#). Refer to [NZMRM](#) recommendations, sections 5.5 **Gutters** and 5.7 **Downpipes**.

## PRODUCTS

### Materials

#### COLORCOTE® ZINCALUME

ColorCote® ZR8™ and Colorcote ZRX™ manufactured from Zincalume™ AZ150 coated steel, [AS/NZS 2728](#).

### Products

#### SPOUTING

Manufactured by **Continuous Spouting NZ Ltd** using onsite plant to provide made to measure continuous lengths of spouting. Complete with matching brackets and screws. Spouting to be sized to comply with [NZBC E1/AS1](#) and installed to [NZBC E2/AS1](#) 8.1.6. Refer to SELECTIONS for type.

#### DOWNPIPES

Complete with stand-off brackets, screw fixed. Refer to SELECTIONS for type.

### Components

#### BRACKETS

Material to match the spouting.  
Refer to SELECTIONS for type.

#### SEALANT

Neutral cure silicone or Fixall Hitack MS Polymer sealant.

## 3 EXECUTION

### Conditions

### 3.1 HANDLE AND STORE

Handle and store downpipes, spouting and accessories to avoid damage. Store on site under cover, on a clean level area, stacked to eliminate movement and away from work in progress. Avoid exposure to sunlight if strippable film is still on the product.

### 3.2 SUBSTRATE

Check that fascias, bargeboards or cladding are level and true to line and face and will allow work of the required standard without distortion to the product alignment. Do not proceed until they are up to standard.

### 3.3 THERMAL MOVEMENT

Make adequate provision in the fixing and jointing of the spouting for thermal movement in the length of the spouting.

### 3.4 CORROSION

Separate metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

Check compatibility of metals used for rainwater goods, against the materials being used for roofing and flashings.

#### **Application - metal**

### 3.5 INSTALL METAL SPOUTING

Establish minimum falls necessary (minimum 1:500) to outlets to prevent ponding and screw fix brackets true-to-line between 800mm to 900mm centres maximum. In areas where snow fall is possible the centres should be reduced to 600mm and snow strap fitted. Cut out neatly for and fit the pre-formed downpipe dropper and seal and rivet around the joint. All installation to [NZMRM CoP](#) recommendations section 5.5 **Gutters**.

#### **Application - general**

### 3.6 INSTALLATION GENERALLY

Install to [NZMRM CoP](#) recommendations where not otherwise specified.

### 3.7 INSTALL OUTLETS AND OVERFLOWS

Install outlets and overflows where required to [NZMRM CoP](#), clauses 5.8.2, **Outlets and Overflows**.

#### **Completion**

### 3.8 REPLACE

Replace damaged or marked elements.

### 3.9 LEAVE

Leave the whole of this work discharging completely and freely into the stormwater system and free of all debris. Leave work to the standard required by following procedures.

### 3.10 REMOVE

Remove debris, unused materials and elements from the site.

## **SELECTIONS**

Substitutions are not permitted to the following, unless stated otherwise.

### **Prepainted Zincalume system**

#### 4.1 CONTINUOUS SPOUTING NZ LTD - PREPAINTED ZINCALUME SPOUTING

Manufacturer: **Continuous Spouting NZ Ltd**  
Profile/size: 135mm Quarter Round spouting  
Base material: Steel with Zincalume® coating  
BMT: 0.50mm  
Finish: Prepainted Colorcote® ZR8  
Colour: **Refer to Generation Homes Standard Features and Variations Lists for selections.**  
Brackets: Internal

##### Miscellaneous items

#### 4.2 CONTINUOUS SPOUTING NZ LTD - METAL FASCIA

Manufacturer: **Continuous Spouting NZ Ltd**  
Material: Colorcote Zincalume  
BMT: 0.50mm - 0.55mm  
Profile/size: 140mm Bevelled  
Finish: ZR8 Colorcote Zincalume  
Colour: **Refer to Generation Homes Standard Features and Variations Lists for selections.**



# 7411MA MARLEY RAINWATER DISPOSAL SYSTEMS

## 1 GENERAL

This section relates to **Marley** rainwater disposal systems.  
It includes;

- uPVC spouting and downpipes

### 1.1 RELATED WORK

Refer to 7411C CONTINUOUS SPOUTING RAINWATER SYSTEMS for spouting.

### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

[NZBC E1/AS1](#) Surface water

[NZBC E2/AS1](#) External moisture

[AS/NZS 4020:2005](#) Testing of products for use in contact with drinking water

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:

Marley Rainwater Sales Brochures

Marley Product Catalogue

Marley - Spouting and Downpipe DIY Installation Guide

Manufacturer/supplier contact details

Company: **Marley New Zealand Limited**

Web: [www.marley.co.nz](http://www.marley.co.nz)

Email: [info@marley.co.nz](mailto:info@marley.co.nz)

Telephone: 0800 MARLEY (0800 627 539)

### Warranties

### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier Guarantee:

15 years: Against defects in material and manufacture

- Commence the guarantee from the date of purchase
- Refer to Marley NZ Guarantee available at [www.marley.co.nz](http://www.marley.co.nz)

Refer to the general section 1237 WARRANTIES for additional requirements.

### Requirements

### 1.5 QUALIFICATIONS

Installers to be experienced, competent workers familiar with the materials and techniques specified.

### 1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified Marley systems, components and associated products listed in this section.

### Performance

### 1.7 TEST

Test the completed Marley rainwater disposal system with water to ensure, spouting is laid to correct fall, that both spouting and downpipes are unobstructed and that no ponding occurs in spouting.

### 1.8 DESIGN

Layout, falls and capacity of spouting to falls and the size and position of downpipes to comply with [NZBC E1/AS1](#).

## 2 PRODUCTS

### Materials

#### 2.1 UPVC SPOUTING/DOWNPipes

Marley uPVC spouting and downpipe systems in white and grey uPVC.

### Products

#### 2.2 MARLEY DOWNPIPES

Marley downpipe system, complete with Marley fittings including bends, clips, joiners and junctions supplied by Marley. Refer to SELECTIONS for type.

### Components

#### 2.3 MARLEY MCS SOLVENT WELDING CEMENT

Only Marley MCS® Solvent Welding Cement to be used in conjunction with the spouting and downpipe systems to manufacturer's instructions. Colour match to spouting or downpipes.

#### 2.4 SCREW FIXINGS - METAL FASCIA

Self drilling tek screws 6g pan head or wafer head.

#### 2.5 FABRICATION

Special items can be fabricated by Marley to specific dimensions on request including but not limited to angle flats, angle rakes, outlets and adaptors.

## EXECUTION

### Conditions

#### 3.1 HANDLING AND STORAGE

Handle and store Marley downpipes, spouting and accessories to avoid damage. Store on site under cover, on a clean level area, stacked to eliminate movement and away from work in progress. Store out of direct sunlight. Refer to Marley installation guides for further details.

#### 3.2 SUBSTRATE

Check that fascias, barges or cladding are level and true to line and face and will allow work of the required standard without distortion to the product alignment. Do not proceed until they are up to standard.

#### 3.3 THERMAL MOVEMENT

Make adequate provision in the jointing of the spouting for thermal movement in the length of the spouting by using Marley expansion joiners and/or expansion outlets. Refer to Marley expansion technical information.

#### 3.4 ENVIRONMENTAL

Marley Spouting and Downpipe systems are suitable for most environmental conditions and will never rust, rot or corrode.

#### 3.5 RECYCLING

All Marley manufactured spouting and downpipe systems are 100% recyclable and Marley operates recycling programs with industry suppliers where uPVC pipes can be returned from site for recycling at Marley.

### Application

#### 3.6 INSTALL MARLEY DOWNPIPES

Install to Marley's current published installation instructions available at [www.marley.co.nz](http://www.marley.co.nz). Ensure that all joints are sealed properly using Marley MCS® Solvent Welding Cement. Assemble downpipes, solvent cement jointed complete, fit to outlets, fix with pipe clips every 1.2 metres, fix pipe clips with 304 stainless steel screws, plumb and discharging into the stormwater gully or pipe inlet to the Marley required practice.

## Painting Marley uPVC spouting/downpipes

### 3.7 PAINTING

After installation use a mineral based undercoat and two coats of 100% weatherable acrylic paint. Do not paint the inside of spouting or internal brackets.

### Completion

### 3.8 REPLACE

Replace damaged or marked elements.

### 3.9 LEAVE

Leave the whole of this work discharging completely and freely into the stormwater system and free of all debris. Leave work to the standard required by following procedures.

### 3.10 REMOVE

Remove debris, unused materials and elements from the site.

## SELECTIONS

For further details on selections go to [www.marley.co.nz](http://www.marley.co.nz)  
Substitutions are not permitted to the following, unless stated otherwise.

### uPVC system - downpipes

### 4.1 MARLEY UPVC DOWNPIPES - RP80®

Manufacturer:	Marley
Profile/type:	Marley RP80® 80mm Round
Size:	80mm
Colour:	White
Bracket type:	Stand off

### Painting

### 4.2 PAINTING

Brand/type:	Dulux
Finish/colour:	<b>Refer to Generation Homes Standard Features and Variations Lists for selections.</b>

# 7421MO MARLEY OPTIM DWV SANITARY SYSTEM

## 1 GENERAL

This section relates to the supply and laying of **Marley New Zealand Limited** above ground gravity flow PVC-U sanitary systems for residential and commercial applications.  
It includes:

- foul water
- sanitary fixtures to first underground drain connection
- system wastes, floor wastes, floor waste gullies, traps, vents and valves
- associated components and accessories to make the system work.

### 1.1 RELATED WORK

Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures.  
Refer to 7123 HOT AND COLD WATER SYSTEM for potable water systems.

### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

<a href="#">NZBC G1/AS1</a>	Personal hygiene
<a href="#">NZBC G13/AS1</a>	Foul water - Sanitary plumbing
<a href="#">AS 2887</a>	Plastic waste fittings
<a href="#">AS/NZS 1260</a>	PVC-U pipes and fittings for drain, waste and vent applications
<a href="#">AS/NZS 1462.22</a>	Methods for test for plastic pipes and fittings - Method 22: Method for determination of pipe stiffness
<a href="#">AS/NZS 1462.3</a>	Methods for test for plastic pipes and fittings - Method for determining the impact characteristics of pipes
<a href="#">AS/NZS 2032</a>	Installation of PVC pipe systems
<a href="#">AS/NZS 3500.2</a>	Plumbing and drainage - Sanitary plumbing and drainage
<a href="#">Plumbers, Gasfitters and Drainlayers Act 2006</a>	

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:  
Marley OPTIM DWV Technical Design Manual  
Marley Material Safety Data Sheets

Manufacturer/supplier contact details

Company: **Marley New Zealand Limited**  
Web: [www.marley.co.nz](http://www.marley.co.nz)  
Email: [guy@marley.co.nz](mailto:guy@marley.co.nz)  
Telephone: 09 279 2799

### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

For defects in materials and manufacture

Refer to Marley New Zealand Ltd for warranty conditions and details

- Provide this warranty on Marley New Zealand Ltd standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

### 1.5 WARRANTY - INSTALLER

Provide an installer warranty:

2 years: For installation

- Provide this warranty on the installer standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

## Requirements

### 1.6 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying plumber under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

### 1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

### 1.8 AS BUILT DOCUMENTS

Refer to the general section 1238 AS BUILT DOCUMENTATION for the requirements for submission and review of as built documents and records.

Provide the following as built documents and records:

- Provide draft as built information prior to practical completion.
- Provide final as built information prior to the end of the defects liability period.

## Compliance information

### 1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Installer's approval certificate from the manufacturer / importer / distributor
- Manufacturer's, importer's or distributor's Certificate of Conformance
- Installer's warranty
- Producer Statement - Construction from the installer
- Producer Statement - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

## Performance

### 1.10 TESTING

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to [NZBC G13/AS1](#) or [AS/NZS 3500.2](#), 15 as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

## PRODUCTS

### Materials

#### 2.1 PVC-U DWV PIPEWORK - RESIDENTIAL

Marley PVC-U DWV pipework comprised of unplasticised PVC waste pipes, traps and fittings manufactured to [AS/NZS 1260](#), tested to AS/NZS 1462.22 and AS/NZS 1462.3, and compliant with [AS/NZS 3500.2](#). Available in a range of pipe types with nominal size DN20 to DN150 and stiffness class SN4 and SN6. Refer to SELECTIONS for options.

#### 2.2 PVC-U VENT PIPES

Marley PVC-U vent pipes comprised of unplasticised PVC including fittings and accessories manufactured to [AS/NZS 1260](#), tested to AS/NZS 1462.22 and AS/NZS 1462.3, and compliant with [AS/NZS 3500.2](#). Available in a range of pipe types with nominal size DN 40 to DN 100 and stiffness class SN4 to SN10. Refer to SELECTIONS for options.

#### 2.3 EXPOSED PIPES AND TRAPS - CHROME

To [AS/NZS 3500.2](#). Satin chrome plated exposed pipes, traps and wastes including all associated fittings refer to SELECTIONS.

## Components

### 2.4 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

## 3 EXECUTION

## Conditions

### 3.1 EXECUTION GENERALLY - NZBC G13/AS1

Carry out this work to [NZBC G13/AS1](#) and [NZBC G1/AS1](#) and complete all tests to G13/AS1, 7.1 Test Methods.

### 3.2 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

### 3.3 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site under cover on a clean level area, stacked to eliminate movement and away from work in progress.

### 3.4 SETTING OUT

Set out location of all stacks, discharge pipes, fittings and vent pipes and the completeness of their discharge into the drainage system.

### 3.5 CORE HOLES AND SLEEVES

Fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Sleeve diameter to be 25mm larger than outside diameter of pipe accommodated. Strip core holes and make good after installation of pipework.

### 3.6 PIPE ACCESS

Fit and fix stacks, wastes and pipes in ducts independent of all other services so they are easily replaceable for their full length. Wrap or tape pipes buried in concrete.

### 3.7 FITTINGS ACCESS

Fit and fix traps and wastes to enable access for cleaning and for maintaining the total system.

### 3.8 CONFIRM LOCATION

Unless the location and height are clearly delineated on the drawings, confirm installation height and plan locations of sanitary fittings before commencing the piping installation.

### 3.9 CORROSION

Separate metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

## Installation - traps and wastes

### 3.10 TRAPS AND WASTES - CONCEALED

Conceal traps and wastes in the fabric of the building in accordance with manufacturer's requirements.

### 3.11 TRAPS AND WASTES - EXPOSED CHROME

Fit and fix satin chrome plated exposed pipes, traps and wastes in accordance with manufacturer's requirements.

## Installation - jointing

### 3.12 JOINTING PVC-U PIPE - SOLVENT WELDED JOINTS

Prime and solvent weld joints using spigots and sockets to Marley requirements. Jointing to be in accordance with Marley OPTIM DWV jointing procedures as shown in the Marley OPTIM technical manual.

## Installation - fixing

### 3.13 THERMAL MOVEMENT

Accommodate longitudinal movement in pipes resulting from temperature changes. Incorporate expansion joints in PVC-U pipes. Install PVC pipes to [AS/NZS 2032](#). Take particular care to allow for movement at horizontal take-off locations from stacks.

### 3.14 TRAPS AND FIXTURE DISCHARGE PIPES

Size traps and pipes as required for each fixture or appliance. Establish the developed length of waste pipes. Vent and allow access for cleaning as required. Follow the most direct line with the least number of bends to [NZBC G13/AS1: Foul water sanitary plumbing, table 4, Discharge unit loading for stacks and graded discharge pipes and table 7, Distance between supports.](#)

### 3.15 DISCHARGE STACKS AND VENTS

Size stacks and vents to [NZBC G13/AS1: Foul water sanitary plumbing, table 2, Fixture discharge pipe sizes and discharge units and table 6, Vent pipe sizes.](#) Extend up past the highest branch to form a discharge stack vent terminating to [NZBC G13/AS1: Foul water sanitary plumbing, figure 12](#) and finishing at the base with a 45 degree bend. Support system to [NZBC G13/AS1: Foul water sanitary plumbing, table 7, Distances between supports.](#)

#### Completion

### 3.16 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal of all debris, unused materials and elements from the site.

### 3.17 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable.

#### Commissioning

### 3.18 TESTING

Pre-test all pipework during construction. On completion of the work and before approval for acceptance of the pipework, carry out a final test to the approval of the engineer and if required witnessed by the representative of the territorial authority.

## SELECTIONS

For further details on selections go to [www.marley.co.nz](http://www.marley.co.nz)  
Substitutions are not permitted to the following, unless stated otherwise.

#### Materials - sanitary systems

### 4.1 MARLEY PVC DWV PIPEWORK, RESIDENTIAL

Manufacturer: Marley New Zealand Limited  
Pipe brand/type: Marley Optim  
Jointing: Solvent joint (for smaller pipe sizes up to and including DN175) or Rubber ring joint (for pipe sizes 100DN and greater)

### 4.2 MARLEY PVC-U VENT PIPE

Manufacturer: Marley New Zealand Limited  
Pipe brand/type: Marley Optim  
Jointing: Solvent joint (for smaller pipe sizes up to and including DN100) or Rubber ring joint (for pipe size 100DN)

#### Components

### 4.3 PROTECTIVE TAPE

Manufacturer/brand: to be determined by plumber



# 7431 DRAINAGE COMMON REQUIREMENTS

## 1 GENERAL

This section relates to common requirements to do with the supply and laying of gravity subsoil, surface water and foul water drains.

### 1.1 RELATED WORK

Refer to 7441 GROUNDWATER DRAINAGE for subsoil drainage  
Refer to 7451 SURFACE WATER DRAINAGE for storm/surface water drainage  
Refer to 7461 FOUL WATER DRAINAGE for waste/foul water drainage

### Documents

### 1.2 DOCUMENTS

Documents referred to in this and the above sections are:

[NZBC E1/AS1](#) Surface water  
[NZBC G13/AS2](#) Foul water  
[NZS 3604](#) Timber-framed buildings  
[NZS 4229](#) Concrete masonry buildings not requiring specific engineering design  
[WorkSafe](#) [Good Practice Guidelines - Excavation Safety](#)  
[Plumbers, Gasfitters and Drainlayers Act 2006](#)  
[Health and Safety at Work Act 2015](#)  
Health and Safety at Work (Hazardous Substances) Regulations 2017

### Requirements

### 1.3 QUALIFICATIONS

Drainlayers to be experienced, competent and familiar with the materials and techniques specified.  
Carry out all work under the direct supervision of a certifying drainlayer under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

### 1.4 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance manual information to requirements set out in the general section 1239 OPERATION & MAINTENANCE.

### 1.5 AS BUILT DOCUMENTS

Supply as-built drawings to requirements set out in the general section 1238 AS BUILT DOCUMENTATION.

### Performance

### 1.6 SITE MEETING

Meet with the territorial authority drainage inspector to confirm the drainage layout in relation to site conditions. Confirm changes resulting and seek written site instruction before carrying out any work.

### 1.7 CHECK LOCATION

Check the location of existing on and off-site, private and public services with the network utility operator. Follow their requirements for safety and protection where laying drainage.

### 1.8 SITE CONDITIONS

Before starting work check on site the drainage layout, dimensions, levels and invert levels and ensure that line, level, falls and cover are correct.

### 1.9 ADJOINING PROPERTIES

Take precautions to protect adjoining property from damage or risk of damage arising from excavation and drainage work.

## 1.10 SAFETY

To the [Health and Safety at Work Act 2015](#).

Carry out excavation and trenching to WorkSafe, [Good Practice Guidelines - Excavation Safety](#).  
Prevent material rolling into trenches.

## 1.11 EXPLOSIVES

Do not use explosives except with the written approval of the territorial authority/[WorkSafe NZ](#).

Comply with their safety requirements and use construction blasters holding a current, appropriate Approved Handler Certificate and Controlled Substance Licence issued by [WorkSafe NZ](#), to the Health and Safety at Work (Hazardous Substances) Regulations 2017.

## 1.12 TESTS

Using the method agreed with the territorial authority inspector, test and inspect pipelines before backfilling to ensure required acceptance levels are achieved. Test again after backfilling to confirm acceptance levels and for final acceptance of the works.

## 1.13 RECORDS

Records to be kept of all tests.

## PRODUCTS

### 2.1 PRODUCTS

Refer to the RELATED WORK sections for products.

## EXECUTION

### Application

### 3.1 EXCAVATION

Open not more than 120 metres of trench at any one time. Excavated trench to a minimum width of pipe diameter plus 300mm. Do not batter or cut the trench wider above the top of the pipe.

For deep excavation, trench width to be sufficient to provide safe access and to accommodate shoring to WorkSafe NZ, [Good Practice Guidelines - Excavation Safety](#). Width of bottom of trench up to 300mm above top of pipe to be pipe diameter plus 300mm.

Maintain free of water and free of all falling material.

### 3.2 TRENCHING - PARALLEL TO FOUNDATIONS TO NZS 3604 OR NZS 4229

Trenches running parallel, below and close to foundations of buildings to [NZS 3604](#) or [NZS 4229](#) to be separated to:

- [NZBC E1/AS1](#), 3.9.7, **Proximity of Trench to Building**, for stormwater and subsoil drains.
- [NZBC G13/AS2](#), 5.6, **Proximity of Trench to Building**, for foul water drains.

### 3.3 TEMPORARY BRIDGES

Provide temporary bridges over trenches to prevent heavy construction traffic damaging pipes after backfilling.

### 3.4 CLEAN

Clean and flush out the whole installation and remove all silt and debris before handing over.

### Completion

### 3.5 REPLACE

Replace damaged or marked elements.

### 3.6 LEAVE

Leave work to the standard required by following procedures.

### 3.7 REMOVE

Remove debris, unused materials and elements from the site.

# 7451 SURFACE WATER DRAINAGE

## 1 GENERAL

This section relates to below ground, gravity flow stormwater pipework complete with maintenance access and fittings and connected to network utility operators system.

### Related work

#### RELATED SECTIONS

Refer to 7431 DRAINAGE COMMON REQUIREMENTS for general matters  
Refer to 7461 FOUL WATER DRAINAGE for waste/foul water drainage

### PRODUCTS

#### Materials

##### REINFORCING STEEL

Plain round and/or deformed steel bars, Grade 300 to [AS/NZS 4671](#).

##### PVC-U PIPES AND FITTINGS

Unplasticised PVC pipe and fittings to [AS/NZS 1254](#).  
Underground PVC-U pipe to comply with [AS/NZS 1254](#) and Classified as follows:

Classification	Use
SN4 - SN6	Domestic & light load areas
SN8 - SN10	Commercial & Industrial medium load areas
SN16	Public roads & high load areas

##### POLYETHYLENE PIPES AND FITTINGS

Polyethylene pipe and fittings to [AS/NZS 5065](#).

##### SURFACE WATER SUMPS

Precast concrete complete with lift-up cast iron grate and frame to [NZBC E1/AS1](#): Surface water, 3.6, Surface water inlets to drains.

##### CHANNEL DRAIN, GRATING AND SUMPS

Proprietary PVC channel or precast concrete drain complete with friction fit grating sections and matching sumps.

### Accessories

#### BEDDING SURROUND AND FILLING MATERIALS

Granular:	Clean gravel or crushed stone or a blend of these. Particle size from minimum 7mm to maximum 20mm.
Selected:	Fine grain soil or granular material suitable for bedding and excluding topsoil, organic matter and rubbish.
Ordinary:	Top soil or other excavated materials excluding organic matter and rubbish.

#### CONCRETE

To [NZS 3104](#).

Prescribed mix 17.5 MPa: For in situ bases, anchors and pipe surrounds.

Prescribed mix 14 MPa: For bedding only.

## 3 EXECUTION

### Conditions

### 3.1 EXISTING DRAINS

Completely remove any existing drains no longer required and disconnect from the system at the junction with the live drain. Seal the live drain to the requirements of [NZBC G13/AS2](#): Foul water drainage, 5.10 Disused drains.

#### Application

### 3.2 BEDDING

Place to [NZBC E1/AS1](#), 3.9, **Bedding and backfilling**, using compacted granular material to avoid differential settlement and to obtain longitudinal support of the pipe.

### 3.3 SURROUND AND BACKFILL

Place to [NZBC E1/AS1](#), 3.9, **Bedding and backfilling**, using compacted granular material and compacted fill. Compact in layers not exceeding 100mm.

### 3.4 SETTING OUT

Use string line, boning rod or laser equipment methods. Use surveying and levelling equipment to accurately set out design invert levels.

### 3.5 LAYING AND JOINTING

Lay in straight lines between changes of line or grade from the lower end of the pipeline with sockets pointing uphill, each pipe set true to line and grade and each joint completed before the next pipe is laid. Install PVC Pipes to [AS/NZS 2032](#) or [AS/NZS 2566.1](#) and [AS/NZS 2566.2](#). Install polyethylene Pipes to [AS/NZS 2033](#). To prevent entry of foreign matter cap ends of uncompleted runs each day. Test drains and backfill progressively to minimise site disruption. Concrete cap trenches to all drains with less than 375mm cover.

### 3.6 LAYING STORM WATER SYSTEM

From the building rainwater system, sealed yard areas and including all access chambers, sumps, bends and junctions, lay the drainage system as detailed to discharge into the network utility operator water system and to their requirements.

### 3.7 DIFFERENTIAL SETTLEMENT

Provide flexible jointing, bedding and surrounding of pipes at junctions with manholes, foundation walls and other points where differential settlement may occur.

#### Application - fittings

### 3.8 CONSTRUCT SUMPS

Bed in concrete to the manufacturer's recommendations.

### 3.9 INSTALL CHANNEL DRAIN

Excavate for, provide bedding to fall and install channel drains and sumps complete with grated covers, to the manufacturer's requirements.

#### Application - connections

### 3.10 CONNECT TO SURFACE WATER - PUBLIC MAINS

Locate, excavate and expose the existing drain, connect new pipework to existing drain to the requirements of the network utility operator.

## SELECTIONS

### 4.1 SURFACE WATER SUMPS

Manufacturer/Type: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

### 4.2 SURFACE WATER CHANNEL DRAIN, GRATING AND SUMPS

Manufacturer/brand: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

# 7461 FOUL WATER DRAINAGE

## 1 GENERAL

This section relates to below ground, non-pressure foul water pipework complete with all maintenance access and fittings and connected to network utility operator sewers.

### 1 RELATED WORK

Refer to 7431 DRAINAGE COMMON REQUIREMENTS for general matters  
Refer to 7421 SANITARY SYSTEMS for above ground pipework  
Refer to 7451 SURFACE WATER DRAINAGE for storm/surface water drainage

### 2 PRODUCTS

#### Materials

##### 2.1 REINFORCING STEEL

Plain round and/or deformed steel bars, Grade 300 to [AS/NZS 4671](#).

##### 2.2 PVC-U PIPES AND FITTINGS

Unplasticised PVC pipe and fittings to [AS/NZS 1260](#), buried pipes classified as follows:

Classification	Use
SN4 - SN6	Domestic & light load areas
SN8 - SN10	Commercial & Industrial medium load areas
SN16	Public roads & high load areas

##### 2.3 GULLY TRAPS - NZBC G13/AS2

Gully traps complete with grating to [NZBC G13/AS2](#), 3.3 **Gully traps**.

#### Accessories

##### 2.4 BEDDING, SURROUND AND FILLING MATERIALS

Granular:	Clean gravel or crushed stone or a blend of these. Particle size from minimum 7mm to maximum 20mm.
Selected:	Fine grain soil or granular material suitable for bedding and excluding topsoil, organic matter and rubbish.
Ordinary:	Top soil or other excavated materials excluding organic matter and rubbish.

##### 2.5 CONCRETE

To [NZS 3104](#).

Prescribed mix 17.5 MPa: For in situ bases, anchors and pipe surrounds.

Prescribed mix 14 MPa: For bedding only.

## 3 EXECUTION

### Application

#### 3.1 BEDDING - NZBC G13/AS2

Place to [NZBC G13/AS2](#), 5.0 **Installation**, figure 7, **Bedding and backfilling**, using compacted granular material to avoid differential settlement and to obtain longitudinal support of the pipe.

#### 3.2 SURROUND AND BACKFILL - NZBC G13/AS2

Place to [NZBC G13/AS2](#), figure 7 **Bedding and backfilling**, using compacted granular material and compacted fill. Compact in layers not exceeding 100mm.

### 3.3 SETTING OUT

Use string line, boning rod or laser equipment methods. Use surveying and levelling equipment to accurately set out design invert levels.

### 3.4 LAYING AND JOINTING

Lay in straight lines between changes of line or grade from the lower end of the drain with sockets pointing uphill. Set each pipe true to line and grade and each joint completed before the next pipe is laid. Install PVC-U pipes to [AS/NZS 2032](#) or [AS/NZS 2566.1](#) and [AS/NZS 2566.2](#). Install polyethylene Pipes to [AS/NZS 2033](#). Cap ends of uncompleted runs each day to prevent entry of foreign matter. Test drains and backfill progressively to minimise site disruption. Concrete cap trenches to drains with less than 375mm cover.

### 3.5 LAYING FOUL WATER DRAINS

Lay the drainage system from soil stacks and gully traps, including access chambers, inspection chambers, bends, junction inspections, and vents (fresh air inlets). Discharge into the network utility operator foul water system to their requirements.

### 3.6 DIFFERENTIAL SETTLEMENT

Provide flexible jointing, bedding and surrounding of pipes at junctions with manholes, foundation walls and other points where differential settlement may occur.

#### **Application - fittings**

### 3.7 CONSTRUCT GULLY TRAPS - NZBC G13/AS2

Set in a minimum 75mm thick concrete with top surround 25mm above paving and 100mm above other surfaces, to [NZBC G13/AS2](#), 3.3 **Gully traps**.

#### **Application - connections**

### 3.8 CONNECTION TO FOUL WATER - PUBLIC MAINS

Locate, excavate and expose the existing drain, connect new pipework to existing drain to the requirements of the network utility operator.

### 3.9 CONNECTION TO FOUL WATER - ON SITE

Locate, excavate and expose the existing drain, connect new pipework to existing drain using a 'Y' junction, to meet the standards of the new work.

## **SELECTIONS**

### 4.1 GULLY TRAPS

Manufacturer/type: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

Material: uPVC

# 7673 SPLIT UNIT HEAT PUMP SYSTEMS

## 1 GENERAL

This section relates to heat pump air conditioning systems.

### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

L10 :	Centile Level, sound level that is equalled or exceeded for 10% of the time.
HFC:	Hydro-fluorocarbon
mm Hg:	mm mercury - unit of pressure
NIWA	National Institute of Water and Atmospheric Research
ASHRAE	American Society of Heating and Air Conditioning Engineers
IRHACE	Institute of Refrigeration, Heating and Air Conditioning Engineers

### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External Moisture
NZBC G4/AS1	Ventilation
AS 1324.2	Air filters for use in general ventilation and air conditioning - methods of test
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 1571	Copper - seamless tubes for air conditioning and refrigeration
AS/NZS 2107	Acoustics - Recommended design sound levels and reverberation times for building interiors
AS/NZS 3666.1	Air handling and water systems of buildings - Microbial control - Design, installation and commissioning
AS/NZS 3823.1.1	Performance of electrical appliances - Airconditioners and heat pumps - Part 1.1: Non-ducted airconditioners and heat pumps - Testing and rating for performance
AS/NZS 3823.1.2	Performance of electrical appliances - Airconditioners and heat pumps - Part 1.2: Ducted airconditioners and air-to-air heat pumps - Testing and rating for performance
AS/NZS 3823.2	Performance of electrical appliances - Air conditioners and heat pumps - Energy labelling and minimum energy performance standard (MEPS) requirements
AS 4254.1	Ductwork for air handling systems in buildings - Flexible duct
NZS 4303	Ventilation for acceptable indoor air quality
AIRAH DA9, ASHRAE or Carrier	Manual calculation methods
ACADS-BSG Camel, Carrier E20	Electronic calculation methods

### Warranties

### 1.3 WARRANTY - INSTALLER/APPLICATOR

Installer's warranty for the system under normal environmental and use conditions against failure.

2 years                      Execution warranty

Provide this warranty on the installer's standard form.



#### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Manufacturer's warranty for the system under normal environmental and use conditions against failure.

2 years: Warranty

Provide this warranty on the manufacturer's standard form.

#### Requirements

##### 1.5 CO-ORDINATE WORK

Co-ordinate all items with the main contractor, in particular cutting of penetrations and waterproofing. Exterior penetrations to [NZBC E2/AS1](#) as consistent with the project requirements.

##### 1.6 DRAWINGS AND BROCHURES

Submit, on request for review drawings and brochures of units, grilles and any other elements that affect the interior finishes.

##### 1.7 QUALIFICATIONS

Work to be carried out by approved trades people, qualified, experienced, competent and familiar with the equipment, systems, materials and techniques specified.

Handling or recovering refrigerant to be carried out by the appropriate Approved Filler and/or Handler, with a test certificate under the HNSO Act.

##### 1.8 AIR CONDITIONING LOAD CALCULATIONS

General: Calculate the cooling and heating loads using one of the following:

- Manual methods: AIRAH DA9, ASHRAE or Carrier.
- Electronic methods: ACADS-BSG Camel, or Carrier E20

## 1.9 AIR CONDITIONING DESIGN BASIS

### General

Outside design conditions: Use outdoor design conditions listed in publications from NIWA, ASHRAE, IRHACE or other reliable sources for weather data, for the location geographically closest and most relevant to the site.

### Inside design conditions

Summer: 22°C dry bulb, 50% relative humidity.

Winter: 21°C dry bulb.

