

These documents must be retained on site. Inspections may not be carried out if they are not.

# SPECIFICATION

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

## Whites Line E. Unit 2&3 - Proposed Dwelling

(project name)

## Whites Line East,

(project address)

**C\*\*\*\*\***

(client)

Project Ref:

Date: 13 March 2022

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30/03/2022**

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# 1013 DOCUMENT CONTROL

## 1 DOCUMENT CONTROL

### Document Control

#### 1.1 PREPARED BY

Company:	
Postal Address:	
Street Address:	
City:	
Telephone:	
Email:	

#### 1.2 DOCUMENT DETAILS

Project Name:	Proposed Dwelling - Units 2 & 3
Project Number:	-
File Reference:	Whites Line East
Client:	
Client Contact:	-
Version:	-

#### 1.3 REVISION CONTROL

Issue:	Building Consent
Revision:	~
Amendment Details:	~
Issued to:	~
Date of Issue:	~
Reviewed by:	~
Approved by:	~

#### 1.4 AUDIT CONTROL

Date:	~
Author:	~
Approved by:	~

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# 1220 PROJECT

## 1 GENERAL

This general section describes the project including:

- A description of the work
- Design construction safety
- Principal's Health & Safety matters
- 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.

### 1.2 DESCRIPTION OF THE WORK

~

### 1.3 RESTRICTED BUILDING WORK

This project includes Restricted Building Work.

### 1.4 NO RESTRICTED BUILDING WORK

This project does not include Restricted Building Work.

### Design Construction Safety

### 1.5 DESIGN CONSTRUCTION SAFETY

The project designers are unaware of unusual or atypical features, which a reasonably experienced contractor may not be aware of, that may present a hazard or risk during a typical construction process. The Contractor is still required to undertake its own assessment, to determine if they consider there are any further safety matters and provide for these in carrying out the construction of the work.

### 1.6 DESIGN CONSTRUCTION SAFETY REPORT

Refer to the separate project design construction safety report ~.

Provide particular health and safety procedures and methods to mitigate any hazards or risks in the report, and specifically include them as well as any other health and safety matters in the site Health and Safety Plan (refer to section 1260 PROJECT MANAGEMENT for Plan requirements). The Contractor is still required to undertake its own assessment, to determine if they consider there are any further safety matters and provide for these in carrying out the construction of the work.

### 1.7 DESIGN CONSTRUCTION SAFETY MATTERS

The project has the following unusual or atypical features, which a reasonably experienced contractor may not be aware of, that may present an unexpected hazard or risk during a typical construction process.

ITEM	COMMENT
~	~
~	~

Provide particular health and safety procedures and methods to mitigate these hazards or risks, and specifically include them as well as any other health and safety matters in the site Health and Safety Plan (refer to section 1260 PROJECT MANAGEMENT for Plan requirements). The Contractor is still required to undertake its own assessment, to determine if they consider there are further safety matters and provide for these in carrying out the construction of the work.

### Principal's Health & Safety Matters

### 1.8 PRINCIPAL'S KNOWN SITE HAZARDS

Site hazards known to the principal are:

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1.9 PRINCIPAL'S SITE HEALTH AND SAFETY PLAN

Obtain a copy of the principal's site health and safety plan.

Site

1.10 SITE

The site consists of: flat section and an existing single storey dwelling  
As shown on drawing: existing survey plan

1.11 LEGAL DESCRIPTION

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

1.12 EXISTING BUILDINGS

Existing buildings consist of: existing single storey dwelling  
Refer drawing(s): ~

1.13 EXISTING SERVICES

The following are the network utility services:

- Electrical: Y
- Communications: Y
- Water: Y
- Gas: Y
- Stormwater: Y
- Foul water: Y

The services are also shown on the drawings.

1.14 SITE FEATURES

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Site environment - Durability

1.15 EXPOSURE ZONE

The exposure zone is to NZS 3604, Section 4 Durability, 4.2 Exposure zones and NZBC E2/AS1.  
The site zone is: C

Site environment - Wind

1.16 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 Medium (refer to NZS 3604, table 5.4)

1.17 WIND DESIGN PARAMETERS - SPECIFIC DESIGN

The design wind pressures are to AS/NZS 1170.2.  
SLS ~ Pa  
ULS ~ Pa

Site environment - Seismic

1.18 EARTHQUAKE ZONE - NON SPECIFIC DESIGN

The zone is to NZS 3604, Section 5 Bracing design, 5.3 Earthquake bracing demand.  
The earthquake zone is: 3

1.19 EARTHQUAKE - SPECIFIC DESIGN

The earthquake design is to NZS 1170.5, in particular the intent of NZS 1170.5, 1.2 Determination of earthquake actions.

Building type, importance level (to AS/NZS 1170.0, table 3.2)

Archaeological discovery

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**1.20 REPORT FINDING ANY 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 [Heritage New Zealand Pouhere Taonga Act 2014](#). If such items or evidence is discovered work must stop immediately and the Contract Administrator must be notified immediately. The site may be classified as an Archaeological Site under the Act, and the Contract Administrator or Owner must contact the Heritage New Zealand 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.

Known archaeological information relating to this site includes the following: -

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# 1232S1 EXPLANATION OF SCHEDULE SECTIONS

## 1 GENERAL

This general section provides an explanation of schedule sections and their relationship to general sections and work sections. Specific schedule sections contained within this specification are also identified.

### 1.1 EXPLANATION OF SCHEDULE SECTIONS

A schedule section identifies work sections that contain common requirements, as identified in the title of the schedule section. For example 1235S1 SCHEDULE OF SHOP DRAWINGS identifies work sections that have requirements for shop drawings. Details of the requirements are contained in the identified work sections with additional requirements contained in the general section 1235 SHOP DRAWINGS.

Some schedule sections are identified by the 4 digit CBI (Co-ordinated Building Information) number of the general section that they relate to, followed by the letter "S" followed by a numeral (1-9). The numeral allows for multiple schedule sections to be associated with the same general section.

Other schedule sections that do not share a common CBI number with a general section, have their own unique 4 digit CBI number, followed by the letter "S" followed by a numeral. These schedule sections contain additional subject content relating to the schedules and the identified work sections.

### 1.2 SCHEDULE SECTIONS

There are no work section requirements.

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## 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 1170.2:2011</a>	Structural design actions - Wind actions
<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="#">NZS 4781</a>	Code of Practice for Safety in Welding and Cutting
<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</a>	<a href="#">Guidelines for the provision of facilities and general safety in the construction industry</a>
<a href="#">WorkSafe</a>	<a href="#">Good Practice Guidelines - Excavation Safety</a>
<a href="#">WorkSafe</a>	<a href="#">Scaffolding in New Zealand - Good Practice Guidelines</a>
<a href="#">WorkSafe</a>	<a href="#">Managing Work Site Traffic - Good Practice Guidelines</a>

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# 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
- Branded work sections
- Care of construction documents
- Confidentiality of documents
- Receipt of construction documents

### Building Consent Authority documentation

#### 1.1 BUILDING CONSENT

Obtain the original building consent forms and documents from the owner and keep them on site, preserve the condition of consent forms and documents. Liaise with the building consent authority 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

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**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 LBP previously advised.

Include the following as applicable

- Site LBP
- Carpenter
- Foundations 1 Concrete foundation walls and concrete slab-on-ground constructor
- Foundations 2 Concrete or timber pile foundations constructor
- Bricklaying and block laying 1 Brick / masonry veneer
- Bricklaying and block laying 2 Structural masonry - Bricklayer / Blocklayer
- Roofing 1 Concrete / clay tile roofer
- Roofing 2 Profiled metal roofer and/or wall cladding installer
- Roofing 3 Metal tile roofer
- Roofing 4 Membrane roofer
- Roofing 5 Torch on membrane roofer
- Roofing 6 Liquid membrane roofer
- Roofing 7 Shingle / slate roofer
- External plastering 1 Solid plasterer
- External plastering 2 Proprietary Plaster Cladding Systems (PPCS) plasterer

Also provide names and contact details of the following

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

**1.5 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**

**1.6 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 (PS1) - Design
- Producer Statement (PS3) - Construction from the applicator / installer
- Producer Statement (PS4) - 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.

**1.7 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.

**Residential building contract**

**1.8 CHECKLIST**

If requested provide evidence of the prescribed checklist given to the residential client.

**1.9 DISCLOSURE STATEMENT**

If requested provide evidence of the disclosure statement given to the residential client.

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## 1.10 BUILDING CONTRACT

If requested provide evidence of the written building contract that the residential customer has signed.

## 1.11 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

## 1.12 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.

## 1.13 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified products and systems listed in a section unless specified otherwise. If a product is not available then immediately contact the contract administrator for direction.

## 1.14 PROPOSED SUBSTITUTIONS

Substitution of products or systems contained within branded work sections is not allowed. The contractor may propose substitutions to products within non branded work sections, when the contractor has determined that the proposed substitution is an alternative to the specified product. The Contract administrator is not bound to accept any substitutions. Submit a draft proposal detailing the substitution to the contract administrator before proceeding with full notification.

## 1.15 NOTIFICATION OF SUBSTITUTIONS

Notify the contract administrator of 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

## 1.16 ACCEPTANCE OF SUBSTITUTIONS

Acceptance of any proposed substitutions will be given in writing by the contract administrator.

### Amendments to issued Building Consent

### 1.17 CONTRACTOR AMENDMENTS 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 amendment.
- Pay all fees and other costs associated with this amendment.
- Where the amendment affects other approved plans, also amend those plans.

### 1.18 PRINCIPAL AMENDMENTS 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

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

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

#### 1.20 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.

#### 1.21 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

#### 1.22 BRANDED PRODUCTS / SYSTEMS

Where branded products and systems are specified, all products and components of the system must be as per the specification.

#### 1.23 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.

### Care of construction documents

#### 1.24 CONSTRUCTION ISSUE

Take receipt of the plans, specifications and other documents issued "for construction". Keep at least one copy on site available for use by all on site workers. Keep a record of copies provided to others including subcontractors. Protect the documents as appropriate. Obtain replacement copies for documents that have become damaged.

#### 1.25 REVISIONS TO CONSTRUCTION ISSUE

When revised plans and other documents are issued ensure that superseded documents are deleted from the working sets. Ensure that subcontractors are provided with amended documents. Delete superseded documents by either:

- removing them from the working copy of the construction issue; or
- marking them as superseded

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**1.26 RETURN DOCUMENTS ISSUED FOR CONSTRUCTION**

On completion of the contract works:

- Keep such copies of the plans, specification and other documents as reasonably required for contractor's record purposes.
- Retrieve all other copies no longer required by parties.
- Agree method of disposal of such documents with the Contract Administrator.

The Contract Administrator will advise whether such documents shall be:

- delivered to the Contract Administrator/Owner; or
- disposed of by normal waste disposal methods; or
- disposed of by secure document disposal methods.

**Confidentiality of documents****1.27 CONFIDENTIALITY OF DOCUMENTS**

Documents shall not be given or copied to others who do not require them for carrying out services required for the construction of the works. Documents are only to be used for the contract. Maintain confidentiality of documents.

**2 SELECTIONS****Receipt of construction documents****2.1 INITIAL ISSUE & REVISIONS - HARD COPIES**

Initial issue: refer stamped consent documents

Revisions: refer architecture drawings

**2.2 DOCUMENT RECEIPT - HARD COPIES**

Hard copies of plans, specifications and other documents issued for construction shall be ~

**2.3 DOCUMENT RECEIPT - ELECTRONIC DOCUMENTS**

Electronic documents issued for construction shall be ~

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# 1237 WARRANTIES

## 1 GENERAL

This general section refers to the requirements for warranties/guarantees, referred to within this specification and 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.

### 1.1 SCHEDULE SECTION

Refer to 1237S1 SCHEDULE OF WARRANTIES for work sections contained in this specification that have requirements for warranties.

#### **Warranties**

### 1.2 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.

### 1.3 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.

### 1.4 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.

### 1.5 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.

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Submission

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## 1.6 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.

## 1.7 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)"

## 1.8 WARRANTIES - SUBMISSION NZIA SCC 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.

## 1.9 WARRANTIES - SUBMISSION NZS3902:2004 CONTRACT

Refer to [NZS 3902](#) Housing, alterations and small buildings contract. Submit warranties to the owner no later than the time the builder gives Notice of final completion to the owner.

## 2 SELECTIONS

### 2.1 WARRANTIES - SUBMISSION NZS3916:2013 CONTRACT

Refer to NZS 3916 Conditions of contract for building and civil engineering – Design and construct, clauses 11.5 and 11.6 for requirements relating to the time for submission of warranties and guarantees. Submit all warranties/guarantees to the engineer no later than the date that the contractor notifies that it believes the contract works qualify for practical completion.

#### **Project warranties / guarantees**

#### **Guarantees - Contractor - Master Build Services Ltd**

### 2.2 MASTER BUILD SERVICES LTD - 10 YEAR KIWI GUARANTEE

Provide a 10 Year Kiwi Guarantee, 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.

### 2.3 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.

### 2.4 MASTER BUILD SERVICES LTD - 10 YEAR PREMIUM GUARANTEE

Provide a 10 Year Premium 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.