Limit the temperature difference in air conditioned spaces served by the same zone or system to  $\pm 1.5^\circ\text{C}$  when measured:

- Between any 2 points in the space from floor level to 1500mm above floor level, > 2000mm from cooking equipment and > 1000mm from any other appliance.
- When outside conditions are in the range specified above.
- After the plant has been operating for one hour.
- In the same 5 minute period.

Divide the systems into temperature controlled zones to meet the specified permissible temperature variation and documented system divisions.

Where ventilation requirements are not met by natural means and do not comply with [NZBC G4/AS1](#), supply fresh air to spaces with air conditioning systems via the air handling system, or separate mechanical ventilation system in accordance with [NZS 4303](#).

### Heating

Reverse cycle.

### Building Enclosure

Refer to drawings for construction of windows, walls, floors, roofs and insulation.

External window shading: Type: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

Internal window shading: Type: **Refer to Generation Homes Standard Features and Variations Lists for selections.**

### Noise

Indoor noise emitted - to [AS/NZS 2107](#), depending on space served, occupancy and activity.

Noise received in all habitable rooms shall not exceed that permitted by the applicable Territorial Authority for the time of day or day of the week for the zoning of the site. Not more than L10: 35dbA between 2300 and 0700 hours. This shall apply to both the property in question and the neighbouring properties.

## 1 10 INFORMATION FOR OPERATION AND MAINTENANCE

Provide the following general operation and maintenance information as electronic PDF format documents:

All units, filters, controls, pumps, traps, drain trays, refrigerant

## 1 11 MAINTENANCE CONTRACT PROPOSAL

Provide a proposed contract for the ongoing servicing of the heat pump system. Refer to SELECTIONS.

## 2 PRODUCTS

### Material

## 2 1 REVERSE CYCLE UNITS

Split system heat pumps shall meet the requirements of AS/NZS 3823.1.1 and AS/NZS 3823.1.2 with minimum energy performance standards (MEPS) in accordance with AS/NZS 3823.2.

Provide effective outdoor coil defrost facility that prevents room temperature dropping more than  $2^\circ\text{C}$  during defrost.

## 2.2 CABINETS

Aluminium, powder coated steel or moulded acrylonitrile-butadiene-styrene (ABS) plastic with zinc - coated steel or stainless steel fasteners. Insulate and vapour seal cabinet and drain trays to prevent external condensation under all operating conditions.

## 2.3 DRAIN TRAYS

Aluminium, stainless steel or plastic to collect all moisture inside indoor and outdoor units.

## 2.4 FILTERS

Washable panel type.( 85% of arrestance when tested to AS 1324.2, Test Dust No.4 or Class EU2 rated.

## 2.5 COILS

Copper tube with aluminium plate fins.

## 2.6 CONTROLS

Provide as a minimum the following functions:

- Temperature control for each zone located to accurately sense zone temperature.
- Fan speed selection for multi and variable speed fans.
- Day/night zone changeover if scheduled.
- Time switch for each system with ( 6 temperature programs per day, separate programs for each day of the week, manual set point over ride and 'Vacation' or 'Holiday' temperature set back.

## 2.7 DUCTS

Metallic-coated sheet steel to AS 1397, coating class G2/Z275.

Flexible ducting shall be metallized fabric clamped on formed metal helix with polyester insulation blanket wrapped around duct and covered with an outer vapour barrier.

## 2.8 REFRIGERATION PIPEWORK KIT

Split system manufacturer's standard pre-charged piping kit.

## 2.9 REFRIGERATION PIPEWORK CUSTOM

Copper tubing, de-oxidised seamless refrigeration quality, either half hard or soft drawn. Jointing shall be brazed or flared connections to equipment.

## 2.10 REFRIGERANT

Refrigerant HFC type with no phase out date, such as R410a or R407a, unless approved otherwise.

# EXECUTION

## Conditions

## 3.1 DELIVERY

Keep materials and equipment dry in transit. Take delivery of materials and equipment in an undamaged condition. Reject all damaged materials.

## 3.2 STORAGE

Store materials and accessories on a level, firm base, in dry conditions, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until installed.

## 3.3 CONFIRM LAYOUT

Before commencing work confirm the proposed location of pipes, ducts and controls.

## 3.4 CONCEALED PIPING

All refrigeration and condensate piping shall be concealed within the building structure unless stated otherwise.

## 3.5 CO-ORDINATE SERVICES

Co-ordinate and co-operate with other sub-trades to avoid any conflict with the installation of the system with other subcontractors work.

## 3.6 PROTECT SURFACES

Protect surfaces, equipment and finishes already in place from the possibility of damage during the installation process.

## Application

### 3.7 INSTALLATION DUCTWORK

Install flexible duct as straight as possible with minimum number of bends. Maximise bend radius. Check for and rectify any crushed flexible duct. Install and support to AS 4254.1,2,5, limit sag to < 40mm/m.

Insulate ducts to reduce heat gain and prevent condensation. Provide continuous vapour barrier around ducts carrying conditioned air. Insulate flexible connections on ducts carrying air below ambient temperature.

Clean interior of ductwork progressively during installation.

### 3.8 INSTALLATION PIPE WORK

Install general pipe work to AS/NZS 1571

Purge the system at all times with dry nitrogen when brazing or heating pipework.

Pipes to be installed to manufacturer's requirements, adequately supported, also arranged and sized to prevent excessive pressure drop and ensure correct circulation of refrigerant and oil.

All refrigeration pipework test to 1800 kPa.

Insulate all refrigerant and drain piping that may sweat with chemically blown closed cell elastomeric insulation. Suction lines are to be insulated over the entire length between connections to indoor and outdoor units. Protect insulation from sunlight and mechanical damage. Insulation thickness: 13mm for pipes < DN 20, 19mm otherwise.

Provide trapped ( DN 20 condensate drains to [AS/NZS 3666.1](#) from each indoor coil and safety tray, to an approved drain point. Provide drains from each reverse cycle outdoor coil unless casing freely drains to a roof or other location where condensate will not cause damage or pond.

### 3.9 INSTALLATION UNIT

Provide clearance around outdoor units for condenser air flow and maintenance access, to manufacturer's requirements. Ensure discharge air does not short-circuit to condenser intake. For equipment at ground level, ensure they are mounted on 100mm level concrete plinth or equivalent impervious material. Provide internal or external flexible duct connections at indoor unit.

For vibration isolation of suspended units, provide ( 4 metal spring or rubber-in - shear isolation mountings with ( 25mm static deflection and 98% isolation efficiency. For floor mounted units, provide neoprene waffle pads. Bolt in place.

If leaks or condensation from equipment could cause nuisance or damage to the building or its contents provide a galvanized steel safety tray under the equipment.

### 3.10 INSTALLATION REFRIGERANT

The completed system including all pipework, to be evacuated to 0.2mm Hg or better with a vacuum pump and maintained at this pressure for 2 hours, then broken with refrigerant.

#### Completion

### 3.11 COMMISSIONING

Commission the systems to manufacturer's recommendations using instruments calibrated in the last 12 months. Submit signed commissioning check list on completion.

### 3.12 CLEANING

Clean filters, outdoor coils, grilles and diffusers.

Remove debris, unused materials and elements from the site. Clean soiled or marked work.

Replace damaged, cracked or marked elements. Leave the whole of this work to the standard required by following procedures.

### 3.13 PROTECT

Protect new work from damage.

## 4 SELECTIONS

#### 4.1 SPLIT UNIT HEAT PUMP MANUFACTURER / MODEL

Manufacturer: **Refer to Generation Homes Standard Features and Variations Lists for selections.**  
Indoor Unit Model: As indicated on the drawings  
Outdoor Unit Model: As indicated on the drawings

#### 4.2 NON-DUCTED AIR CONDITIONING

Plant location: As indicated on contractors drawings  
Room served: As indicated on contractors drawings  
System: **Refer to Generation Homes Standard Features and Variations Lists for selections.**  
Outdoor plant location: As indicated on contractors drawings

#### 4.3 SPLIT UNIT HEAT PUMP SUPPLY DIFFUSERS

Type: **Refer to Generation Homes Standard Features and Variations Lists for selections.**  
Material: As selected  
Finish and colour: As selected

#### 4.4 SPLIT UNIT HEAT PUMP RETURN AIR GRILLE

Type: **Refer to Generation Homes Standard Features and Variations Lists for selections.**  
Material: As selected  
Finish and colour: As selected

# 7701 ELECTRICAL BASIC

## 1 GENERAL

This section relates to the wiring for domestic and small scale commercial installations, including:

- power
- lighting
- electrical automation
- security system
- complete with componentry
- electrically-powered fittings

### 1.1 RELATED WORK

Refer to 7673 SPLIT UNIT HEAT PUMP SYSTEMS for electric heat pumps.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

CFL	compact fluorescent lamp
ELV	extra low voltage
GLS	general lighting service
IP	international (ingress) protection classification
LCD	liquid crystal display
LED	light emitting diode
MCB	miniature circuit breaker
NUO	Network Utility Operator
PCB	printed circuit board
PIR	passive infrared
RCBO	residual current-operated circuit breaker with over current protection
RCCB	residual current-operated circuit breakers
RCD	residual current device
SIA	security integration architecture
TPS	tough plastic sheathed
TCF	Telecommunications Carriers' Forum

### Documents

### 1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
NZBC F6/AS1	Visibility in escape routes
NZBC F7/AS1	Warning systems
NZBC G4/AS1	Ventilation
AS/NZS 1125	Conductors in insulated electric cables and flexible cord
AS/NZS 1768	Lightning protection
AS/NZS 2201.1	Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance
AS 2293.1:2005	Emergency escape lighting and exit signs for buildings - System design, installation and operation
AS 2293.3:2005	Emergency escape lighting and exit signs for buildings - Emergency escape luminaires and exit signs
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3008.1.2	Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions
AS/NZS 3100	Approval and test specification-general requirements for electrical equipment
AS/NZS 3112	Approval and test specification - Plugs and socket-outlets
AS/NZS 3113	Approval and test specification - Ceiling roses
AS/NZS 3190	Approval and test specification - Residual current devices (current-operated earth-leakage devices)
AS/NZS 3439.3	Low-voltage switchgear and controlgear assemblies - Particular requirements for low-voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards
AS 3786	Smoke alarms
NZS 4514	Interconnected smoke alarms for houses
AS/NZS 5000.2	Electric cables - Polymeric insulated - for working voltages up to and including 450/750v
AS/NZS 60335.1	Household and similar electrical appliances - Safety - General requirements
AS/NZS 60598.2.2:2001	Luminaires - Particular requirements - Recessed luminaires
AS/NZS 61439.3	Low-voltage switchgear and controlgear assemblies - Part 3: Distribution boards intended to be operated by ordinary persons (DBO).
IEC 61643	Components for low voltage surge protection devices
Electricity (Safety) Regulations 2010 (Reprint as at 4 April 2016)	
TCF Premises Wiring Code of Practice 2011	

#### Warranties

### 1.4 WARRANTY

Warrant the complete electrical installation under normal environmental and use conditions against failure of materials and execution.

1 year: Warranty period

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

#### Requirements

### 1.5 COMPLY

Comply with the Electricity (Safety) Regulations 2010, AS/NZS 3000, AS/NZS 3008.1.2 and TCF Premises Wiring Code of Practice for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.



## 1.6 QUALIFICATIONS

Carry out work under the supervision of an electrical licensed supervisor.

## 1.7 QUALIFICATIONS - SECURITY SYSTEM

Installation by an installer licensed under the Private Investigators and Security Guards Act.  
Installation of all security equipment to comply with [AS/NZS 2201.1](#) Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance.

## 1.8 SAFETY OF INSTALLATION - DESIGN BY ELECTRICAL ENGINEER

Before installation work commences obtain from the electrical engineer a Certified Design. The Certified Design is to comply with the Electrical (Safety) Regulations (2010), regulation 58.

## 1.9 SAFETY OF INSTALLATION - DESIGN BY ELECTRICIAN

Before installation work commences provide a Certified Design. The Certified Design is to comply with the Electrical (Safety) Regulations (2010), regulations 58. It must be signed by the designer of the installation.

## 1.10 ELECTRICAL CERTIFICATE OF COMPLIANCE

Supply a certificate of compliance (CoC) to the owner, and if required the NUO, as required by the Electricity (Safety) Regulations (2010), prior to connection.

- Arrange for the NUO to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.
- Arrange for an inspector to inspect as required by regulation 70.

## 1.11 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electrical (Safety) Regulations 2010, to the owner and when required the BCA. To be provided no later than 20 working days after connection and prior to Practical Completion.

## PRODUCTS

### 2.1 MAINS SUPPLY

Tough plastic sheathed neutral screened cable to [AS/NZS 5000.2](#) and [AS/NZS 3008.1.2](#), with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

### 2.2 CABLES

Tough plastic sheathed copper conductors to [AS/NZS 5000.2](#), stranded above 1.0mm<sup>2</sup>, and to [AS/NZS 3008.1.2](#). Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the MCB rating, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.5mm <sup>2</sup> on 10 amp MCBs
Lighting circuits:	Commercial: 1.5mm <sup>2</sup> on 16 amp MCBs
Power circuits:	2.5mm <sup>2</sup> on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
	2.5mm <sup>2</sup> on 16 amp MCBs for domestic insulated construction, or filled cavity
	2.5mm <sup>2</sup> on 20 amp MCBs for unenclosed or unfilled cavity construction
	2.5mm <sup>2</sup> on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres

Hot water cylinder circuits: Single phase: 2.5mm<sup>2</sup> on 20 amp MCBs

Range/oven/hob circuits: Single phase: 6mm<sup>2</sup> on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions that may be above 35°C.

### 2.3 METER BOX

Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.

## 2.4 DISTRIBUTION BOARD

Flush surface mount boards manufactured to [AS/NZS 3439.3](#), or AS/NZS 61439.3, and installed in accordance with [AS/NZS 3000](#). Manufactured from engineering grade resin with a glow wire rating of 850°C, complete with neutral and earth busbars, and insulated comb phase bar. Distribution boards to have 20% spare capacity for future additions and alterations.

## 2.5 CIRCUIT PROTECTION

General requirements including main switch 63A or 100A. Residual current protection 30mA, ensure RCCBs' meet Type A and comply with [AS/NZS 3190](#). MCBs to 4.5kA or 6kA rated.

### 2.6 WALL BOXES

Standard grid size or equivalent to be manufactured from plastic or metal, with 2 or more gang size to be metal with steel inserts for accessory securing screws. Screw fixed.

### 2.7 SWITCH UNITS

Single pole switches to be 16 amp minimum rated, double pole or intermediate to be 16 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units and 2 way units.

### 2.8 HOT WATER SYSTEM SWITCH

One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

### 2.9 SWITCHED SOCKET UNITS

10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters and manufactured to [AS/NZS 3100](#), [AS/NZS 3112](#) and [AS/NZS 3113](#), single or multi gang as detailed.

### 2.10 SMOKE ALARMS

Type 1 domestic smoke alarm to [NZBC F7/AS1](#). 1.2 **Descriptions of alarm systems.** Alarm to AS 3786. A wired 230 volt ionised smoke detector type.

### 2.11 SURGE PROTECTION

Protection for the homes appliances with IEC 61643 Class II surge protection devices fitted to the switchboard. For variable electronic equipment fit IEC 61643 Class III surge protection to switched socket outlets.

### 2.12 CEILING ROSES

White plastic mounting base with screwed cover, manufactured to [AS/NZS 3113](#). Terminal type. Cylindrical section TPS for suspended fittings.

### 2.13 BATTEN HOLDERS

Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.

### 2.14 LIGHT FITTINGS

Fluorescent and High Intensity Discharge fittings with low loss control gear and power factor corrected to 0.95 minimum. Control gear suitable for dimming if this is required. All fittings complete with lamps; Incandescent GLS lamps pearl, coiled-coil 230v rated, bayonet cap; Fluorescent triphosphor 2700K; CFL; halogen ELV 12v dichroic reflector with cover glass unless detailed otherwise; integral/non-integral LEDs, reflectors, lenses, heatsinks and drivers - 3,000K to 4,000K, CRI >80, L70.

### 2.15 RESIDENTIAL RECESSED LIGHT FITTINGS

Residential recessed luminaires to [AS/NZS 60598.2.2](#), types IC-F, IC, CA-80 or CA-135 only.

### 2.16 EXHAUST FANS

Ceiling, wall or duct mounted exhaust fans for ventilation to [NZBC G4/AS1](#), and compliant with [AS/NZS 60335.1](#).

### 2.17 HEATED TOWEL RAILS

Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with [AS/NZS 60335.1](#), scratch resistant powdercoated or chrome finish.

## 2.18 OUTDOOR SWITCHES & SOCKETS

Using materials with superior UV protection, impact strength, and addition chemical resistance when compared with interior polycarbonate fittings. Weather protected, switches to IP56 minimum, and sockets to IP53 minimum. Sockets fitted with safety shutters behind socket pins, and all products able to be padlocked off or on.

### Electrical automation system

## 2.19 ELECTRICAL AUTOMATION SYSTEM

Electrical automation system designed to enable if required:

- Lighting - automated control and dimming timer control.
- Heating including heated towel rails and ventilation systems.
- Appliances.

### Security system

## 2.20 CONTROL PANEL

Control panel system with a minimum of one installer code, one master code, 6 zones minimum and 6 user codes. The installer to select codes to suit installation.

## 2.21 DETECTORS

There are two main types of detectors:

- Standard passive infrared sensors: Install in stable environments with no wind flow and no direct bright sunlight.
- Passive infrared/ microwave sensors: Install in area where environmental stability is an issue.

## 2.22 AUDIBLE DEVICES

Internal sirens can be either a 12V Piezo Siren or a Horn speaker with a sound pressure level of no less than 95dB.

External siren can be either a stainless steel design or have hardened plastic casing. Both designs to be fully weatherproof but not limited to IP66 Rating. The siren box to contain a strobe diffuser in either blue or red. The siren shall contain a horn speaker, 12v speaker or an electronic siren. The external siren box to have both a cover and rear wall tamper mechanism.

## 2.23 CABLING

Security alarm wiring to NZS/AS 1125 for cables.

Security alarm wiring to be multi stranded and not single stranded, minimum 0.5mm<sup>2</sup>.

## 2.24 PERIPHERALS

Fit anti-tamper devices to detectors, control panels and equipment housings, programmed to give a tamper indication when the system is unset and a tamper alarm when the system is set.

Standard keypad manufactured of moulded hardened plastic with either a LED or LCD screen, to match the style of the wiring accessories in diameter, colour and aesthetics.

## 2.25 COMMUNICATIONS

Digital dialler to be built into the PCB of all control panels, with the options for both monitoring and remote dial in windows based software. Digital dialler to comply with all the industry standard communication formats including contact I.D and SIA, and NZ Telepermit certification.

Remote software able to upload / download programming changes and or history events and change status of the security alarm with the ability to be turned off if required.

## EXECUTION

## 3.1 MAIN SUPPLY

Lay underground mains to the NUO requirements. Excavate trench, install cable and marker tape and backfill.

## 3.2 METER BOX

Fit to meter box manufacturer's and Electricity Retailer's requirements. Recess into external wall in sheltered area and flash to weatherproof to [NZBC E2/AS1](#) fig 69. Arrange for meter installation and connection.

### 3.3 DISTRIBUTION BOARD

Fit to [AS/NZS 3000](#) and board manufacturer's requirements. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

### 3.4 CIRCUIT PROTECTION

Install MCBs at distribution board to AS/NZS3000 to protect each final sub circuit.

### 3.5 EARTH BONDS

Bond together and to earth all plumbing fittings not adequately isolated, to [AS/NZS 3000](#), the Electricity (Safety) Regulations 2010 and the fitting manufacturer's requirements.

### 3.6 MAIN EARTH

Provide a plastic toby box to contain and protect the earth electrode. Fix the connecting earth wiring closely and securely against wall surfaces.

### 3.7 EARTH LEAKAGE PROTECTION

Install RCD protection to [AS/NZS 3000](#).

### 3.8 RCD - DOMESTIC INSTALLATIONS

Install 30mA RCD protection at the switchboard for all final sub circuits to control outlets and lighting except for fixed or stationary cooking equipment, to [AS/NZS 3000](#).

### 3.9 RCD - SPECIFIC INSTALLATIONS

Install 30mA RCDs at the distribution board.

Install fixed wired RCD protected outlets (SRCD) in the following areas:

- Wet areas: bathrooms, laundries, kitchens.
- Near pools and water features.
- Where intended for use with cleaning equipment.
- Hand-held tools subject to movement in use, i.e. work-shops, garages.

### 3.10 SET-OUT

The position of outlets and equipment shown on drawings is indicative of requirements. Confirm documents and site conditions are not in conflict with other services or features. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

### 3.11 CABLING

Install wiring systems to [AS/NZS 3000](#). All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.

### 3.12 CABLING CIRCUITS

Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.

### 3.13 WALL BOXES

Mount flush in cavity construction size to fit products selected. Fix vertically mounted wall boxes to studs. Screw fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

### 3.14 SWITCH AND SOCKET UNITS

Fit all single and double switch units, all sockets to the following heights (to the centre of the unit) unless shown otherwise on the drawings.

Switch Units: 1000mm above finished floor

Socket Units: 150mm above work benches

400mm above finished floor

Mount light switches and switch socket outlets vertically and socket units horizontally. Label all switch units that control electrical equipment or special lighting circuits by colour filled engraving on the switch. Use proprietary engraved switch mechanisms where applicable.

### 3.15 ISOLATING SWITCHES

Locate isolating switches in positions as confirmed by the owner, when not specifically shown on the drawings.

### 3.16 LIGHT FITTINGS

Install light fittings in locations and at heights specified and confirmed by the owner, in accordance with the fitting manufacturer's requirements.

### 3.17 EXTRA LOW VOLTAGE LIGHTING

Use electronic, transformers (halogen) or drivers (LED) for ELV lamps, one transformer/driver per lamp. Locate to manufacturer's requirements and as close as practicable to the lamp. Ensure transformers/drivers and rear of light fittings are adequately ventilated and appropriately clear of any building elements, to [AS/NZS 3000](#).

### 3.18 RECESSED LIGHT FITTINGS - CLEARANCE TO INSULATION

Non-residential applications;

The clearance between insulation and recessed downlights;

- Leave 100mm gap to [AS/NZS 3000](#), figure 4.9
- Provide larger gaps where required by the downlight manufacturer

Residential applications;

- Ensure new recessed downlights are one of the new classes classified in [AS/NZS 60598.2.2](#); CA 80, CA 135, IC and IC - F.
- Classification type CA 80, CA 135, to [AS/NZS 60598.2.2](#); insulation can abut the sides (wrapping around the sides)
- Classification type IC and IC - F, to [AS/NZS 60598.2.2](#); insulation can abut and cover over the top of the downlight
- Provide larger gaps where required by the light manufacturer
- In a retrofit situation where the insulation is non-approved or unknown, ensure 100mm clearance from the insulation to [AS/NZS 3000](#), figure 4.9.

### 3.19 SMOKE ALARMS

Install Type 1 domestic smoke alarm system to [NZBC F7/AS1 3.0 Domestic smoke alarms](#), NZS 4514 and to the alarm manufacturer's requirements. Fit neatly and without damage to the surrounding finish.

### 3.20 SURGE PROTECTION

Install surge protection devices to manufacturer's requirements and in accordance with [AS/NZS 3000](#) and AS/NZS 1768. When fitting IEC 61643 Class II protection at the switchboard, protect the device by a dedicated MCB.

### 3.21 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire fittings and equipment to individual fittings and equipment manufacturer's requirements. Refer to the drawings for required layouts and locations for equipment. Refer to SELECTIONS for schedules of fittings.

### 3.22 BATHROOM ELECTRICAL FIXTURES

Install all electrical fixtures. Connect the following bathroom and toilet electrical items:

- Heated towel rails: Install to manufacturers requirements and installed in accordance with [AS/NZS 3000](#)
- Mirror demisters: Locate centrally above the wash hand basin(s). Connect wiring to room lighting unless specified otherwise.
- Exhaust fans: Install exhaust fans to manufacturer requirements. Installed in accordance with [AS/NZS 3000](#) and [NZBC G4/AS1](#).



### 3.23 OUTDOOR/EXTERIOR SERVICES

Install all wiring systems in accordance with [AS/NZS 3000](#) and in accordance with the manufacturer's recommendations:

Provide circuits and connections for exterior installations, including ELV 12/24 Volt path lighting and electronic irrigation systems. Refer to drawings for connection points. Where underground, ensure appropriate protection, such as thickness of sheathing, conduit, depth of cabling, and proximity to other services.

Use the appropriate rated fittings for power control and power supply. Weather protected switches to IP56, and sockets to IP53 as a minimum. Install to manufacturer's specifications using recommended fittings and sealants to maintain the products integrity.

Earth leakage protection to be provided for in areas where there is increased risk to human safety in the form of either RCDs at the distribution board, or socket outlet. RCDs are recommended for visible awareness of protection.

### 3.24 LABELLING

Include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit.

#### Security system

### 3.25 SECURITY SYSTEM

Install to the system manufacturer's requirements, control panel, detectors and associated equipment fitted neatly and without damage to surrounding finishes. Installation of security equipment to [AS/NZS 2201.1](#) Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance. All 230v mains power connections to the security panel are to be in accordance with [AS/NZS 3000](#). The 230V power is to be switched using a dedicated single gang Isolator switch or similar.

#### Completion

### 3.26 COMPLETION

Leave installation operating correctly, with equipment clean and operational.

## SELECTIONS

### Materials

### 4.1 SELECTIONS - FITTINGS AND HARDWARE

**Confirm selections of all outlet fittings and hardware with the Generation Homes Standard Features and Variations Lists for selections before ordering.**

### 4.2 METER BOX

Location:	Refer to architectural drawings
Brand / type:	<b>Refer to Generation Homes Standard Features and Variations Lists for selections.</b>

### 4.3 DISTRIBUTION BOARD

Location:	Refer to architectural drawings
Brand / type:	<b>Refer to Generation Homes Standard Features and Variations Lists for selections.</b>

MCB:	to be selected
RCCB:	to be selected
RCBO:	to be selected
Surge protectors:	to be selected
Modular contactors:	to be selected
Main switch:	to be selected
Timers	to be selected

### 4.4 SECURITY SYSTEM

**Refer to Generation Homes Standard Features and Variations Lists for locations and selections.**

#### Outlets - fittings

- 4.5 INTERIOR OUTLETS  
**Refer to Generation Homes Standard Features and Variations Lists for selections.**
- 4.6 INTERNAL LIGHT FITTINGS  
**Refer to Generation Homes Standard Features and Variations Lists for selections.**
- 4.7 SMOKE ALARMS  
Location: Refer to architectural drawings  
Brand / type: **Refer to Generation Homes Standard Features and Variations Lists for selections.**
- 4.8 EXTERIOR SWITCHES AND SOCKETS  
**Refer to Generation Homes Standard Features and Variations Lists for selections.**
- 4.9 EXTERNAL LIGHT FITTINGS  
**Refer to Generation Homes Standard Features and Variations Lists for selections.**
- 4.10 MISCELLANEOUS ITEMS  
**Refer to Generation Homes Standard Features and Variations Lists for selections.**
- 4.11 HEATED TOWEL RAILS  
**Refer to Generation Homes Standard Features and Variations Lists for selections.**
- 4.12 MIRROR DE-MISTERS  
**Refer to Generation Homes Standard Features and Variations Lists for selections.**
- 4.13 BATHROOM FANS AND HEATERS  
**Refer to Generation Homes Standard Features and Variations Lists for selections.**
- 4.14 APPLIANCES  
**Refer to Generation Homes Standard Features and Variations Lists for selections.**
- 4.15 OWNER SUPPLY ITEMS  
**Refer to Generation Homes Sale and Purchase Agreement for any Owner coordinated works.**



# 8320 SOIL PREPARATION, PLANTING & TURFING

## 1 GENERAL

This section relates to the supply, preparation and placement of plant mix and soil, and the planting of:

- trees
- shrubs
- lawns
- installation of irrigation systems
- sowing or turfing of lawns

### 1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

AS/NZS 1477	PVC pipes and fittings for pressure applications
NZS 3604	Timber-framed buildings
AS/NZS 3500	Plumbing and drainage Part 1: Water services

### Requirements

### 1.2 QUALIFICATIONS

Landscapers to be experienced competent workers, familiar with the materials and the techniques specified. Supply evidence of experience and competence on request.

### PRODUCTS

#### Materials

#### 2.1 TOPSOIL

Good quality loam of a workable consistency stripped from its original location to a maximum depth of 200mm:

- free of pernicious weeds, straw, stones, sticks, clay lumps
- free of foreign matter exceeding 25mm dimension.
- pH value between 6.5 and 7.5
- humus content greater than 50%.

#### 2.2 PLANT MIX

Thoroughly mixed medium of 60% compost and 40% bark, pumice and fertiliser by volume.

#### 2.3 BACKFILLING

Thoroughly mixed medium of 30% peat and 70% topsoil by volume.

#### 2.4 TREES, SHRUBS, PLANTS

As selected. Best nursery stock, healthy and vigorous with well developed root systems in balance with the amount of foliage growth, well branched and symmetrically shaped and all tagged with the grower's own tag. Reject all root bound plants or those with badly spiralling root systems. Refer to SELECTIONS for type and size.

#### 2.5 STAKES

Rough sawn radiata pine H4 treated.

Size/length: 50mm x 50mm, length to suit tree/plant size  
20mm x 20mm, length to suit tree/plant size

#### 2.6 MULCH

Refer to SELECTIONS for type.

#### 2.7 FERTILISER - GENERAL

Pre-plant, slow release, non-burning complete NPK (nitrogen, phosphorous, potassium) ratio of 5:5.5:4.1, with added micro-nutrients iron, sulphur and magnesium. Add gypsum, blood and bone and potash where required by soil composition or plant type.

## 2.8 GRASS, TURFED

Blended local and imported lawn grasses in selected netted topsoil, to finish as a deep, green, weed-free, uniform, close density lawn turf in 1.0m<sup>2</sup> rolls. Refer to SELECTIONS for type.

## 2.9 GRASS, SOWN

Certified mixture of grass seed to suit local site conditions, with a high germination rate, fungicide and bird-repellent treated. Supply for review the proposed mixture and area of use. Refer to SELECTIONS for seed mix and rate.

## 3.10 FERTILISER - GRASS SEEDING OR TURFING

Pre-plant, slow release, non-burning complete NPK (nitrogen/phosphorous/potassium) ratio of 20:11:10 with added micro-nutrients iron, sulphur and magnesium.

## 3.11 WEED MAT

Biodegradable weed suppressant matting or woven construction stabilised polypropylene fabric.

# EXECUTION

## Conditions

### 3.1 RELATIVE LEVELS

All proposed finished landscaping levels to conform to [NZS 3604](#), section 6.14, **Prevention of dampness** and section 7.5.2, **Finished floor levels and foundation edge construction**, in relation to any adjoining habitable floor levels.

Maintain the required cover over any buried services.

### 3.2 DELIVERY

Only deliver material to the site that can be immediately placed in its final location from the delivery vehicle. Plant trees, plants and shrubs as soon as possible and no later than 3 days after delivery, keeping the rootball moist.

### 3.3 QUALITY OF TREES, SHRUBS AND PLANTS

Provide trees, shrubs and plants which are healthy and vigorous, with well developed root systems, in balance with the amount of foliage growth, well branched and symmetrically shaped of a normal habit and all tagged with the growers' own tag. Reject all root bound plants and those with spirally bound root systems.

### 3.4 EXISTING SERVICES

Check for services in the area of this work. Avoid interference or damage to them.

### 3.5 ENSURE

Ensure that all areas are clean, ready to be worked and clear of any continuing work by others.

## Application

### 3.6 PREPARATION OF PLANTING AREAS

Replace substandard soil with 200mm layer of plant mix. Place in 100mm layers, lightly compacted by heeling or rolling and slightly mounded in the centre of the bed.

Thoroughly spray planting areas which contain weed growth with a non-selective herbicide. Apply using protective clothing, in dry, still-air conditions to the spray manufacturer's requirements.

### 3.7 PREPARATION OF GRASS AREAS

Replace substandard soil with 150mm layer of topsoil. Rotary hoe in two directions to a depth of 150mm and bring up to the required topsoil standard. Rake to a fine tilth, level and smooth with run-offs to drainage outlets. Apply selective herbicide.

Thoroughly spray grass areas which contain weed growth with a non-selective herbicide. Apply using protective clothing, in dry, still-air conditions to the spray manufacturer's requirements.

### 3.8 SITING

Position and space out trees and shrubs in locations and quantities shown on the drawings. Where layout is not shown on the drawings, confirm layout and spacing with architect or landscape architect. Organise planting to avoid undue compaction of planting areas. Re-cultivate any heavily compacted areas prior to planting.

Report the existence of any buried services or concrete footings restricting the accurate placement of plants to the architect or landscape architect for instruction.

### 3.9 PREPARATION FOR PLANTING LARGE TREES AND SHRUBS

Excavate planting holes to twice the diameter and 1½ times the depth of the rootball. Where depth exceeds the depth of the topsoil, carry on down into subsoil a further 150mm, breaking it up and mixing in peat or a clay-killer before replacing. Scarify the sides of holes in clay soils. Provide drainage beneath planting in impervious soils. Place plant mix to support the rootball at a level to allow the top to finish flush with surrounding ground.