#### **Guarantee - Contractor - New Zealand Certified Builders Association**



## 2.5 HALO - 10 YEAR RESIDENTIAL GUARANTEE INSURANCE

Provide the Halo 10 year residential guarantee insurance application and obtain all required signatures. Submit the application to the insurer along with payment of the premium prior to the commencement of construction. Provide the application acceptance confirmation and policy document to the owner.

### **Weathertightness and watertightness warranty**

## 2.6 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.

## 2.7 WARRANTIES - SUBMISSION NZS3915:2005 CONTRACT

Refer to [NZS 3915](#) Conditions of contract for building and civil engineering construction (where no person is appointed to act as engineer to the contract), clause 11.5 for requirements relating to the time for submission for warranties and guarantees. Submit all warranties/guarantees to the principal before or at the time of the issue of the provisional defects liability certificate the end of the defects liability period.

## 2.8 WARRANTIES - SUBMISSION NZS3910:2013 CONTRACT

Refer to [NZS 3910](#) Conditions of Contract for building and civil engineering construction, clauses 11.5 and 11.6 for requirements relating to the time for submission of warranties and guarantees. Submit all warranties/guarantees to the engineer no later than the date that the contractor notifies that it believes the contract works qualify for practical completion.

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# 1240 ESTABLISHMENT

## 1 GENERAL

This general section relates to site establishment including:

- Notices and approvals
- Inspections
- Site preparation
- Temporary construction

### Notices and approvals

#### 1.1 STATUTORY OBLIGATIONS

Comply with all statutory obligations and regulations of regulatory bodies controlling the execution of the works.

#### 1.2 BUILDING CONSENT AUTHORITY AND NETWORK UTILITY APPROVALS

Attend on building consent authority officers, statutory and network utility inspectors, as necessary to obtain approvals, including those required for the completion of the works.

#### 1.3 NOTIFY NETWORK UTILITY OPERATORS

Notify all network utility operators of proposed works before commencing site operations. Ascertain location of services or confirm that none exist in the vicinity of the works. Take all necessary precautions to avoid damage to existing services.

### Inspections

#### 1.4 CARRY OUT INSPECTIONS

~

### Site preparation

#### 1.5 SITE ACCESS

Access to the site is limited to: ~

#### 1.6 WORKING AREA

Limited to the following designated working areas on the site:

~

#### 1.7 SITE AND SOIL SURVEYS

Carry out all investigations necessary and peruse all information available to determine ground conditions and likely ground performance both on the site and adjacent to it. Also refer to the territorial authority project information memorandum (PIM).

#### 1.8 GROUND CONDITIONS

Refer to the geotechnical / soils report included with this specification.

### Existing buildings

#### 1.9 ALTERATIONS

Control access and working areas within existing buildings. Liaise with building owner to establish site limitations.

#### 1.10 TEMPORARY BUILDINGS

Provide as necessary temporary sheds, offices, lunch rooms, sanitary accommodation and other temporary buildings required for storage, management of the works, for the use of workers while on site and as required by Acts and Regulations.

#### 1.11 TEMPORARY SITE FENCING

Provide and maintain a temporary 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.

### Temporary construction

**1.12 SITE - SAFETY SIGNAGE**

Provide hazard board and other safety signage as required.

**1.13 SITE - PROJECT SIGN**

Obtain approval to, provide and erect a timber framed sign board ~mm x ~mm. Sign to be, fully painted with vinyl lettering or fully printed, and displaying:

- Title of contract
- Principal's name
- Contractor's name
- Consultants as listed in general section 1222 PROJECT PERSONNEL
- If the contractor wishes, names of subcontractors.

**First aid****1.14 FIRST AID EQUIPMENT**

Provide first aid equipment.

**1.15 TEMPORARY ACCESS**

Liaise with the building owner to arrange access to areas of the existing building which are not normally part of the contract.

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# 1270 CONSTRUCTION

## 1 GENERAL

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

- Quality control and assurance
- Noise and nuisance
- Set-out and tolerances
- Common execution requirements
- Qualifications
- Common product requirements
- Common requirements for samples and prototypes
- Common requirements for spare and maintenance products
- Cleaning during the works
- Removal of protection
- Completion requirements
- Commissioning
- Practical completion submission
- Defects period submissions
- Completion submissions

### 1.1 SCHEDULE SECTION

Refer to 1270S1 SCHEDULE OF SAMPLES & PROTOTYPES for work sections contained in this specification that have requirements for samples and prototypes.

Refer to 1270S2 SCHEDULE OF SPARES & MAINTENANCE PRODUCTS for work sections contained in this specification that have requirements for spares and maintenance products.

#### Quality control and assurance

### 1.2 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.

### 1.3 PROVIDE QUALITY PLAN

Prepare a quality plan for the execution of the contract works and submit a copy of the quality plan to the Contract Administrator within 10 Working Days of the date of award of the contract. The quality plan shall describe the procedures for meeting the requirements of the contract in respect of:

- Materials and workmanship
- Monitoring and maintaining subcontractors' performance
- Record keeping
- The level of documentation for signing off the contract works as complete
- Procedures to ensure that all persons engaged in undertaking the contract works are qualified, experienced and trained for the work they are undertaking
- Inspection and testing required by the contract
- Auditing the quality plan

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**1.4 REVIEW OF QUALITY PLAN**

Within 5 working days of the contractor submitting a quality plan to the contract administrator for review, the contract administrator may advise that:

- they have completed their final review, or
- that they have undertaken a review and require resubmission of the quality plan.

Review by the contract administrator of the quality plan does not make the quality plan a contract document. The contractor at all times remains responsible for the construction of the Works. If resubmission of a quality plan is required, the contract administrator will give their reasons. The contractor shall take account of the reasons and resubmit a revised quality plan within a period of 5 working days.

**1.5 COMMENCEMENT OF WORK**

Do not commence any part of the contract works, other than establishment, setting out and site preparation until the contract administrator has completed their final review of the quality plan.

**1.6 NOTICE**

Give notice to the contract administrator and any other nominated person of hold points and notification points. Refer to work sections and 1260 PROJECT MANAGEMENT for hold points and notification points required.

**1.7 NOTIFIABLE WORK**

Lodge notice of the intention to commence any notifiable work and any work that will at any time include any notifiable work, in accordance with [Health and Safety in Employment Regulations 1995](#).

**Noise and nuisance**

**1.8 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.

**1.9 ACCEPTABLE NOISE LEVELS**

Refer to [NZS 6803](#) Tables 2 and 3 for the upper limits of construction work noise received in residential zones, dwellings in rural areas, industrial areas and commercial areas, note also the allowed adjustments. Do not exceed these limits or any limits imposed by regional councils or territorial authorities.

**1.10 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.

**1.11 ADDITIONAL NOISE CONSTRAINTS**

As well as complying with the preceding clauses, comply with the following on this contract:

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**1.12 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.

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## 1.13 ROADWAY AND FOOTPATH

Keep the adjacent footpath and road clear at all times. Where work must be carried out in the roadway or footpath, obtain required consents from the territorial authority. Where temporary use is made of the footpath or roadway for deliveries and the like ensure that public safety is protected and the goods and materials moved as soon as practicable. Sweep, wash and otherwise clean the roadway/footpath and restore it to its previous condition.

## 1.14 VEHICLE CROSSING

Make good damage that has occurred as a result of carrying out the contract works. Where there has been significant damage, contact the territorial authority and obtain instructions for making good. Pay the territorial authority costs associated with making good.

## 1.15 TRAFFIC SAFETY

The management of traffic safety on-site and related traffic off-site, to [WorkSafe Managing Work Site Traffic - Good Practice Guidelines](#). Movement on- and off-site also to territorial authority and/or NZTA requirements.

## 1.16 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.

## 1.17 DAMAGE AND NUISANCE

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

## 1.18 SMOKE FREE REQUIREMENTS

In accordance with the Smoke Free Environments Act 1990 smoking is not allowed on site.

## 1.19 RESTRICTIONS

Do not:

- light rubbish fires on the site.
- bring dogs on to or near the site.
- bring radios/audio players on to the site.

### Set-out and tolerances

## 1.20 SURVEY INFORMATION

Locate and verify survey marks and datum points required to set out the works. Where these do not exist or cannot be located advise the contract administrator who will arrange for the required points to be established.

Record and maintain their position. Re-establish and replace disturbed or obliterated marks.

## 1.21 DATUM

Establish a permanent site datum to confirm the proposed levels and their relationship to all other existing and new levels.

## 1.22 SET-OUT

Set out the work to conform with the drawings.

## 1.23 CONFIRM HEIGHT IN RELATION TO BOUNDARY

Arrange for the licensed cadastral surveyor to provide a certificate certifying that the building has been constructed within the allowed height in relation to boundary. Obtain details from the principal of the person they have engaged to carry out this certification and advise the surveyor when they can carry out the required survey.

Provide the certificate to the local authority. Provide a copy of the certificate to the contract administrator.

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1.24 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.

1.25 USE OF SET-OUT INSTRUMENTS

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

1.26 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.

1.27 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</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**

1.28 EXAMINE PREVIOUS WORK

Before commencing any part of the work carefully examine the previous work on which it depends, to ensure it is of the required standard.

1.29 EXECUTION GENERALLY

Construct the work in accordance with the documents issued for construction including any direction that may have been given by the contract administrator that varies the construction document.

1.30 EXECUTION - NO DETAIL IS PROVIDED

The documents issued for construction will not include all details relating to every material, junction and interface with other materials.

Where the detail provided is of a general nature, or where no detail is provided, refer to the manufacturer's documents for information relating to installation and execution of that part of the work.

Where there is more than one method or detail appropriate to the part of the work in question, refer the options to the Contract Administrator for direction as to which detail or method to use.

1.31 EXECUTION - ACCEPTABLE SOLUTION IS REFERRED TO

Where a NZBC Acceptable Solution is referred to in the specification but not shown on the plans, obtain a copy of that Acceptable Solution and make it available to the workers carrying out that part of the work.

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## 1.32 MINIMISE DELAYS DUE TO WEATHER

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

**Defective or damaged work**

## 1.33 DEFECTIVE OR DAMAGED WORK

Repair defective, damaged and marked elements, or replace them where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Refer to individual work sections for any special requirements.

**Qualifications**

## 1.34 QUALIFICATIONS GENERALLY

The work is to be carried out by workers and / or supervisors who are experienced, competent and familiar with the materials and the techniques specified. Workers must also be familiar with the manufacturers' and suppliers' installation and application instructions and standard details provided by them in relation to the use of the products for this project. If requested provide evidence of qualification / experience.

## 1.35 QUALIFICATIONS WORKERS – RESTRICTED BUILDING WORK

Where restricted building work (RBW) forms part of the contract works, workers, or supervisors of that work must be licensed building practitioners (LBP) holding current licenses for the particular restricted building work.

For rare instances where non-RBW also requires an LBP refer to individual work sections for details.

## 1.36 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Where required by a manufacturer or supplier, workers must be specifically trained /approved / accredited / registered / licensed / certified by them. Refer to individual work sections for details.

## 1.37 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

Where workers and / or supervisors of work are required to be licensed, registered or similar under legislation, they must have a current license before they start the work and maintain currency until their part of the work has been completed and all documentation that is required has been provided.

## 1.38 QUALIFICATIONS – PRODUCER STATEMENTS

Where producer statements are required for parts of the work, ensure that person is suitably qualified and authorized to issue such producer statements.

## 1.39 REPLACEMENT OF PERSON

Should it be necessary to replace a person, ensure that records of work, producer statements, warranties and the like required for the part of the work they have carried out are obtained.

Ensure that the replacement person takes responsibility for the work they carry out and that they are able to provide such records of work, producer statements, warranties and the like required as a condition of the contract and the building consent.

**Products**

## 1.40 NEW PRODUCTS

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

## 1.41 COMPATIBILITY OF PRODUCTS

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.

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1.42 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Protect products during transit and delivery on site and / or off site. Reject and replace goods that are defective or damaged or will not provide the required finish.

Handle products carefully to avoid damage and distortion and in accordance with codes of practice and the manufacturer's or supplier's requirements. Avoid any contact with potentially damaging surfaces or conditions.

Store products to avoid visual damage, environmental damage, mechanical damage and distortion. Store in accordance with codes of practice and the product manufacturer's or supplier's requirements. Maintain the proper condition of any protective packaging, wrapping and support.

Refer to individual work sections for any special requirements.

1.43 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.

1.44 INSTALLING PRODUCTS

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.

1.45 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.

1.46 CONDITION OF PRODUCTS

To be in perfect condition when incorporated into the work.

1.47 INCOMPATIBLE PRODUCTS

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 & maintenance products**

1.48 SPARES & MAINTENANCE PRODUCTS

Collect, protect, package, label and store safely all spares and maintenance products specified in the work sections. Give the contract administrator an inventory of all spares and maintenance products.

If no instruction is given within a work section for the location of spares and maintenance products, then deliver to the owner ~.

If no instruction is given within a work section for timing in relation to the provision of spares and maintenance products, then provide at practical completion.

Refer to SPARES & MAINTENANCE PRODUCTS clauses in work sections for further detail.

**Cleaning during the works**

1.49 PERIODIC SITE CLEANING

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

1.50 TRADE CLEANING

Keep the work area clean, remove of all debris, unused and temporary materials and elements from the site as work progresses and on completion. Refer to individual work sections for any specific requirements.

**Remove protection**

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### 1.51 REMOVE PROTECTION

Remove all temporary markings, labels, packaging and coverings to products unless instructed otherwise, or where they are required for protection.

Maintain temporary protection until removal is required by the manufacturer/supplier, the execution of the work or the requirements of individual work sections. Re-establish protection as necessary.

Remove temporary protection and special protection immediately prior to practical completion or before when there is no further risk of damage.

Refer to individual work sections for any special removal requirements.

#### Completion

### 1.52 LEAVE WORK

Leave work to the standard required for the following procedures.

### 1.53 SPECIAL REQUIREMENTS

Refer to individual work sections for any special completion requirements.

### 1.54 COMPLETION - TESTS & CERTIFICATION

Carry out tests as detailed in the work sections. If testing identifies a failure to meet performance requirements, notify the contract administrator and any nominated recipient, identify and correct the cause of failure and repeat the test. Submit test results and certification documentation to the contract administrator and any nominated recipient.

### 1.55 REMOVE CONSTRUCTION WASTE

Remove all debris, unused materials and the like from the site. Arrange for material to be recycled to be collected or delivered to the recycler.

### 1.56 COMPLETE ALL SERVICES

Ensure all services are complete and operational, with all temporary labelling removed, required labelling fixed and service instructions provided.

### 1.57 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. Do not use metal scrapers that may 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.

### 1.58 CLEANING BY COMMERCIAL CLEANER

In addition to cleaning carried out by the contractor, use a commercial cleaning company 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.
- Clean all floor finishes.
- Clean and polish all glass, both sides. Take particular care when removing paint or cementitious materials to not damage the glass. Do not use metal scrapers that may damage the glass.

### 1.59 SPECIAL REQUIREMENTS

Refer to individual work sections for any special commissioning requirements.

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**Commissioning**

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1.60 MOVING PARTS

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

1.61 COMMISSIONING - TESTS & CERTIFICATION

Carry out tests as detailed in the work sections. If testing identifies a failure to meet performance requirements, notify the contract administrator and any nominated recipient, identify and correct the cause of failure and repeat the test. Submit test results and certification documentation to the contract administrator and any nominated recipient.

1.62 INSTRUCTION AND DEMONSTRATION

Provide instruction and demonstration to the owner/occupier to the extent that is listed below and as required for them to reasonably occupy and use the building. This is to include at least the following:

- Location and isolation of all services connections.
- Operation of all emergency systems.
- Locking and security arrangements.
- Operation of basic building services including lighting, heating, mechanical ventilation, air conditioning and security.
- Special cleaning requirements and procedures.
- Any other features that the owner/occupier needs to know about.

**Practical completion submission**

1.63 ADDITIONAL PRACTICAL COMPLETION INFORMATION

In addition to requirements in the contract and contained elsewhere in the specification provide the following information submissions for practical completion:

- All documents which the contractor has obtained on behalf of the owner/occupier.
- Information required by the owner/occupier to be able to use the building.
- Advice that NUO accounts in the contractor’s name have been closed and as appropriate changed to be in the name of the owner/occupier.
- A list of persons to be contacted to carry out any emergency or remedial work including 24 hour/7 day contact details.

1.64 ADDITIONAL PRACTICAL COMPLETION REQUIREMENTS

Refer to the conditions of contract for the definition of practical completion and the conditions relating to practical completion.

In addition to the requirements in the contract, the following conditions also apply:

- ~

**Defects period submissions**

1.65 DEFECTS REMEDIATION - SUBMISSIONS

Provide the following at periods required by the contract administrator, where no period is stated, provide this information monthly:

- A copy of the contractor’s check list identifying remaining defects and omissions to be completed recording progress made in completing and correcting the items.
- A copy of lists issued by the principal/employer identifying omissions and defects recording progress made in completing and correcting the items.
- A copy of lists issued by the contract administrator identifying omissions and minor defects recording progress made in completing and correcting the items.

**Completion submissions**

1.66 FINAL COMPLETION - SUBMISSIONS

In addition to requirements in the contract and contained elsewhere in the specification provide:

- Contractors advice that all defects have been corrected and omissions and deferred work completed.
- All documents which the contractor has obtained on behalf of the owner/occupier.

1.67 REPORT DEFECTIVE PREVIOUS WORK

Refer defects to the contractor to be remedied, if the remedy is outside the scope of the contract documents the contractor shall obtain direction from the contract administrator. Do not carry out work over previous work that is defective and will affect the required standard.

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1.68 QUALIFICATIONS WORKERS – INDUSTRY QUALIFICATION REQUIREMENTS

Where workers and / or supervisors of work are required to be trained / licensed / certified or similar under industry rules or contractual requirements, they must have a current qualification before they start the work and maintain currency until their part of the work has been completed. Refer to individual work sections for details.

1.69 SAMPLES FOR REVIEW

Where specified in the work sections submit samples and any nominated supporting documentation to the named reviewer and notify the contract administrator of the submission. Where no person is named as the reviewer, submit to the contract administrator.

Samples for review may be described as a portable sample for review, portable control sample, fixed sample for review or fixed control sample. A portable sample refers to a sample that is easily movable, convenient for carrying. A fixed sample refers to a sample that is not portable. If the location of a fixed sample is not defined in the work section, obtain direction from the contract administrator.

For samples that are located on site, or by agreement with the contract administrator are located off site, notify the reviewer and contract administrator of their location and availability for review.

Timing for the provision and review of samples is to be included in the contract programme. Where no time is stated in a work section allow 10 working days for each review. Allow for such resubmission and further review as may be required. No extension of time will be allowed for resubmission and further review.

Obtain written instructions in relation to the samples from the contract administrator. Do not proceed further with related work items until advised to continue.

Samples may be incorporated in the finished work if confirmed in writing by the contract administrator, otherwise allow to completely remove any fixed samples. Remove from the site any rejected samples.

Refer to SAMPLES clauses in work sections for further detail.

1.70 CONTROL SAMPLES

Samples become control samples if an instruction is given by the contract administrator to that effect. Control samples will be used for comparison purposes throughout the contract. Control samples may be portable or fixed in place, refer to SAMPLES clauses in work sections for further detail.

Control samples that are to remain on site, or otherwise in the care of the contractor, are to be maintained in original condition.

If confirmed by the contract administrator, fixed control samples may be incorporated in the finished work, otherwise allow to remove fixed control samples from site when instructed by the contract administrator.

1.71 OTHER SAMPLE REQUIREMENTS

Where specified in the work sections obtain samples for the purposes described.

**Prototypes**

1.72 PROTOTYPES - TESTING

Where specified in the work sections provide and test prototypes. Timing for the provision, testing, disassembling, re-assembling, retesting and review of prototypes and test results is to be included in the contract programme. Where no time is stated in a work section allow 10 working days for each review of test results. Submit test results to the named reviewer and to the contract administrator. Where no person is named as the reviewer submit test results to the contract administrator.

Obtain written instructions in relation to the prototype from the contract administrator. Do not proceed further with related work items until advised to continue.

Refer to PROTOTYPES - TESTING clauses in work sections for further detail.

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**1.73 PROTOTYPES - REVIEW**

Where specified in the work sections provide prototypes for review. Timing for the provision, disassembling, re-assembling and review of prototypes is to be included in the contract programme. Where no time is stated in a work section allow 10 working days for review by the named reviewer. Where no person is named as the reviewer notify the contract administrator for direction.

Obtain written instructions in relation to the prototype from the contract administrator. Do not proceed further with related work items until advised to continue.

Refer to PROTOTYPES - REVIEW clauses in work sections for further detail.

**1.74 PROTOTYPES - GENERAL**

Refer to the PROTOTYPES - TESTING and PROTOTYPES - REVIEW clauses in work section for details on what is to happen after the review and or testing of the prototype is complete. Where no information is provided refer to the contract administrator for direction.

Prototypes may become control samples if an instruction is given by the contract administrator to that effect.

**1.75 SPECIAL SITE CLEANING**

~

**1.76 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.

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# 2210 PREPARATION & GROUNDWORK

## 1 GENERAL

This section relates to the clearance, excavation and backfilling of the site area in preparation for:

- footings and floor slabs
- backfilling behind basement retaining walls

### Documents

#### 1.1 DOCUMENTS

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

- [NZS 3604](#) Timber-framed buildings
- [WorkSafe](#) [Good Practice Guidelines - Excavation Safety](#)

#### 1.2 MANUFACTURER/SUPPLIER DOCUMENTS

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

Manufacturer/supplier contact details;

- Company: ~
- Web: ~
- Email: ~
- Telephone: ~

#### 1.3 SITE SAFETY

Provide adequate support for all excavations. Cover holes and fence off open trenches and banks.

#### 1.4 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.

## 2 PRODUCTS

#### 2.1 EXCAVATED CLEAN FILL

Clean, free of contamination, mineral soil from other formations in the excavation which may be selected and approved as suitable for filling by having grading and moisture content properties that will allow recompaction to 95% of maximum density.

#### 2.2 VOLCANIC TUFF FILL

Scoriaceous tuff of variable grading excluding excessive silt or clay material, capable of being placed and compacted as specified.

#### 2.3 ROCK FILL

Hard material comprising rock, broken stone, hard brick, concrete, run of pit scoria, or other comparable inert material capable of being placed and compacted as specified.

#### 2.4 SAND FILL

Clean sand of such grading in particle size to achieve mechanical compaction to 90% maximum density.

#### 2.5 HARD FILL

Scoria or crushed rock to GAP (General All Passing) 40 grading.

#### 2.6 GRANULAR FILL

Approved screened crushed gravel or scoria, graded in size from 20mm to 7mm, clean. When tested with a standard sieve of 4.75 opening no material is to pass.

#### 2.7 DRESSING COURSE

Scoria to GAP 20 grading, or "dirty footpath scoria", or equivalent "all in" graded crushed metal aggregate.

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## 2.8 FREE-DRAINING AGGREGATE

Scoria or crushed gravel graded 50 to 14 clean.

## 3 EXECUTION

### 3.1 WASHOUT BAY FOR TRUCK

Provide a designated area for trucks to be washed down to avoid mud and dirt being carried off site.

### 3.2 EXCAVATION GENERALLY

Carry out excavation, using plant suitable for the purpose, to the guidelines set by the [WorkSafe, Good Practice Guidelines - Excavation Safety](#).

### 3.3 BURNING OF MATERIALS

Burning of materials is not permitted on site.

### 3.4 PROTECT EXISTING WORK

Protect from damage existing buildings, structures, roads, paving and services nominated on the drawings as being retained.

### 3.5 EROSION CONTROL

Ensure measures are in place to contain silt dislodged as a result of water infiltration and to prevent it being carried off site with stormwater.

### 3.6 SURFACE PREPARATION

Comply with [NZS 3604](#), section 3.5, **Site preparation**. Remove all turf, vegetation, trees, topsoil, stumps, uncontrolled fill and rubbish from the area to be built on.

### 3.7 STOCKPILE TOPSOIL

Stockpile excavated topsoil on site where directed. Keep separate from other excavated materials. Spread and level where directed before completion of the works.

### 3.8 GENERAL EXCAVATION

Trim ground to required profiles, batters, falls and levels. Remove loose material. Protect cut faces from collapse. Keep excavations free from water.

### 3.9 ROCK EXCAVATION

If rock is found at any level above the underside of the structural foundations, or above required base levels for site service trenches, immediately notify the owner. Obtain written instructions from the owner on the proposed approach to rock excavation, or consequent alterations to subgrade construction. Confirm any changes with the territorial authority.

### 3.10 FOUNDATION EXCAVATION

Take foundation excavations to depths shown. Keep trenches plumb and straight, bottoms level and free of soft spots, stepped as detailed and clean and free of water.

### 3.11 INADEQUATE BEARING

If localised bearing is not to [NZS 3604](#), 3.1.2 **Foundations** and 3.1.3 **Determination of good ground**, then excavate further and backfill with material as follows:

- Below slabs on grade: Hardfill compacted in 150mm layers
- Below footings: 10 MPa concrete

If excavation exceeds the required depths, backfill and compact to the correct level with material as listed.

Confirm any changes with the territorial authority.

For inadequate bearing or over excavation of service trenches, use hardfill compacted in 150mm layers.

### 3.12 STANDARD OF COMPACTION

Place fill in layers of not more than 150mm and compact to achieve 95% of maximum dry density. For granular fill material, the fill shall be compacted to 80% of saturated dry density.

### 3.13 GRANULAR BASE FOR SLABS

To conform to [NZS 3604](#), section 7.5.3, **Granular base**. Consolidate with a vibrating roller. Blind the surface with 20mm of coarse sand or sand/cement and roll ready to receive a damp-proof membrane.

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**3.14 GENERAL BACKFILLING**

Obtain written confirmation from the owner before using any excavated material. Compact approved backfilling in 150mm layers with the last 200mm in clean topsoil, lightly compacted and neatly finished off.