### 3.10 PLANTING LARGE TREES AND SHRUBS

Drive two plumb stakes, located to avoid wind-contact with the tree or shrub at opposite sides of the planting hole. Keeping rootball intact place each plant plumb with its best side facing into the prevailing wind. Backfill in 150mm layers using rod or fingers to evenly firm without compaction to a level that will allow the top of the root ball to finish flush with surrounding ground. When completed, firm each plant in by heeling. Tie plants at 2/3 the height of the main stem leaving enough play for a small amount of natural movement. Water in immediately after planting to saturation level in surrounding soil and thoroughly wet all foliage. Spread 75mm to 100mm layer of selected mulch on weed mat over newly planted areas ensuring it is not mounded up around plants and that any drainage material is undisturbed and all buried services are undamaged.

### 3.11 PREPARING FOR PLANTING SMALL AND MEDIUM SHRUBS

Place plant mix 200mm deep and in 100mm layers, lightly compacted plant mix by heeling or rolling and slightly mounded in the centre of the bed. Excavate planting holes to twice the diameter and 1½ times the depth of the rootball.

### 3.12 PLANTING SMALL AND MEDIUM SHRUBS

Keeping rootball intact, place each plant plumb with the top of the rootball at the top of the plant mix. Backfill material using fingers to evenly firm without compaction, before finally firming the plant with the base of the palm of the hand. Water in immediately after planting to the saturation level of surrounding soil. Spread 100mm layer of bark mulch on weed mat over newly planted areas.

### 3.13 LAYING GRASS TURF

Cultivate thoroughly area to be turfed to a depth of 100-150mm and roughly level. Consolidate by heeling and rake to required levels, finishing 12mm below kerbs and paths. Add fertiliser, raking it in to the top 30-50mm and bring to a smooth, level surface. Leave to settle for a day. Moisten if dry. Place turf mats across the slope in straight lines, tightly butted and with joints staggered and to correct levels. Cut around trees, buildings and borders with a sharp knife. Lightly roll and deep water immediately after laying. Deep water late every day for 3 weeks and continue weekly until the end of the contract.

### 3.14 SOWING GRASS

Replace unsatisfactory soil with 150mm layer of topsoil. Rotary hoe in two directions to a depth of 150mm. Rake to a fine tilth, level and smooth with run-offs to drainage outlets. Apply selective herbicide. Spread pre-plant fertiliser at the required rate for lawn. Spread grass seed at half the required rate in each of two directions at right angles, using an approved spreader. Lightly rake in and roll. Water deeply and keep moist without any run-off of water until germination is complete. Continue watering as necessary until the end of the contract. First cut only when growth is a minimum of 100mm and only down to 50mm.

### Completion

### 3.15 CLEAN UP

Clean up around all trees, shrubs, beds and lawns. Remove all surplus soil, unused materials and plants, from the site.

## 4 SELECTIONS

Refer to Generation Homes Standard Features and Variations Lists for selections and ensure that it complies with any local subdivision covenants.

# 8420 MISCELLANEOUS SITE WORKS

## 1 GENERAL

This section relates to the supply and installation of hard landscaping including:

- paths
- fencing
- other minor structures

### 1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B1/VM1	Structure
NZBC F9/AS1	Means of restricting access to residential pools
NZS 3104	Specification for concrete production
NZS 3114	Specification for concrete surface finishes
NZS 3124	Concrete construction for minor works
AS/NZS 4671	Steel reinforcing materials

### Requirements

### 1.2 QUALIFICATIONS

Landscapers to be experienced, competent trades people familiar with the materials and techniques specified.

## PRODUCTS

### 2.1 SUSTAINABLE TIMBER

This project uses FSC Certified sustainable timber.

Abbreviations and definitions:

FSC

- Forest Stewardship Council

FSC Forest Management (FM) Certification

- A forest management unit independently FSC inspected and certified that it complies with the internationally-agreed FSC Principles.

FSC Chain of Custody (COC) Certification

- COC certification applies to those who process, transform or trade forest products, providing a guarantee about the production and source of FSC-certified products and tracking the production and distribution of the products.

Organisation website details

FSC website:- <https://nz.fsc.org/en-nz>

FSC suppliers lists:- <https://info.fsc.org/certificate.php#result>

### 2.2 CERTIFIED SUSTAINABLE TIMBER

Refer to SELECTIONS for details of amount, type, suppliers.

Certified Sustainable FSC-COC Certified (or similar pre-approved) timber from forest to installation. Contractor to obtain and track all timber FSC-COC certificates and receipts showing FSC-COC numbers, including signed FSC outsourcing agreements between parties (ie FSC timber broker and non-FSC door joiner).

FSC suppliers lists:- <https://info.fsc.org/certificate.php#result>

### 2.3 CONCRETE

Prescribed mix, maximum aggregate size 19mm to [NZS 3104](#).

### 2.4 SITE MIXED CONCRETE

To [NZS 3124](#). Prescribed mix 17.5 MPa minimum strength, using either separate batching of sand and coarse aggregate to [NZS 3104](#), or builder's mix.

## 2.5 REINFORCEMENT

To [AS/NZS 4671](#). Welded reinforcing mesh to [AS/NZS 4671](#), 500E mesh to [AS/NZS 4671](#) as modified by NZS B1/VM1.

## 3 EXECUTION

### 3.1 CONSTRUCT CONCRETE PATHS AND DRIVEWAYS

Excavate for path thickness and hardfill. Remove plants, tree roots and soft fill to firm subgrade.

Compact with a plate vibrator to form a level surface of even bearing. Place and compact a layer of basecourse. Reinforcement where scheduled to [AS/NZS 4671](#). Place concrete with a fall of 1:100 (minimum) and construction joints/saw cuts, thickness and finish to [NZS 3114](#) as scheduled and [NZS 3124](#) Specification for concrete construction for minor works.

### 3.2 CONSTRUCT TIMBER FENCES

Refer to drawings for set out of timber fences. Confirm position in relation to boundary. Confirm height in relation to Resource Consent. Unless otherwise shown set out boundary fences on the centre line of the legal boundary.

Excavate holes for posts and set posts in concrete, plumb and true to line. Form weed band/mowing strip where scheduled. All fixings to rails and to posts to be galvanized fasteners.

### 3.3 INSTALL GATES

Hang gates on corrosion resistant hinges/dogs. Check operation of gates to ensure that they swing clear of the ground and other features. Fit scheduled gate hardware.

## SELECTIONS

Refer to **Generation Homes Standard Features and Variations Lists** for selections and ensure that it complies with any local subdivision covenants and/or local territory authority requirements.





# EzyBrace<sup>®</sup> Systems

Specification and installation manual

SDC - Approved Building Consent Document - BC192253 - Pg 177 of 248 - 8/01/2020 - parkea

CBI 5113

AUGUST 2016

## **NATIONAL SUPPORT**

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## **GIB® HELPLINE**

0800 100 442



Based on learnings derived from the 2011 Canterbury earthquakes GIB EzyBrace® Systems have been updated to offer improved design flexibility and further simplification of the bracing design and build process.

#### **NEW GIB EZYBRACE® 2016 DESIGN SOFTWARE**

- Improved user interface with simplified bracing design process.
- Increased functionality including exterior line check function, easy insert/deletion of bracing elements and built in software help function.
- Includes the new GIB® Bracing element GS2- NOM
- Allows the GIBFix® Framing System to be used in GIB EzyBrace® designs.

#### **NEW GIB® BRACING ELEMENT GS2-NOM**

- Allows internal walls lined with GIB® plasterboard on both sides and fastened off as per the standard fixing requirements of the current GIB® Site Guide to contribute to bracing resistance.
- Potentially reduces the amount of fasteners<sup>1</sup>
- Encourages more even bracing distribution throughout the building.

<sup>1</sup> Actual savings dependent on building and bracing design

#### **UPDATE TO OPENINGS IN BRACING ELEMENTS AND CEILING DIAPHRAGMS**

- Large hole specification updated to use a more conservative methodology.
- Guidance included for fireplace flues and range hoods.

#### **NEW — GIBFIX® FRAMING SYSTEM**

- Reduced potential for fastener pop and joint cracking as a result of timber frame movement.
- Reduced potential for on-site call backs.
- Improved thermal performance.
- Reinforced plasterboard junctions.

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## GIB EzyBrace® Systems — August 2016

Winstone Wallboards Ltd accepts no liability if GIB EzyBrace® Systems are not designed and installed in strict accordance with instructions contained in this publication.

### USE ONLY THE CURRENT SPECIFICATION

This publication may be superseded by a new publication at any time. Winstone Wallboards accepts no liability for reliance upon publications that have been superseded. Check for the current publication at [gib.co.nz/library](http://gib.co.nz/library) before using this publication. If you are unsure whether this is the current publication, call the GIB® Helpline on 0800 100 442.

GIB EzyBrace® 2011 software and specification literature remains valid until further notice.

### PATENTS

GIBFix® Framing System and GIB EzyBrace® Systems, including componentry and design method, have patents pending (NZ Patent Number 596691, NZ Patent 709159 pending) and design and other IP rights reserved.

## Beware of substitution

The performance of GIB® Systems are very sensitive to design detailing and construction practices. All GIB® Systems have been developed specifically for New Zealand conditions and independently tested or assessed to ensure the required level of performance. It is important to use only GIB® branded components where specified and to closely follow the specified design details and construction practices, to be confident that the required level of performance and quality is achieved on site.

For further information call our GIB® Helpline on 0800 100 442.

GIB EzyBrace® Systems have been designed and tested using only the products specified. When additional GIB® plasterboard properties are required the table below provides acceptable alternative options.

	Acceptable alternative GIB® plasterboards								
Specified GIB® plasterboard	GIB® Standard	GIB Ultraliner®	GIB Braceliner/ Noiseline®	GIB Aqualiner®	GIB Toughliner®	GIB Fyreliner®			
						10mm	13mm	16mm	19mm
GIB® Standard		OK	OK	OK	OK	Note 1 and 3			
GIB Braceliner®	X	X		Note 2	OK	X	Notes 1, 2 and 3		

- Note 1** The fastener type and length must be as required for the relevant FRR system using the perimeter fixing pattern illustrated for the relevant bracing specification.
- Note 2** The element must be 900mm or longer. Decrease perimeter fastener centres to 100mm. The bracing corner fastening pattern, as illustrated for the relevant specification applies to all four corners of the element. Panel hold-down fixings are required.
- Note 3** Specify traditional wall framing layout (see figure 1) where a Fire Resistance Rating (FRR) is required.

## Scope of use

This document is a guide to wall bracing of light timber frame (LTF) buildings constructed in accordance with NZS3604:2011 Timber Framed Buildings and presents a simple and efficient method for calculating and incorporating bracing resistance. This information draws on recent experiences from seismic activity in New Zealand and seeks to minimise earthquake damage to plasterboard linings in LTF buildings.

This document outlines the main principles of bracing design and construction using GIB® plasterboard products and systems. Further detailed information can be found in the GIB® Bracing Supplement by visiting [gib.co.nz/library](http://gib.co.nz/library). This 'live' on-line document is updated continuously in response to market feedback and Winstone Wallboards' development initiatives.

## Finish quality — framing and substrates

Home owners are increasingly demanding a high quality of interior finish. Finish quality is heavily influenced by the substrate to which linings are fixed. Detailed information on 'Levels of Finish' is given in AS/NZS 2589 and the latest version of the GIB® Site Guide.

## New GIBFix® Framing System

With increased NZ Building Code requirements and growing customer demand for thermal efficiency and high quality interior finishes, traditional framing practices present problems such as multiple framing members at wall intersections creating thermal 'bridges' and cavities where insulation cannot be installed effectively.

Figure 1 shows a traditional wall framing layout. Figure 2 shows the alternative GIBFix® Framing System layout.

Multiple timber framing members also take longer to dry resulting in an increased risk of fastener pops and blemishes resulting from timber frame movement.

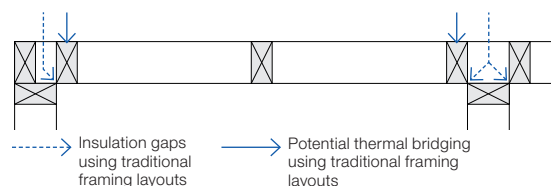
The GIBFix® Framing System offers better thermal efficiencies and minimises potential joint imperfections resulting from interior linings being fixed to multiple timber framing members.

The GIBFix® Framing System can be used in conjunction with GIB EzyBrace® Systems.

Bracing resistance is not affected by the GIBFix® Framing System if the use of this alternative timber framing layout is preferred. Refer to the GIBFix® Framing System literature for more information.

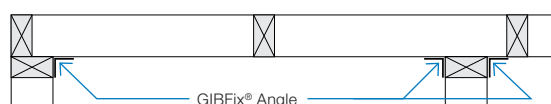
Bracing ratings apply whether fixing is directly into timber or into the metal components, provided correct construction details, fastener types and centres are applied.

FIGURE 1: TRADITIONAL WALL FRAMING LAYOUT



GFS004

FIGURE 2: GIBFix® FRAMING SYSTEM (ALTERNATIVE LAYOUT)



GFS005

## NEW GS2-NOM Bracing Element

The new GS2-NOM bracing element allows most homes to be braced with a single lining type and less fixings so that a high quality finish is maintained throughout.

GS2-NOM permits the contribution of 'nominally fixed' internal walls. Higher performance elements are commonly specified on external walls and where limited wall area is available or adjacent to significant openings.

Winstone Wallboards recommends the use of the GIBFix® Framing System in conjunction with GS2-NOM elements. Key benefits of this approach include:

- Reduced potential for fastener pop and joint cracking of plasterboard linings.
- Enhanced thermal performance.
- Allows internal walls lined with GIB® plasterboard on both sides and fastened off as per the standard fixing requirements of the current GIB® Site Guide to contribute bracing resistance.
- Potentially reduces the amount of fasteners!
- Encourages more even bracing distribution throughout the building.

1. Actual savings dependent on building and bracing design.

## Compliance with the NZ Building Code

### NZBC CLAUSE B1 – STRUCTURE

The design and material specification for steel and timber framing used in conjunction with this literature must be in accordance with the performance requirements of NZBC Clause B1. GIB EzyBrace® Systems comply with the requirements of NZS 3604:2011, when designed and installed in accordance with this publication and relevant technical literature. NZS 3604:2011 is an acceptable solution to NZBC Clause B1.

### NZBC CLAUSE B2 – DURABILITY

Under normal conditions of dry internal use GIB EzyBrace® Systems have a service life in excess of 50 years and satisfy the requirements of NZBC Clause B2. When in conditions of dry internal use, the components specified in this literature satisfy the requirements of NZBC Clause B2.

GIB® EzyBrace® Systems must not be specified in areas where 15 year durability applies and where linings are subject to direct water pressure, e.g. shower cubicle or shower over bath situations.

### NZBC CLAUSE F2 – HAZARDOUS BUILDING MATERIALS

Under normal conditions of use, during handling, installation or serviceable life, the products detailed in GIB EzyBrace® Systems do not constitute a health hazard and meet the provisions of the NZBC Clause F2.

### NZBC CLAUSE H1 – ENERGY EFFICIENCY

Buildings must be constructed to achieve an adequate degree of energy efficiency and the building envelope must provide adequate thermal resistance. The required thermal resistance (R-value) of timber framed external walls depends on climate zone but is commonly in the range from R 1.9 to R 2.0.

## CAD design details

Where applicable drawings related to GIB EzyBrace® Systems have been produced for CAD design. These are identified by a unique number in the bottom corner of each detail box. CAD design details can be found at [gib.co.nz/library](http://gib.co.nz/library).

## Appraisal

GIB EzyBrace® Systems 2016 have been appraised by the Building Research Association of New Zealand (BRANZ), Appraisal No. 928 (2016) GIB EzyBrace® Systems, 2016.

It is of prime importance to comply with the details of design, construction and workmanship in this document.

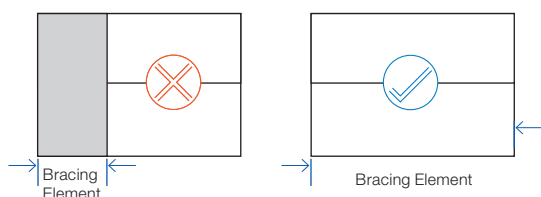


## Bracing resistance

### WALL BRACING LAYOUT

When designing the bracing layout, carefully consider the final finished appearance and utilise full wall lengths where possible, avoiding unnecessary fastenings in the centre of a clear wall. Using the available wall length provides additional bracing and achieves improved aesthetics.

FIGURE 3: WALL BRACING LAYOUT



### BRACING DISTRIBUTION

Distribute bracing by drawing a grid pattern of bracing lines along and across the building. Bracing lines must coincide as much as possible with the wall bracing elements. Pairs of elements may be counted on a single line provided they are no more than 2 metres apart and parallel. See figure 4.

Locate bracing evenly throughout the building and as close as practical to corners of external walls.

Space bracing lines no more than:

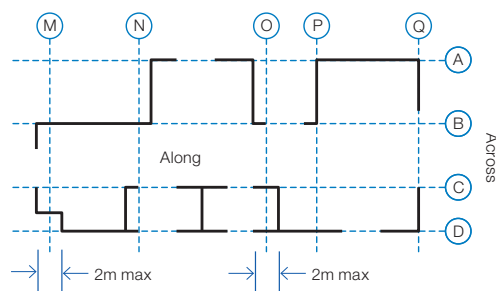
- 6 metres for standard construction with any GIB® plasterboard ceiling, or
- 7.5 metres where dragon ties in accordance with NZS3604:2011 have been installed, or
- 12 metres with a GIB® plasterboard ceiling diaphragm.

The construction of ceiling diaphragms is described in detail on p.18–20.

NZS3604:2011 requires that no bracing line shall have a capacity less than the greater of:

- 100 Bracing Units (BUs), or
- 15 x the external wall length (BUs) for bracing lines coinciding with external walls, or
- 50% of the total demand (D) divided by the number of lines (n) in the direction being considered (BUs).

FIGURE 4: BRACING GRID LAYOUT



The NZS3604 'rules' are merely minimum guidelines and compliance with them does not in itself ensure even distribution. The designer is responsible for checking distribution. Poor distribution can cause torsional effects and localised or more significant damage in an earthquake event.

### GIB EZYBRACE® SYSTEMS

The GIB EzyBrace® Specification Numbering System (and sub-components thereof) is protected by copyright and makes specification and identification of GIB EzyBrace® Systems transparent.

- 'GS' stands for GIB® Standard.
- 'BL' for GIB Braceline®.
- 'P' for plywood.
- '1' and '2' for linings one or both sides.
- 'N' stands for 'no specific panel hold-down fixings'.
- 'H' stands for 'specific panel hold-down fixing' required.
- 'NOM' stands for 'nominal plasterboard fixing'. This refers to the standard fixing method used to install plasterboard as shown in the current GIB® Site Guide.

Where specific hold-down fixings are specified, refer to p.15-16. GIB HandiBrac® is fully contained within the framing cavity and does not interfere with lining installation and quality of finish.

Where no specific hold-down fixings are required, the minimum NZS3604:2011 bottom plate fixings apply.

Full bracing element construction details are provided in this technical literature.

Further general design and construction information can also be found in our GIB® Bracing Supplement by visiting [gib.co.nz/library](http://gib.co.nz/library).

### Specifying GIB EzyBrace® elements (minimum wall length 400mm)

Inside lining external walls.	Nominate available lengths of wall as GS1-N elements. Use BL1-H if higher ratings are required. If the other side of the frame is lined with plywood consider GSP-H or BLP-H elements or use alternative proprietary bracing systems.
Internal walls (only one side available for bracing).	Nominate available lengths of wall as GS1-N elements. Use BL1-H if higher ratings are required.
Internal walls (both sides available for bracing).	Nominate available length of wall as GS2-NOM elements. Change to GS1-N if higher ratings are required. Change to GS2-N if higher ratings are required. Change to BLG-H for even higher ratings. Consider GSP-H or BLP-H if the opposite side is lined with plywood.

## Bracing demand

### GIB EZYBRACE® CALCULATOR

The GIB EzyBrace® calculator is a software tool to determine the wind and earthquake bracing demand and to design the bracing resistance for light timber-framed buildings constructed in accordance with NZS 3604:2011.

The updated GIB EzyBrace® calculator combines an up-to-date user-friendly interface with the latest knowledge relating to the performance of GIB® plasterboard in light timber-framed structures when subjected to high winds or earthquakes. The calculator can be down-loaded free of charge by visiting [gib.co.nz/ezybrace](http://gib.co.nz/ezybrace) and can be installed on either Microsoft® or Apple® Mac environments.

### DEMAND

Wind and Earthquake 'Demand' calculates the forces a structure must be able to resist during its 'design life'. The GIB EzyBrace® calculator's Demand sheet determines the number of Bracing Units required depending on building location, building dimensions and materials used. The Demand sheet closely follows the familiar format of our Excel based GIB EzyBrace® calculator, and includes additional features such as a pop-up help facility explaining required input.

Bracing resistance sheets ('tabs') are added depending on the building specification entered. For example, subfloor bracing resistance tabs only show when a 'subfloor' foundation type has been selected.

The Demand sheet gives the designer the option to select a longer earthquake return period which represents a higher earthquake design force. The default for buildings constructed in accordance with NZS3604:2011 is an earthquake that has a 10% chance of being exceeded within the assumed 50 year 'design life' of a light timber framed residential structure, a 'return period' of 500 years.

Many commercial and public buildings are designed for the more stringent requirement of a 10% probability of exceedance in a 100 or 250 year life expectancy.

A screen shot of the GIB EzyBrace® 2016 Demand Sheet and Help Facility is shown in figure 5.

FIGURE 5: GIB EZYBRACE® 2016 — DEMAND CALCULATION SHEET AND 'POP UP' HELP FACILITY

**GIB EzyBrace® Bracing Software**

**Job Details**

Name: A Job  
 Street and Number: 100 Job Street  
 Lot and DP Number: Lot 321, DP 456  
 City/Town/District: Johnson  
 Designer: AR Client  
 Company: Job Limited  
 Date: 1/08/15

**Building Specification**

Number of Storeys: Single  
 Floor Loading: 2 MPa  
 Foundation Type: Slab

**Single**

Cladding Weight: 2 Light  
 Roof Weight: 2 Light  
 Room in Roof Space: No  
 Roof Pitch: 2 25  
 Roof Height above Eaves (m): 1.5  
 Building Height to Apex (m): 4.5  
 Ground to Lower Floor (m): 0.2  
 Stud Height (m): 2.4  
 Building Length (m): 10  
 Building Width (m): 10  
 Building Area (m²): 100

**Building Location**

Wind Zone or Consent Authority: Not Available  
 Wind Region: 2 A  
 Lee Zone: No  
 Ground Roughness: 2 Urban  
 Site Exposure: 2 Sheltered  
 Topography Class: 2 11

Earthquake Zone: 2 1  
 Soil Type: D & E (Deep to Very Soft)  
 Annual Prob. of Exceedance: 1 in 500 (NZS3604:2011 Default)

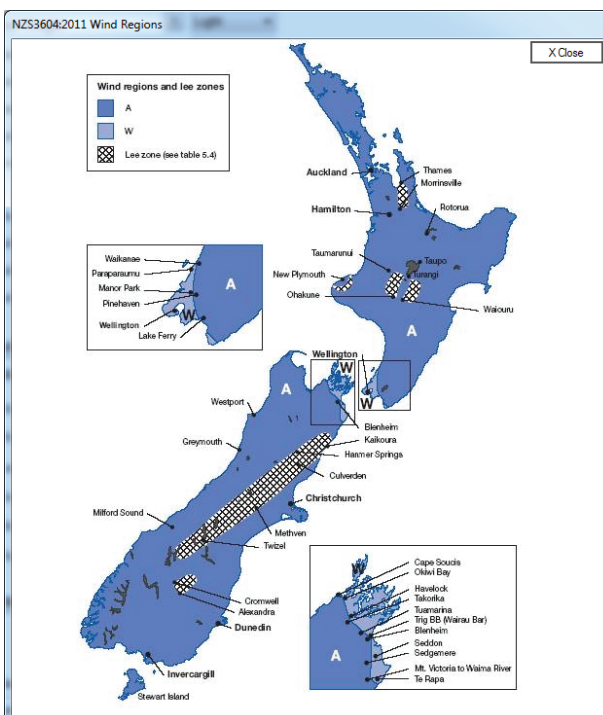
**Bracing Units required for Wind**

	Along	Across
Single Level	258	222

**Bracing Units required for Earthquake**

	Along and Across
Single	264

Demand | Single Along | Single Across | Custom



Download GIB EzyBrace® 2016 design software from [gib.co.nz/ezybrace](http://gib.co.nz/ezybrace)



## Software functionality

Innovations adopted in the GIB EzyBrace® 2016 bracing 'resistance' calculation sheets include the ability to easily add and delete lines and elements during calculations.

The software compares bracing resistance achieved with demand and for wall bracing lines incorporating external walls, the external wall length can now be entered to check minimum

bracing units required on that line. The NZS 3604:2011 rules and associated software output are not the only check. Designers must additionally check the building layout to ensure adequate bracing distribution.

Figures 6 and 7 show screen shots of the Wall and Subfloor Resistance Sheets respectively.

FIGURE 6: GIB EZYBRACE® 2016 — WALL BRACING RESISTANCE CALCULATION SHEET

Line	Ext. Len. (m)	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BU)	Earthquake (BU)
a	11.25	1	0.5		2.44	GSP-H	GIB®	53	58
		2	1.1		2.44	GS1-N	GIB®	72	65
		3	0.6		2.44	GSP-H	GIB®	67	73
b	6.41	1	1.2		2.44	GS1-N	GIB®	81	71
		2	0.6		2.44	GS1-N	GIB®	34	35
		3	4		2.44	GS2-NOM	GIB®	197	197
c		1	3.2		2.44	GS2-NOM	GIB®	157	157
d		1	7.9		2.44	GS2-NOM	GIB®	389	389
e	17.9	1	0.6		2.44	BL1-H	GIB®	58	60
		2	0.6		2.44	BL1-H	GIB®	58	60
		3	0.8		2.44	GS1-N	GIB®	48	46
		4	2.1		2.44	GS1-N	GIB®	143	124
		5	1.2		2.44	EP1-1.2	CHH	142	159

Demand		Resistance	
Wind	Earthquake	Wind	Earthquake
682	880	1499	1492
220%	170%		

193 OK    196 OK

312 OK    302 OK

157 OK    157 OK

389 OK    389 OK

449 OK    449 OK

FIGURE 7: GIB EZYBRACE® 2016 — SUBFLOOR BRACING RESISTANCE CALCULATION SHEET

Download GIB EzyBrace® 2016 design software from [gib.co.nz/ezybrace](http://gib.co.nz/ezybrace)

Line	Ext. Len. (m)	Element	Length(m) or No.	Angle (degrees)	Type	Supplier	Wind (BU)	Earthquake (BU)
A		1	1		Braced Piles	NZS3604	160	120
		2	1		Anchor Pile	NZS3604	160	120
		3	1		Braced Piles	NZS3604	160	120
B		1	1		Braced Piles	NZS3604	160	120
		2	1		Cantilever Pile	NZS3604	70	30
		3	1		Cantilever Pile	NZS3604	70	30
C		1	1		Anchor Pile	NZS3604	160	120
		2	1		Anchor Pile	NZS3604	160	120

Demand		Resistance	
Wind	Earthquake	Wind	Earthquake
426	687	1100	780
258%	114%		

480 OK    360 OK

300 OK    180 OK

320 OK    240 OK

## Software functionality

Custom elements can be entered by accessing the 'custom' tab as shown in figure 8.

FIGURE 8: GIB EZYBRACE® 2016 — CUSTOM ELEMENTS SHEET

Supplier	System	Min. Length m	Wind BU/s/m	EQ BU/s/m	Element Height Dependant	Element Foundation Dependant
Custom1	CU1.0.4	0.4	80	95	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Custom1	CU1.0.6	0.6	95	105	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Custom1	CU1.1.2	1.2	120	135	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Custom2	CU2.0.4	0.4	90	90	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Custom2	CU2.0.6	0.6	127	136	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Custom2	CU2.1.2	1.2	164	135	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Engineer	Portal	1	300	300	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Note: Values and systems shown in Custom Elements Sheets are for illustrative purposes only.

Help can be accessed by pressing the ? symbol which displays a window with further information.

The GIB EzyBrace® 2016 software has a number of options that can be accessed via the File tab at the top left hand corner of the window. The options include: New, Save, Save As, Open, Recent and Print.

- The New option closes any opened job ready for the input of a new job.
- The Save option saves the currently opened job to the same filename and the Save As option saves the job to a new filename.

- The Open option prompts for the name of an existing job.
- The Recent option displays a list of the ten latest jobs and allows for the selection of one of these jobs to be opened.
- The Print option displays the print screen. In this screen, a print preview is displayed. The print preview can be copied to the clipboard by clicking the right-hand mouse button. Also on the print screen is the option to choose which pages are to be printed and the option to print the output to a portable data format, PDF, file.
- The Print Screen View is shown in figure 9.

FIGURE 9: GIB EZYBRACE® 2016 — PRINT SCREEN VIEW

Download GIB EzyBrace® 2016 design software from [gib.co.nz/ezybrace](http://gib.co.nz/ezybrace)

Demand Calculation Sheet	
<b>Job Details</b>	
Name	Example
Drawn and Number	100 Job Sheet
Lot and DP Number	Lot 123 DP 001
City/Town/District	Sevilla District
Designer	A.R. Architect
Company	John Limited
Date	11/6/15
<b>Building Specification</b>	
Number of Storeys	1
Floor Loading	2 kPa
Foundation Type	Shallow
Cladding Weight	Single
Roof Weight	Light
Roof to Roof Space	No
Roof Pitch	20
Roof Height above Eaves (m)	2.5
Building Height to Apex (m)	5
Ground to Lower Floor (m)	0.3
Average Stud Height (m)	2.34
Building Length (m)	17.9
Building Width (m)	15.8
Building Plot Area (m²)	100
<b>Building Location</b>	
Wind Zone	High
Earthquake Zone	1
Soil Type	C (Shallow)
Annual Prob. of Exceedance	1 in 500 (NZS3104:2011 Default)
<b>Bracing Units required for Wind</b>	
Along	Across
Single Level	682
Single Level	960
<b>Bracing Units required for Earthquake</b>	
Along & Across	
Single Level	177

# GIB® plasterboard linings

When fixing part sheets of GIB® plasterboard, a minimum sheet width of 300mm applies for bracing elements. Horizontal fixing is recommended. If fixing vertically, full height sheets shall be used where possible. Where sheet end butt joints are unavoidable they must be formed over nogs or over the studs and fastened at 200mm centres. Alternatively, and preferably, sheet end butt joints may be back-blocked.

When a GIB® Bracing element has been designated for a section of wall, BU ratings cannot be increased by incorporating additional proprietary bracing elements within that same section of wall.

## LIMITATIONS

- GIB® plasterboard must be stacked flat and protected from the weather.
- GIB® plasterboard must be handled as a finishing material.
- GIB® plasterboard in use must not be exposed to liquid water or be installed in situations where extended exposure to humidities above 90% RH can reasonably be expected.
- GIB EzyBrace® Systems must not be used in showers or behind baths.
- It is highly recommended not to install GIB® plasterboard in any situation where external claddings are not in place or the property is not adequately protected from the elements.
- If GIB® plasterboard is installed under these conditions, the risk of surface defects such as joint peaking or cracking is greatly increased.

# GIB EzyBrace® Systems in water-splash areas

When GIB® plasterboard is installed in locations likely to be frequently exposed to liquid water it must have an impervious finish. Examples are adhesive fixed acrylic shower linings or ceramic tiles over an approved waterproof membrane over GIB Aqualine®. The NZBC requires 15 years durability in these situations. Bracing elements are required to have a durability of 50 years. Bracing elements are not to be located in shower cubicles or behind baths because of durability requirements, the likelihood of renovation, and practical issues associated with fixing bracing elements to perimeter framing members. Otherwise GIB EzyBrace® Systems can be used in water-splash areas as defined by NZBC Clause E3, provided these are maintained impervious for the life of the building.

For further design details refer to the current GIB Aqualine® Wet Area Systems literature.

## Renovation

When relining walls during the process of renovation, ensure that bracing elements are reinstated (check the building plans).

## Openings in bracing elements

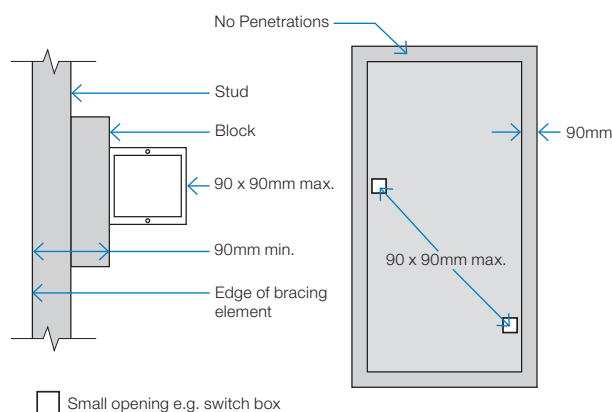
## SMALL OPENINGS

Small openings (e.g. power outlets) of 90 x 90mm or less may be placed no closer than 90mm to the edge of the braced element. A block may need to be provided alongside the perimeter stud as shown below.

## LARGE OPENINGS

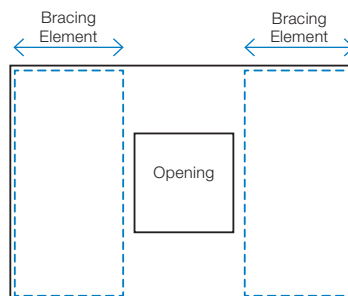
Openings above 90 x 90mm such as switch boards, recessed cabinets and TV's etc. should be placed outside of the bracing element or locate bracing on the other side of the wall framing.