**3.15 RETAINING WALLS**

Backfill behind retaining walls with free draining granular material and compact in 200mm layers. Ensure any tanking membranes, protection sheets, drain coil and damp-proofing are not damaged.

**3.16 SURPLUS MATERIAL**

Remove surplus and excavated material from the site.

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## 3820 CARPENTRY

### 1 GENERAL

This section relates to the supply and erection of timber framing, as a framed structure, or as partitioning. It includes prefabricated timber and engineered wood.

#### 1.1 RELATED WORK

Refer to ~ for ~.

Refer to 4161 UNDERLAYS, FOIL AND DPC for underlays, foils and DPC.

#### 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
AS/NZS 1328.1	Glued laminated structural timber - Performance requirements and minimum production requirements
AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3622	Verification of timber properties
NZS 3640	Chemical preservation of round and sawn timber
AS/NZS 4357.0	Structural laminated veneer lumber - Specification
FTMA CoP	Frame and Truss Manufacturers Association Code of Practice
<b>*A copy of NZS 3604 Timber-framed buildings, must be held on site.</b>	

#### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

~

Manufacturer/supplier contact details

Company: ~  
 Web: ~  
 Email: ~  
 Telephone: ~

#### 1.4 QUALIFICATIONS

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

#### 1.5 DIMENSIONS

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

## 2 PRODUCTS

### 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 TRUSSES

To FTMA CoP. Moisture content 16% at supply.

### 2.3 WALL DWANGS, NOGS AND BLOCKING

If dwangs, nogs or blocking is required for exterior insulated walls, ensure they are not full depth of framing. Install flush with face of wall required, leaving a minimum 20mm or 45mm preferable gap to the other face to NZS 3604, 8.8. Dwangs and nogs if required to be at 1350mm centres maximum to NZS 3604, 8.8.

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## 2.4 EXTERIOR CAVITY WALL BATTENS - PROPRIETARY - NON-STRUCTURAL

Extruded polypropylene battens, size approximately 45mm wide x 18mm thickness. Temporary fix battens before being fixed into the framing with the cladding fixings. To the scope limitations of NZBC E2/AS1, and NZS 3604 Building Wind Zones up to, and including "Extra High".

### 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 COACH SCREWS

Bolts and coach screws complete with washers, to the requirements of NZS 3604, clause 2.4.5 Bolts and Coach Screws, and section 4, **Durability**, and of the type, number and form required for each particular junction to NZS 3604, sections 6 - 10.

## 2.7 NAIL PLATES

Comply with 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. Plates to the plate manufacturer's design for the particular locations as shown on the drawings.

## 2.8 CONNECTORS

Comply with 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. Connectors and structural brackets to the connector manufacturer's design for particular locations shown on drawings.

## 2.9 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).

## 2.10 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

# 3 EXECUTION

## 3.1 EXECUTION GENERALLY

To 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 SEPARATION

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

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

## 3.3 ATTENDANCE

Provide and fix blocks, noggs, openings and other items as required by other trades.

## 3.4 MOISTURE CONTENT

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

Framing at erection:	24% maximum
Framing at enclosure:	20% maximum
Framing at lining:	16% maximum

## 3.5 SET-OUT

Set out framing in accordance with the requirements of NZS 3604 and as required to support sheet linings and claddings. When necessary provide framing to suit any required cladding/lining control joints and sheet joints.

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**3.6 FRAMING SUB-FLOOR**

Frame up off foundation walls and piles, all fabricated, fastened and braced to [NZS 3604](#), section 6.10, **Framed subfloor walls**.

**3.7 FRAMING FLOORS**

Framed and fastened to [NZS 3604](#), section 7, **Floors**.

**3.8 FRAMING WALLS**

Frame to required loading and bracing complete with lintels, sills and nogs, all fabricated and fastened to [NZS 3604](#), section 8, **Walls**.

**3.9 FRAMING ROOFS**

Frame to required loading and bracing complete with valley boards, ridge boards and purlins. Design and fit roof trusses complete with anchorage. All fabricated and fastened to [NZS 3604](#), section 9, **Posts** and 10, **Roof framing**.

**3.10 FRAMING CEILINGS**

Frame to required loading and bracing complete with runners and battens set out to support ceiling lining. All fabricated and fastened to [NZS 3604](#), section 13, **Ceilings**. Trim for openings in ceilings and hatches to [NZS 3604](#) section 13.3, **Openings in ceilings**. Provide blocking for water tanks located in the ceiling space to [NZS 3604](#), section 13.4, **Water tanks in roof space**.

**3.11 INSTALLING WALL UNDERLAYS**

Refer to 4161 UNDERLAYS, FOIL AND DPC section

**3.12 FIT JAMB BATTENS**

For walls with direct fix cladding, fit 20mm (nominal) jamb battens over the wall underlay, to the jambs of window and door rough openings, to [NZBC E2/AS1](#), fig 72A. Cut around sill flashings. Fix with 60 x 2.8 flat head galvanized nails at 300mm centres.

**3.13 FIT CAVITY BATTENS**

Fit and fix 20mm cavity battens over wall underlay or rigid air barrier, fully nail to timber studs to the requirements of the manufacturer or to [NZS 3604](#). Fit and fix related flashings. Make allowance for cladding control joints where required. Fit and fix cavity closers to base of walls, open horizontal (or raking) junctions and over openings (windows, meters etc.).

**3.14 DPC TO LOSP TREATED TIMBER**

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

**3.15 DPC TO TIMBER**

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

**4 SELECTIONS**

**4.1 FLOOR FRAMING - RADIATA PINE**

Member	Species	Grade	Treatment
Mid floor joists:	Radiata pine	SG8	H1.2
Boundary joists:	Radiata pine	SG8	H1.2

**4.2 EXTERIOR WALL FRAMING - RADIATA PINE**

Member	Species	Grade	Treatment
Exterior walls:	Radiata pine	SG8	H1.2
Parapets:	Radiata pine	SG8	H1.2
Enclosed decks and balconies:	Radiata pine	SG8	H1.2
Cantilevered joists enclosed decks and balconies:	Radiata pine	SG8	H3.2
Nogs	Radiata pine	SG8	H1.2
Wall battens (hot cavity):	Radiata pine	Merch	H1.2
Jamb battens:	Radiata Pine	Merch	H3.1

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4.3 EXTERIOR WALL FRAMING - DOUGLAS FIR

Member	Species	Grade	Treatment
Exterior walls:	Douglas fir	SG8	H1.2
Parapets:	Douglas fir	SG8	H1.2
Enclosed decks and balconies:	Douglas fir	SG8	H1.2
Cantilevered joists enclosed decks and balconies:	Douglas fir	SG8	H3.2
Nogs	Douglas fir	SG8	H1.2
Wall battens (not cavity):	Douglas fir	Merch	H1.2
Jamb battens:	Douglas fir	Merch	H3.1

4.4 CAVITY BATTENS

Cavity battens	Species	Grade	Treatment
Timber - Non Structural:	Radiata pine	Merchantable	H3.1
Proprietary - non structural:	Manufacturer ~	Type ~	Reference ~
Cavity closer:	Manufacturer ~	Type ~	Reference ~

4.5 ROOF FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Rafters:	Radiata pine	SG8	H1.2
Trusses:	Radiata pine	SG8	H1.2
Purlins:	Radiata pine	SG8	H1.2
Ceiling joists and battens:	Radiata pine	SG8	H1.2
Valley boards:	Radiata pine	Merchantable	H1.2
Sarking:	Radiata pine	Merchantable	H1.2
Skillion roof framing:	Radiata pine	SG8	H1.2
Enclosed flat roof framing:	Radiata pine	SG8	H1.2

4.6 INTERIOR FRAMING - RADIATA PINE

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

4.7 EXTERIOR EXPOSED TIMBERS

Member	Species	Grade	Treatment
Posts:	Radiata pine	SG8	H3.2 CCA
Joists:	Radiata pine	SG8	H3.2 CCA
Exterior stairs and steps:	Radiata pine	SG8	H3.2 CCA
Pergola:	Radiata pine	SG8	H3.2 CCA
Ground contact members	Radiata pine	SG8	H5 CCA

Note all CCA to be preservative code 01 or 02

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# 4161T THERMAKRAFT UNDERLAYS, FOILS, DPC, DPM, & TAPES

## 1 GENERAL

This section relates to the application of **Thermakraft Ltd**, DPC, DPM, Wall & Roof Underlays, Foils, Flashing Tapes, and accessories.

### 1.1 RELATED WORK

Refer to ~ for ~

### 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

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## 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

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

[BRANZ Appraisal 651](#) - Thermakraft Covertek™ 407 Roof and Wall Underlay

[BRANZ Appraisal 695](#) - Watergate Plus™ Wall Underlay

[BRANZ Appraisal 743](#) - Thermakraft Covertek 405™ Roof and Wall Underlay

[BRANZ Appraisal 878](#) - Thermakraft Aluband™ Window Flashing Tape

[BRANZ Appraisal 912](#) - Thermakraft 220™ Synthetic Wall Underlay

[BRANZ Appraisal 917](#) - Thermakraft Covertek 403™ Roof and Wall Underlay

[BRANZ Appraisal 942](#) - OneSeal™ Multi-Fit Pipe and Cable Penetration Seals

[BRANZ Appraisal 943](#) - Thermakraft Covertek 401™ Roof Underlay

[BRANZ Appraisal 962](#) - The Thermakraft One Wrap System™

[BRANZ Appraisal 1000](#) - Thermakraft Thermabar 397™ Light Diffusing Reflective Underlay

[BRANZ Appraisal 1029](#) - Thermakraft Ausnet™ Hexagonal Wire Mesh

[BRANZ Appraisal 1104](#) – Thermathene Orange™ Concrete Underlay

[BRANZ Appraisal 1122](#) – Thermaflash™ Flashing Tape

[Code Mark Certificate 30069](#) - Thermakraft Covertek 403™ Absorbent Breathable Roof Underlay

[Code Mark Certificate 30030](#) - Thermakraft Covertek 405™ Absorbent Breathable Roof Underlay

[Code Mark Certificate 30028](#) - Thermakraft Covertek 407™ Absorbent Breathable Roof Underlay

[Code Mark Certificate 1002](#) - Thermakraft Watergate Plus™ Wall Underlay

Manufacturer/supplier contact details

Company: Thermakraft Ltd

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

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

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 comply 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.

## 2 PRODUCTS

### Materials

#### Damp Proof Course

**2.1 SUPER COURSE 500™ DPC**

Supercourse 500™, high-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 joining tape.

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## 2.2 PERIMETER™ DPC

Thermakraft Perimeter™ DPC, a heavy kraft impregnated with high grade bitumen and coated with higher heat resistant bitumen to [AS/NZS 2904](#) and to the appropriate test methods set out in AS/NZS 4347. Refer to SELECTIONS for type of joining tape.

**Damp Proof Membrane**

## 2.3 THERMATHENE BLACK™ DPM (MEDIUM DUTY)

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 joining tape.

## 2.4 THERMATHENE BLACK™ DPM (MEDIUM DUTY) - SUBFLOOR GROUND COVER

Thermathene Black™ polyethylene sheet with minimum thickness of 0.25 mm and a minimum vapour flow resistance of 90MN/g to [NZS 3604](#), 7.5.6, Polyethylene (polythene) sheet damp-proof membranes. Refer to SELECTIONS for type of joining tape.

**Wall underlays**

## 2.5 WATERGATE PLUS™ SYNTHETIC WALL UNDERLAY

Watergate Plus™, specifically designed as a wall underlay. Absorbent breathable spun bonded non-woven polyolefin type building membrane, coated with a water resistant vapour permeable film. A fire retardant membrane, with Flammability Index of ≤ 5, when tested to AS 1530.2. The product has a [BRANZ Appraisal 695](#), and is included in the Thermakraft One Wrap System™ [BRANZ Appraisal 962](#).

## 2.6 THERMAKRAFT 220™ LIGHTWEIGHT SYNTHETIC WALL UNDERLAY

Thermakraft 220™, absorbent breathable spun-bonded non-woven polyolefin type building membrane. A fire retardant membrane, with Flammability Index of 5 or less when tested to AS 1530.2. The product has a [BRANZ Appraisal 912](#), and is included in the Thermakraft One Wrap System™ [BRANZ Appraisal 962](#).

## 2.7 THERMAKRAFT 213™ MEDIUM DUTY BITUMINOUS WALL UNDERLAY

Thermakraft 213™, bituminous medium weight wall underlay to [NZS 2295](#).

**Roof underlays**

## 2.8 THERMAKRAFT 213™ BITUMINOUS ROOF UNDERLAY

Thermakraft 213™, bituminous heavy weight underlay to [NZS 2295](#).

## 2.9 THERMAKRAFT 215™ BITUMINOUS ROOF UNDERLAY

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

## 2.10 COVERTEK 407™ HEAVY DUTY SYNTHETIC WALL UNDERLAY

Covertex 407™, a fire retardant non-woven wall underlay, consisting of two spun-bonded polyolefin fabric layers bonded to a micro porous inner layer, designed for use as a water absorbent, breathable, water resistant wall underlay. A fire-retardant membrane with a flammability index of ≤ 5, when tested to AS 1530.2, to [NZBC C/AS2](#), meets the requirements for suspended fabrics, [BRANZ Appraisal 651](#) and [Code Mark Certificate 30028](#). Can be used in areas exposed to view in occupied spaces.