FIGURE 10: SMALL OPENINGS IN BRACING ELEMENTS



GFB001

FIGURE 11: LARGE OPENINGS AND BRACING ELEMENTS



## Timber framing

General framing requirements such as grade, spacings and installation shall comply with the provisions of NZS 3604:2011. To achieve the published bracing performance the minimum actual framing dimensions are 90 x 45mm for external walls and 70 x 45mm for internal walls.

As a minimum the use of Kiln Dried Stress Graded timber for all wall, roof and mid-floor framing members is recommended.

## GIBFix® Framing System (alternative layout)

Practices recommended as part of the GIBFix® Framing System aim to increase timber framing efficiencies, reduce reliance on unnecessary framing at wall junctions and minimise surface imperfections that commonly arise from constructing plasterboard junctions over multiple timber members. GIBFix® Angles fixed to a single timber framing member are introduced to tie together plasterboard junctions, improving seismic resilience and decrease the risk of future defects due to timber movement. The GIBFix® Framing System can be used in conjunction with the GIB EzyBrace® System.

Note: GIBFix® Angles and 32mm x 7g GIB® Grabber® Dual Thread Screws may also be used in traditional wall framing layouts and in GIB EzyBrace® Systems.

When the GIBFix® Framing System is used a minimum of 2 equally spaced nogs for walls between 2.4m and 3m in height are required at corners and wall junctions.

When used in GIB EzyBrace® systems GIBFix® Angles must run from top to bottom on all applicable studs. If 2 GIBFix® Angles are required on a stud they must be overlapped by a minimum of 300mm with 2/32mm 7g GIB® Grabber® Dual Thread Screws penetrating through both GIBFix® Angles.

For full specification details refer to GIBFix® Framing System literature available at [gib.co.nz/gibfix](http://gib.co.nz/gibfix).

## Guidelines for intersection walls

GIB® Bracing Elements may have intersecting walls with a minimum length of 200mm. Fasteners are required around the perimeter of the bracing element. Vertical joints at T-junctions shall be fixed and jointed as specified for intermediate sheet joints. The bracing element length must be no less than 900mm.

Where a Wall Bracing Element is interrupted by a T-junction the element is deemed to be continuous for the whole length (900mm minimum in the example illustrated).

When fixing part sheets of GIB® plasterboard to the side of a T-junction, a minimum width of 300mm applies for bracing elements. See figures 12 and 13.

FIGURE 12: WALL INTERSECTION (TRADITIONAL WALL FRAMING)

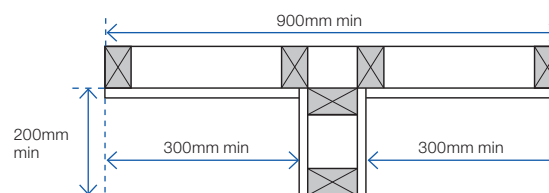


FIGURE 13: WALL INTERSECTION (GIBFix® FRAMING SYSTEM)

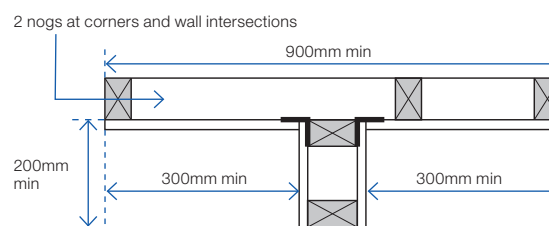


FIGURE 14: CORNER INTERSECTION (GIBFix® FRAMING SYSTEM)

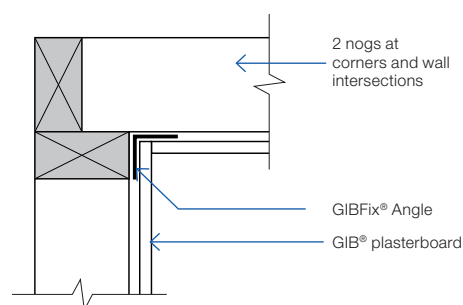
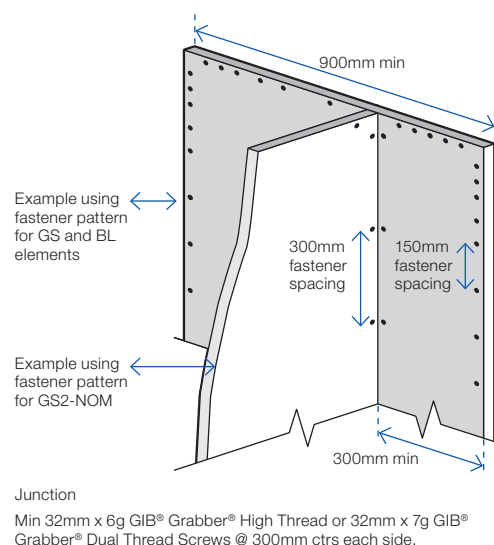


FIGURE 15: WALL INTERSECTION FASTENER PLACEMENT



## Top plate connections

For top plate connections refer to NZS3604:2011 section 8.7.3.

## Parapets and gable end walls

Bracing elements must be fixed from top plate to bottom plate. Fixing to a row of nogs is not acceptable unless either:

A continuous member such as an ex 90 x 45mm ribbon plate is fixed across the studs just above a row of nogs at the ceiling line, as shown in figure 16.

or

GIBFix® Angle as shown in figure 17. The angle is fixed to a row of nogs with 30 x 2.5mm galv flat head nails or 32mm x 7g GIB® Grabber® Dual Thread Screws at 300mm centres.

## Bottom plate fixing

### TIMBER FLOOR

For elements with an 'N' specification use 2/100 x 3.75mm hand or 3/90 x 3.15mm power-driven nails at 600mm centres.

In addition, for elements with an 'H' specification, use GIB HandiBrac® panel hold-down fixings at each end of the bracing element, see p.16.

### CONCRETE FLOOR – EXTERNAL WALL BRACING ELEMENTS

For bracing elements with an 'N' specification fix external wall plates in accordance with NZS 3604:2011.

Use GIB HandiBrac® panel hold-down fixings at each end of bracing elements with an 'H' specification and minimum intermediate fixings as required by NZS 3604:2011.

### CONCRETE FLOOR – INTERNAL WALL BRACING ELEMENTS

For bracing elements with an 'N' specification fix plates in accordance with NZS 3604:2011 or use 75 x 3.8mm shot-fired fasteners with 16mm discs spaced at 150 and 300mm from end-studs and 600mm centres thereafter.

For bracing elements with an 'H' specification use GIB HandiBrac® panel hold-down fixings at each end of the element and minimum intermediate fixings as required by NZS 3604:2011.

FIGURE 16: PARAPETS AND GABLE ENDS WITH RIBBON PLATE

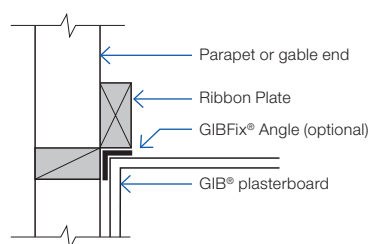
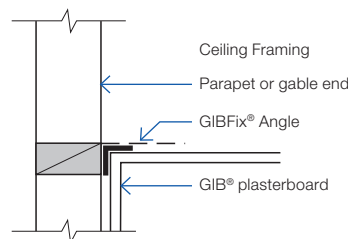


FIGURE 17: PARAPETS AND GABLE ENDS WITH GIBFIX® ANGLE



GFS003

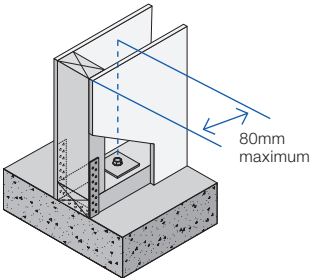
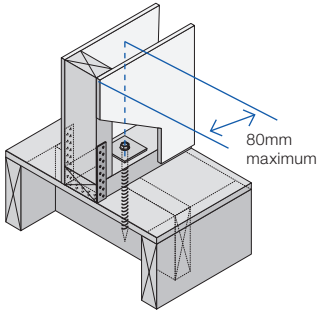
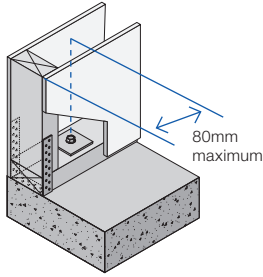
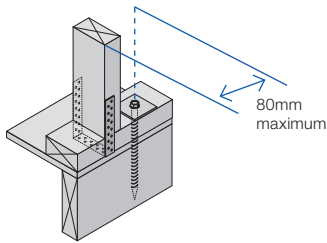
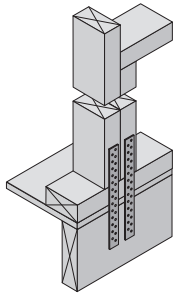
### BOTTOM PLATE FIXINGS FOR GIB® BRACING ELEMENTS

Brace type	Concrete slabs		Timber floors
	External wall	Internal wall	External and Internal walls
GS1-N	As per NZS 3604:2011. No specific additional fastening required.	As per NZS 3604:2011. Alternatively use 75 x 3.8mm shot-fired fasteners with 16mm discs, 150mm and 300mm from each end of the bracing element and at 600mm thereafter.	Pairs of 100 x 3.75mm flat head hand driven nails or 3/90 x 3.15mm power driven nails at 600mm centres in accordance with NZS 3604:2011.
GS2-N	Not applicable.		
GS2-NOM			
GSP-H BL1-H BLP-H	Intermediate fastenings to comply with NZS 3604:2011  In addition: GIB HandiBrac® fixings or metal wrap-around strap fixings and bolt as illustrated on p.15 and 16.		Pairs of 100 x 3.75mm flat head hand driven nails or 3/90 x 3.15mm power driven nails at 600mm centres in accordance with NZS 3604:2011.  In addition:
BLG-H	Not applicable	As for GSP-H, BL1-H, BLP-H on concrete slab as illustrated on p.15 and 16.	GIB HandiBrac® fixings or metal wrap-around strap fixings and bolt as illustrated on p.15 and 16.

## Bracing strap installation

Care needs to be taken with the installation of the bracing strap. It should be checked in to be flush with the face of the stud providing a flat substrate for the plasterboard and

positioned in such a way that the corner fastenings of the bracing element are not affected by it. Keeping the strap to the edge of the end stud as shown will allow the corner fastenings to be installed without having to penetrate the bracing strap.

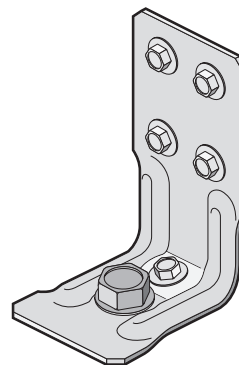
Concrete floor	Timber floor
<p>400 x 25 x 0.9mm galvanised strap to pass under the plate and up the other side of the stud. Six 30 x 2.5mm flat head galvanised nails to each side of the stud. Three 30 x 2.5mm flat head galvanised nails to each side of the plate. Hold down bolt with 50 x 50 x 3mm washer to be fitted within 80mm of the end of the element.</p>	
Internal wall	
 <p>GEB004</p>	 <p>GEB005</p>
External wall	
 <p>GEB006</p>	 <p>GEB007</p>
<p>Note: Where applicable drawings have been produced for CAD design. These are identified by a unique number in the bottom corner of each detail box that can be found at <a href="http://gib.co.nz/library">gib.co.nz/library</a>.</p>	
<p>2/300 x 25 x 0.9mm galvanised straps with six 30 x 2.5mm flat head galvanised nails to each stud and into the floor joist and three nails to the plate. Block to nog fixed with 3/100 x 3.75mm nails to stud.</p>	
 <p>GEB008</p>	
Hold-down fastener requirements	
Concrete floor	Timber floor
<p>A mechanical fastening with a minimum characteristic uplift capacity of 15kN fitted with a 50 x 50 x 3mm square washer within 80mm of the ends of the bracing element.</p>	<p>12 x 150mm galvanised coach screw fitted with a 50 x 50 x 3mm square washer within 80mm of the ends of the bracing element</p>

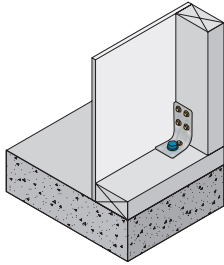
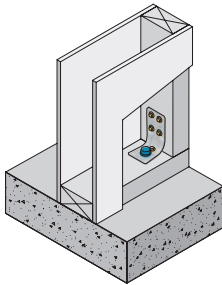
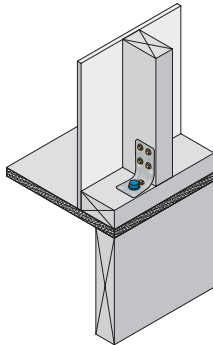
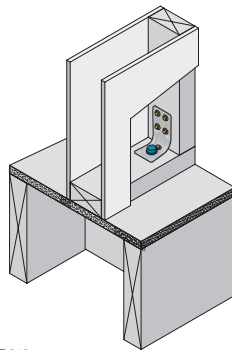
## GIB HandiBrac® installation

Developed in conjunction with MiTek™, the GIB HandiBrac® has been designed and tested by Winstone Wallboards for use in GIB EzyBrace® elements that require hold-downs. The GIB HandiBrac® is a substitute for bottom plate hold-down straps.

- Quick and easy to fit.
- May be fitted at any stage before lining.
- Framing face is clear to allow flush lining.
- Easily inspected.

The GIB HandiBrac® with BOWMAC® blue head screw bolt is suitable for timber and concrete floors constructed in accordance with NZS 3604:2011.



Concrete floor		Timber floor	
External walls	Internal walls	External walls	Internal walls
 <p>GEB009</p> <p>Position GIB HandiBrac® as close as practicable to the internal edge of the bottom plate.</p>	 <p>GEB010</p> <p>Position GIB HandiBrac® at the stud/plate junction and at mid-width of plate.</p>	 <p>GEB011</p> <p>Position GIB HandiBrac® flush with the outside stud face, as close as practicable to the centre of the boundary joist.</p>	 <p>GEB012</p> <p>Position GIB HandiBrac® in the centre of floor joist or full depth solid block.</p>
Hold-down fastener requirements			
A mechanical fastening with a minimum characteristic uplift capacity of 15kN or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.		12 x 150mm galvanised coach screw or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.	



## GIB HandiBrac® placement with GIBFix® Framing System for concrete floors

Figure 18 shows the preferred positioning of the GIB HandiBrac® panel hold-down brackets within the GIBFix® Framing System layout and where they are required by bracing systems with an 'H' in the specification code.

Note that, in corners and at wall junctions, a single GIB HandiBrac® can serve 'H' type bracing elements in both directions, but additional intermediate concrete anchors may need to be installed to meet the minimum requirements of NZS 3604:2011 for bottom plate fixing.

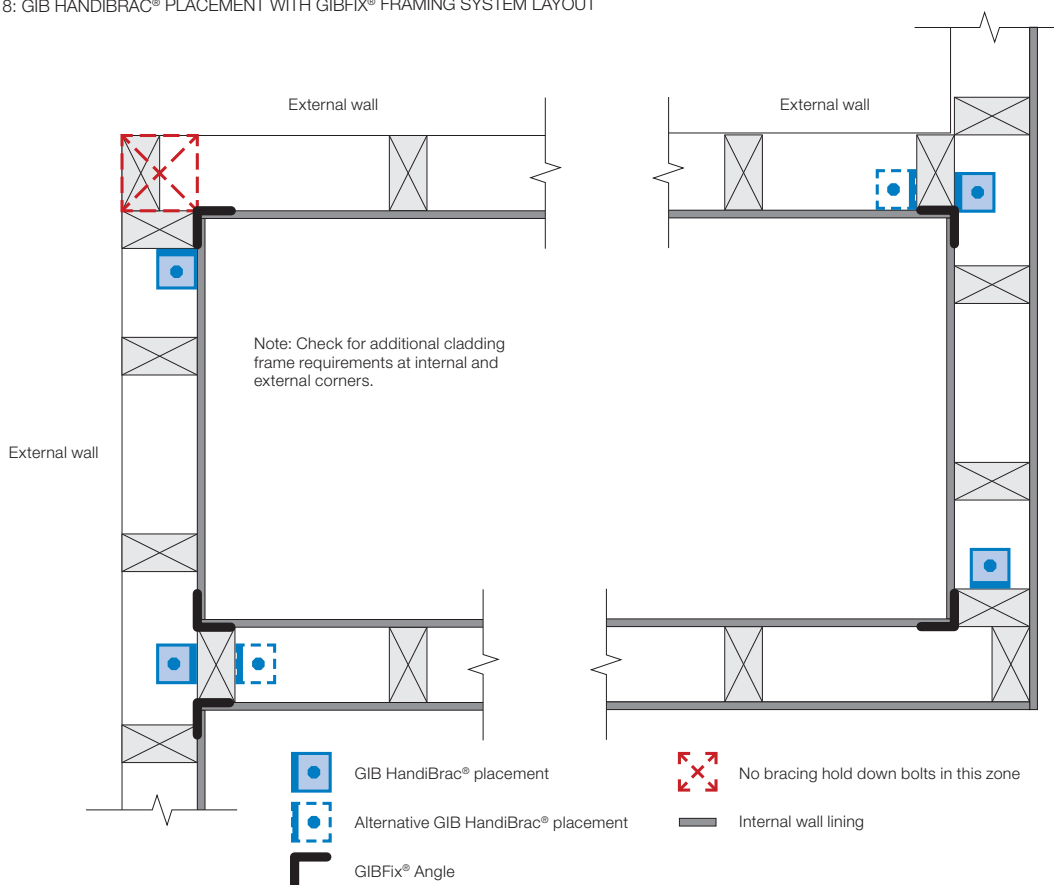
The GIB HandiBrac® is fixed to the stud which has the GIBFix® Angle.

For bracing elements with sheet material both sides of the wall connect corner studs using 8/90mm gun nails as shown in figure 19.

### TIMBER FLOORS

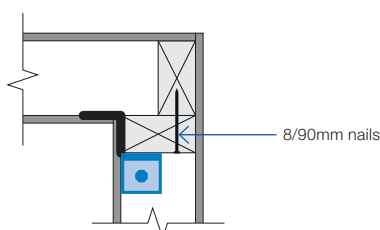
For timber floors bolt fixing in to solid joist or block is required, as shown on p 15.

FIGURE 18: GIB HANDIBRAC® PLACEMENT WITH GIBFIX® FRAMING SYSTEM LAYOUT



GEB013

FIGURE 19: STUD CONNECTION FOR 'H' TYPE BRACING ELEMENTS WITH SHEET MATERIAL BOTH SIDES



GEB014

## Ceiling diaphragms

GIB® plasterboard ceiling diaphragms are stiff and strong horizontal elements which effectively transfer loads to bracing walls. They themselves do not have a bracing unit rating but are used when bracing lines exceed 6m separation. The basic shape of a ceiling diaphragm is square or rectangular. Protrusions are permitted but cut-outs are not. The length of a ceiling diaphragm shall not exceed twice its width. Dimensions are measured between supporting bracing lines. Supporting bracing lines shall have a bracing capacity no less than the greater of 100 bracing units or 15 bracing units per metre of diaphragm dimension, measured at right angles to the line being considered, see figure 21.

## Limitations for GIB® plasterboard ceiling diaphragms

Ceiling diaphragms may be constructed using any GIB® plasterboard provided perimeter fixing is at;

150mm centres for: Diaphragms up to 7.5m in length, no steeper than 15°.

100mm centres for: Diaphragms up to 7.5m in length, no steeper than 45°. Diaphragms up to 12m in length, no steeper than 25°.

Diaphragms outside these parameters must be specifically designed.

### General fixing requirements for GIB® Ceiling Diaphragms:

- Linings must be installed over the entire area of the diaphragm.
- Fastening must be no less than 12mm from sheet edges and not less than 18mm from sheet ends.
- Sheets must be supported by framing members (e.g., ceiling battens) spaced at no more than 500mm centres for 10mm GIB® plasterboard and at no more than 600mm centres for 13mm GIB® plasterboard.
- Sheets within the diaphragm area may be fastened and finished conventionally in accordance with the publication entitled, "GIB® Site Guide". All joints shall be GIB® Joint Tape reinforced and stopped. It is recommended that sheet butt joints are formed off framing and back-blocked (see "GIB® Site Guide").
- Use full width sheets where possible. At least 900mm wide sheets with a length not less than 1800mm shall be used. Sheets less than 900mm wide but no less than 600mm may be used provided all joints with adjacent sheets are back-blocked (see "GIB® Site Guide" and figure 22).
- Fasteners are placed at the specified centres around the ceiling diaphragm with the corners fastened using the GIB EzyBrace® fastener pattern.

FIGURE 20: PROTRUSIONS AND CUTOUTS

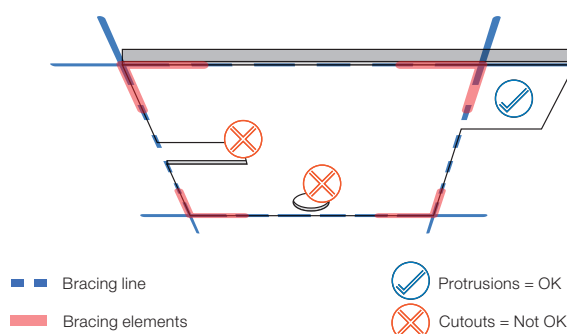


FIGURE 21: DIAPHRAGM BRACING LINING SPACINGS

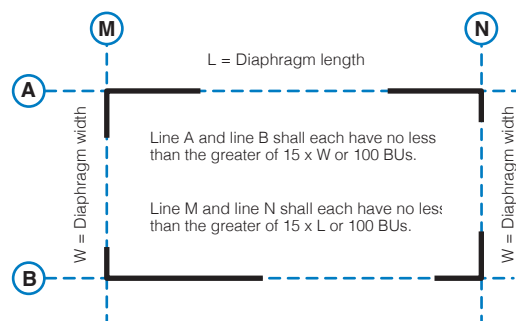


FIGURE 22: GIB® CEILING DIAPHRAGM SHEET WIDTHS AND LENGTHS

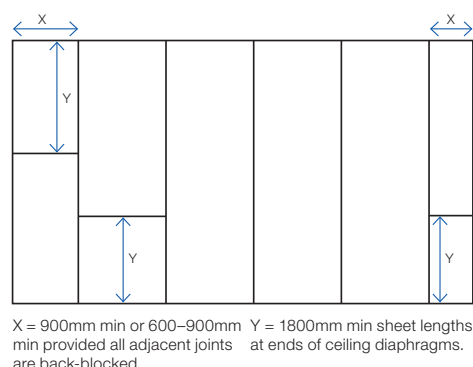
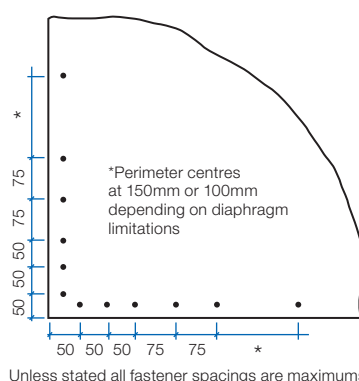


FIGURE 23: GIB EZYBRACE® FASTENER PATTERN



GEB015

## Ceiling battens in ceiling diaphragms

Ceiling diaphragms may be constructed using steel or timber ceiling battens.

Battens shall be spaced at a maximum of:

- 500mm for 10mm GIB® plasterboard.
- 600mm for 13mm GIB® plasterboard.

Timber battens shall be fixed in accordance with the requirements of NZS 3604:2011.

Metal battens shall be GIB® Rondo® battens with two external flanges of 8mm to allow direct screw fixing to roof framing.

GIB® Rondo® metal battens shall be fixed with 2/32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws to supporting framing.

GIB® Rondo® metal battens must be fixed directly to the roof framing. If a clip system has been used, a timber block (min 300mm) or a continuous timber member can be fixed alongside the bottom chord to permit a direct connection to the batten, see figure 26.

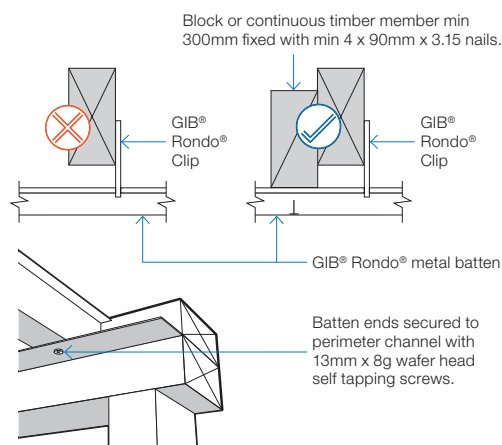
For GIB® Rondo® metal battens, a GIB® Rondo® metal channel or metal angle is required at the perimeter of the diaphragm. The perimeter channel shall be fastened to the top plate with 32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws or 32mm x 7g GIB® Grabber® Dual Thread screw at 300mm centres maximum.

Linings are fastened to metal using 25mm x 6g GIB® Grabber® Self Tapping screws and to timber framing using 32mm x 6g GIB® Grabber® High Thread screws. Alternatively 32mm x 7g GIB® Grabber® Dual Thread screws can be used in both cases. Fastener centres are specified on p.18.

Coved ceiling diaphragms can be achieved by using nominally 32 x 32 x 0.55mm proprietary galvanised metal angles ("back-flashing") at the changes in direction. These angles shall be:

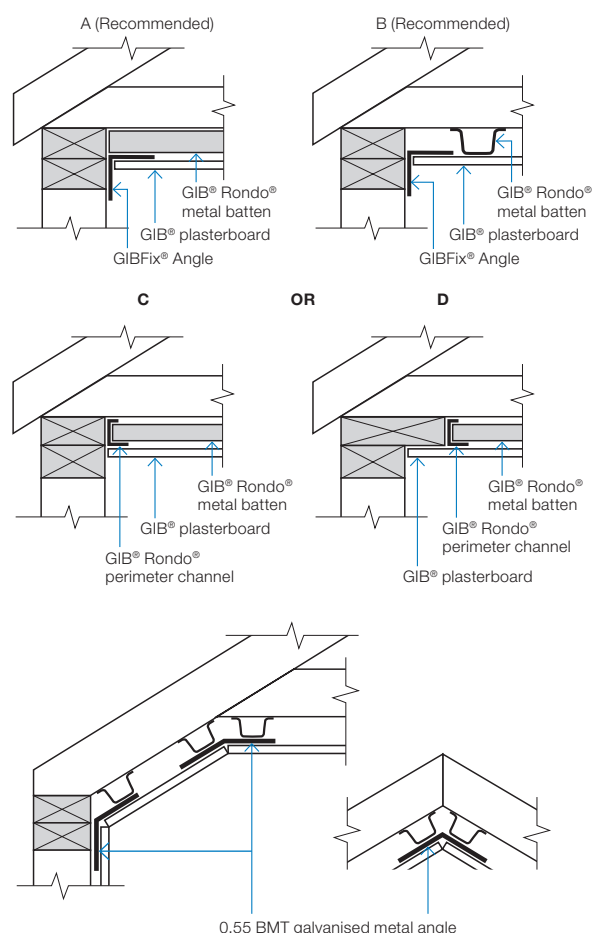
- Fastened at 300mm on each edge to metal battens using 32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws or 32mm x 7g GIB® Grabber® Dual Thread screws.
- Fastened to timber framing using 32mm x 7g GIB® Grabber® Dual Thread screws when linings are installed.

FIGURE 26: GIB® RONDO® METAL CEILING BATTEN INSTALLATION



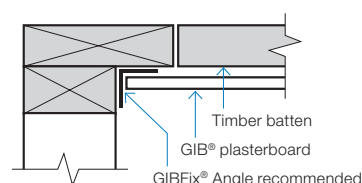
GEB016

FIGURE 27: GIB® RONDO® METAL CEILING BATTENS WITH CORNER ANGLES



GEB017

FIGURE 28: TIMBER CEILING BATTENS\*



GEB018

## Openings in ceiling diaphragms

### SMALL OPENINGS

Small opening (e.g. down lights) of 90 x 90mm or less may be placed no closer than 90mm to the edge of the ceiling diaphragm.

### LARGE OPENINGS

Openings are allowed within the middle third of the diaphragms length and width. Fixing of sheet material to opening trimmers shall be at 150mm centres. Neither opening dimension shall exceed a third of the diaphragm width. Larger openings or openings in other locations require specific engineering design.

Where fireplace flue or range hood openings are required in a ceiling diaphragm use a galvanised metal backing plate as shown in figure 25, with a maximum hole diameter of 350mm.

Figure 25 can also be used for range hood openings in walls.

For information on openings in ceiling diaphragms contact the GIB® Helpline on 0800 100 442.

FIGURE 24: LARGE OPENINGS IN CEILING DIAPHRAGMS

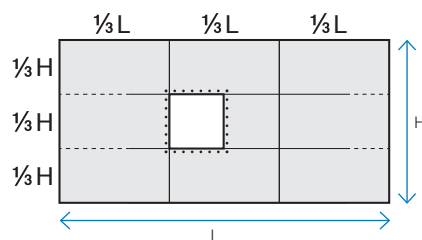
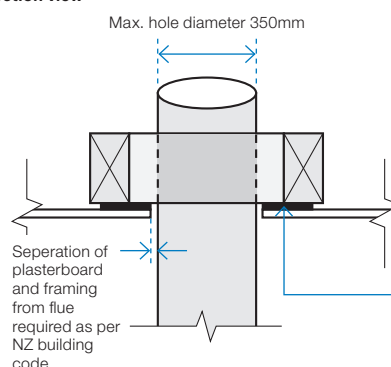


FIGURE 25: FIREPLACE FLUES AND RANGE HOOD OPENINGS

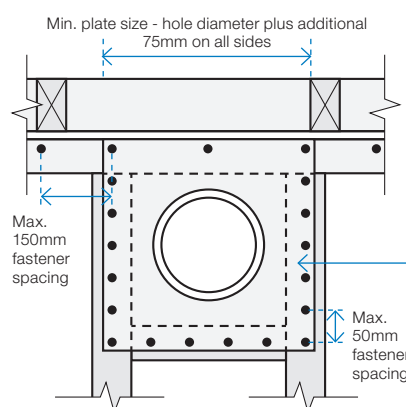
#### Section view



**Steel plate**  
0.55 BMT  
Galvanised sheet  
Max. opening  
350mm diameter.  
Installed prior to  
GIB® plasterboard.

**Framing**  
90 x 45mm framing  
trimmed to provide  
extra fixing.

#### Plan view



**GIB® plasterboard ceiling**  
Installed over the  
steel plate and into  
framing using a  
minimum of 32mm  
x 6g GIB® Grabber  
High Thread or  
32mm x 7g GIB®  
Grabber Dual Thread  
screws at 50mm  
max centre spacing.

Plasterboard ceiling not shown in plan view

## Length of GIB EzyBrace® elements ('N' Type)

The length of GIB EzyBrace® elements with an 'N' extension (requiring standard NZS3604:2011 plate connections) can be taken as the full frame length measured from the outside of the end-stud to the opening face as illustrated in figures 29-32.

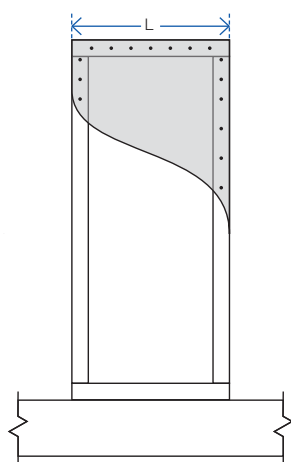
'N' type GIB EzyBrace® elements are identified by GIB® specification numbers GS1-N, GS2-N and GS2-NOM

The dimension 'L' shall not be less than 400mm.

Perimeter bracing fixing for linings of both 'H' and 'N' type elements is along the top and bottom plates, end stud, and doubling stud immediately adjacent to the opening.

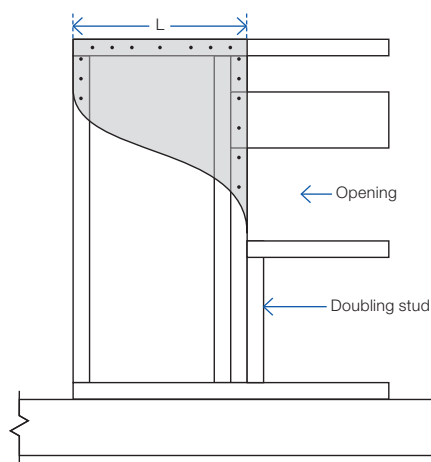
Fastener spacings and diagram scales shown in Figures 29-32 are indicative only. Refer to p.23-30 for construction details.

FIGURE 29: GS BRACING ELEMENTS (OPTION A)



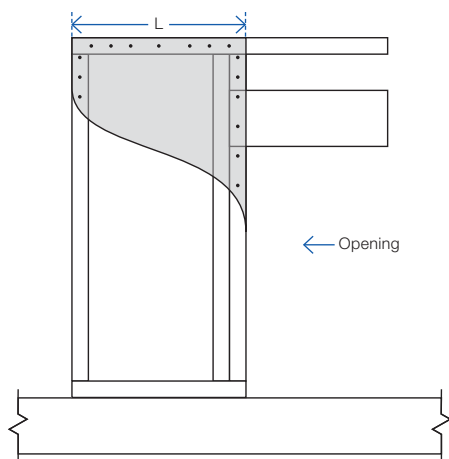
GS1-N, GS2-N elements  
'L' indicates the length of the bracing element

FIGURE 30: GS BRACING ELEMENTS (OPTION B)



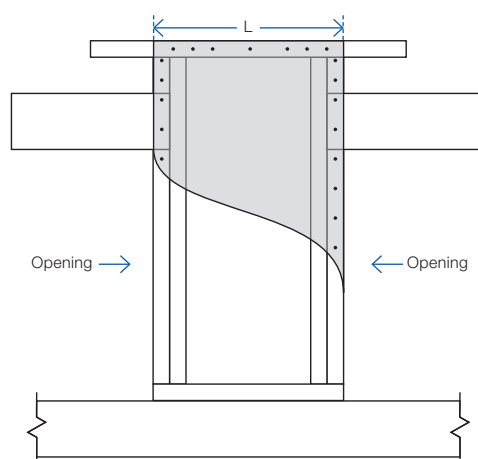
GS1-N, GS2-N elements  
'L' indicates the length of the bracing element

FIGURE 31: GS BRACING ELEMENTS (OPTION C)



GS1-N, GS2-N elements  
'L' indicates the length of the bracing element

FIGURE 32: GS BRACING ELEMENTS (OPTION D)



GS1-N, GS2-N elements  
'L' indicates the length of the bracing element

## Length of GIB EzyBrace® elements ('H' Type)

GIB EzyBrace® elements with an 'H' extension (requiring special panel hold-down fixings) can be used when the dimension 'L' as illustrated in figures 33–36 is 400mm or more.

'H' type GIB EzyBrace® elements are identified by GIB® specification numbers GSP-H, BL1-H, BLG-H and BLP-H.

The length of an 'H' type element is not only determined by the sheet material, but also by the placement of the hold-down fixings.

Hold-down fixings cannot be placed closer together than what is shown for the standard panel in figure 33.

Hold-down fixings can be placed under windows provided sill trimming studs beneath the opening are connected to the bracing element using 8/90mm gun nails, as illustrated in figure 34.

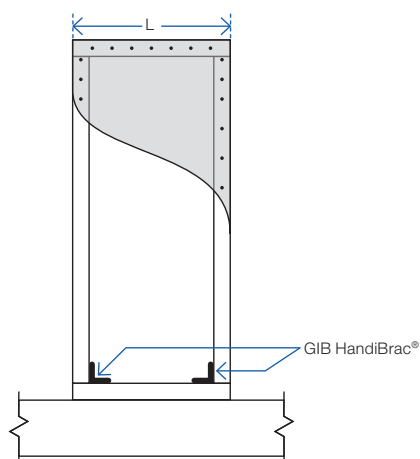
Spike doubling stud to trimming stud using a minimum of 2/90mm gun nails at 600mm centres. Lintel straps (where required for wind uplift) should be checked in and be located away from the bracing element fasteners.

Perimeter bracing fixing for linings of both 'H' and 'N' type elements is along the top and bottom plates, end stud, and doubling stud immediately adjacent to the opening as indicated in figures 34–36.

When using bracing straps, installed in accordance with p.17, fix the strap to the same framing member as shown for the GIB Handibrac® below, and install the adjacent anchor bolt in the same position as the GIB Handibrac® bolt.

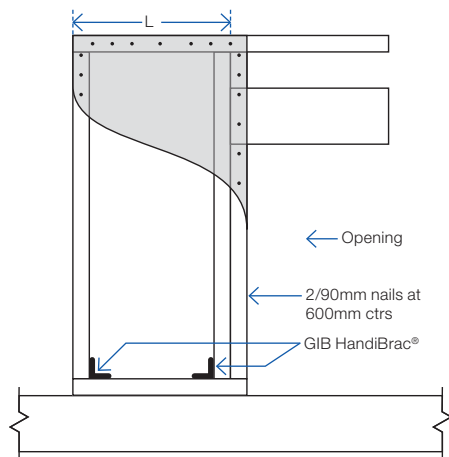
Fastener spacings and diagram scales shown in figures 33–36 are indicative only. Refer to p.23–30 for construction details.

FIGURE 33: BL BRACING ELEMENTS (OPTION A)



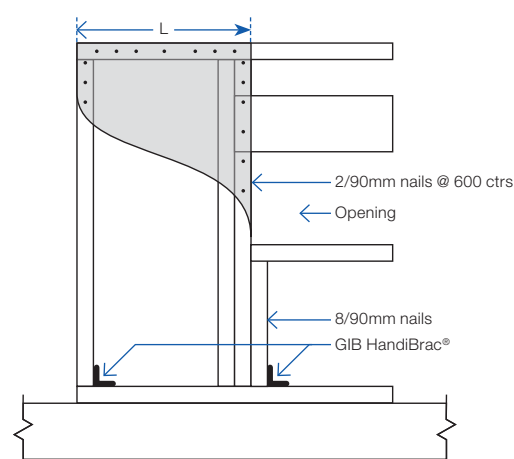
'H' type elements with specific hold downs  
'L' indicates the length of the bracing element

FIGURE 35: BL BRACING ELEMENTS (OPTION C)



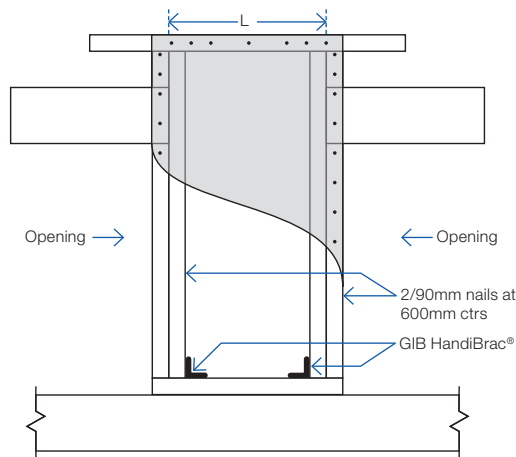
'H' type elements with specific hold downs  
'L' indicates the length of the bracing element

FIGURE 34: BL BRACING ELEMENTS (OPTION B)



'H' type elements with specific hold downs  
'L' indicates the length of the bracing element

FIGURE 36: BL BRACING ELEMENTS (OPTION D)



'H' type elements with specific hold downs  
'L' indicates the length of the bracing element

# GIB EzyBrace® Systems specification GS1-N

Specification code	Minimum length (m)	Lining requirement
GS1-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard to one side only

## WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

## BOTTOM PLATE FIXING

### Timber floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

### Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and 600mm centres thereafter.

External Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for external wall bottom plate fixing.

## WALL LINING

- Any 10mm or 13mm GIB® plasterboard lining.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

## PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

## FASTENING THE LINING

### Fasteners

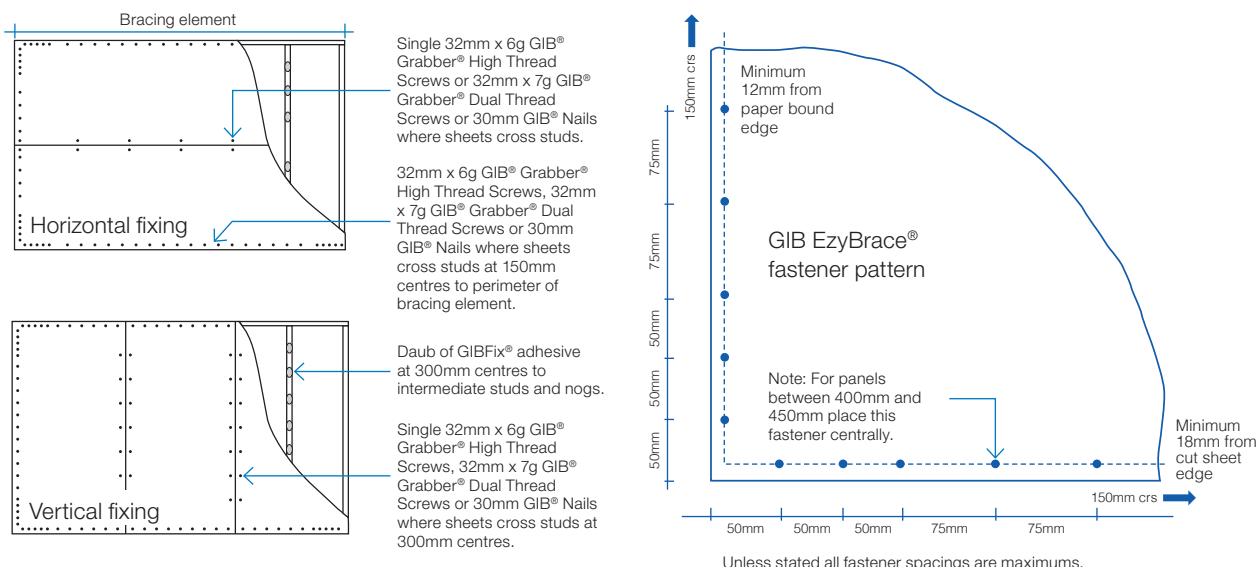
32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

### Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

## JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



# GIB EzyBrace® Systems specification GS2-NOM

Specification code	Minimum length (m)	Lining requirement
GS2-NOM	0.4	Any 10mm or 13mm GIB® Standard plasterboard fixed to each side of the wall framing

## WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

## BOTTOM PLATE FIXING

### Timber floor

Pairs of hand driven 100mm x 3.75mm nails at 600mm centres; or three power driven 90mm x 3.15mm nails at 600mm centres.

### Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75mm x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and then 600mm centres thereafter.

## WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to each side of the wall.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

## PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

## FASTENING THE LINING

### Fasteners

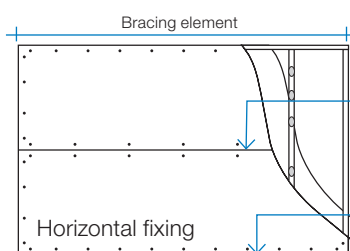
32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Angle use 32mm x 7g GIB® Grabber® Dual Thread Screws.

### Fastener centres

50, 300mm from each corner and 300mm maximum thereafter around the perimeter of the bracing element. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

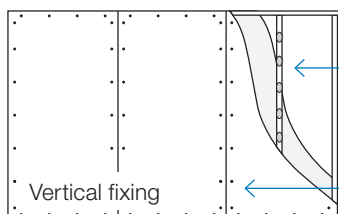
## JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



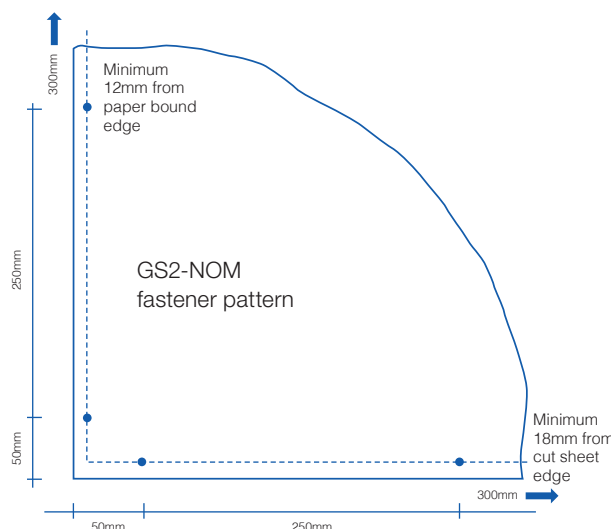
Single 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws where sheets cross studs.

Single 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws to perimeter of bracing element (note corner fastening pattern).



Daub of GIBFix® adhesive at 300mm centres to intermediate studs and nog.s

32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws at 300mm centres to perimeter of bracing element (note corner fastener pattern).



Unless stated all fastener spacings are maximums.

In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

### GS2-NOM ADHESIVE FIXING OPTION AT DOOR JAMBS

As an alternative to using screw fixings, a continuous 6-10mm bead of solvent based GIBFix® All-Bond can be applied along the full height studs immediately adjacent to an internal door opening and at the door lintel or head trimmer. The lining is then bedded into the adhesive and installed into the rebated jamb, as shown in figure 38.

This solvent based adhesive option may only be used with GS2-NOM specification and is designed to reduce popping of fasteners around door openings on internal walls.

FIGURE 37: SCREW FIX FOR OPENINGS

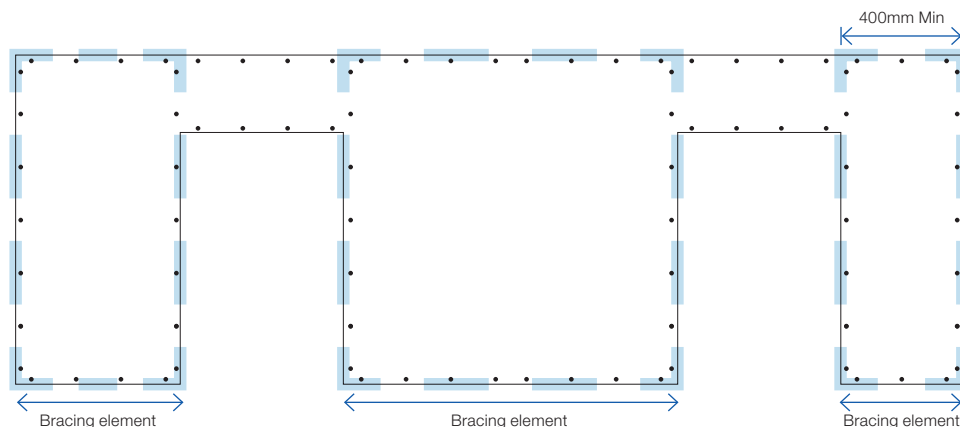
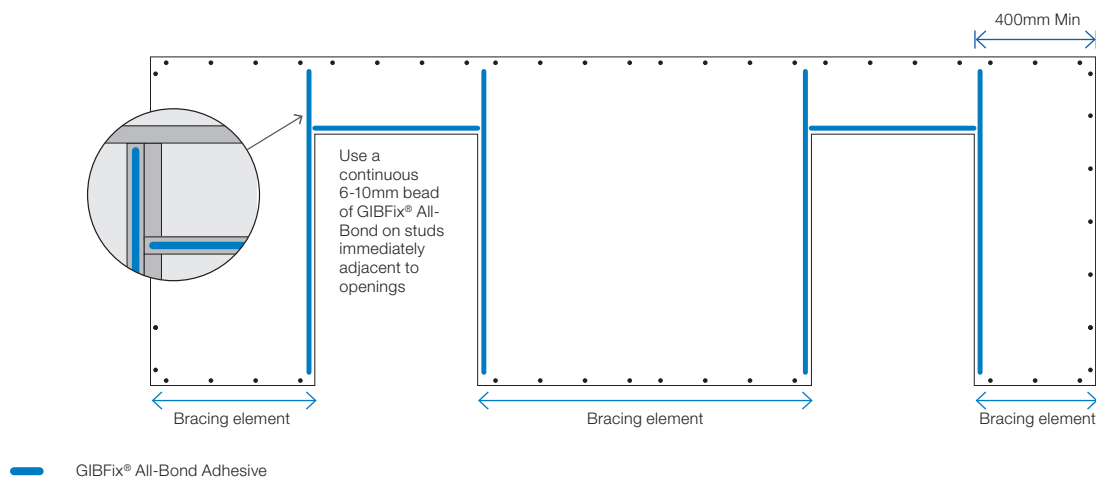
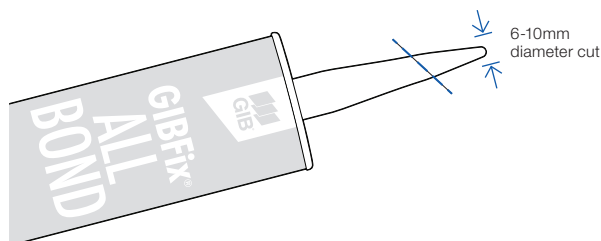


FIGURE 38: SCREW AND ADHESIVE FIX FOR OPENINGS



#### ADHESIVE NOZZLE APERTURE



# GIB EzyBrace® Systems specification GS2-N

Specification code	Minimum length (m)	Lining requirement
GS2-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard fixed to each side of the wall framing

## WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

## BOTTOM PLATE FIXING

### Timber Floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

### Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and then 600mm centres thereafter.

## WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to each side of the wall.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

## PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

## FASTENING THE LINING

### Fasteners

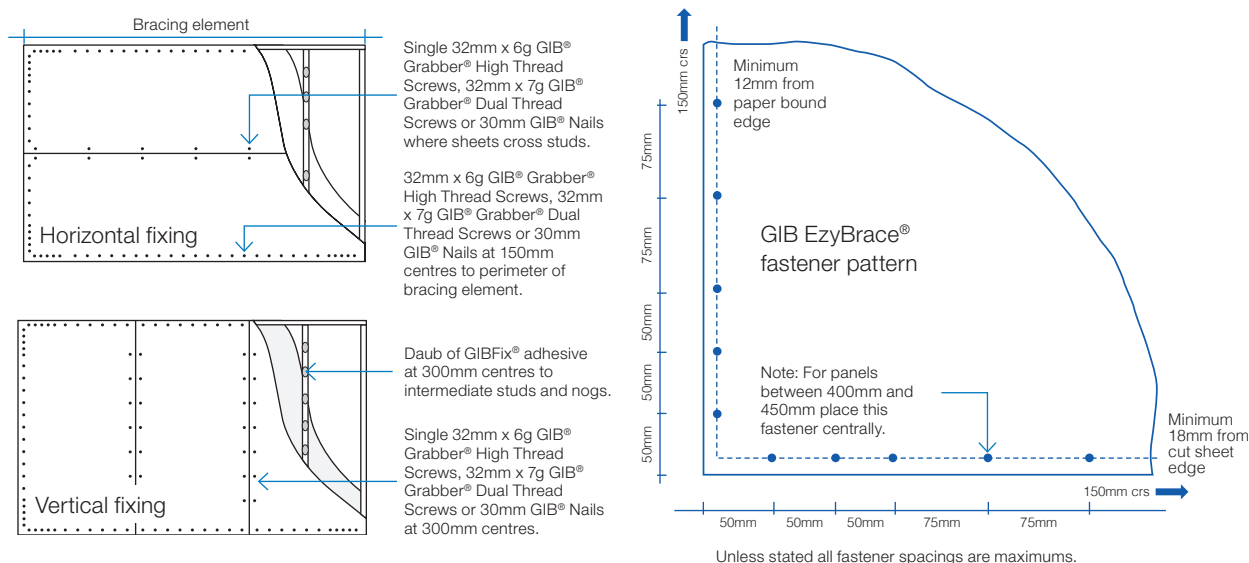
32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

### Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

## JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

# GIB EzyBrace® Systems specification GSP-H

Specification Code	Minimum length (m)	Lining requirement	Other requirements
GSP-H	0.4	Any 10mm or 13mm GIB® plasterboard lining to one side of framing and minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side	Hold downs

## WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

## BOTTOM PLATE FIXING

### Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

### Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

## WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to one side of the wall plus minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side.
- Sheets can be fixed vertically or horizontally, with edges supported.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

## PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

## FASTENING THE LINING

### Fasteners

32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails.

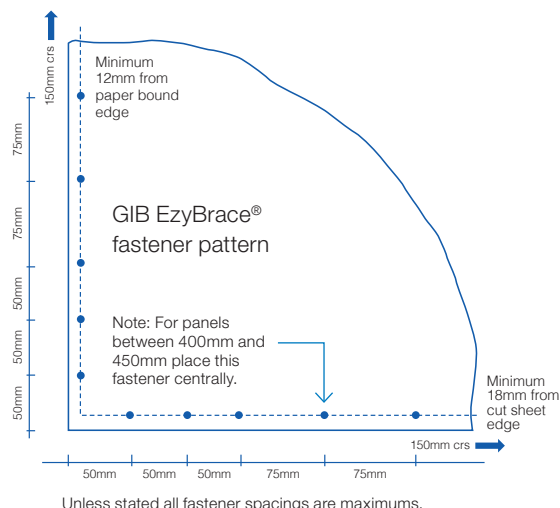
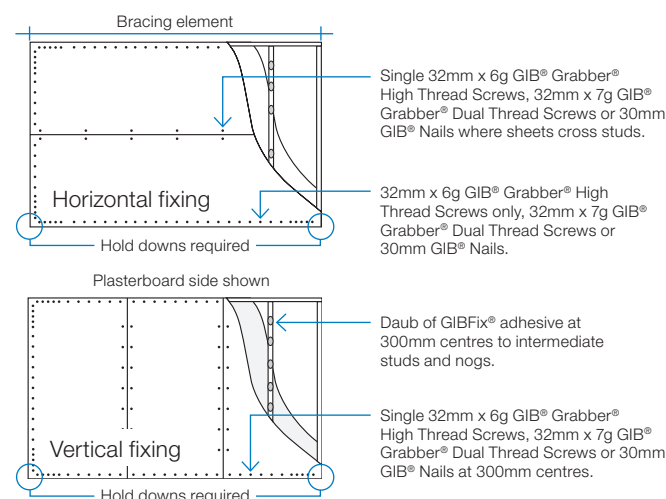
If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails.

### Fastener centres

GIB® plasterboard side: 50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge. Plywood side: 150mm centres to the perimeter of each sheet. GIB® corner fastener pattern does not apply to the plywood side. 300mm centres to intermediate studs.

## JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

# GIB EzyBrace® Systems specification BL1-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BL1-H	0.4	10mm or 13mm GIB Braceline® to one side only	Hold downs

## WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

## BOTTOM PLATE FIXING

### Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

### Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

## WALL LINING

- A layer of 10mm or 13mm GIB Braceline®
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

## PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

## FASTENING THE LINING

### Fasteners

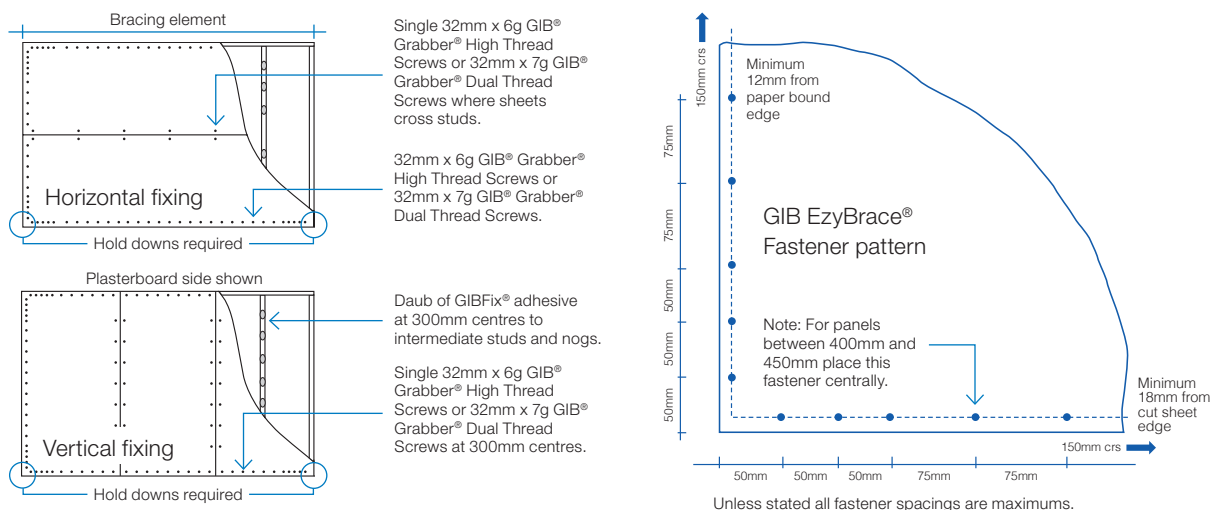
32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

### Fastener centres

50,100,150, 225, 300mm from maximum each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the sheet joint. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

## JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

## GIB EzyBrace® Systems specification BLG-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BLG-H	0.4	10mm or 13mm GIB Braceline® to one side of the frame plus any 10mm or 13mm GIB® plasterboard to the other side	Hold downs

### WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

### BOTTOM PLATE FIXING

#### Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

#### Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems 2011 or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

### WALL LINING

- A layer of 10mm or 13mm GIB Braceline® to one side of the wall plus any 10mm or 13mm GIB® plasterboard lining to the other side.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

### PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

### FASTENING THE LINING

#### Fasteners

GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Other side: 32mm x 6g GIB® Grabber® High Thread Screws, 30mm GIB Nails or 32mm x 7g GIB® Grabber® Dual Thread Screws.

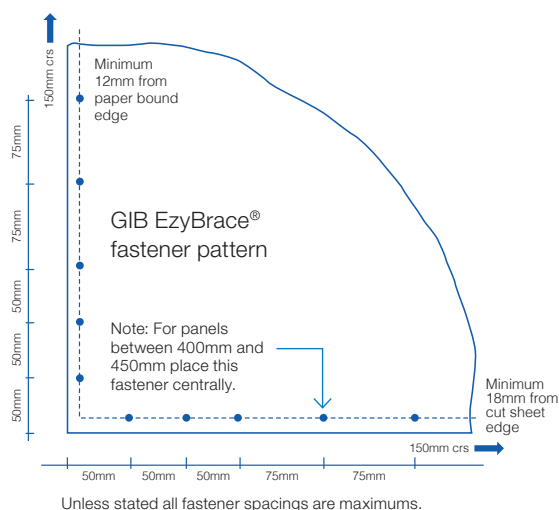
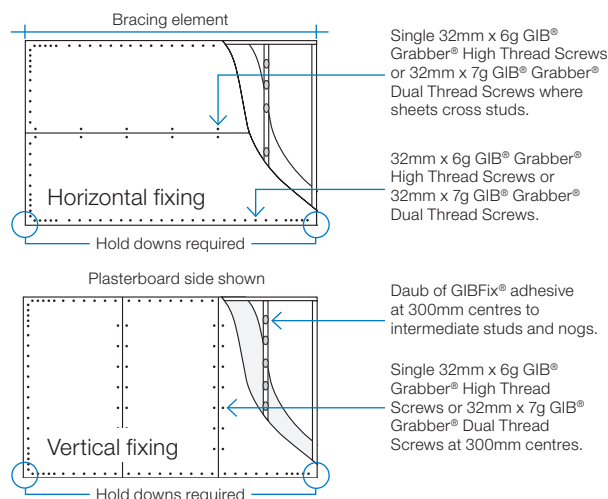
If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

#### Fastener centres

50,100,150, 225, 300mm maximum from each corner and then 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

### JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



## GIB EzyBrace® Systems specification BLP-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BLP-H	0.4	10mm or 13mm GIB Braceline® to one side of the frame plus minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side	Hold downs

### WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure; B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

### BOTTOM PLATE FIXING

#### Timber floor

Use panel hold downs at each end of the bracing element. The GIB® HandiBrac is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

#### Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of AS/NZ 2269/0 :2012.

### WALL LINING

- A layer of 10mm or 13mm GIB Braceline® to one side of the wall plus minimum 7mm structural plywood manufactured to AS/NZS 2269.0 :2012 to the other side.
- Sheets can be fixed vertically or horizontally.
- Plywood is to be fixed vertically with edges supported.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

### PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

### FASTENING THE LINING

#### Fasteners

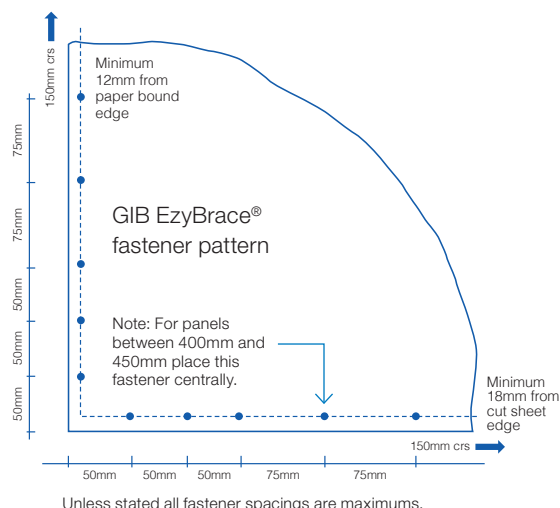
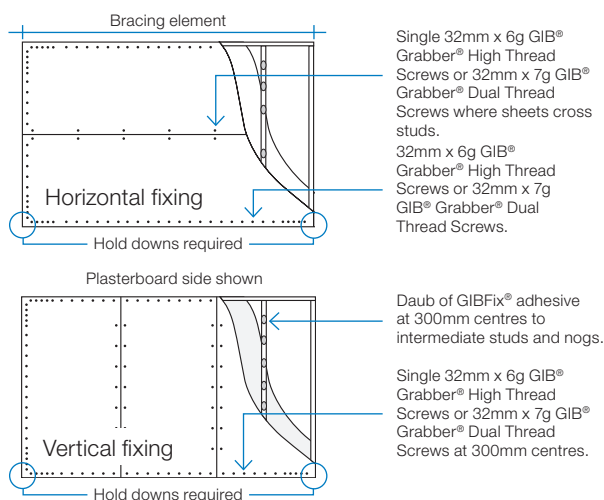
GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

#### Fastener centres

GIB® Plasterboard side: 50,100,150, 225, 300mm from each corner and then 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge. Plywood side: 150mm centres to the perimeter of each sheet. GIB® corner fastener pattern does not apply to the plywood side. 300mm centres to intermediate studs.

### JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems





Winstone Wallboards is committed to protecting the environment. Environmental matters are integrated into all business activities:

- Our operations strive to exceed all environmental regulatory requirements at all times.
- Protection of the environment is a day to day responsibility that we all must accept.
- We allocate appropriate management time and resources to address relevant environmental issues and continuously improve our activities in that area.
- We will achieve our standards of performance through positive action, employee involvement and constant communication with our neighbours, local authorities and customers.

Minimise on-site waste when designing and/or installing GIB® Systems. For larger projects give consideration to our cut-to-length service to reduce waste. GIB® plasterboard off-cuts, if separated from other waste building materials, can be readily recycled.

For larger projects waste can be diverted to compost manufacturers who grind up the GIB® plasterboard and use it in compost. For smaller projects, the GIB® plasterboard can be ground up and spread around the building site.

### GLOBAL GREENTAG<sup>CERT</sup>™

The Global GreenTag<sup>Cert</sup>™ certified eco-label acknowledges product as meeting the GreenRate Standard set by Global GreenTag<sup>Cert</sup>™

GIB® plasterboard has a Level B green rating.

### DECLARE CERTIFICATION

Declare is a database of non-toxic, sustainably sourced building products.

Many GIB® plasterboard products including GIB® Standard, GIB Braceline®, GIB Noiseline® and GIB Aqualine® have achieved Red List Free status in Declare certification.

For more information on Winstone Wallboards sustainability commitments visit [gib.co.nz](http://gib.co.nz).

### COPYRIGHT

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Winstone Wallboards asserts its moral rights and reserves all other intellectual property rights in the materials contained in this brochure and related to GIBFix® Framing System and GIB EzyBrace® Systems.

### TRADEMARKS

The names GIB®, GIB Fyrelime®, GIB Ultraline®, GIB Braceline®, GIB Toughline®, GIB Noiseline®, GIB Aqualine®, GIB Nail®, GIB Tradeset®, GIB Plus 4®, GIB-Cove®, GIB Lite Blue®, GIBFix®, the colour mauve for GIB Toughline®, GIB HandiBrac®, GIB EzyBrace®, the colour blue for GIB Braceline®, the colour pink for GIB Fyrelime®, the colour green for GIB Aqualine®, and the shield device are registered trademarks of Fletcher Building Holdings Limited.

### PATENTS

GIBFix® Framing System and GIB EzyBrace® Systems, including componentry and design method, have patents pending (NZ Patent Number 596691, NZ Patent 709159 pending) and design and other IP rights.



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**FOR MORE INFORMATION VISIT**

[gib.co.nz](http://gib.co.nz)

**OR CALL THE GIB® HELPLINE**

0800 100 442



CONSTRUCTION  
TECHNOLOGIES  
AUSTRALIA

A SIKA COMPANY

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# TILE INSTALLATION SYSTEMS

## CTA · AQUA BLOK MANUAL

JUNE 2015



# INTRODUCTION

CTA has been supplying premium quality products for the building and renovation industry for many years. The company develops and manufactures premium quality products for the installation of all types of tiling solutions for trade professionals.

The range includes high tech levelling compounds, tile adhesives, primers and waterproofing membranes. CTA's products are specially formulated to provide superior performance and ease of application.

Sika acquired Construction Technologies Australia Pty Ltd (CTA) on 1st May 2015.

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# Aqua Blök™



## TRAINING MANUAL

# CTA Aqua Blok Waterproofing Systems

JUNE 2015 / 0615 / SIKA (NZ) LIMITED / PAUL HUNTER

### SIKA TILE INSTALLATION SYSTEMS

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## 1 SCOPE

This training manual describes the requirements, considerations and methods for the installation of CTA Aqua Blok waterproofing systems.

## 2 WHY WATERPROOF?

- Water damage is only second to fire as a cause of building deterioration
- 80% of all complaints in respect of tiling relate to a LEAKING SHOWER
- A tiled wet area surface is NOT inherently waterproof

## 3 AUTHORITIES & STANDARDS

### 3.1 REGULATING AUTHORITIES

- Building Code of Australia (BCA)
- Master Builders Association (MBA)
- Waterproofing Industry Council of Australia (WICA)
- Australian Institute of Waterproofing (AIW)
- Department of Building & Housing New Zealand

### 3.2 STANDARDS

- Australian Standards AS 3740 (2010)
- Wet Area Membranes AS / NZS 4858 (2004)

## 4 WHAT IS WATERPROOFING?

It is a system that prevents water and/or vapour from passing through.