## 2.11 COVERTEK 405™ MEDIUM DUTY SYNTHETIC ROOF UNDERLAY

Covertex 405™, a non-woven self-supporting roof underlay, consisting of two spun-bonded polyolefin fabric layers bonded to a micro-porous inner layer, designed for use as a water absorbent, breathable, water resistant roof underlay for sloped roofs. A fire retardant membrane with a Flammability Index of ≤ 5 tested to AS 1530.2, when tested to [NZBC C/AS2](#), meets the requirements for suspended fabrics, [BRANZ Appraisal 743](#) and [Code Mark Certificate 30030](#). Can be used in areas exposed to view in occupied spaces.

## 2.12 COVERTEK 403™ LIGHT-MEDIUM DUTY SYNTHETIC ROOF UNDERLAY

Covertex 403™, a non-woven roof underlay, consisting of two spun-bonded polyolefin fabric layers bonded to a micro-porous inner layer, designed for use as a water absorbent, breathable, water resistant roof underlay for sloped roofs. A fire retardant membrane with a Flammability Index of ≤ 5 when tested to AS 1530.2, and meets the requirements of [NZBC C/AS2](#), 4.17.8. (b) for suspended flexible fabrics. [BRANZ Appraisal 917](#) and [Code Mark Certificate 30069](#). Can be used in areas exposed to view in occupied spaces.

## Accessories

- 2.13 ALUBAND™ BITUMINOUS FLASHING TAPE  
Thermakraft Aluband™ window flashing tape consists of synthetic faced reinforced bituminous window sealing tape, in widths of 75mm, 150mm and 200mm. Used to repair damaged bituminous underlays. Bitumen may react to sealants, always check compatibility. Thermakraft Corner Moulds must be used. Exposure 42 days. Install from 5°C. [BRANZ Appraisal 878](#), and is included in the Thermakraft One Wrap System™ [BRANZ Appraisal 962](#).
- 2.14 THERMASTRAP™ MEDIUM DUTY STUD STRAP  
Thermastrap™, 19mm wide blue polythene straps.
- 2.15 STUDSTRAP™ HEAVY DUTY STUD STRAP  
Thermakraft StudStrap™, 25mm wide black polythene strap. Heavy duty, offering greater resistance to splitting.
- 2.16 PREMIUM JOINING TAPE™  
Thermakraft Premium Joining Tape™, an acrylic, reinforced tape with superior adhesion and tear resistance used to join laps of wall and roof underlays, plywood rigid underlay, OSB board, fibre cement and insulation panels, DPM and vapour control products such as foil underlays. Exposure 180 days, install from -10oC. Compatibility of the substrate with Premium Joining Tape must be checked by the designer or the installer prior to use. BRANZ Appraised and approved for use with the James Hardie™ RAB™ Board system, refer [BRANZ Appraisal 611](#). NOT to be used as a flashing tape.
- 2.17 DRAINAGE MAT™  
Thermakraft Drainage Mat™, a 7mm extruded three-dimensional black polypropylene mesh which provides an uninterrupted drainage path and ventilation between the roof cladding and roof underlay. Used under long-run steel roof where specific drainage and ventilation is required. Can be used in wind zones up to and including Extra High. If using on a roof pitch of less than 3° then Specific Engineering Design is required. The strand entanglement is designed to withstand compression forces resulting from typical roof fixings.

## 3 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.

### Application DPC

- 3.2 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.
- 3.3 DPC TO TIMBER / STEEL  
Lay Supercourse 500™ under the bottom plate of all timber / steel framed walls on concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier.  
Refer to SELECTIONS for type.

### Application - DPM

- 3.4 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 General Purpose Tape™ 60mm.

### Application - wall underlay

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### 3.5 WALL UNDERLAY

Fix horizontally to outside face of framing in true alignment, with succeeding sheets overlapping 150mm to NZBC E2/AS1, 9.1.7, Wall underlay, and refer to Thermakraft for requirement for fastenings. Fix to Thermakraft Technical Data specifications. Scribe neatly around penetrations and openings to leave no gaps. Flash all openings and tape all penetrations in accordance with Thermakraft Installation Guides. Keep clean, undamaged and without visible weather deterioration until closed in.

### 3.6 INSTALL STUD STRAPS

Over underlay, install stud straps horizontally at 300mm centres, draw taut and fix to studs with stainless steel staples.

#### Application - roof underlay

### 3.7 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.

#### Completion

### 3.8 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

## 4 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: Baae  
Type: Supercourse 500™  
Joining tape: Thermakraft™ Aluband™ joinery and flashing tape

#### Damp Proof Membrane

#### Wall underlays - synthetic, fire-retardant, air barriers

### 4.2 THERMAKRAFT WATERGATE PLUS™ WALL UNDERLAY

Location: Externla walls  
Type: Thermakraft Watergate Plus™  
Joining tape: Thermakraft White General Purpose Tape  
Flashing tape: Thermakraft Thermaflash™ joinery and flashing tape  
Accessories: Thermakraft Oneseal™ penetration seal

#### Roof underlays - bituminous, self-supporting

### 4.3 THERMAKRAFT COVERTEK 407™ ROOF UNDERLAY

Location: Roof  
Type: Covertek 407™  
Joining tape: Thermakraft White General Purpose Tape  
Flashing tape: Thermakraft Thermaflash™ joinery and flashing tape  
Accessories: Thermakraft Oneseal™ penetration seal

#### Window and joinery flashing tape

**4.4 THERMAKRAFT ALUBAND™ FLASHING TAPE**

Location: ~  
Sill/head tape: 150mm Thermakraft Aluband™ (for 90mm framing)  
200mm Thermakraft Aluband™ (for 140mm or 150mm framing)  
Sill corners: Thermakraft Corner Mould™  
Head corners: 75mm Thermakraft Aluband™ butterfly corners

**Stud straps****Roof underlays - synthetic, fire-retardant, self-supporting****4.5 COVERTEK 407™ HEAVY DUTY SYNTHETIC ROOF UNDERLAY**

Covertek 407™, a fire retardant non-woven self-supporting roof underlay, consisting of two spun-bonded polyolefin fabric layers bonded to a micro porous inner layer, designed for use as a water absorbent, breathable, water resistant roof underlay for sloped roofs. A fire retardant membrane with a flammability index of  $\leq 5$ , when tested to AS 1530.2, to [NZBC C/AS2](#), meets the requirements for suspended fabrics, [BRANZ Appraisal 651](#) and [Code Mark Certificate 30028](#). Can be used in areas exposed to view in occupied spaces.

**4.6 THERMAKRAFT THERMASTRAP™ STUD STRAPS**

Location: ~  
Type: Thermakraft Thermastrap™ 7 19mm blue polythene embossed tape

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# 4231BS BGC SHEET LINING & FACADE SYSTEMS

## 1 GENERAL

This section relates to the supply and fixing of **BGC Fibre Cement (NZ)** sheet lining and facade systems, for interior and exterior use fixed directly or with a cavity to timber or steel framing. It includes:

- BGC Duragroove™ Facade System (Direct Fixed)
- BGC Duragroove™ Facade System (Cavity)
- BGC Duragrid™ Facade System
- BGC Durasheet™ Fibre Cement Sheet
- BGC Stonesheet™ Fibre Cement Sheet (stone tile substrate)

### 1.1 RELATED WORK

Refer to ~ for ~.

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:

<a href="#">NZBC E2/AS1</a>	External moisture
<a href="#">NZBC E2/VM1</a>	Weathertightness
<a href="#">AS/NZS 1170.2:2011</a>	Structural design actions - Wind actions
<a href="#">AS/NZS 2908.2</a>	Cellulose-cement products - Flat sheet
<a href="#">NZS 3602</a>	Timber and wood-based products for use in building
<a href="#">NZS 3604</a>	Timber-framed buildings

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

BGC Fibre Cement documents relating to this part of the work:

- BGC Duragroove™ Facade System Cavity and Direct Fixed Brochure
- BGC Duragrid™ Facade System Brochure
- BGC Durasheet™ Fibre Cement Sheet Brochure
- BGC Stonesheet™ Stone Tile Substrate Technical Specification
- BGC Duragroove™ Facade System Architectural Details
- BGC Duragrid™ Facade System Architectural Details
- BGC Durasheet™ Fibre Cement Architectural Details
- BGC Stonesheet™ Stone Tile Substrate Architectural Details
- [BRANZ Appraisal 752](#) - BGC Duragrid™ Facade System
- [BRANZ Appraisal 798](#) - BGC Duragroove™ and Durascape™ Facade Systems (Direct Fixed)
- [BRANZ Appraisal 799](#) - BGC Duragroove™ and Durascape™ Facade Systems (Cavity)
- [BEAL Appraisal C807](#) - BGC Stonesheet™ and Render Tape for use with manufactured or natural stone slip veneers

Manufacturer/supplier contact details

Company: **BGC Fibre Cement (Australia) Pty Ltd**

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

Email: [nz@bgc.com.au](mailto:nz@bgc.com.au)

Telephone: 09 273 1457, 0800 424 234

#### Warranties

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#### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

- 15 years: For BGC Duragroove™ Facade product (refer to BGC Fibre Cement product warranty)
  - 15 years: For BGC Duragrid™ Facade product (refer to BGC Fibre Cement product warranty)
  - 15 years: For BGC Durasheet™ Fibre Cement Sheet product (refer to BGC Fibre Cement product warranty)
  - 15 years: For BGC Stonesheet™ Fibre Cement Sheet product (refer to BGC Fibre Cement product warranty)
  - 15 years: For accessories supplied by BCG (refer to BGC Fibre Cement product warranty)
- Commence the warranty from the date of purchase

Provide this warranty on the manufacturer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

#### 1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

- 2 years For installation

Provide this warranty on the installer's standard form

Refer to the general section 1237 WARRANTIES for additional requirements.

#### Requirements

#### 1.6 QUALIFICATIONS

Installers 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.

#### 1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Provide relevant BGC Fibre Cement maintenance requirements at completion of the work.

#### Performance - wind

#### 1.9 PERFORMANCE, WIND

The design wind pressures are to [NZS 3604](#), up to and including Extra High Wind Zone. BGC Fibre Cement Brochure details are suitable for these conditions.

#### Performance

#### 1.10 BGC DURAGROOVE™ PANELS - CAVITY CONSTRUCTION

BGC Duragroove™ and Durascape™ Facade Systems (Cavity) to [BRANZ Appraisal 799](#), with the following conditions:

- with a risk score of 0-20, to [NZBC E2/AS1](#) Table 2, and,
- situated in [NZS 3604](#) Wind Zones up to, and including 'Extra High'
- situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 2.5kPa.

## 2 BUILDING PRODUCTS

### Materials

#### 2.1 WALL UNDERLAY

For flexible wall underlays and rigid wall underlays, refer to the appropriate separate section(s).

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**2.2 EXTERIOR CAVITY BATTENS**

Radiata pine battens, minimum 45mm wide x 18mm thick, H3.1 treated, height to match timber framing studs. To [NZS 3602](#), Table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance.

**2.3 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING**

Perforated uPVC, with upstands.

**2.4 BGC DURAGROOVE™ PANELS**

BGC Duragroove™ panel, acrylic sealed, 9mm thick, with a shiplap horizontal jointing system and vertical grooves, manufactured from Portland cement, finely ground silica, cellulose fibres and water, cured by high pressure autoclaving.

Manufactured to [AS/NZS 2908.2](#), tested to [NZBC E2/VM1](#) for weathertightness and complying with the NZBC. Panel supplied with a smooth or wood grain finish and 4 profiles. Available in 1200mm wide panels x 2450mm, 2750mm or 3000mm long. Refer to SELECTIONS for options.

**Components - general**

**2.5 FASTENER TYPE**

Fasteners to minimum durability requirements of the NZBC. Refer to [NZS 3604](#), section 4, **Durability**, for requirements for fixing's 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.

<b>Zone</b>	<b>Fixings Material</b>
Zone D, Zone E / Microclimates (incl. Geothermal)	Grade 316 Stainless
Zone B, Zone C	Hot-dipped galvanized
Bracing - All zones	Grade 316 Stainless

Check against SED (specific engineering design) requirements for microclimate conditions.

**Components - Innova™ Duragroove™ Facade System**

**2.6 NAILS / SCREWS - CAVITY FIXED**

Fixing batten to framing:

- 65mm x 2.87mm RounDrive Ring Shank Nail, or
- 60mm x 2.8mm Jolt Head Galvanized Nail

Fixing Duragroove™ to batten:

- C25 304 stainless steel brads,
- 30mm x 2.8mm Fibre Cement Nail galvanized or stainless steel, or
- 25mm x 10g class 4 or stainless steel countersunk wood screws

**2.7 ADHESIVE FIXING**

Bostik Seal'n'Flex FC, for fixing to cavity battens.