### 4.1 PERFORMANCE REQUIREMENTS

- Accommodate reasonable movement
- Contain water and be resistant to household chemicals
- Provide resistance to static head of water

## 5 WATERPROOF MEMBRANE TYPES

### Preformed Sheet Membranes

Bitumen, PVC, EPDM, PE, Neoprene, Butyl, TPO

### Liquid Applied

SBR, water-based acrylic and urethane, epoxy, solvent polyurethane, cementitious

### Integral Systems

Crystalline, admixture, bentonite clays

**5.1 RESIN BASED FIBREGLASS. COPPER TRAYS, EPOXIES**

CLASS	ELONGATION	BOND BREAKER	DESCRIPTION
I	< 60%	75 mm	Rigid

**ADVANTAGES**

- Quick curing – mixing ratio
- Single application
- High abrasion resistance

**DISADVANTAGES**

- Little or no flexibility
- Brittle
- Limited open time

**5.2 ACRYLICS, BITUMEN EMULSIONS, TORCH-ON SHEET MEMBRANES**

CLASS	ELONGATION	BOND BREAKER	DESCRIPTION
II	60 – 300 %	35 mm	Flexible

**ADVANTAGES**

- Water-based, non-toxic
- UV Stable
- Adhesive compatibility

**DISADVANTAGES**

- Slow curing – climate and site conditions
- Priming and multiple coats
- Not suitable – continuous immersion

**5.3 POLYURETHANES – WATER BASED, SOLVENT BASED. SHEET MEMBRANES – PVC, RUBBER**

CLASS	ELONGATION	BOND BREAKER	DESCRIPTION
III	> 300 %	12 mm	Elastomeric

**ADVANTAGES**

- Highly flexible
- No mixing
- Easy clean

**DISADVANTAGES**

- Clean up – solvent based
- Adhesive compatibility – solvent PU
- Toxic / storage

**6 SUBSTRATES**

- Concrete
- Plywood
- Fibre cement sheeting

## 7 AQUA BLOK WATERPROOFING SOLUTIONS

Aqua Blok™ 2 Part



Aqua Blok™ SBR



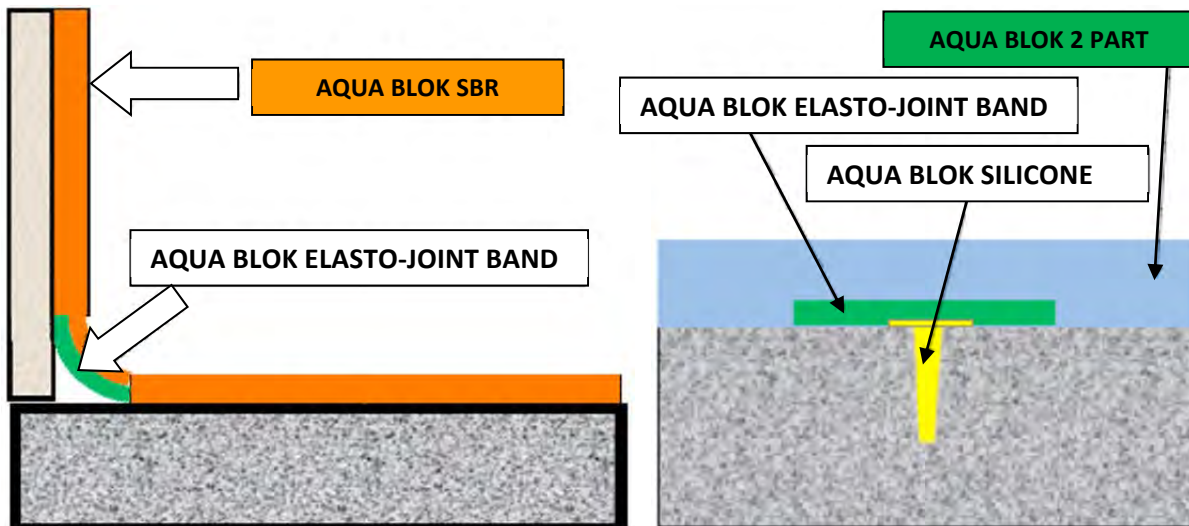
## 8 PRIMERS

Priming a porous substrate enhances the adhesion of the membrane to the substrate, breaks the dust barrier, and creates a tacky surface for the membrane to adhere. It also controls during and drying.

- **Eco Primer WB** for porous substrates
- **Eco Prep'n'Prime** for dense substrates
- **Aqua Blok Moisture Seal** for damp/moist substrates

## 9 BOND BREAKER

Water-based systems – Aqua Blok SBR and Aqua Blok 2 Part



- Copes with movement at critical junctions
- Imperative for performance of water-based system
- Install at wall/wall, wall/floor, change of direction or substrate
- Membrane does not adhere to the bond breaker
- Corners – internal and external

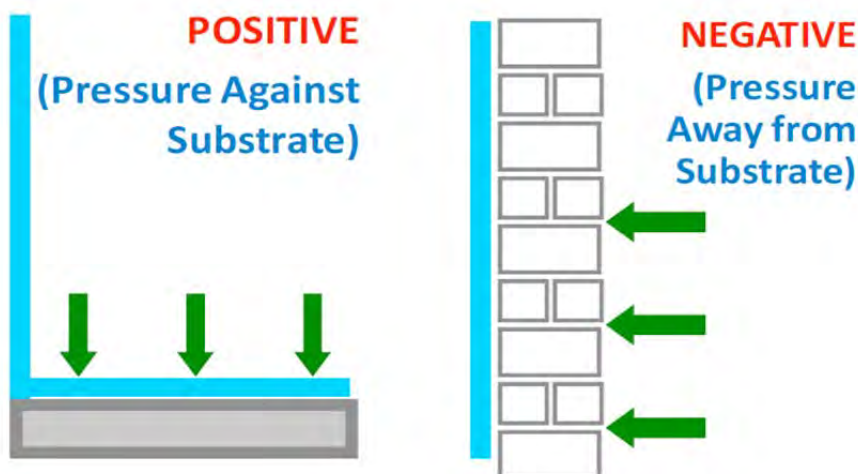
## 10 AQUA BLOK ELASTO-JOINT – CORNERS & BANDS

Aqua Blok Elasto-Joint bandage and pre-formed corners are a part of the Aqua Blok system. These flexible reinforcements are used for areas of movement as “Bond Breaker”.

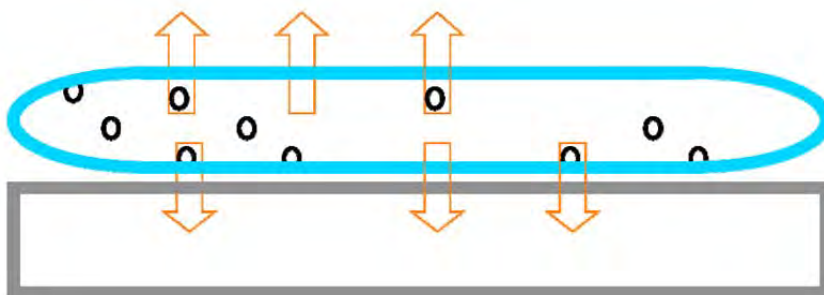
### 10.1 APPLICATION

- After priming and allowing it to dry, apply a liberal coat of Aqua Blok extending 100 mm wide on the wall and floor junction.
- Immediately place the preformed corners into the wet membrane.
- Using a brush, detail the corner by removing all creases and air pockets.
- Apply a second coat, ensuring that bandage is well embedded.
- When joining Aqua Blok Elasto-Joint Band, a minimum 50mm overlap must be achieved. Treat these joints as per the application recommendation for corners.
- Apply a liberal coat of Aqua Blok, extending 100mm wide equidistantly across the joint/crack and along the entire length of the joint/crack.
- Place the Aqua Blok Elasto-Joint Band over the freshly applied membrane. Thoroughly wet out the edges of the bandage using a brush or roller, remove all creases and air pockets under and along the bandage.
- Immediately apply a second coat of Aqua Blok to completely fill and bed the bandage.

### Hydrostatic Pressure:



## 11 CURING & DRYING – WATER-BASED SYSTEMS



- Absorption and evaporation of moisture
- Cross linking and film-forming

## 12 APPLICATION – LIQUID WATER-BASED SYSTEMS

- Preparation – sweep, vacuum, blow
- Install ‘Bond Breaker’ – Aqua Blok Elasto-Joint Band
- Prime – porous substrate
- Install first coat – maximum wet film thickness 1mm
- Check – imperfections and drying
- Install second coat – dry film thickness minimum 1mm
- Cure – time to dry and cure important
- Protect – against damage

### 12.1 ADVANTAGES – LIQUID APPLIED WATER-BASED SYSTEMS

Reinforced – bandage	Flexible / elongate
Versatile – substrate / internal / external	Water-based
Economical	Non-toxic / carcinogenic
Seamless	Low odour
Weatherability (U.V.)	Easy application
Compatibility – adhesives	Non-hazardous
Seamless	

### 12.2 COMMON CAUSES OF FAILURE

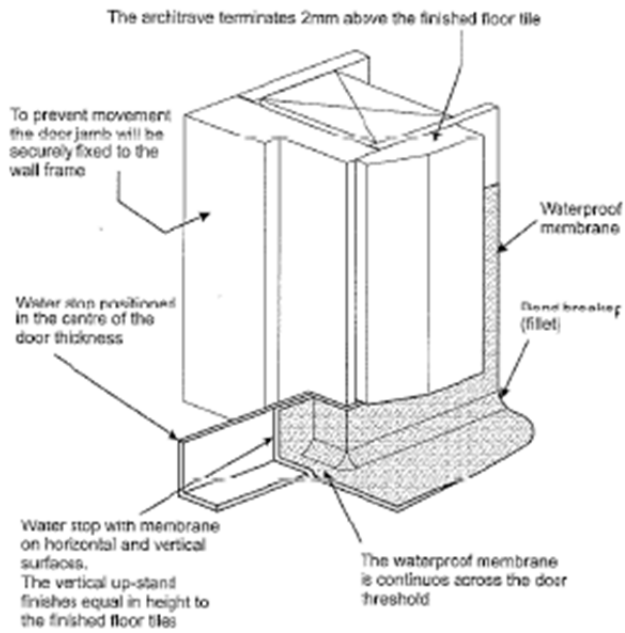
- Incorrect surface preparation – no primer, etc.
- No/ineffective bond breaker / fillet joint
- Membrane not fully cured/dry
- Incorrect application / film thickness
- Incompatibility – substrate/membrane/adhesive
- Incorrect membrane
- Damage
- Incorrect design
- Incorrect position – shower screen, water stop angle

### 12.3 KEYS TO GOOD INSTALLATION

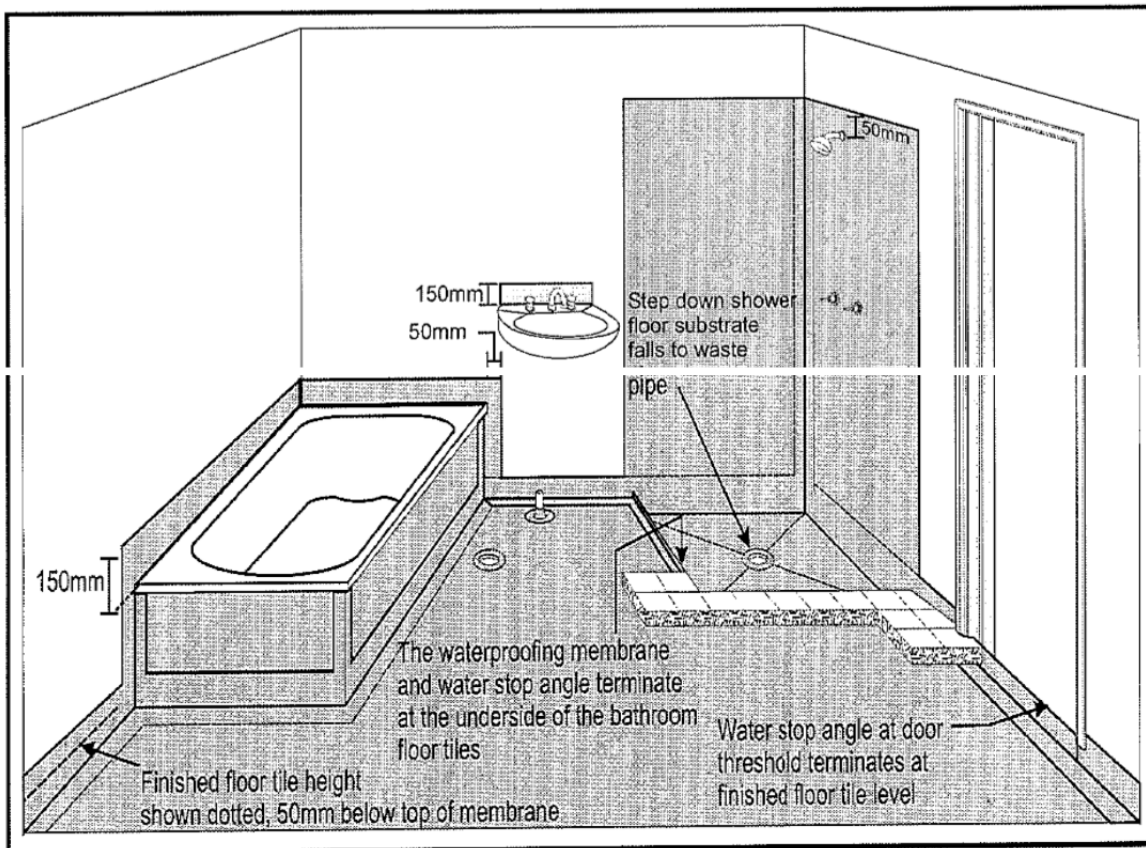
<ul style="list-style-type: none"> <li>▪ Consider at design stage</li> <li>▪ Choose the right product</li> <li>▪ Licenced applicator</li> <li>▪ Adequate preparation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Follow manufacturer’s instructions</li> <li>▪ Seek advice</li> <li>▪ Protect against damage</li> <li>▪ Ensure full cure</li> </ul>
---	---

## 13 DETAILS

### 13.1 WATERSTOP ANGLE

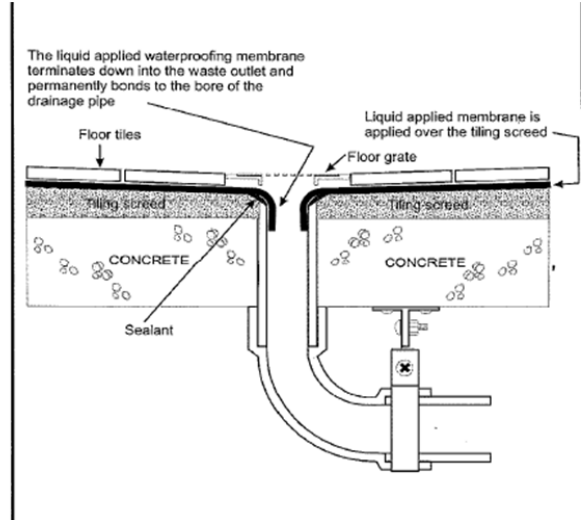
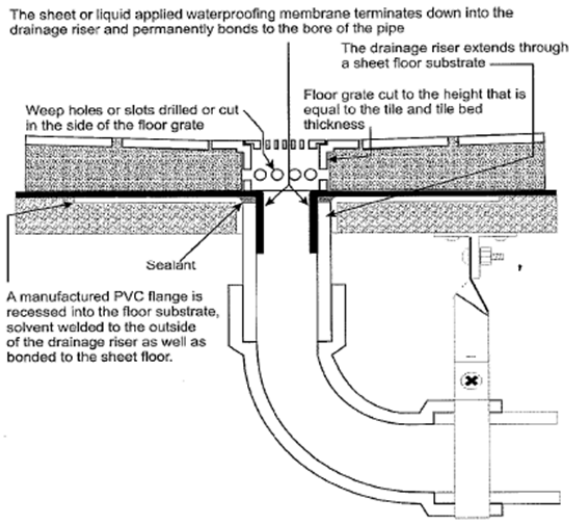


### 13.2 DETAIL – TYPICAL BATHROOM, HOBLESS SHOWER / SHOWER SCREEN



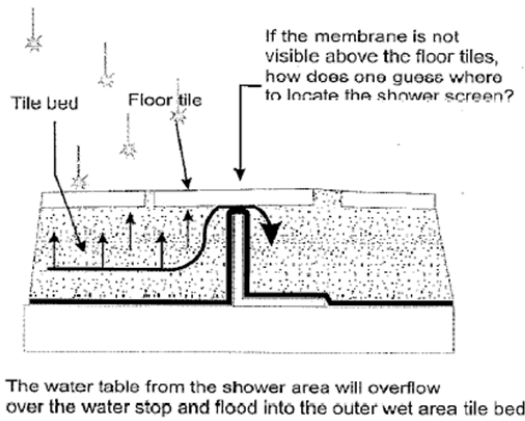


### 13.3 TERMINATION DETAIL – DRAINAGE PIPE

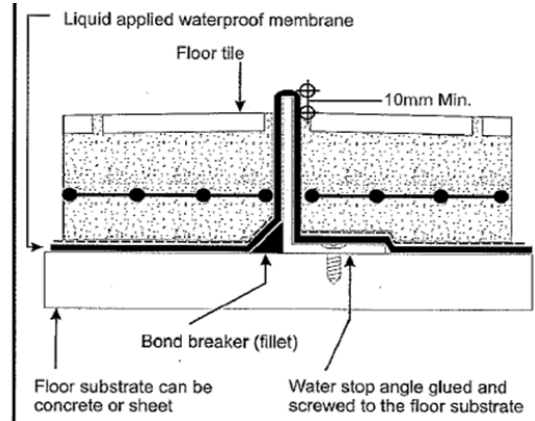


### 13.4 DETAIL WATER STOP SHOWER DETAIL

#### INCORRECT:

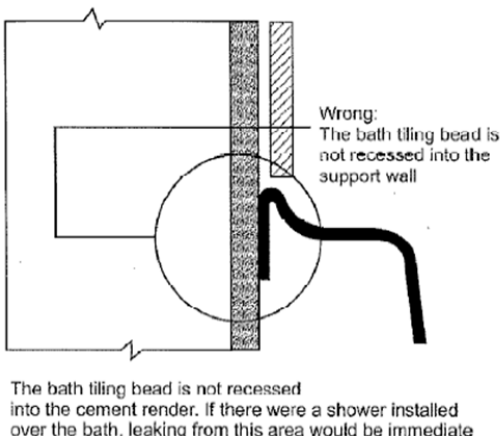


#### CORRECT:

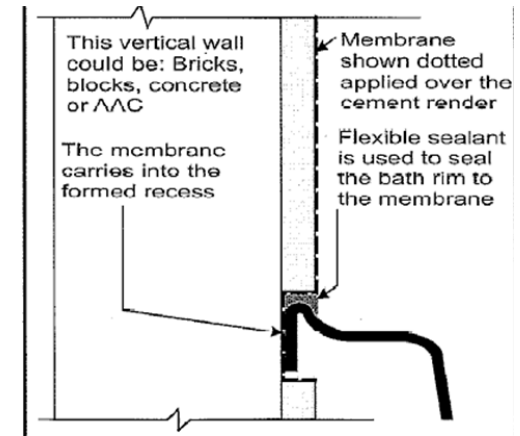


### 13.5 BATH EDGE DETAIL

#### INCORRECT:



#### CORRECT:





## 14 MEMBRANE SELECTION

Consider:

- Environment – internal, external, UV stable, exposed, trafficable
- Substrate compatibility – adhesion, elongation
- Finishes compatibility – tiling, timber, vinyl, soil, etc.
- Membrane characteristics – elongation, hardness, immersion
- Positive or negative tanking
- Bonded/unbonded system – liquid applied / sheet membrane

## 15 SUBSTRATE PREPARATION

### 15.1 CONCRETE SUBSTRATE

- All surfaces to be waterproofed must be firm, clean, dry, sound and smooth.
- All grease, oil, wax, curing compounds, dust, droppings, loose material, paint and any other contaminants must be removed.
- Concrete must be allowed to cure for 28 days.
- Concrete surfaces should be smooth and any imperfections repaired with a suitable mortar or cement render. All repairs must be allowed to cure for 7 days prior to the application of Aqua Blok.
- The moisture content of the concrete must not exceed 15%.
- Porous, damp or moist substrates must be primed with Aqua Blok Moisture Seal. Excessively porous, friable and dusty surfaces may require an additional priming coat.
- The surface on to which Aqua Blok is applied must be continuous. Aqua Blok cannot span gaps. The substrate must have adequate falls to drainage outlets to avoid ponding.

### 15.2 PLYWOOD SUBSTRATE

- Plywood substrates must be a minimum of 17mm and comply with AS/NZS 22269, be minimum CD grade structural plywood, sanded “C” face upwards, and H3 treated.
- Plywood must be fixed in accordance with the manufacturer’s installation instructions, and maximum moisture content should be 20% or less.
- The maximum joist span in any direction shall be 400mm. Panels should be laid in a brick bond, and sheet edges must be supported.
- Sheets must be glued and screwed using 10G x 50 stainless steel and countersunk. Fixings must be at 150mm centres on the edges, and at 200mm centres in the body of the sheets.

### 15.3 FIBRE CEMENT SHEETING

Fibre cement sheeting must be fixed in accordance with the manufacturer’s technical directions for installation in various applications.

## 16 MINIMUM FILM THICKNESS

Refer to individual product data sheets for application rates to ensure correct coverage and minimum dry film thickness is achieved. The use of a wet film gauge is recommended to periodically check wet film thickness. Note wet film thickness is generally greater than dry film thickness.

## 17 QUICK GUIDE

Surface preparation – falls, cracks, joints, penetrations, clean, smooth and continuous

Drainage/water stop – waste /angles

Bond breaker / fillet joint

Primer

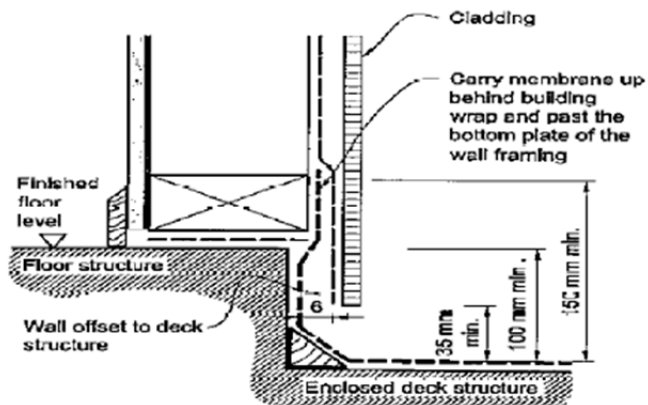
Membrane application / installation

Inspection/rectification/water test

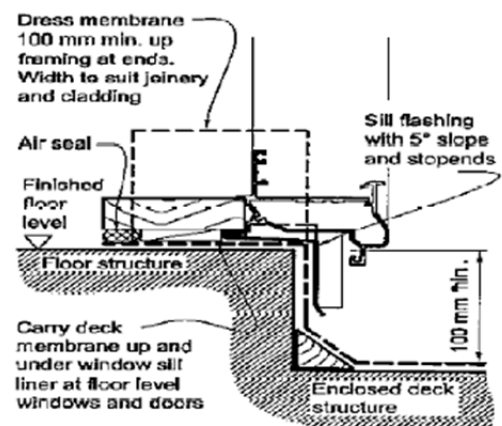
Protect / hand over

## 18 FURTHER DETAILS

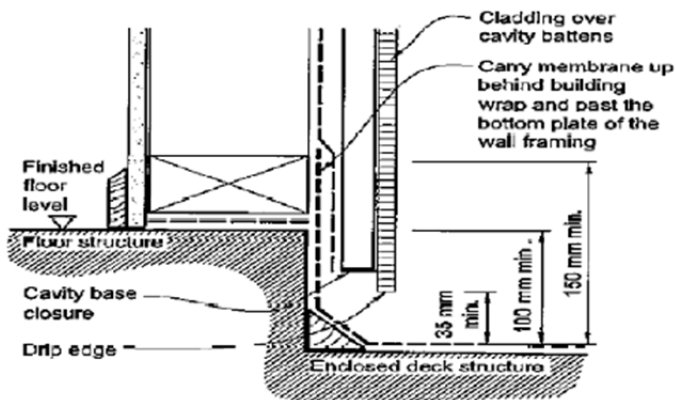
### 18.1 THRESHOLD DETAIL



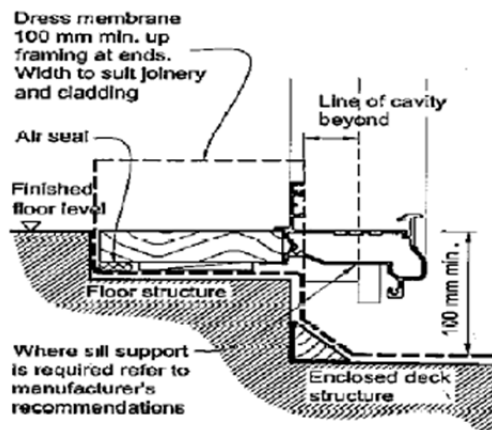
(a) DIRECT FIX THRESHOLD AT WALL



(b) DIRECT FIX THRESHOLD AT OPENING

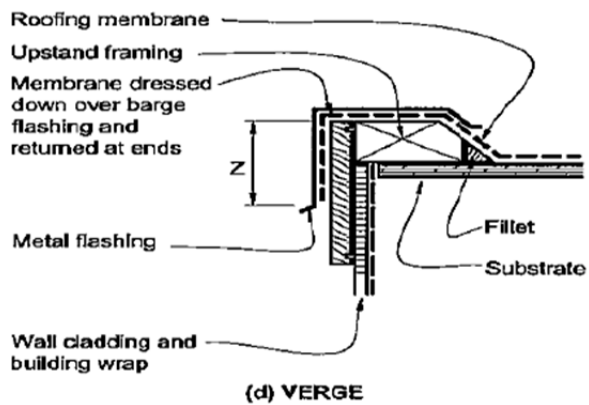
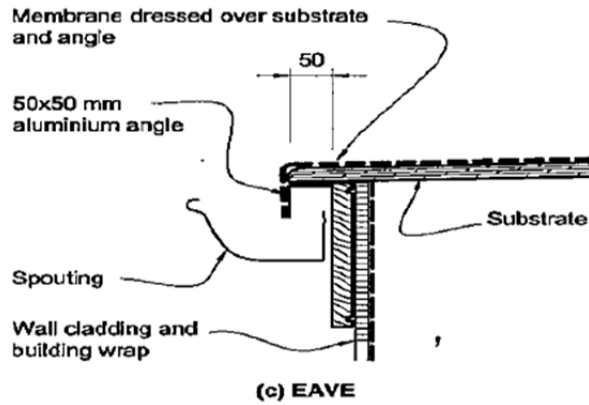


(c) CAVITY THRESHOLD AT WALL



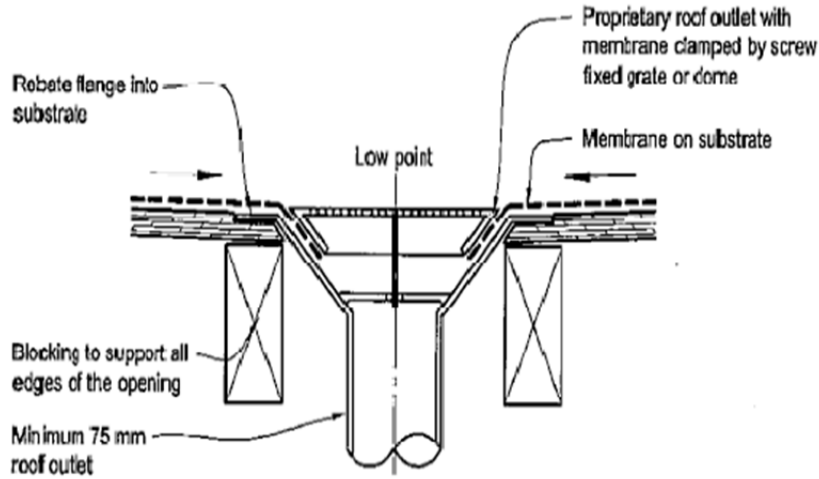
(d) ALTERNATIVE CAVITY THRESHOLD AT OPENING

## 18.2 EDGE DETAIL

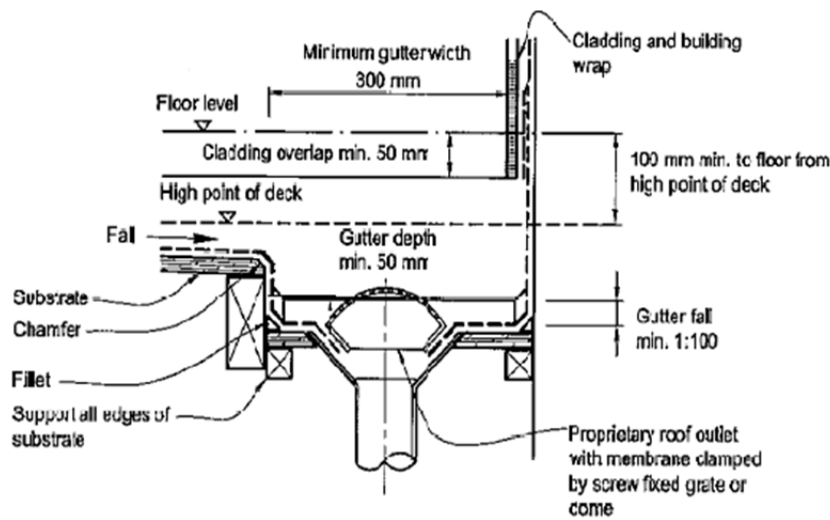


NOTE: "Z" = variable with wind zone (refer table 7 ES/AS1)

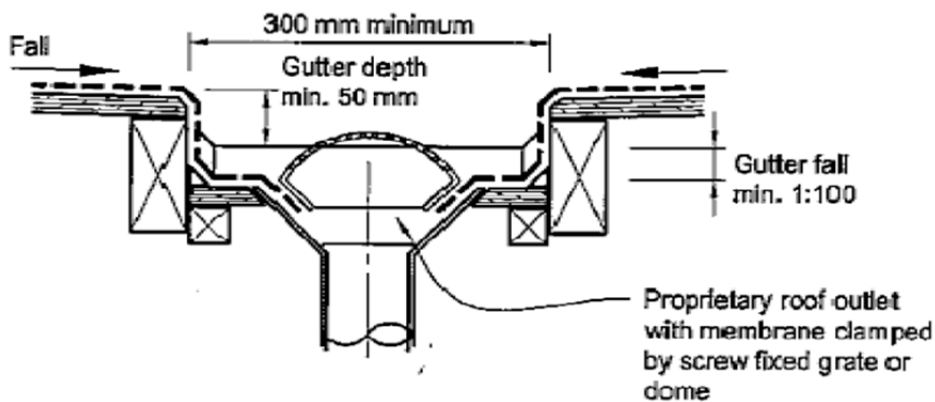
### 18.3 GUTTERS



(a) TYPICAL GUTTER OUTLET

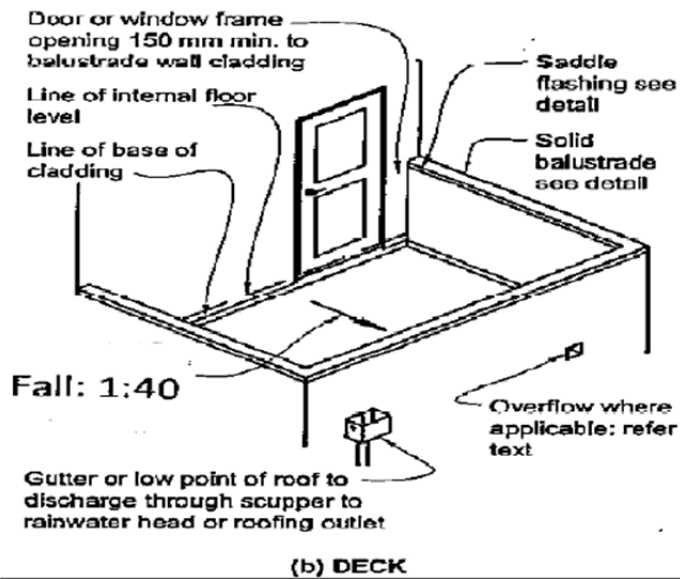
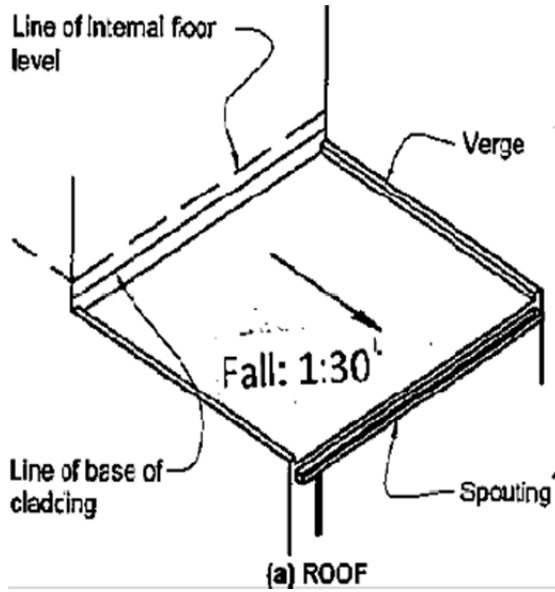


(b) EDGE GUTTER



(c) CENTRAL GUTTER

#### 18.4 ROOFS & DECKS – FALLS IN MEMBRANE







**BRANZ Appraised**

Appraisal No.723 [2011]

BRANZ Appraisals

Technical Assessments of products  
for building and construction

**BRANZ  
APPRAISAL  
No. 723 (2011)**

Amended 9 July 2013

## AQUABLOK EXTERIOR WATERPROOFING MEMBRANES

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[www.branz.co.nz](http://www.branz.co.nz)



### Product

1.1 AquaBlok Exterior Waterproofing Membranes are single and two part waterproofing membranes for use under ceramic or stone tile finishes on external decks and balconies.

**CTA<sup>TM</sup>** CONSTRUCTION  
TECHNOLOGIES  
AUSTRALIA



### Scope

2.1 AquaBlok Exterior Waterproofing Membranes have been appraised as waterproofing membranes on buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with respect to building height and maximum floor plan areas; and,
- with building structures designed and constructed to meet the requirements of the NZBC; and,
- with deck and balcony supporting structures of timber framing with substrates of plywood; and,
- with substrates of suspended concrete slabs; and,
- situated in all Wind Zones of NZS 3604, up to and including 'Extra High'.

2.2 AquaBlok Exterior Waterproofing Membranes have also been appraised for use as waterproofing membranes on specifically designed buildings within the following scope:

- with building structures designed and constructed to comply with the NZBC; and,
- with deck and balcony supporting structures of timber framing with substrates of plywood and fibre cement compressed sheet; and,
- with substrates of suspended concrete slab; and,
- subjected to maximum wind pressures (Refer Paragraph 7.8); and,
- with the weathertightness design of all junctions being the subject of specific design by the designer.

*Note: The design of these junctions has not been appraised by BRANZ and is outside the scope of this Appraisal.*

2.3 Decks and balconies waterproofed with AquaBlok Exterior Waterproofing Membranes must be designed and constructed in accordance with the following limitations:

- constructed to suitable falls (Refer Paragraphs 13.3 - 13.6); and,
- with the membranes continually protected from exposure to UV (ultra violet) light and from physical damage by ceramic or stone tile finishes; and,
- with decks and balconies designed and constructed such that deflections do not exceed 1/360<sup>th</sup> of the span; and,
- with no steps within the deck level, no integral roof gardens and no down pipes discharging directly onto the deck; and,
- with a maximum size of 40 m<sup>2</sup>.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.



2.4 Movement and control joints in the substrate must be carried through to the tile finish. The design and construction of the substrate and movement and control joints is specific to each building, and therefore the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.

2.5 Ceramic or stone tile finishes are outside the scope of this Appraisal.

2.6 The membranes must be installed by trained applicators, approved by Construction Technologies Australia Pty Ltd.

## New Zealand Building Code (NZBC)

In the opinion of BRANZ, AquaBlok Exterior Waterproofing Membranes, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

**Clause B2 DURABILITY:** Performance B2.3.1 (b) 15 years. AquaBlok Exterior Waterproofing Membranes will meet this requirement. See Paragraph 10.1.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.1 and E2.3.2. Decks and balconies incorporating AquaBlok Exterior Waterproofing Membranes will meet these requirements. See Paragraphs 13.1 – 13.3.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. AquaBlok Exterior Waterproofing Membranes will meet this requirement and will not present a health hazard to people.

This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

Materials supplied by Construction Technologies Australia Pty Ltd are as follows:

### AquaBlok SBR

AquaBlok SBR is a styrene-butadiene copolymer-based, one-part, ready-to-use, liquid-applied membrane supplied as a thixotropic paste in 4 and 15 litre pails.

### AquaBlok Rapid

AquaBlok Rapid is a styrene-butadiene copolymer-based, one-part, ready-to-use, liquid-applied membrane supplied as a red thixotropic paste in 4 and 15 litre pails.

### AquaBlok 2 Part

AquaBlok 2 Part is a quick drying, latex based, two-part, flexible, cementitious-based, liquid-applied membrane. It is supplied as AquaBlok Part A liquid in 10 litre pails and AquaBlok Part B powder in 15 kg bags. When dry, the membrane is light grey in colour.

### Eco Prime WB Primer

Eco Prime WB is a synthetic, latex based liquid which is used for priming a variety of substrates prior to the application of the AquaBlok Waterproofing Membranes. It is supplied in 5 litre and 20 litre containers.

## Elasto-Joint Bandage and Corners

- Elastomeric bond-breaker tapes are used at movement and expansion joints, and elastomeric formed corner sections for use at internal and external corner wall/floor junctions as set out in the Technical Literature. The tapes are available in rolls 50 m long x 120 mm wide. The corner sections are approximately 150 mm long and are available for internal corner/floor junctions (90°) and external corner/floor junctions (270°).

## Handling and Storage

5.1 All materials must be stored inside, up off concrete floors, in dry conditions, out of direct sunlight and out of freezing conditions. The materials in the original unopened packaging have a shelf life of 12 months from date of manufacture. Once opened, the materials must be used within 3 months.

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for AquaBlok Exterior Waterproofing Membranes. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

## General

7.1 AquaBlok Exterior Waterproofing Membranes are for use on decks and balconies where an impervious waterproof membrane is required to prevent damage to building elements and adjoining areas.

7.2 The AquaBlok 2 Part product is designed to be used where a quicker curing time is required, such as in cool or humid conditions.

7.3 The membranes must be protected from exposure to UV light and from physical damage by ceramic or stone tile finishes.

7.4 The effective control of internal moisture must be considered at the design stage due to the impermeability of the membranes. Refer to the BRANZ publication "Good Practice Guide – Membrane Roofing".

7.5 Movement and control joints may be required depending on the shape and size of the deck, and the finish specified. Design guidelines for control joints for tiles can be found in the BRANZ Good Practice Guide – Tiling.

7.6 Timber framing must comply with NZS 3604, or where specific engineering design is used, the framing shall be of at least equivalent stiffness to the framing provisions of NZS 3604, or comply with the serviceability criteria of AS/NZS 1170. In all cases framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and that all sheet edges are fully supported.

7.7 Timber framing supporting the substrates must be constructed such that deflections do not exceed 1/360th of the span. Where NZS 3604 is used, the allowable joist spans given in Table 7.1 shall be reduced by 20%.

7.8 AquaBlok Exterior Waterproofing Membranes are suitable for use in areas subject to maximum wind pressures of 6 kPa Ultimate Limit State.



## Substrates

### Plywood

8.1 Plywood must be treated to H3 (CCA treated). **LOSP treated plywood must not be used.** Plywood must comply with NZBC Acceptable Solution E2/AS1 Paragraph 8.5.3 and 8.5.5.

### Fibre Cement Compressed Sheet

8.2 Fibre cement compressed sheet must be manufactured to comply with the requirements of AS 2908.2 and must be specified by the manufacturer as being suitable for use as an external decking substrate. The fibre cement sheet must be of a thickness to meet specific structural design requirements and must be secured to the structure to resist wind uplift and all other forces acting on the deck or balcony, such as deflection from gravity and live loads. Installation must be in accordance with instructions of the manufacturer.

### Concrete

8.3 Concrete substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101.

## Durability

### Serviceable Life

10.1 AquaBlok Exterior Waterproofing Membranes, when subjected to normal conditions of environment and use, are expected to have a serviceable life of at least 15 years and be compatible with ceramic or stone tiling finishes with a design service life of 15-25 years.

## Maintenance

11.1 No maintenance of the membrane will be required provided significant substrate movement does not occur and the tile finish remains intact. Regular checks must be made of the tiling to ensure it is sound and will not allow moisture to penetrate. Any cracks or damage must be repaired immediately by repairing the tiling and any grout or sealant.

11.2 In the event of damage to the membrane, the tiling must be removed and the membrane repaired by removing the damaged portion and applying a patch as for new work.

11.3 Drainage outlets must be maintained to operate effectively, and tile finishes must be kept clean. Cleaning materials that may affect polymer based membranes must not be used.

## Prevention of Fire Occurring

12.1 Separation or protection must be provided to AquaBlok Exterior Waterproofing Membranes from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

## External Moisture

13.1 Decks and balconies must be designed and constructed to shed precipitated moisture. They must also take account of snowfalls in snow prone areas. A means of meeting code compliance with NZBC Clause E2.3.1 is given by the Technical Literature which gives details aligned with NZBC Acceptable Solution E2/AS1.

13.2 When installed in accordance with this Appraisal and the Technical Literature, AquaBlok Exterior Waterproofing Membranes will prevent the penetration of water and will therefore meet code compliance with NZBC Clause E2.3.2. The membranes are impervious to water and will give a weathertight deck or balcony.

13.3 The minimum fall to decks and balconies must be 1 in 40 and gutters must be 1 in 60 and all falls must slope to an outlet. Inadequate falls will allow moisture to collect and increase the risk of deterioration of the membrane and tiling finish.

13.4 AquaBlok Exterior Waterproofing Membranes are impermeable; therefore a means of dissipating construction moisture must be provided in the building design and construction to meet code compliance with NZBC Clause E2.3.6.

13.5 Deck and balcony falls must be built into the substrate and not created with mortar screeds applied over the membrane.

13.6 Allowance for deflection and settlement of the substrate must be made in the design of the deck or balcony to ensure falls are maintained and no ponding of water can occur.

13.7 Drainage flanges must be used for any outlet and must be fitted with a grate or cage to reduce potential sources of blockages. An overflow must be provided where the deck or balcony does not drain to an external gutter or spouting.

13.8 Penetrations and upstands of the membrane must be raised above the level of any possible flooding caused by blockage of deck and balcony drainage.

13.9 The design of details not covered by the Technical Literature is subject to specific weathertightness design and is outside the scope of this Appraisal.

## Installation Skill Level Requirement

14.1 Installation of the membrane must be completed by Construction Technologies Australia Pty Ltd Approved and Trained Applicators that have experience in the application of waterproofing membranes and understand waterproofing principles.

14.2 Installation of substrates must be completed by tradespersons with an understanding of deck and balcony construction, in accordance with instructions given within the Construction Technologies Australia Pty Ltd Technical Literature and this Appraisal.

## Preparation of Substrates

15.1 Substrates must be dry, clean and stable before installation commences. Surfaces must be smooth and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents. All surface defects must be filled to achieve an even and uniform surface.

15.2 The relative humidity of concrete substrates must be 75% or less before membrane application. The concrete can be checked for dryness by using a hygrometer, as set out in BRANZ Bulletin No. 424.

15.3 The moisture content of the timber substructure and plywood must be a maximum of 20% and fibre cement and plywood sheets must be dry at time of membrane application. This will generally require plywood and fibre cement sheets to be covered until just before the membrane is laid, to prevent rain wetting.

15.4 Porous substrates must be primed with Eco Prime WB Primer and allowed to dry fully before the membranes are installed.



## Membrane Installation

16.1 Installation must not be undertaken where the substrate surface temperature is below 5°C or above 35°C.

16.2 AquaBlok Part B liquid and AquaBlok Part A powder must be mixed and left to stand for 5 minutes before re-mixing, then applying. AquaBlok and AquaBlok Rapid must be thoroughly stirred before application.

16.3 The membranes must be applied in a minimum of two coats at the rates set out in the Technical Literature. Subsequent coats must be applied in an opposite direction to the previous coat. The total finished system thickness of the membranes must be a minimum of 1.2 mm.

16.4 Application can be made by roller (medium/long nap), brush (long bristle), or a non-edge serrated flat steel trowel.

16.5 In all situations, reinforcement provisions as set out in this Appraisal and the Technical Literature apply.

16.6 It is strongly recommended that the membranes are protected with temporary covers until it is fully cured in case of mechanical damage or rain wetting.

16.7 Clean up may be undertaken with water.

## Tiling

17.1 The membranes must be fully cured before tiling. The cured membranes must be protected at all times to prevent mechanical damage, so may require temporary covers until the finishing is completed.

17.2 Tiling must be undertaken in accordance with AS 581 and the BRANZ "Good Practice Guide, Tiling". The compatibility of tile adhesive must be confirmed with the adhesive manufacturer or Construction Technologies Australia Pty Ltd.

## Inspections

18.1 Critical areas of inspection for waterproofing systems are:

Construction of substrates, including crack control and installation of bond breakers and movement control joints.

Moisture content of the substrate prior to the application of the membrane.

Acceptance of the substrate by the membrane installer prior to application of the membrane.

Installation of the membrane to the manufacturer's instructions, particularly installation to the correct thickness and use of reinforcement.

Membrane curing and integrity prior to the installation of tiles, including protection from moisture, frost and mechanical damage during curing.

## Health and Safety

19.1 Safe use and handling procedures for the membrane systems are provided in the Technical Literature. The products must be used in conjunction with the relevant Materials Safety Data Sheet for each membrane.

The following is a summary of the technical investigations carried out:

## Tests

20.1 The following testing of AquaBlok Exterior Waterproofing Membranes has been undertaken by the following organisations:

- Amdel Limited, Australia – water absorption; tensile strength and elongation; shore A hardness; water vapour transmission; accelerated weathering and low temperature flexibility.
- CSIRO, Australia – mass per unit area and gravimetric thickness; tensile strength and elongation at break; tensile strength and elongation at break after UV exposure, including immersion in water, bleach and detergent; loss on heating; moving joint test and cyclic strain.

20.2 The following testing of AquaBlok Exterior Waterproofing Membranes has been undertaken by Amdel Limited, Australia – wet area durability testing in accordance with AS/NZS 4858 covering immersion in water, bleach, detergent, and heat ageing; UV ageing; water absorption; low temperature flexibility and water vapour transmission.

20.3 The above test methods and results have been reviewed by BRANZ and found to be satisfactory.

## Other Investigations

21.1 An assessment was made of the durability of AquaBlok Exterior Waterproofing Membranes by BRANZ technical experts.

21.2 Site inspections were carried out by BRANZ to examine the practicability of installation.

21.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

## Quality

22.1 The manufacture of the membranes has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

22.2 The quality management system of the membranes' manufacturer has been assessed by BRANZ and found to be satisfactory.

22.3 The quality of supply to the market is the responsibility of Construction Technologies Australia Pty Ltd.

22.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the framing system and the substrates.

22.5 Quality on site is the responsibility of the Construction Technologies Australia Pty Ltd Approved and Trained Applicators.

22.6 Building owners are responsible for the maintenance of the ceramic tiles in accordance with the instructions of Construction Technologies Australia Pty Ltd.



## Sources of Information

- AS 2908.2: 2000 Cellulose-cement products – Flat sheet.
- AS 3958.1: 1991 Guide to the installation of ceramic tiles.
- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2269: 2008 Plywood - Structural.
- AS/NZS 4858 - 2004 Wet area membranes.
- NZS 3101: 2006 The design of concrete structures.
- NZS 3604: 2011 Timber-framed buildings.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (Amendment 5, 1 August 2011).
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.
- Good Practice Guide Tiling, BRANZ, March 2004.
- Good Practice Guide Membrane Roofing, BRANZ, October 2003.

### Amendment No. 1, dated 7 April 2011.

This Appraisal has been amended to include maximum deck size.

### Amendment No. 2, dated 31 January 2012.

This Appraisal has been amended to update clause changes as required by the introduction of NZS 3604: 2011 and NZBC Acceptable Solution E2/AS1 Third Edition, Amendment 5.

### Amendment No. 3, dated 9 July 2013.

This Appraisal has been amended to update clause changes as required by the introduction of NZBC Fire Clauses C1 – C6 Protection from Fire and A3 Building Importance Levels and to include an additional product.



**BRANZ**

In the opinion of BRANZ, AquaBlok Exterior Waterproofing Membranes are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Construction Technologies Australia Pty Ltd, and is valid until further notice, subject to the Conditions of Appraisal.

### Conditions of Appraisal

1. This Appraisal:
  - a) relates only to the product as described herein;
  - b) must be read, considered and used in full together with the technical literature;
  - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
  - d) is copyright of BRANZ.
2. Construction Technologies Australia Pty Ltd:
  - a) continues to have the product reviewed by BRANZ;
  - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
  - c) abides by the BRANZ Appraisals Services Terms and Conditions.
  - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
  - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
  - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
  - c) any guarantee or warranty offered by Construction Technologies Australia Pty Ltd.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Construction Technologies Australia Pty Ltd or any third party.

For BRANZ

P Burghout  
Chief Executive

Date of issue: 5 April 2011





**BRANZ Appraised**

Appraisal No.724 [2011]

BRANZ Appraisals

Technical Assessments of products  
for building and construction

**BRANZ  
APPRAISAL  
No. 724 (2011)**

Amended 9 July 2013

## AQUABLOK INTERIOR WATERPROOFING MEMBRANES

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### Product

1.1 AquaBlok Interior Waterproofing Membranes are single and two part waterproofing membranes for use under ceramic or stone tile finishes in internal wet areas.



### Scope

2.1 AquaBlok Interior Waterproofing Membranes have been appraised for use as waterproofing membranes for internal wet areas of buildings, within the following scope:

- on floor substrates of concrete, flooring grade particleboard, plywood, compressed fibre cement sheet and fibre cement sheet tile underlay, and on wall substrates of concrete, concrete masonry, wet area fibre cement sheet lining systems and wet area plasterboard lining systems; and,
- when protected from physical damage by ceramic or stone tile finishes; and,
- where floors are designed and constructed such that deflections do not exceed 1/360<sup>th</sup> of the span.

2.2 The use of AquaBlok Interior Waterproofing Membranes on concrete slabs where hydrostatic or vapour pressure is present from below is outside the scope of this Appraisal.

2.3 Movement and control joints in the substrate must be carried through to the tile finish. The design and construction of the substrate and movement and control joints is specific to each building, and therefore the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.

2.4 The ceramic or stone tile finishes are outside the scope of this Appraisal.

2.5 The membranes must be installed by trained applicators, approved by Construction Technologies Australia Pty Ltd.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.



## New Zealand Building Code (NZBC)

**3.1** In the opinion of BRANZ, AquaBlok Interior Waterproofing Membranes if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

**Clause B2 DURABILITY:** Performance B2.3.1 (b) 15 years. AquaBlok Interior Waterproofing Membranes meet this requirement. See Paragraph 9.1.

**Clause E3 INTERNAL MOISTURE:** Performance E3.3.6. Interior wet area floors and walls incorporating AquaBlok Interior Waterproofing Membranes will meet this requirement. See Paragraphs 11.1- 11.6.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. AquaBlok Interior Waterproofing Membranes meet this requirement and will not present a health hazard to people.

This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

**4.1** Materials supplied by Construction Technologies Australia Pty Ltd are as follows:

### AquaBlok SBR

- AquaBlok SBR is a styrene-butadiene copolymer-based, one-part, ready-to-use, liquid-applied membrane supplied as a thixotropic paste in 4 and 15 litre pails.

### AquaBlok Rapid

- AquaBlok Rapid is a styrene-butadiene copolymer-based, one-part, ready-to-use, liquid-applied membrane supplied as a red thixotropic paste in 4 and 15 litre pails.

### AquaBlok 2 Part

- AquaBlok 2 Part is a quick drying, latex based, two-part, flexible, cementitious-based, liquid-applied membrane. It is supplied as AquaBlok Part A liquid in 10 litre pails and AquaBlok Part B powder in 15 kg bags. When dry, the membrane is light grey in colour.

### Eco Prime WB Primer

- Eco Prime WB is a synthetic, latex based liquid which is used for priming a variety of substrates prior to the application of the AquaBlok Waterproofing Membranes. It is supplied in 5 litre and 20 litre containers.

### Elasto-Joint Bandage and Corners

- Elastomeric bond-breaker tapes are used at movement and expansion joints, and elastomeric formed corner sections for use at internal and external corner wall/floor junctions as set out in the Technical Literature. The tapes are available in rolls 50 m long x 120 mm wide. The corner sections are approximately 150 mm long and are available for internal corner/floor junctions (90°) and external corner/floor junctions (270°).

## Handling and Storage

**5.1** All materials must be stored inside, up off concrete floors, in dry conditions, out of direct sunlight and out of freezing conditions. The membrane products have a shelf life of 12 months from date of manufacture in the original unopened packaging. Once opened, the products must be used within 3 months.

**6.1** Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the AquaBlok Interior Waterproofing Membranes. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

## General

**7.1** AquaBlok Interior Waterproofing Membranes are for use in buildings where an impervious waterproof membrane is required to floors and walls to prevent damage to building elements and adjoining areas.

**7.2** The membranes must be protected from physical damage by the application of ceramic or stone tile finishes.

**7.3** Movement and control joints may be required depending on the shape and size of the building or room, and the tile finish specified. Design guidelines can be found in the BRANZ "Good Practice Guide Tiling".

**7.4** Timber framing systems must comply with NZS 3604, or where specific engineering design is used, the framing shall be of at least equivalent stiffness to the framing provisions of NZS 3604, or comply with the serviceability criteria of AS/NZS 1170. In all cases framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and all sheet edges are fully supported. Timber framing systems supporting the substrates must be constructed such that deflections do not exceed 1/360<sup>th</sup> of the span. Where NZS 3604 is used, the allowable joist spans given in Table 7.1 shall be reduced by 20%.

## Substrates

### Plywood

**8.1** Plywood must be a minimum of 17 mm thick complying with AS/NZS 2269, CD Grade Structural with sanded C face upwards and treated to H3 (CCA treated). **LOSP treated plywood must not be used.** The plywood must be supported with dwangs or framing with a maximum span of 400 mm in each direction and fixed with 10 g x 50 mm stainless steel countersunk head screws at 150 mm centres on the edges and 200 mm through the body of the sheets.

### Fibre Cement Compressed Sheet / Fibre Cement Sheet Tile Underlay

**8.2** Fibre cement compressed sheet must be manufactured to comply with the requirements of AS 2908.2 and must be specified by the manufacturer as being suitable for use as a wet area substrate. Fibre cement sheet tile underlay must be suitable for use in internal wet areas. Installation must be in accordance with the instructions of the manufacturer.

### Particleboard

**8.3** Particleboard must be specified for the end use in accordance with NZS 3602.

### Concrete and Concrete Masonry

**8.4** Concrete and concrete masonry substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101, concrete slab-on-ground to NZS 3604, and concrete masonry to NZS 4229 and NZS 4230.



## Wet Area Wall Linings

8.5 Plasterboard wall linings must be manufactured to comply with AS/NZS 2588 and be suitable for use in internal wet areas.

8.6 Fibre cement sheet must be suitable for use in wet areas.

## Durability

### Serviceable Life

9.1 AquaBlok Interior Waterproofing Membranes, when subjected to normal conditions of environment and use, are expected to have a serviceable life of at least 15 years and be compatible with ceramic or stone tile finishes with a design service life of 15-25 years.

### Maintenance

10.1 No maintenance of the membranes will be required provided significant substrate movement does not occur and the tile finish remains intact. Regular checks must be made of the tiled areas to ensure they are sound and will not allow moisture to penetrate. Any cracks or damage must be repaired immediately by repairing the tiles, grouts and sealants.

10.2 In the event of damage to the membranes, the tiling must be removed and the membrane repaired by removing the damaged portion and applying a patch as for new work.

10.3 Drainage outlets must be maintained to operate effectively, and ceramic or stone tile finishes must be kept clean.

### Internal Moisture

11.1 AquaBlok Interior Waterproofing Membranes are impervious to water and when appropriately designed and installed will avoid the likelihood of water penetrating behind linings or entering concealed spaces.

11.2 AquaBlok Interior Waterproofing Membranes are suitable for use to contain accidental overflow to meet NZBC Clause E3.3.2. A means of Code Compliance for overflow is given in NZBC Acceptable Solution E3/AS1 Paragraph 2.

11.3 Surfaces must be finished with ceramic or stone tile finishes. A means of Code Compliance to NZBC Clause E3.3.3 and E3.3.4 is given in NZBC Acceptable Solution E3/AS1 Paragraph 3.1.1 (b), 3.1.2 (b) and 3.3.1 (b).

11.4 Falls in showers and shower areas must be a minimum of 1 in 50. In unenclosed showers, falls must extend a minimum of 1500 mm out from the shower rose. Floor wastes and drainage flanges must be provided and the floor must fall to the outlet.

11.5 The waterproofing membranes must completely cover shower bases, and for unenclosed showers it must extend a minimum of 1500 mm out from the shower rose. Further design guidance on waterproofing wet areas, including waterproofing walls and junctions can be obtained from AS 3740, BRANZ "Good Practice Guide Tiling", and flooring and wallboard manufacturers.

11.6 Where water resistant wall finishes such as prefinished sheet materials are used, they must flash over the membrane a minimum of 30 mm.

## Installation Skill Level Requirement

12.1 Installation of the membranes must be completed by trained applicators, approved by Construction Technologies Australia Pty Ltd.

12.2 Installation of substrates must be completed by tradespersons with an understanding of internal wet area construction, in accordance with instructions given within the Construction Technologies Australia Pty Ltd Technical Literature and this Appraisal.

## Preparation of Substrates

13.1 Substrates must be dry, clean and stable before installation commences. With surfaces that are even and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents.

13.2 The relative humidity of the concrete must be 75% or less before membrane application. Concrete substrates can be checked for dryness by using a hygrometer as set out in BRANZ Bulletin No. 424.

13.3 All voids, cracks, holes, joints and excessively rough areas must be filled to achieve an even and uniform surface. Junctions of substrate abutments, such as at wall/floor and wall/wall junctions must have reinforcing mesh installed as set out in the Technical Literature.

13.4 Porous substrates must be primed with Eco Prime WB Primer and allowed to dry fully before the membranes are installed.

## Membrane Installation

14.1 Installation must not be undertaken where the substrate surface temperature is below 5°C or above 35°C.

14.2 AquaBlok Part B liquid and AquaBlok Part A powder must be mixed and left to stand for 5 minutes before re-mixing, then applying. AquaBlok and AquaBlok Rapid must be thoroughly stirred before application.

14.3 The membranes must be applied in a minimum of two coats at the rates set out in the Technical Literature to give a total minimum finished thickness of 1.2 mm. Subsequent coats must be applied in an opposite direction to the previous coat.

14.4 Application can be made by roller (medium/long nap), brush (long bristle), or a non-edge serated flat steel trowel.

14.5 In all situations, reinforcement provisions as set out in this Appraisal and the Technical Literature apply.

14.6 Clean up may be undertaken with water.

## Tiling

15.1 The membranes must be fully cured before tiling. The cured membranes must be protected at all times to prevent mechanical damage, so may require temporary covers until the finishing is completed.

15.2 Tiling must be undertaken in accordance with AS 3958.1 and the BRANZ Good Tiling Practice Guide. The compatibility of the tile adhesive must be confirmed with the adhesive manufacturer or Construction Technologies Australia Pty Ltd.

## Inspections

16.1 Critical areas of inspection are:

- Construction of substrates, including crack control and installation of bond breakers and movement control joints.
- Moisture content of the substrate prior to the application of the membrane.
- Acceptance of the substrate by the membrane installer prior to application of the membrane.
- Installation of the membrane to the manufacturer's instructions, particularly installation to the correct thickness and use of reinforcement.



- Membrane curing and integrity prior to the installation of tiles including protection from mechanical damage during curing and prior to tile installation.

## Health and Safety

17.1 Safe use and handling procedures for the membranes are provided in the Technical Literature. The materials must be used in conjunction with the relevant Material Safety Data Sheet.

The following is a summary of the technical investigations carried out:

## Tests

18.1 The following testing of AquaBlok Interior Waterproofing Membranes has been undertaken by the following organisations:

- Amdel Limited, Australia – water absorption; tensile strength and elongation; shore A hardness; water vapour transmission; accelerated weathering and low temperature flexibility.
- CSIRO, Australia – mass per unit area and gravimetric thickness; tensile strength and elongation at break; tensile strength and elongation at break after UV exposure, including immersion in water, bleach and detergent; loss on heating; moving joint test and cyclic strain.

Test methods and results have been reviewed by BRANZ and found to be satisfactory.

18.2 The following testing of AquaBlok Interior Waterproofing Membranes has been undertaken by Amdel Limited, Australia – wet area durability testing in accordance with AS/NZS 4858 covering immersion in water, bleach, detergent, and heat ageing; UV ageing; water absorption; low temperature flexibility and water vapour transmission. Test methods and results have been reviewed by BRANZ and found to be satisfactory.

18.3 Although not required by the standard AS/NZS 4858 as water vapour transmission testing had already shown compliance, additional testing of AquaBlok Interior Waterproofing Membranes was also undertaken by Amdel Limited for suitability over particleboard in accordance with AS/NZS 4858, Appendix C, and found to be satisfactory.

Test methods and results have been reviewed by BRANZ and found to be satisfactory.

## Other Investigations

19.1 An assessment was made of the durability of AquaBlok Interior Waterproofing Membranes by BRANZ technical experts.

19.2 Site inspections were carried out by BRANZ to examine the practicability of installation.

19.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

## Quality

20.1 The manufacture of the membranes has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

20.2 The quality management system of the membrane's manufacturer has been assessed and found to be satisfactory.

20.3 The quality of supply to the market is the responsibility of Construction Technologies Australia Pty Ltd.

20.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the framing systems and the substrates.

20.5 Quality on site is the responsibility of the trained applicators, approved by Construction Technologies Australia Pty Ltd.

20.6 Building owners are responsible for the maintenance of the ceramic tiles in accordance with the instructions of Construction Technologies Australia Pty Ltd.

## Sources of Information

- AS 2908.2: 2000 Cellulose-cement products - flat sheet.
- AS 3740 – 2010 Waterproofing of wet areas within residential buildings.
- AS 3958.1: 1991 Guide to the installation of ceramic tiles.
- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2269: 2008 Plywood - Structural.
- AS/NZS 4858 - 2004 Wet area membranes.
- NZS 3101: 2006 The design of concrete structures.
- NZS 3602: 2003 Timber and wood-based products for use in buildings.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4229:1999 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230:1990 Code of practice for the design of masonry structures.
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- tions 1992.
- Good Practice Guide Membrane Roofing, BRANZ , October 2003.

**Amendment No. 1, dated 31 January 2012.**

This Appraisal has been amended to update clause changes as required by the introduction of NZS 3604: 2011.

**Amendment No. 2, dated 9 July 2013.**

This Appraisal has been amended to include an additional product.



# BRANZ

In the opinion of BRANZ, AquaBlok Interior Waterproofing Membranes are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Construction Technologies Australia Pty Ltd, and is valid until further notice, subject to the Conditions of Appraisal.

## Conditions of Appraisal

1. This Appraisal:
  - a) relates only to the product as described herein;
  - b) must be read, considered and used in full together with the technical literature;
  - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
  - d) is copyright of BRANZ.
2. Construction Technologies Australia Pty Ltd:
  - a) continues to have the product reviewed by BRANZ;
  - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
  - c) abides by the BRANZ Appraisals Services Terms and Conditions.
  - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
  - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
  - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
  - c) any guarantee or warranty offered by Construction Technologies Australia Pty Ltd.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Construction Technologies Australia Pty Ltd or any third party.

For BRANZ

P Burghout  
Chief Executive

Date of issue: 5 April 2011





## Aqua Blok<sup>TM</sup> 2 PART



**AQUA BLOK<sup>TM</sup> 2 PART** is a flexible, fast-drying, latex modified, cement based, two-part waterproofing membrane. AQUA BLOK<sup>TM</sup> 2 PART can withstand up to 1.5 bar of negative head of hydro-static pressure. It is suitable for internal and external waterproofing of shower recesses, bathrooms, balconies, roofs and decks. AQUA BLOK 2 PART<sup>TM</sup> is also suitable for areas of continuous water immersion such as swimming pools, spas, water tanks and ponds and is suitable for application over green screeds in internal installations.

### RECOMMENDED FOR

- Shower recesses and bathroom floor areas.
- Laundries, kitchens, balconies and patios.
- Waterproofing over water resistant plasterboard, fibrous cement sheeting, structural grade particle board and plywood, concrete, cement render, rendered brickwork and rendered concrete blocks.
- Areas of continuous water immersion eg: swimming pools & spas.
- For use in areas covered by AS3740-2010.

### PRODUCT FEATURES

- Fast drying.
- Low VOC content.
- Permanently flexible. Class II.
- Dries to a keyed finish to promote adhesion with ceramic tile adhesives.
- Suitable for internal and external applications.
- Excellent adhesion to a variety of substrates.
- Designed for use with a bond breaker.
- Suitable for application over green screeds.
- Reduces the migration of efflorescence through the tiling system.

### SUBSTRATES / BACKGROUNDS

#### Concrete

Allow at least 28 days for the concrete to cure. Concrete should be left with an open surface – standard helicopter finishes are generally acceptable if they display the “Moderate water absorption” in the substrate test. Wood float or broom finish is preferred where possible.

All traces of curing compounds (or sealers) should be removed prior to waterproofing as these can act as release agents. The surface should be flat and even unless falls are incorporated where required.

#### Cement Screeds and Renders

The screeds and / or renders must conform with the appropriate standard and should be left with a wood float finish and left to cure for at least 24 hours per 25mm thickness.

#### Sheet Walls

Plasterboard and fibrous cement sheeting walls must be solidly fixed in accordance with the manufacturer's instructions specifically for tiling, any surface dust must be removed by dry wiping. Surfaces may be primed with ECO SYSTEMS<sup>TM</sup> ECO PRIME WB particularly where a jointing compound has been used.

#### Compressed Fibrous Cement Sheeting

Structural compressed fibre cement sheeting must be a minimum of 15mm thick, totally clean, dry, sound and free from any movement and must be fixed in accordance with the manufacturer's instructions specifically for tiling. Substrate deflection under all loads must not exceed L/360. Secure floor with additional fixings and wedges as necessary. Any surface dust must be removed by dry wiping. The whole area must be primed with ECO SYSTEMS<sup>TM</sup> ECO PREP'N'PRIME prior to waterproofing.