**Accessories - Innova™ Duragroove™ Facade System**

**2.8 INTERNAL ALUMINIUM CORNER**

BGC Internal Aluminium Corner, 3000mm long.

**2.9 EXTERNAL ALUMINIUM CORNER**

BGC External Aluminium Corner, 2450mm, 2750mm or 3000mm long.

**2.10 HORIZONTAL FLASHING**

BGC Aluminium Horizontal Flashing, 3000mm long.

**2.11 CAVITY VENT STRIP**

BGC Cavity Vent Strip, 19mm x 2700mm.

**2.12 EDGE SEALER**

BGC Edge Sealer.

**Accessories - supplied by contractor**

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## 2.13 SEALANT / GAP FILLER

Bostik Safetech Safe Seal sealant or BRANZ appraised paintable sealant, in accordance with BGC Fibre Cement application requirements.

### Finishing

## 2.14 PAINT FINISHING SYSTEM

Refer to relevant painting section(s) for the painting systems required for the product as recommended by BGC Fibre Cement.

# 3 EXECUTION

## Conditions

### 3.1 STORAGE

Take delivery of products and stack flat, up off the ground and supported on equally spaced (maximum of 400mm) level gluts. Protect edges and corners from damage and covered to keep dry until fixed.

### 3.2 HANDLING

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

### 3.3 SUBSTRATE

Do not commence work until the substrate is of the standard required by BGC Fibre Cement 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.

## Application - generally

### 3.4 INSTALL WALL UNDERLAY

Install flexible wall underlays and rigid wall underlays in accordance with the appropriate separate section(s).

### 3.5 INSTALL CAVITY BATTENS

Install 18mm minimum thick cavity battens to [NZBC E2/AS1: 9.0 Wall claddings](#), where required. Fix vertical cavity battens to wall framing studs. The battens are fixed by the cladding fixings which will penetrate the wall framing studs under the wall underlay. Seal the top of the cavity and install cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). Do not use horizontal cavity battens. Use cavity spacers where fixing is required between cavity battens.

When installing Duragroove™ and Duragrid™ on a cavity, structurally fix the cavity battens a 300mm centres and offset them 12mm alternatively off the centre line.

### 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:

- Wall underlay appropriately incorporated with penetration and junction flashings.
- Materials lapped in a way that water tracks down to the exterior face of the wall underlay.
- Wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- Claddings neatly finished off to all sides of openings
- Installation of flashings (those required to be installed prior to installation of penetrating elements).

### 3.7 INSTALL FLASHINGS

Install flashings at all wall openings, penetrations, junctions, connections, window sills, heads and jambs to [NZBC E2/AS1](#).

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Installation

### 3.8 INSTALL BGC DURAGROOVE™ FACADE SYSTEM - CAVITY FIXED

Install BGC Duragroove™ panels, cavity fixed, strictly in accordance with BGC Fibre Cement requirements and product Brochure BGC Duragroove™ Facade System and Architectural Details.

#### Completion

### 3.9 REPLACE

Replace all damaged or marked elements.

### 3.10 LEAVE

Leave work to the standard required for following procedures.

### 3.11 REMOVE

Remove debris, unused materials and elements from the site.

## 4 SELECTIONS

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

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

#### Materials

### 4.1 CAVITY BATTENS - TIMBER

Timber species: Radiata pine

Treatment: H3.1

### 4.2 CAVITY BATTENS - CAVIBAT

Manufacturer: Cavity Batten Systems Ltd

Type/brand: Cavibat batten, 20mm x 50mm

#### Innova™ Duragroove™ Facade System

### 4.3 BGC DURAGROOVE™ PANELS

Location: ~

Manufacturer: BGC Fibre Cement (Australia) Pty Ltd

Supplier: BGC Fibre Cement (NZ)

Brand/type: Innova™ Duragroove™ Pane

Thickness: 9mm

Panel width: 1200mm

Panel length: TBC

Profile/finish: Duragroove™ Woodgrain (150mm between grooves, width of groove 4.5mm)

Construction: Cavity fix

Nail finish: Galvanized

Nails: Refer manufacture spec

Screw fixing: refer to BGC product Brochure

#### Finishing

### 4.4 PAINTING

Refer to painting section(s) for details.

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# 4231BW BGC WEATHERBOARD & PLANK CLADDING SYSTEMS

## 1 GENERAL

This section relates to the supply and fixing of **BGC Fibre Cement (NZ)** weatherboard and plank cladding systems, fixed directly or with cavity to timber or steel framing.  
It includes:

- Innova™ Nuline Plus™ Weatherboard Direct Fixed Cladding System
- Innova™ Nuline Plus™ Weatherboard Cavity Cladding System
- Innova™ Stratum™ Cladding System (horizontal and vertical installation)
- Innova™ Stratum™ Duo Cladding System (horizontal and vertical installation)
- Innova™ Stratum™ Trio Cladding System (horizontal and vertical installation)
- Innova™ Stratum™ Contour Cladding System (horizontal installation only)

### 1.1 RELATED WORK

Refer to ~ for ~.

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:

<a href="#">NZBC E2/AS1</a>	External moisture
<a href="#">NZBC E2/VM1</a>	Weathertightness
<a href="#">AS/NZS 1170.2:2011</a>	Structural design actions - Wind actions
<a href="#">AS/NZS 2908.2</a>	Cellulose-cement products - Flat sheet
<a href="#">NZS 3602</a>	Timber and wood-based products for use in building
<a href="#">NZS 3604</a>	Timber-framed buildings

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

BGC Fibre Cement documents relating to this part of the work:

- BGC Nuline Plus™ Cavity and Direct Fixed Brochure
- BGC Stratum™, Stratum™ Duo, Stratum™ Trio and Stratum™ Contour Cladding System Brochure
- BGC Nuline Plus™ Architectural Details
- BGC Stratum™, Stratum™ Duo, and Stratum™ Trio Architectural Detail
- BGC Stratum™ Contour Architectural Details
- [BRANZ Appraisal 640](#) - Nuline Plus™ Weatherboard Direct Fixed Cladding System
- [BRANZ Appraisal 641](#) - Nuline Plus™ Weatherboard Cavity Cladding
- [BRANZ Appraisal 847](#) - BGC Stratum™ and Stratum™ Duo Cavity Cladding System
- [BRANZ Appraisal 848](#) - BGC Stratum™ Contour Cavity Cladding System
- [BRANZ Appraisal 1060](#) - BGC Stratum Vertical Cavity Cladding System
- BRANZ Test Report ST1136 - Face Load Testing for Vertical BGC Stratum™ Duo Cladding
- BRANZ Test Report DA0338/CD01 - E2/VM1 Testing of a BGC Fibre Cement Panel
- BRANZ Test Report DA0338/CD02- E2/VM1 Testing of a BGC Fibre Cement Panel

Manufacturer/supplier contact details

Company: **BGC Fibre Cement (Australia) Pty Ltd**  
 Web: [bgcinnovadesign.co.nz](http://bgcinnovadesign.co.nz)  
 Email: [nz@bgc.com.au](mailto:nz@bgc.com.au)  
 Telephone: 09 273 1457, 0800 424 234

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#### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

25 years: For Innova™ Nuline Plus™ Weatherboard product (refer to BGC Fibre Cement product warranty)

25 years: For accessories supplied by BCG (refer to BGC Fibre Cement product warranty)

Commence the warranty from the date of purchase

Provide this warranty on the manufacturer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

#### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years: For BGC Stratum™, Stratum™ Duo, Stratum™ Trio and Stratum Contour Cladding products (refer to BGC Fibre Cement product warranty)

15 years: For accessories supplied by BCG (refer to BGC Fibre Cement product warranty)

Commence the warranty from the date of purchase

Provide this warranty on the manufacturer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

#### 1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/appliator warranty:

2 years For installation

Provide this warranty on the installer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

#### Requirements

#### 1.7 QUALIFICATIONS

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

#### 1.8 NO SUBSTITUTIONS

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

#### 1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Provide relevant BGC Fibre Cement maintenance requirements at completion of the work.

#### Performance - wind

#### 1.10 PERFORMANCE, WIND

The design wind pressures are to [NZS 3604](#), up to and including Extra High Wind Zone. BGC Fibre Cement Brochure details are suitable for these conditions.

#### Performance

#### 1.11 BGC STRATUM™ AND BGC STRATUM™ DUO CAVITY CONSTRUCTION

BGC Stratum™ and Stratum™ Duo Cavity Cladding System to [BRANZ Appraisal 847](#) and [BRANZ Appraisal 1060](#) with the following conditions:

- With a risk score of 0-20 to [NZBC E2/AS1 Table 2](#), and,
- situated in [NZS 3604](#) Wind Zones up to, and including 'Extra High', and
- situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 2.5kPa.

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- 1.12 BGC STRATUM™, DUO, TRIO CAVITY CONSTRUCTION - VERTICAL INSTALLATION  
 BGC Stratum™, Stratum™ Duo, and Stratum™ Trio Cavity Cladding Systems tested t
- BRANZ Test Report ST1136 - Face Load Testing for Vertical BGC Stratum Duo Cladding
  - BRANZ Test Report DA0338/CD01 - E2/VM1 Testing of a BGC Fibre Cement Panel
  - BRANZ Test Report DAO338/CD02 - E2/VM1 Testing of a BGC Fibre Cement Panel

**2 PRODUCTS**

**Materials**

2.1 WALL UNDERLAY

For flexible wall underlays and rigid wall underlays, refer to the appropriate separate section(s).

2.2 EXTERIOR CAVITY BATTENS

- Radiata pine battens, minimum 45mm wide x 18mm thick, H3.1 treated, height to match timber framing studs. To [NZS 3602](#), Table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance, or
- Cavibat Cavity Batten System, 20mm x 50mm.

2.3 EXTERIOR CAVITY BATTENS - STRATUM™ VERTICAL BATTENS

- Stratum™ Vertical Battens 20mm x 50mm.

2.4 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Perforated uPVC, with upstands.

2.5 BGC STRATUM™ PLANKS

BGC Stratum™ Plank, preprimed, 12mm thick, with a shiplap horizontal or vertical jointing system, manufactured from a medium density cellulose fibre cement formulation and cured by high pressure autoclaving.

Manufactured to [AS/NZS 2908.2](#), tested to [NZBC E2/VM1](#) for weathertightness and complying with the NZBC. Supplied with smooth face and available in 300mm wide plank x 4200mm long. Refer to SELECTIONS for options.

**Components - general**

2.6 FASTENER TYPE

Fasteners to minimum durability requirements of the NZBC. Refer to [NZS 3604](#), section 4, **Durability**, for requirements for fixing's 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 / Microclimates (incl. Geothermal)	Grade 316 Stainless
Zone B, Zone C	Hot-dipped galvanized
Bracing - All zones	Grade 316 Stainless

Check against SED (specific engineering design) requirements for microclimate conditions.

**Components - BGC Stratum™, Duo and Trio Cladding Systems, horizontal installation**

2.7 NAILS

Paslode C30 x 1.6mm stainless steel brad nails.

2.8 ADHESIVE FIXING

Bostik Seal "N" Flex FC, for fixing to cavity battens.

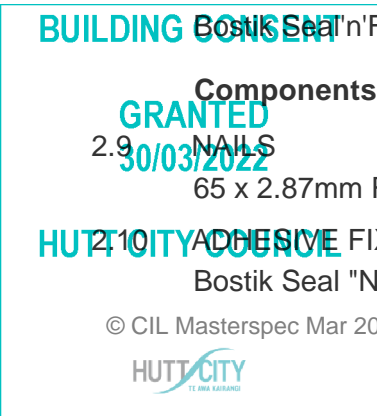
**Components - BGC Stratum™, Duo and Trio Cladding Systems, vertical installation**

2.9 NAILS

65 x 2.87mm Roundrive ring shank nail fixing (typical).

2.10 ADHESIVE FIXING

Bostik Seal "N" Flex FC or similar applied in a continuous bead to all plank laps.



**Accessories - BGC Stratum™, Duo and Trio Cladding Systems**

- 2.11 INTERNAL ALUMINIUM CORNER  
BGC Internal Aluminium Corner, 3000mm x 17mm.
- 2.12 EXTERNAL ALUMINIUM CORNER  
BGC External Aluminium Corner, 3000mm x 17mm.
- 2.13 JAMB FLASHING  
BGC 'J' Jamb Flashing - 2400mm
- 2.14 CAVITY VENT STRIP - STRATUM™  
BGC Cavity Vent Strip, 19mm x 2700mm.
- 2.15 PRECUT SCRIBER  
BGC Precut Scriber - 40mm x 18mm 5400mm.
- 2.16 HORIZONTAL NEGATIVE DETAIL JOINTER  
BGC Horizontal Negative Detail Jointer, 3000mm.
- 2.17 EDGE SEALER  
BGC Edge Sealer.

**Accessories - supplied by contractor**

- 2.18 SEALANT  
Bostik Safetech Safe Seal sealant or BRANZ appraised paintable sealant. Contact BGC Fibre Cement for application requirements.

**Finishing**

- 2.19 PAINT FINISHING SYSTEM  
Refer to relevant painting section(s) for the painting systems required for the product as recommended by BGC Fibre Cement.