#### Particleboard & Plywood

Structural particleboard must be a minimum of 19mm thick, totally clean, dry, sound and free from any movement and must be fixed in accordance with the manufacturer's instructions specifically for tiling. Substrate deflection under all loads must not exceed L/360. Secure floor with additional fixings and wedges as necessary. Any surface dust must be removed by dry wiping. The whole area must be primed with ECO SYSTEMS<sup>TM</sup> ECO PREP'N'PRIME prior to waterproofing. In some circumstances the floorboards may need to be sanded prior to priming if any surface contamination is still present after initial preparation.

## Existing Tiles

Any existing tiles must be well bonded and be free from any sealers or coatings. It may be necessary to mechanically prepare the area to be tiled. Dense, low absorbent surfaces must be coated with ECO SYSTEMS™ ECO PREP'N'PRIME prior to waterproofing. Contact CTA™ for advice if further information is required.

**Static Crack Treatment** – For cracks less than 5mm, clean thoroughly before filling with AQUA BLOK™ neutral cure silicone extending 5mm on either side. Install AQUA BLOK™ ELASTO JOINT reinforcing bandage. For dynamic cracks, expansion joints and control joints contact CTA™ for advice if further information is required.

**Sheet Joint Treatment** – For sheet joints clean thoroughly before filling with AQUA BLOK™ neutral cure silicone extending 5mm on either side. Install AQUA BLOK™ ELASTO JOINT reinforcing bandage.

## BOND BREAKER

AQUA BLOK™ 2 PART is a class 11 membrane with medium extensibility and is designed for use with a 3mm bond breaker to bridge joints opening up to 5mm. A bond breaker must be installed at wall/wall junction, wall/floor junction, sheet joints, penetrations and where there is a change in the direction or substrate.

## ELASTO JOINT BAND & CORNERS

After preparing the substrate, apply a liberal coat of AQUA BLOK™ 2 PART, extending 100mm wide equidistantly across the Joint/Crack and along the entire length of the Joint/Crack. Immediately place the AQUA BLOK™ ELASTO JOINT BAND reinforcing bandage over the freshly applied membrane. Thoroughly wet out the edges of the bandage using a brush or roller, remove all creases and air pockets under and along the bandage. Immediately apply a second coat of AQUA BLOK™ 2 PART to completely fill and bed the bandage. When joining AQUA BLOK™ ELASTO JOINT BAND a minimum 50mm overlap must be achieved. Apply a liberal coat of AQUA BLOK™ 2 PART, extending 100mm wide at the wall/floor junction, immediately place the preformed corners into the wet membrane. Using a brush detail the corner by removing all creases and air pockets. Apply a second coat ensuring that the preformed corner is well embedded.

## MIXING

Thoroughly stir AQUA BLOK™ liquid before use, Mix the AQUA BLOK™ 2 PART at a ratio of 1L of liquid to 1.5Kg of powder. Pour the liquid into a clean mixing container before slowly adding the appropriate quantity of powder. Always add the powder to the liquid and mix until a smooth lump free consistency is achieved. Allow mixture to stand for 5 minutes to allow the chemicals to slake – then restir and the product is ready for immediate use. DO NOT ADD MORE LIQUID. Restirring may be necessary during the pot life of the product.

## APPLYING

AQUA BLOK™ 2 PART must be applied using a brush or roller. A minimum (DFT) dried film thickness of 1.2mm of AQUA BLOK™ 2 PART is required for optimum waterproofing properties. The surface onto which AQUA BLOK™ 2 PART is applied must be continuous. AQUA BLOK™ 2 PART cannot span gaps. A minimum of two coats of AQUA BLOK™ 2 PART is required, each coat must be applied in a perpendicular direction to the previous coat. The application must conform to AS 3740, AS 4654 and relevant local building codes. Ensure there is no defect or damage to the waterproofing membrane, if necessary repair and rectify. AQUA BLOK™ 2 PART is recommended as a waterproofing membrane for non-trafficable roof areas. There must be sufficient falls for effective drainage to prevent ponding.

## DRYING

Allow 2-3 hours between coats and 24 hours to dry prior to applying finished covering, Allow 21 days curing before full immersion. Allow longer in adverse weather conditions.

## POT LIFE

2 hours at 23°C and 60% relative humidity.

## TILING

Compatible with a range of tile adhesives, contact CTA™ for advice if further information is required.

## CLEANING

Tools and equipment can be washed using clean water before the waterproofing has cured.

## COVERAGE

Apply two coats to achieve a minimum dry film thickness of 1.2mm. 0.75lt/1m<sup>2</sup> per coat. 12m<sup>2</sup> per kit. For continuous immersed and subterranean applications apply two coats to achieve a minimum dry film thickness of 1.5mm. 1lt/m<sup>2</sup> per coat. 9m<sup>2</sup> per kit. Coverage will vary depending on substrate and application.

## STORING

When AQUA BLOK<sup>TM</sup> 2 PART is stored in its original unopened package in a dry area at a temperature of 23°C and a relative humidity of 60%, it should be usable for approximately 12 months

## HANDLING

CTA<sup>TM</sup> supports best practice in material handling: Gloves, mask and protective clothing should be worn. If the product comes into contact with the skin, wash off with warm soapy water. Avoid inhaling the dust by wearing a dust mask and provide adequate ventilation. If swallowed drink plenty of water and seek medical advice. In case of contact with the eyes, rinse with an eye wash or wash away with plenty of clean water. For further information refer to product MATERIAL SAFETY DATASHEET.

## LIMITATIONS

- AQUA BLOK<sup>TM</sup> 2 PART must not be used over wet or contaminated substrates.
- AQUA BLOK<sup>TM</sup> 2 PART must not be applied if it is raining or if rain is imminent.
- AQUA BLOK<sup>TM</sup> 2 PART must not be applied directly over protective coatings.
- AQUA BLOK<sup>TM</sup> 2 PART must not be applied over the recommended coverage rate
- To eliminate possible surface contamination or damage, it is recommended that tiling can be carried out as soon as the membrane has cured.
- Timber flooring must be overlaid with fibrous cement sheeting prior to waterproofing.
- AQUA BLOK<sup>TM</sup> 2 PART must not be used as a wearing surface for foot or vehicle traffic.
- Do not apply where the surface temperature is below 10°C or greater than 35°C.
- Contact CTA<sup>TM</sup> for advice if further information required

## WARRANTY

Construction Technologies Australia Pty Ltd (CTA<sup>TM</sup>) warrants its products for a period of twelve (12) years from the date of sale. Visit [www.ctaust.com.au](http://www.ctaust.com.au) to view the full terms and conditions of this warranty.



Always ensure you reference the latest data sheet available at [www.ctaust.com.au](http://www.ctaust.com.au) before use.

Scan the QR Code to access the Aqua Blok products section on the CTA website.

# Aqua Blok

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## PRODUCT HIGHLIGHTS

- Low VOC content
- Permanently flexible - accommodates cracking in substrate
- Excellent adhesion to a wide variety of substrates
- Dries to a keyed finish to promote adhesion with tile adhesives
- Single pack
- Quick drying
- Safe and easy to use
- No priming required
- Designed for use with a 12mm bond-breaker



## BEST FOR:

- Shower recesses
- Bathroom floor areas
- Laundries
- Kitchens
- Balconies
- Patios
- Steel (suitably primed)
- Concrete, cement render, plaster
- Wet area wall lining board
- Hardie/CSR sheet flooring
- Brick
- Light weight aggregate block
- Plasterboard, MDF
- Plywood sheet flooring

**Aqua Blok is a waterborne flexible waterproof membrane designed for use under tiled finishes that is capable of accommodating expected structural movement.**

## SURFACE PREPARATION

All surfaces to be waterproofed must be firm, clean, dry, sound and smooth. All grease, oil, wax, curing compounds, dust, droppings, loose material, paint and any other contaminants must be removed. Fibrous cement sheeting, water resistant plasterboard, marine ply and level 3 treated ply must be fixed in accordance with the manufacturer's installation directions. Concrete must be allowed to cure for 28 days and cement render and sand / cement screeds must be allowed to cure for 7 days prior to the application of Aqua Blok. Porous substrates must first be primed using an appropriate water based primer. Damp or moist substrates and dense non – porous substrates must be primed using "Aqua Blok Epoxy Seal".

Apply an appropriate neutral cure silicone as a bond breaker to the wall/wall joints, the wall/floor joints, and wherever there is a change in the direction of the substrate. All sheet joints and fixings must also be filled with neutral cure silicone before applying a coat of Aqua Blok over all sheet joints, extending 100mm either side of the joints.

## Static crack treatment

For cracks less than 1mm, clean thoroughly before filling with an appropriate neutral cure silicone. Aqua Blok cannot span gaps. For dynamic cracks/expansion joints and control joints contact the CTA Technical Department for further advice.

## APPLICATION - Internal Wet Areas

Aqua Blok must be applied using a brush or roller.

A minimum thickness of 1mm dried film thickness of Aqua Blok is required for optimum waterproofing properties. The surface onto which Aqua Blok is applied must be continuous. Aqua Blok cannot span gaps. A minimum of two coats of Aqua Blok is required.

## Shower Recesses

Apply Aqua Blok to the internal vertical corners of the shower using a brush extending at least 100mm either side of the joint. Ensure the corner is well coated. This must extend past the height of the shower rose. It is important to coat around the tap protrusions in the wall. The wall/floor joint must be coated with Aqua Blok. The membrane must extend onto the floor at least 100mm and onto the wall 100mm. Aqua Blok must extend a minimum of 25mm above the height of the hob. The walls should then be coated. Once the wall/wall junctions, wall/floor junctions, tap protrusions and walls are coated, then the shower floor must be coated. When coating the floor, the Aqua Blok must be dressed down into the floor waste a minimum of 50mm. The floor must be coated with the Aqua Blok ensuring a minimum dry film thickness of 1mm is achieved. Apply a final coat to ensure there are no imperfections in the membrane.

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manufactured by:



#### Walls of Wet Areas (excluding joints)

Aqua Blok must be applied at 0.5 litre per M<sup>2</sup> per coat. The minimum dry film thickness must be a minimum of 0.5mm.

#### Floors of Wet Areas

Apply Aqua Blok to the wall/floor joints and sheet flooring joints and fixings using a brush, extending at least 100mm either side of the joints. Once these areas are dry, the entire floor area can be coated. Sufficient Aqua Blok must be applied onto the surface to achieve a 1mm dried film thickness. Aqua Blok must be applied at 1 litre per M<sup>2</sup> per coat. Two coats are required.

#### Roofs

Aqua Blok is recommended as a waterproofing membrane for non-trafficable areas. Application is recommended as for "Floors of Wet Areas". There must be sufficient falls for effective drainage to eliminate ponding.

#### DRYING

Allow 4 – 6 hours between coats. Allow 48 hours to dry prior to tiling. Allow longer in adverse weather conditions.

#### CLEAN UP

Clean tools and equipment with warm water and detergent while the membrane is still wet.

#### PACKAGING

15 litre plastic pails

#### COVERAGE

Floors - 2 litres per M<sup>2</sup> at 1mm dry film thickness

Walls – 1 litre per M<sup>2</sup> at 0.5mm dry film thickness

#### TILING

Use an appropriate CTA Pty Ltd recommended tile adhesive

#### SHELF LIFE

Unopened pails can be stored for up to 12 months in a cool, dry and weatherproof environment. Bags must be stored off the floor.

#### SAFETY DIRECTIONS

CTA supports best practice in material handling: gloves, mask, safety goggles and protective clothing should be worn. If the product comes into contact with the skin, wash off with warm soapy water. Avoid inhaling the dust by wearing a suitable dust mask and provide adequate ventilation. If swallowed drink plenty of water and seek medical advice. In case of contact with the eyes, rinse with an eye wash or wash away with plenty of water.

#### FIRST AID

If poisoning occurs, contact a Doctor or Poisons Information Centre (Phone Australia: 13 11 26, New Zealand: 0800 764 766). EMERGENCY INFORMATION: 1800 033 111 (ALL HOURS). SEE THE MATERIAL SAFETY DATA SHEET FOR ADDITIONAL INFORMATION.

#### LIMITATIONS

- Aqua Blok is not designed to stop a hydrostatic head of water pressure
- Aqua Blok must not be used over damp, wet or contaminated substrates
- Aqua Blok must not be applied if it is raining or if rain is imminent
- Aqua Blok must not be applied directly over protective coatings
- Aqua Blok must not be applied over the recommended coverage of 1 litre per m<sup>2</sup>
- To eliminate possible surface contamination or damage, it is recommended that tiling be carried out as soon as the membrane has cured
- Timber and particleboard flooring must be overlaid with fibrous cement sheeting
- Aqua Blok must not be used as a wearing surface for foot or vehicle traffic
- Aqua Blok must only be used as recommended
- Do not apply where the surface temperature is below 10°C or greater than 35°C

#### GUARANTEE

CTA Pty. Ltd. guarantee this product for 12 years provided application is in accordance with manufacturer's written directions for use and the Australian Standard for Tiling Practice (AS3958.1-2007). The representations and recommendations regarding the products are based on tests which we believe to be reliable. However, no guarantee of their accuracy can be made because of the great range of field conditions and variations encountered in raw materials, manufacturing equipment and methods. Thus, the products are sold with a limited warranty only, and on the condition that purchasers will make their own tests to determine the suitability of the product for their particular purposes. Under no circumstances will CTA Pty Ltd. be liable to anyone except for replacement of the products or refund of the purchase price.



Always ensure you reference the latest data sheet available at [www.ctaust.com.au](http://www.ctaust.com.au) before use.

Scan the QR Code to access the Aqua Blok products section on the CTA website.

# METHOD STATEMENT

## WATERPROOFING WITH CTA AQUA BLOK SYSTEMS PRIOR TO TILING

### 1. Preparation

#### 1.1 Substrate Preparation

- 1.1.1 Substrates must be prepared and ready to commence waterproofing. Rectification works include concrete topping with wood float finish to include a monolithic fall to the waste outlets.
- 1.1.2 All surfaces must be clean, dry, free from dust, grease, wax, oil, laitance, curing compounds, release agents, paint, coatings, friable material and all other contaminants likely to prevent the waterproofing bonding.
- 1.1.3 Cement render/screeds must be allowed to cure for 7 days, concrete to be left with a wood float finish and allowed to cure for at least 28 days before tiling.

#### 1.2 General Preparation

- 1.2.1 Ensure PVC outlets are trimmed to floor level and a 'puddle flange' is installed to waste outlet. Puddle flange is to be installed as flush as possible, i.e., minimal lipping at substrate/flange interface.
- 1.2.2 Plastic fittings must be lightly sanded and must be primed using ECO Prep'n'Prime speciality primer for dense impervious substrates.
- 1.2.3 Prime PVC flange and outlet including a minimum of 25 mm downturn.

#### 1.3 Aluminium Angle Installation

- 1.3.1 Install appropriate aluminium (Height) angle to base of shower screen by mechanical fastening and sealant. Install appropriate aluminium angle at doorway threshold.

### 2. Priming

- 2.1 All porous surfaces should be primed using ECO Prime WB. This may be applied by brush or roller evenly over the substrate. One litre of ECO Prime WB will cover approximately 8-10 m<sup>2</sup>. Coverage may vary depending on the porosity and texture of substrate.
- 2.2 Allow the primer to dry for approximately 30 minutes prior to application of the waterproofing membrane.

- 2.3 Damp or moist substrates must be first treated with Aqua Blok Moisture Seal, a two part water based epoxy.
- 2.4 Dense, non-porous substrates must be primed using ECO Prep'n'Prime speciality primer for dense impervious substrates. Refer to individual product data sheet(s) for application details.

### 3. Preparation of Plumbing Penetrations

- 3.1 Install Aqua Blok Elasto-Tap Sleeves to tap, mixer spouts and plumbing penetrations. Ensure the fabric is wet out and well bedded in Aqua Blok waterproofing.

### 4. Installation of Bond Breakers & Preformed Corners

- 4.1 Install Aqua Blok Elasto-Joint Band as a bond breaker to the wall/wall joints, the wall/floor joints and wherever there is a change in the direction of the substrate.
- 4.2 All flooring sheet joints and cracks up to 5 mm must also be treated with Aqua Blok Elasto-Joint Band before applying Aqua Blok waterproofing membrane.
- 4.3 Aqua Blok waterproofing membranes cannot span gaps.
- 4.4 Apply a liberal coat of Aqua Blok, extending 100 mm wide on the wall and floor junction.
- 4.5 Immediately place the preformed corners into the wet membrane.
- 4.6 Using a brush, detail the corner by removing all creases and air pockets.
- 4.7 Apply a second coat ensuring that bandage is well embedded.
- 4.8 When joining Aqua Blok Elasto-Joint Band, a minimum 50 mm overlap must be achieved. Treat these joints as per application recommendation for corners.

### 5. Application

- 5.1 Aqua Blok waterproofing must be applied using a brush or roller.
- 5.2 A minimum 1.2 mm dried film thickness is required for optimum waterproofing properties. The surface onto which Aqua Blok is applied must be continuous.
- 5.3 Aqua Blok cannot span gaps.
- 5.4 A minimum of two coats of Aqua Blok waterproofing is required.

NOTE: The extent of the waterproofing membrane to walls and floors should be, at minimum, to Australian standard AS 3740 2006 Internal Wet Area Waterproofing, or as specified and referenced by the Building Code of New Zealand. (Minimum of 150 mm above the finished floor surface, a minimum height of 1.8 meters in shower recess walls.)

### 6. Curing

- 6.1 The selected Aqua Blok Waterproofing Membrane is to be installed to floors and walls as per the instructions on the relevant product data sheet.
- 6.2 Allow a minimum of 24 hours curing time between coats.
- 6.3 Ensure the minimum recommended film thickness is achieved.

## 7. Quality Control & Testing

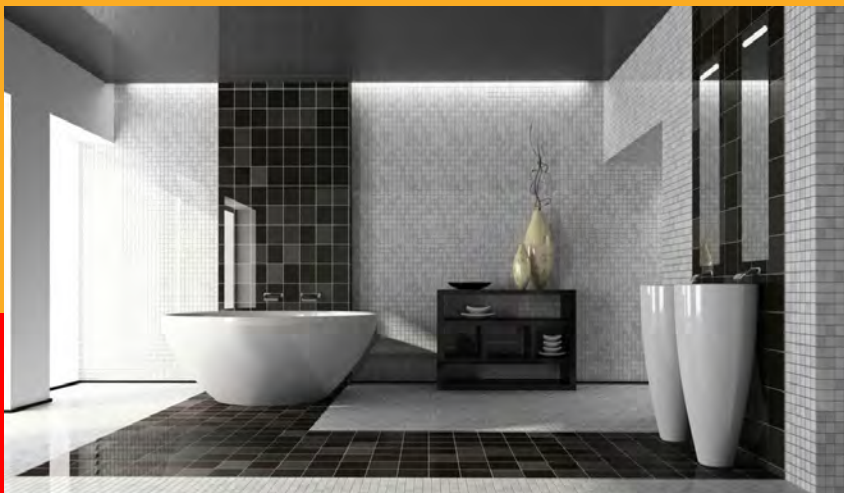
- 7.1 After a minimum of 24 hours, following the application and curing of the second coat, check the waterproofing membrane for imperfections or damage.
- 7.2 Spot repair as necessary.

## 8. Flood Testing

- 8.1 If flood testing is required, ensure the Aqua Blok waterproofing membrane has fully cured, and allow a minimum of 72 hours after application of the second coat prior to flood testing. Curing times may be longer in cool or humid conditions.

- 9. Ensure the area is signed off and accepted prior to continuing with works.
- 10. Protect the waterproofing membrane from damage.
- 11. Hand over completed areas for other finishes to commence ASAP.
- 12. Use a CTA approved adhesive for tile fixing. Refer to individual product data sheets.

**Note:** This outline procedure details the key components of the work required. For specific details regarding surface preparation, mixing of the products and application, refer to the product data sheet.



**CTA**<sup>TM</sup> CONSTRUCTION  
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**BUILDING TRUST**



# Aqua Blok

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## PRODUCT HIGHLIGHTS

- Low VOC content
- Permanently flexible - accommodates cracking in substrate
- Excellent adhesion to a wide variety of substrates
- Dries to a keyed finish to promote adhesion with tile adhesives
- Single pack
- Quick drying
- Safe and easy to use
- No priming required
- Designed for use with a 12mm bond-breaker



## BEST FOR:

- Shower recesses
- Bathroom floor areas
- Laundries
- Kitchens
- Balconies
- Patios
- Steel (suitably primed)
- Concrete, cement render, plaster
- Wet area wall lining board
- Hardie/CSR sheet flooring
- Brick
- Light weight aggregate block
- Plasterboard, MDF
- Plywood sheet flooring

**Aqua Blok is a waterborne flexible waterproof membrane designed for use under tiled finishes that is capable of accommodating expected structural movement.**

## SURFACE PREPARATION

All surfaces to be waterproofed must be firm, clean, dry, sound and smooth. All grease, oil, wax, curing compounds, dust, droppings, loose material, paint and any other contaminants must be removed. Fibrous cement sheeting, water resistant plasterboard, marine ply and level 3 treated ply must be fixed in accordance with the manufacturer's installation directions. Concrete must be allowed to cure for 28 days and cement render and sand / cement screeds must be allowed to cure for 7 days prior to the application of Aqua Blok. Porous substrates must first be primed using an appropriate water based primer. Damp or moist substrates and dense non – porous substrates must be primed using "Aqua Blok Epoxy Seal". Apply an appropriate neutral cure silicone as a bond breaker to the wall/wall joints, the wall/floor joints, and wherever there is a change in the direction of the substrate. All sheet joints and fixings must also be filled with neutral cure silicone before applying a coat of Aqua Blok over all sheet joints, extending 100mm either side of the joints.

### Static crack treatment

For cracks less than 1mm, clean thoroughly before filling with an appropriate neutral cure silicone. Aqua Blok cannot span gaps. For dynamic cracks/expansion joints and control joints contact the CTA Technical Department for further advice.

### APPLICATION - Internal Wet Areas

Aqua Blok must be applied using a brush or roller.

A minimum thickness of 1mm dried film thickness of Aqua Blok is required for optimum waterproofing properties. The surface onto which Aqua Blok is applied must be continuous. Aqua Blok cannot span gaps. A minimum of two coats of Aqua Blok is required.

### Shower Recesses

Apply Aqua Blok to the internal vertical corners of the shower using a brush extending at least 100mm either side of the joint. Ensure the corner is well coated. This must extend past the height of the shower rose. It is important to coat around the tap protrusions in the wall. The wall/floor joint must be coated with Aqua Blok. The membrane must extend onto the floor at least 100mm and onto the wall 100mm. Aqua Blok must extend a minimum of 25mm above the height of the hob. The walls should then be coated. Once the wall/wall junctions, wall/floor junctions, tap protrusions and walls are coated, then the shower floor must be coated. When coating the floor, the Aqua Blok must be dressed down into the floor waste a minimum of 50mm. The floor must be coated with the Aqua Blok ensuring a minimum dry film thickness of 1mm is achieved. Apply a final coat to ensure there are no imperfections in the membrane.

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### Walls of Wet Areas (excluding joints)

Aqua Blok must be applied at 0.5 litre per M<sup>2</sup> per coat. The minimum dry film thickness must be a minimum of 0.5mm.

### Floors of Wet Areas

Apply Aqua Blok to the wall/floor joints and sheet flooring joints and fixings using a brush, extending at least 100mm either side of the joints. Once these areas are dry, the entire floor area can be coated. Sufficient Aqua Blok must be applied onto the surface to achieve a 1mm dried film thickness. Aqua Blok must be applied at 1 litre per M<sup>2</sup> per coat. Two coats are required.

### Roofs

Aqua Blok is recommended as a waterproofing membrane for non-trafficable areas. Application is recommended as for "Floors of Wet Areas". There must be sufficient falls for effective drainage to eliminate ponding.

### DRYING

Allow 4 – 6 hours between coats. Allow 48 hours to dry prior to tiling. Allow longer in adverse weather conditions.

### CLEAN UP

Clean tools and equipment with warm water and detergent while the membrane is still wet.

### PACKAGING

15 litre plastic pails

### COVERAGE

Floors - 2 litres per M<sup>2</sup> at 1mm dry film thickness

Walls – 1 litre per M<sup>2</sup> at 0.5mm dry film thickness

### TILING

Use an appropriate CTA Pty Ltd recommended tile adhesive

### SHELF LIFE

Unopened pails can be stored for up to 12 months in a cool, dry and weatherproof environment. Bags must be stored off the floor.

### SAFETY DIRECTIONS

CTA supports best practice in material handling: gloves, mask, safety goggles and protective clothing should be worn. If the product comes into contact with the skin, wash off with warm soapy water. Avoid inhaling the dust by wearing a suitable dust mask and provide adequate ventilation. If swallowed drink plenty of water and seek medical advice. In case of contact with the eyes, rinse with an eye wash or wash away with plenty of water.

### FIRST AID

If poisoning occurs, contact a Doctor or Poisons Information Centre (Phone Australia: 13 11 26, New Zealand: 0800 764 766). EMERGENCY INFORMATION: 1800 033 111 (ALL HOURS). SEE THE MATERIAL SAFETY DATA SHEET FOR ADDITIONAL INFORMATION.

### LIMITATIONS

- Aqua Blok is not designed to stop a hydrostatic head of water pressure
- Aqua Blok must not be used over damp, wet or contaminated substrates
- Aqua Blok must not be applied if it is raining or if rain is imminent
- Aqua Blok must not be applied directly over protective coatings
- Aqua Blok must not be applied over the recommended coverage of 1 litre per m<sup>2</sup>
- To eliminate possible surface contamination or damage, it is recommended that tiling be carried out as soon as the membrane has cured
- Timber and particleboard flooring must be overlaid with fibrous cement sheeting
- Aqua Blok must not be used as a wearing surface for foot or vehicle traffic
- Aqua Blok must only be used as recommended
- Do not apply where the surface temperature is below 10°C or greater than 35°C

### GUARANTEE

CTA Pty. Ltd. guarantee this product for 12 years provided application is in accordance with manufacturer's written directions for use and the Australian Standard for Tiling Practice (AS3958.1-2007). The representations and recommendations regarding the products are based on tests which we believe to be reliable. However, no guarantee of their accuracy can be made because of the great range of field conditions and variations encountered in raw materials, manufacturing equipment and methods. Thus, the products are sold with a limited warranty only, and on the condition that purchasers will make their own tests to determine the suitability of the product for their particular purposes. Under no circumstances will CTA Pty Ltd. be liable to anyone except for replacement of the products or refund of the purchase price.

Manufactured by:

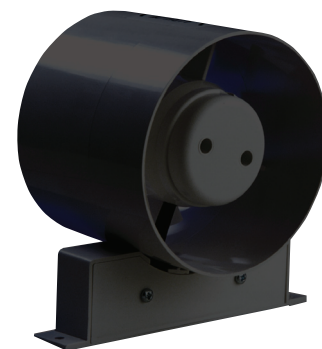


# MANROSE CLASSIC INLINE AXIAL FANS

## ID MODELS

Duct Size	Model	Switching	Performance	Order Code
100mm	ID100S	Standard	23 l/s, 85m <sup>3</sup> /hr	FAN0012
100mm	ID100T	Timer	23 l/s, 85m <sup>3</sup> /hr	FAN0013
125mm	ID125S	Standard	36 l/s, 130m <sup>3</sup> /hr	FAN0060
125mm	ID125T	Timer	36 l/s, 130m <sup>3</sup> /hr	FAN0061
150mm	ID150S	Standard	87 l/s, 313m <sup>3</sup> /hr	FAN0090
150mm	ID150T	Timer	87 l/s, 313m <sup>3</sup> /hr	FAN0091
230mm	ID230S	Standard	152 l/s, 550m <sup>3</sup> /hr	FAN0405
230mm	ID230T	Timer	152 l/s, 550m <sup>3</sup> /hr	FAN0406

- With the fan mounted in the ceiling space, these inline models are able to draw steam directly from the source.
- These axial fans have ball bearing motors to prolong the life of the motor.
- Supported by a 5 year warranty.



ID100/125/150



ID230

## ECO INLINE AXIAL FANS

Duct Size	Model	Switching	Performance	Order Code
150mm	ECO150S	Standard	64 l/s, 230m <sup>3</sup> /hr	FAN2078

- With the fan mounted in the ceiling space, these inline models are able to draw steam directly from the source.
- High quality sleeve bearing motor.
- Supported by a 2 year warranty.



ECO150S

### Switching Options

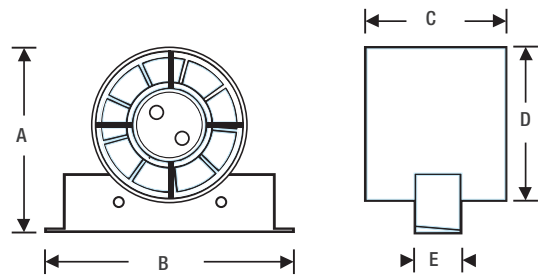
1. Standard - Operates from remote switch (not supplied).
2. Timer - Fan operates from a switch and continues to run for a preset time after switching off - adjustable 1-20 minutes.

Requires three wires: permanent phase, switched phase, neutral.

**NOTE: All fan flow rates quoted are free air delivery.**

## DIMENSIONS SPECIFICATION (MM)

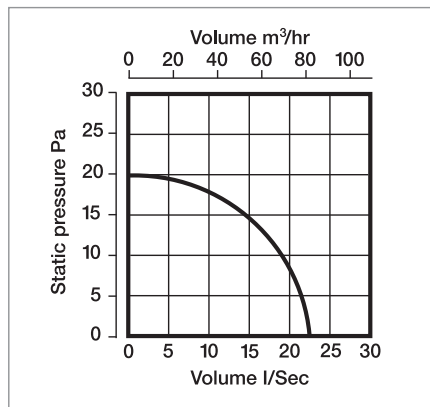
Model	A	B	C	D	E
ID100	130	155	90	100	27
ID125	150	155	99	118	27
ECO150 (white)	187	153	109	150	27
ID150	187	153	109	150	27
ID230 (square model)	286	286	155	230	-



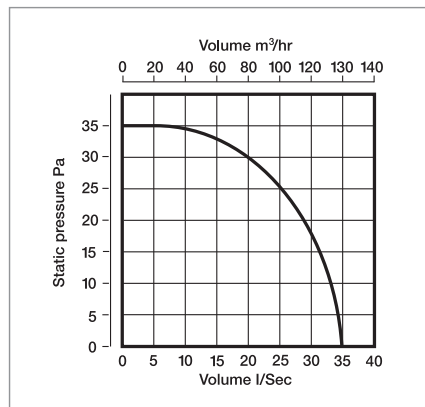
Dimensions - ID Fans

## TECHNICAL SPECIFICATION & PERFORMANCE DATA

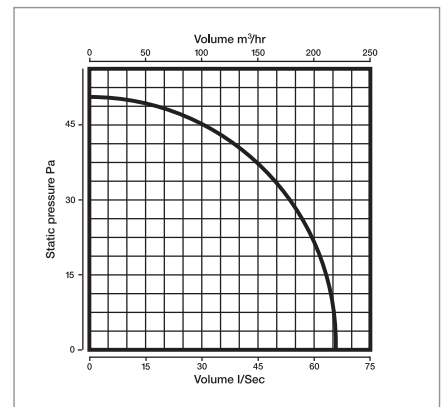
Model	ID100	ID125	ECO150	ID150	ID230
Power	220 - 240V	220 - 240V	220 - 240V	220 - 240V	220 - 240V
Fan Performance	23 l/s, 85m³/hr	36 l/s, 130m³/hr	64 l/s, 230m³/hr	87 l/s, 313m³/hr	152 l/s, 550m³/hr
Fan Wattage	20W	20W	25W	25W	80W
Maximum Pressure	20 Pa	35 Pa	50 Pa	60 Pa	50 Pa
Fan Speed	2400 RPM	2000 RPM	2400 RPM	2400 RPM	1250 RPM
Sound Level	41 dB(A)	41 dB(A)	40 dB(A)	40 dB(A)	50 dB(A)
Max. Operating Temp	50°C	50°C	50°C	50°C	50°C
IP Rating	IPX4	IPX4	IPX4	IPX4	IPX4



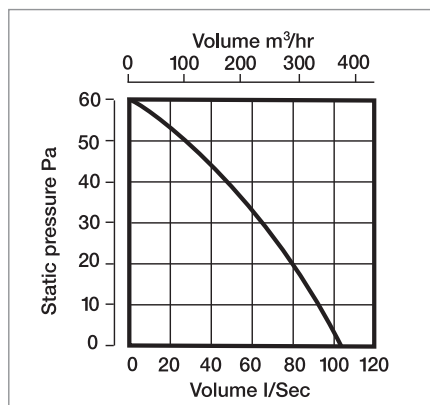
Performance - ID100



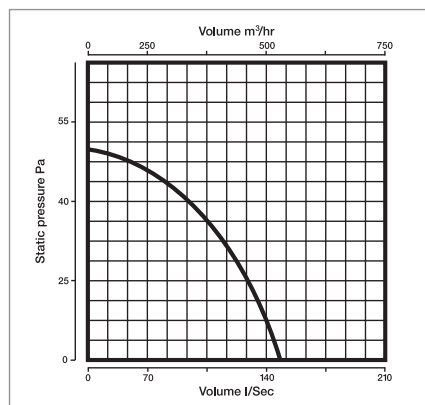
Performance - ID125



Performance - ECO150



Performance - ID150



Performance - ID230

Note: PERFORMANCE - ID Fans maximum fan performance stated, this can vary depending on the length of ducting used.