**3 EXECUTION****Conditions**

- 3.1 STORAGE  
Take delivery of products and stack flat, up off the ground and supported on equally spaced (maximum of 300mm) level gluts. Protect edges and corners from damage and covered to keep dry until fixed.
- 3.2 HANDLING  
Avoid distortion and contact with potentially damaging surfaces. Carry weatherboards in vertical position. Do not drag weatherboards across each other or across other materials. Protect edges, corner and surface finish from damage.
- 3.3 SUBSTRATE  
Do not commence work until the substrate is of the standard required by BGC Fibre Cement 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.

**Application - generally**

- 3.4 INSTALL WALL UNDERLAY  
Install flexible wall underlays and rigid wall underlays in accordance with the appropriate separate section(s).

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### 3.5 INSTALL CAVITY BATTENS - HORIZONTAL INSTALLATION

Install 18mm minimum thick cavity battens to **NZBC E2/AS1: 9.0 Wall claddings**, where required. Fix vertical cavity battens to wall framing studs. The battens are fixed by the cladding fixings which will penetrate the wall framing studs under the wall underlay. Seal the top of the cavity and install cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). Do not use horizontal cavity battens. Use cavity spacers where fixing is required between cavity battens.

Alternatively, the Cavibat cavity batten system can be used. Install Cavibat system in accordance with Cavity Batten Systems Ltd requirements and specification.

### 3.6 INSTALL STRUCTURALLY FIXED CAVITY BATTENS - HORIZONTAL INSTALLATION

Fix battens to all studs over the wall underlay or rigid air barrier using 65mm x 2.87mm Paslode RounDrive ring-shank galvanized nails or 60mm x 2.8mm hot dip galvanized or stainless steel ring-shank flat head nails at fixing centres in accordance with BGC Nuline™ Plus Brochure.

### 3.7 INSTALL CAVITY BATTENS - VERTICAL INSTALLATION

Install Stratum™ vertical cavity battens to **NZBC E2/AS1: 9.0 Wall claddings**, where required. Fix horizontal cavity battens to wall framing studs. The battens are fixed by the cladding fixings which will penetrate the wall framing studs under the wall underlay. Seal the top of the cavity and install cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). Do not use vertical cavity battens. Use cavity spacers where fixing is required between cavity battens.

### 3.8 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:

- Wall underlay appropriately incorporated with penetration and junction flashings.
- Materials lapped in a way that water tracks down to the exterior face of the wall underlay.
- Wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- Claddings neatly finished off to all sides of openings
- Installation of flashings (those required to be installed prior to installation of penetrating elements).

### 3.9 INSTALL FLASHINGS

Install flashings at all wall openings, penetrations, junctions, connections, window sills, heads and jambs to **NZBC E2/AS1**.

#### Installation

### 3.10 INSTALL BGC STRATUM™ PLANKS - CAVITY FIXED

Install BGC Stratum™ Planks, strictly in accordance with BGC Fibre Cement requirements and product Brochure BGC Stratum™ and Architectural Details.

#### Installation - BGC Stratum™, Duo and Trio Cladding Systems, vertical installation

### 3.11 INSTALL BGC STRATUM™ PLANKS - CAVITY FIXED, VERTICAL INSTALLATION

Install BGC Stratum™ Planks, strictly in accordance with BGC Fibre Cement requirements and product Brochure BGC Stratum™ and Architectural Details. Ensure installation includes the following:

- Seal all cut edges of planks before fixing
- Provide continuous bead of Bostik Seal "N" Flex FC or similar to all plank laps (typical)

#### Completion

### 3.12 REPLACE

Replace all damaged or marked elements.

### 3.13 LEAVE

Leave work to the standard required for following procedures.

### 3.14 REMOVE

Remove debris, unused materials and elements from the site.

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## 4 SELECTIONS

For further details on selections go to [www.bgcinnovadesign.co.nz](http://www.bgcinnovadesign.co.nz).  
Substitutions are not permitted to the following, unless stated otherwise.

### 4.1 CAVITY BATTENS - TIMBER

Timber species: Radiata pine  
Treatment: H3.1

### 4.2 CAVITY BATTENS - CAVIBAT

Manufacturer: Cavity Batten Systems Ltd  
Type/brand: Cavibat batten, 20mm x 50mm

### **BGC Stratum™ Cladding Systems**

### 4.3 BGC STRATUM™ PLANKS

Location: ~  
Manufacturer: BGC Fibre Cement (Australia) Pty Ltd  
Supplier: BGC Fibre Cement (NZ)  
Brand/type: BGC Stratum™ Plank  
Thickness: 12mm  
Width: 300mm  
Installation: Bostik Seal'n'Flex FC for fixing to cavity battens  
Construction: Cavity fix  
Nail pattern: One concealed fixing and one face fixing  
Nail finish: Stainless steel  
Nails: Paslode C30 x 1.6mm stainless steel brad  
Adhesive fixing: Bostik Seal'n'Flex FC or similar for the lap on the Vertical install  
Screw fixing: For fixing to steel studs refer to BGC product Brochure

### **Finishing**

### 4.4 PAINTING

Refer to painting section(s) for details.

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# 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® Eclipsa™ Eaves Lining
- James Hardie® Hardie™ Flex Eaves Lining
- James Hardie® Hardie™ Groove Soffit Lining
- James Hardie® Villaboard™ Soffit Lining

### 1.1 RELATED WORK

Refer to ~ for ~

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 1170.2:2011	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:  
Eaves and Soffits Installation Manual by James Hardie®  
Fire and Acoustic Design Manual by James Hardie®

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® ~  
(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.

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**1.6 NO SUBSTITUTIONS**

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

**1.7 SAFE WORKING**

To James Hardie® requirements for safe working practices with James Hardie® products, particularly with regards to cutting and drilling.

**1.8 INFORMATION FOR OPERATION AND MAINTENANCE**

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

**Performance**

**1.9 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. Eaves and Soffits Installation Manual by James Hardie® requirements are suitable for these conditions.

**2 PRODUCTS**

**Materials**

**2.1 HARDIE™ FLEX EAVES LINING**

James Hardie® Hardie™ Flex Eaves Lining 4.5mm and 6mm thick cellulose fibre reinforced cement sheet. Manufactured to [AS/NZS 2908.2](#) from Portland cement, ground sand, cellulose fibre and water.

**Components**

**2.2 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
Sheltered	Nail	Stainless steel	B, C, D, E
Sheltered	Screw	Stainless steel	B, C, D, E

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

**Components - Hardie™ Flex Eaves Lining**

**2.3 SOFFIT JOINTERS AND MOULDS**

Extruded uPVC jointer, capping and scotia mould.

**2.4 HARDIE™ FLEX NAILS**

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

**2.5 FASTFIX FASTENER**

38 x 12mm, Nylon / White Fastfix Fasteners.

**2.6 ADHESIVE**

Refer to SELECTIONS.

**2.7 INSEAL TAPE**

Inseal® 3259, 1.5mm thick x 48mm wide black compressible medium density closed cell foam tape.

**2.8 POLYPROPYLENE TAPE**

Polypropylene tape, 30mm minimum width.

**Components - General**

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- 2.9 FLEXIBLE JOINT SEALANT  
Refer to SELECTIONS.

### 3 EXECUTION

#### Conditions

#### 3.1 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 HARDIE™ FLEX EAVES LINING

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

#### 3.10 BUTT JOINT

Paint sheet edges prior to installation.

#### 3.11 CONTROL JOINT

Install control joint to James Hardie® installation manual requirements.

#### 3.12 FASTENER - SIZE AND LAYOUT

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

#### 3.13 INSTALL FASTFIX FASTENERS

Drill a 6mm diameter hole through the sheet and framing, insert Fastfix Fastener.

#### 3.14 ADHESIVE

Application and use of adhesive to manufacturer's instructions and to suit the fastener layout requirements.

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## 3.15 SEALANTS

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

## 3.16 PAINTING

Refer to painting section/s for protective coating system.

**Completion**

## 3.17 COMPLETE

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

## 3.18 REPLACE

Replace all damaged or marked elements.

## 3.19 CLEAN

Clean surfaces.

## 3.20 LEAVE

Leave work to the standard required for following procedures.

## 3.21 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 HARDIEFLEX™ EAVES LINING

Location:	All soffit
Brand/type:	James Hardie® HardieFlex™ Eaves Lining
Thickness:	4.5mm
Width:	TBC
Fixing Method:	Hardieflex nail
Fixing type:	suitable for zone C
Joint detail:	~

**Painting**

## 4.2 PAINTING

Refer to painting section/s for details.

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# 4311S STEEL & TUBE PROFILED METAL ROOFING

## 1 GENERAL

This section relates to the supply and fixing of **Steel & Tube** profiled metal roofing, complete with accessories.

### 1.1 RELATED WORK

Refer to 7411S STEEL & TUBE 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:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
LBP	Licensed Building Practitioner

### 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 E2/AS1	External moisture
NZBC G12/AS1	Water supplies
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 2728	Prefinished/pre painted sheet metal products for interior/exterior building applications - Performance requirements
AS 3566	Self-drilling screws for the building and construction industries
NZS 3604	Timber-framed buildings
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

**Steel & Tube** literature, including:  
Roofing Solutions Product Guide  
Product Technical Statements

NZ Steel's literature, including:  
NZ Steel: Installers Guide

Copies of the above literature are available from Steel & Tube

Web: [www.steelandtube.co.nz](http://www.steelandtube.co.nz)  
Email: [roofing@steelandtube.co.nz](mailto:roofing@steelandtube.co.nz)  
Telephone: Freephone 0800 333 247

### Warranties

### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty in accordance with published supplier's guidance on materials, environments and building types:

15 years minimum:	For perforation
15 years minimum:	For coatings

- Commence the warranty from the date of installation.

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**1.6 WARRANTY - INSTALLER/APPLICATOR**

Provide an installer/applicator warranty:

Warrant this work under normal environmental and use conditions against weatherproofing failure.

~ years: For workmanship

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

Include a copy of the maintenance requirements with the warranty.

Refer to the general section 1237 WARRANTIES - INSTALLER/APPLICATOR for additional requirements.

**Requirements****1.7 NO SUBSTITUTIONS**

Substitutions are not permitted to any specified Steel & Tube products, or associated components and products.

**1.8 QUALIFICATIONS**

Roof Installers shall be experienced and competent, familiar with the products being used, and preferably a member of RANZ with appropriate qualifications such as the National Certificate in Metal Roofing and Cladding. For restricted building work, installers to be an LBP or supervised by an LBP.

**Performance - Wind (design by contractor)****1.9 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR**

Design the installation to the manufacturer requirements and as appropriate for the project wind design stated in the general section 1220 PROJECT.

**1.10 FIXINGS, WIND**

Design and use the fixings/fixing pattern appropriate for the wind design parameters and [NZMRM CoP](#). Refer to Steel & Tube Product Technical Statements for the selected profile. Allow for specific loadings at corners and the periphery of the roof, where localised pressure factors apply. Fixing pattern to also take into account fixing method and purlin spacing.

**Performance - General****1.11 PERFORMANCE**

Install roofing material and associated flashings and accessories to form a weather tight and durable system.

**1.12 DRINKING WATER**

Roofing for collecting potable water to [NZBC G12/AS1](#).

**1.13 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. Ensure that all necessary members are positioned so that flashings can be fastened at both edges through the roof profile or cladding to the primary structure.

**2 PRODUCTS****Materials****2.1 PRE-FINISHED ALUMINIUM/ZINC ALLOY COATED STEEL**

Grade G550 steel sheet coated to [AS/NZS 2728](#)

Coating class: AZ 150 or AZ 200

**Fixings****BUILDING CONSENT****GRANTED  
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## 2.2 FASTENERS GENERALLY

Minimum Category 4 and durability not less than the roofing material being fixed. Screw fasteners to be head stamped identifying the manufacturer and class.

## 2.3 FIXING SCREWS

To AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by the roofing manufacturer and with a minimum Category 4 durability and not less than the material being fixed. Screws into timber to penetrate by minimum 30mm and 3 threads engagement for screws into steel.

## 2.4 RIVETS

Sealed aluminium, minimum diameter 4mm, for use with zinc coated, zinc/aluminium coated or aluminium roofing.

### Components

## 2.5 FLASHINGS GENERALLY

To E2/AS1, 4.0, **Flashings**.

Grade 0.55mm BMT for galvanized, aluminium/zinc-coated and pre-painted steel, and 0.90mm BMT for aluminium (or 0.7mm BMT for small aluminium flashings) to the same standards as the profiled sheets, notched where across profile or provided with a soft edge.

## 2.6 FLASHINGS TO VERGE, RIDGE AND HIP

To E2/AS1, 4.0, **Flashings**.

Supplied by the roofing manufacturer to match or to suit the roofing.

## 2.7 PIPE FLASHINGS

EPDM proprietary pipe flashing laid on 45° bias to roofing, with over-flashing or soaker flashing if required.

Pipe flashing should be positioned so that it dams a roofing pan no more than 50%, if this cannot be avoided then use either an over-flashing back to the ridge, or a soaker flashing to which the pipe flashing is fixed.

### Accessories

## 2.8 WIRE NETTING AND SAFETY MESH

Refer to 4161 UNDERLAYS, FOIL AND DPC.

## 2.9 UNDERLAY AND REFLECTIVE FOIL

Refer to 4161 UNDERLAYS, FOIL AND DPC.

## 2.10 SEALANT

Neutral curing silicone or MS polymer sealant.

## 2.11 VERMIN PROOFING

PVC Eaves Comb, pre-notched perforated metal, or compressible, profiled, closed cell foam strips (preferably perforated) to fit the sheet profile.

## 2.12 LAP SEALING TAPE

Closed cell self-adhesive lap sealing tape.

# 3 EXECUTION

### Conditions

## 3.1 PRE-INSTALLATION REQUIREMENTS

Inspect the roof framing and supporting structure to ensure that it is complete and ready for roofing and free from any misalignments or protrusions that could adversely affect the roofing.

For transverse flashings the framing moisture content to be a maximum of 18%. Transverse flashings can be temporarily tacked in place and final fixing done when moisture content is acceptable.

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### 3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

Stack roofing and accessories on clean, dry and level areas of the site and protect from mechanical damage, wind damage and contamination. Loosely cover dry sheeting. If sheeting becomes wet, fillet or cross stack to allow air to circulate and dry the sheeting. Remove strippable protective film, if applied, prior to prolonged exposure to sunlight.

Avoid distortion and contact with damaging substances, including but not limited to cement and sunscreen. Do not drag sheets across each other and other materials. Protect edges and surface finishes from damage. Use soft, flat soled shoes when fixing and for all other work on the roof.

### 3.3 SEPARATION

Place isolators between dissimilar metals and separate roofing from treated timber, cement-based or other incompatible materials, refer to [NZBC E2/AS1 Tables 21 and 22](#). Do not use unpainted lead sheet or copper in contact with or allow water run-off onto galvanized or Zincolume materials.

#### Application

### 3.4 SET-OUT

Carefully set out with consideration of the position of side laps to take account of the line of sight.

Ensure all sheets are square and over-sailing the gutter true to line. Check during fixing to eliminate creep or spread and string lines along purlin centres to keep fastenings in line.

### 3.5 END LAPS

End laps are not permitted, except where specifically detailed.

### 3.6 FIXING GENERALLY

Install and fix in accordance with [NZMRM CoP](#) and [NZBC E2/AS1](#) requirements where applicable, and to Steel & Tube's recommendations. Paint colour-matched fixings and accessories before installation.

### 3.7 MARKING AND CUTTING

Cut using shearing tools only. Do not use black lead pencils for marking aluminium/zinc coated products. Remove all cutting and drilling debris from the roof as work proceeds.

### 3.8 FIX SHEETS

Fix sheets in place using the fastening system required by Steel & Tube for specified profiles, making due allowance for dynamic local wind pressures on the building and thermal movement in the sheet.

### 3.9 STOP ENDS AND DOWNTURNS

Form stop-ends at the upper end of sheets.

The lower ends of trapezoidal and trough profile roofing shall be turned down at gutters, where the roof pitch is less than 10°. Form using purpose made tools.

### 3.10 FLASHINGS

Flash roof to parapets, walls and penetrations in accordance with details. Where no detail is provided flash to [NZMRM CoP](#) or [NZBC E2/AS1](#) recommendations.

### 3.11 USE OF SEALANTS

Apply sealant in two narrow beads transversely across flashing intersections in accordance with the [NZMRM CoP](#), close to the two edges. Avoid exposing sealant on outside surfaces.

### 3.12 FLASHING PENETRATIONS

Flash all penetrations through the roof. Fit pipe flashings with a proprietary collar flashing to manufacturer's requirements where suitable, with other penetrations flashed as detailed and to provide a weathertight installation. Ensure that flashings are set to avoid any ponding of water.

### 3.13 INSTALL RIDGING

Install ridging by fastening to the purlins through the leading edge of the roofing. Do not fasten transverse flashings to timber with moisture content >18%.

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**3.14 REPLACE**

Replace damaged or marked elements. Do not attempt to repair coatings by applying colour match paint to pre-finished surfaces.

**3.15 LEAVE**

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

**3.16 REMOVE**

Remove trade rubbish and unused materials from the roof and surrounds daily during the work. Sweep down at the end of each day, and clean out spouting, gutters and rainwater pipes on completion of the roof. Remove strippable protective film, if applied, prior to prolonged exposure to sunlight. Remove debris, unused materials and elements from the site.

**4 SELECTIONS**

For further details on selections go to [www.steelandtube.co.nz](http://www.steelandtube.co.nz)  
Substitutions are not permitted to the following, unless stated otherwise.

**Coating system****4.1 COATING SYSTEM - EXPOSURE ZONE B-C (CAT 1-3)**

Project Exposure Zone B-C to [NZS 3604](#), C 1-3 to ISO 9223.

Profile/location: Trimline  
Base material: Zinalume® on steel  
Coating system: Colorsteel Endura  
Coating colour: TBC

**Roofing****4.2 STEEL & TUBE - TRIMLINE, LOW RIB TRAPEZOIDAL ROOFING**

BMT/material: 0.55mm  
Framing material: timber  
Fixing: refer manufacturer literature  
Fixing pattern: Refer to Steel & Tube Trimline literature for details

**Accessories****4.3 FLASHINGS - GENERALLY**

Profile: refer details  
BMT/material: 0.55mm  
Coating system: To match roofing  
Coating colour: To match roofing

**4.4 CLOSURE STRIP**

Brand: Ecofoam or pre-notched perforated metal closers

**4.5 DEKTITE PIPE FLASHING**

Brand/Type: Dektite

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# 4422AD ARDEX UNDERTILE WATERPROOFING MEMBRANE

## 1 GENERAL

This section relates to **ARDEX** WPM 1000 weldable undertile waterproofing membrane, bonded to:

- structural plywood
- Strandfloor H3.1®
- concrete
- compressed fibre cement sheet

to produce a fully adhered synthetic rubber external membrane system, overlaid with tiles or pavers. Incorporating ARDEX UD 150 undertile drainage system where required. It includes associated accessories and components.

### 1.1 RELATED WORK

Refer to ~ for ~.

Refer to appropriate tiling section for the selection and installation of tiles.

### 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 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
AS/NZS 2269.0	Plywood - Structural - Specifications
AS/NZS 2908.2	Cellulose-cement products - Flat sheets
AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
BRANZ	Good practice guide: Membrane roofing
BRANZ	Good practice guide: Tiling
BRANZ BU 583	Waterproof decks

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:  
ARDEX WPM 1000 Technical Data Sheet  
ARDEX Undertile Accessories

Manufacturer/supplier contact details

Company: **ARDEX New Zealand Ltd**  
Web: [www.ardex.co.nz](http://www.ardex.co.nz)  
Email: [ardexspec@ardexnz.com](mailto:ardexspec@ardexnz.com)  
Telephone: 0800 2 ARDEX (27339)  
09-636 0005 Auckland  
04-568 5949 Wellington  
03-373 6900 Christchurch

### Warranties

### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:  
20 years For ARDEX WPM 1000

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

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Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:  
5 years For installation of ARDEX WPM 1000

- ARDEX approved installer to provide this warranty on the ARDEX 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**

1.6 NO SUBSTITUTIONS

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

1.7 QUALIFICATIONS

Waterproofing to be carried out by an ARDEX approved installer with experience in installation of adhesive fixed membranes. For a list of approved applicators visit [www.ardex.co.nz](http://www.ardex.co.nz) or contact nearest ARDEX branch. Application to be strictly in accordance with current ARDEX technical literature.

NOTE: An LBP is required to carry out RBW. An LBP must do or supervise this work. They must work within the scope of their licence class.

1.8 SYSTEMS ARDEX PROJECT

Contact ARDEX with any relevant key dates and for a list of approved applicators. The contractor is to contact ARDEX prior to starting the contract.

Email: [ardexspec@ardexnz.com](mailto:ardexspec@ardexnz.com)

Telephone: 0800 2 ARDEX (27339)

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicators approval certificate from the manufacturer / importer / distributor
- Manufacturer's warranty
- Installer's / applicator's warranty
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents.

**Quality control and assurance**

1.10 QUALITY ASSURANCE

Maintain quality necessary to assure that work is performed in accordance with this specification and the qualifying requirements of ARDEX.

1.11 INSPECTIONS

~

**2 PRODUCTS**

**Materials**

2.1 UNDERTILE MEMBRANE

ARDEX WPM 1000 weldable undertile waterproofing membrane, a 1.2mm thick single ply rubber sheet with polypropylene filaments. Provides a fully bonded system for waterproofing external tiled or paved areas. Laps and corners heat formed and/or welded. Tiling adhered directly on the membrane with approved ARDEX tiling adhesives, or adhered to loose laid undertile drainage mat.

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**2.2 ADHESIVES**

Adhesives for use with ARDEX WPM 1000 for fixing to substrate:

- ARDEX CA 750      Water-based contact adhesive. Recommended to use ARDEX SpeedTec Catalyst
- ARDEX WA 98      Solvent-based contact adhesive

Adhesive to be recommended by ARDEX and suitable for the particular application and the relevant temperature and conditions.

**Accessories**

**2.3 WELDING KIT**

Leister Triac S hand held hot air gun kit or motorised Leister welding equipment such as Varimat or Uniroof, including a flat angled nozzle for seam welding and a rubber roller to ensure seams and welds are securely welded together.

**2.4 ARDEX STB TAPE**

ARDEX STB tape is a self-adhesive weldable uncured butyl tape with a fleece layer. It is used as a waterproof band for sealing transitions and connections from primary waterproofing layer. WPM 1000 welded on top.

**2.5 RELEASE TAPE**

ARDEX release tape is a 25mm wide pressure sensitive tape between two silicone release backings. For all joints in timber based sheet substrates, and junctions of timber based sheet substrates with other materials.

**2.6 PREFORMED CORNERS**

Internal and external corner detailing for ARDEX WPM 1000 undertile membrane system. 95mm x 95mm x 60mm.

**2.7 UNDERTILE PROFILE**

Right angle undertile profile used for edge detailing with ARDEX WPM 1000 undertile membrane system. 150mm x 70mm, 9m long (length made to order).

**3 EXECUTION**

**Conditions - general**

**3.1 GENERALLY**

Installation is limited to ARDEX approved applicators only. Refer to the ARDEX WPM 1000 Waterproofing Membrane Technical Datasheet for the correct procedures. Work and materials to current ARDEX requirements and installation instructions, BRANZ BU 583 Waterproof decks and BRANZ Good practice guide - Membrane roofing.

**3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS**

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.  
 Store all materials in a dry place, up off concrete floors, at temperatures between 10° C and 32° C. Do not store in direct sunlight. The products have a shelf life of two years from date of manufacture.  
 Materials must not be removed from the packaging until ready to use.  
 Reject and replace goods that are damaged or will not provide the required finish.

**3.3 ROUTINE MATTERS**

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.  
 Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

**3.4 WEATHER**

Lay ARDEX WPM 1000 membrane in fair weather, with ambient air temperature no less than 10°C. Installation must not be undertaken where the substrate surface temperature is below 5°C or above 35°C.

**Installation - preparation**

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### 3.5 CHECK SUBSTRATE

Ensure that the substrate construction is well braced against movement and deflection and structurally sound. Ensure that the substrate fall complies, including correct fall to rainwater/water outlets to avoid ponding. Ensure that sheet materials are screw fixed to specifications, with screw heads flush and sheets spaced to provide for thermal movement or shock. Do not use the product in areas subject to hydrostatic or vapour pressure or rising damp. Complete any remedial work identified before commencing any work.

### 3.6 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Carry out such additional preparatory work as required to bring the substrate to suitable condition. Membrane laying not to start until defects have been corrected.

### 3.7 ACCEPTANCE OF SUBSTRATE

To enable the ARDEX WPM 1000 system to work as intended and to the required standard:

- Confirm that the substrate, including sumps, rebated outlets and projections, is complete and properly constructed.
- Ensure the substrate is dry, clean and stable, 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.
- All voids, cracks, holes joints and excessively rough areas must be filled to achieve an even and uniform surface. Substrate abutments, such as at wall/floor and wall/wall junctions, greater than 3mm must be installed as detailed and as set out in Technical literature.

Ensure whichever is the greater falls are provided:

- as shown in the drawings
- to the membrane manufacturer requirements
- minimum to [NZBC E2/AS1, 8.5.1](#), - 1:30 (2°) for roofs, 1:40 (1.5°) for decks over plywood substrates
- 1:60 minimum for concrete decks
- away from the face of the building that they are accessed from

All floors must have adequate falls either built into the substrate or achieved with a bonded sloped sand/cement screed (minimum 15mm thick, equivalent wood float finish) prior to the installation of ARDEX WPM 1000 Undertile Membrane.

NOTE: Acceptance of the substrate by the membrane installer prior to application of the membrane is critical to the installation process.

#### Installation - substrate

### 3.8 PLYWOOD SUBSTRATE

Ensure plywood is:

- a minimum of 17mm thick and complying with [AS/NZS 2269.0](#)
- minimum CD structural grade with the sanded C side upwards
- hazard class H3.2 with waterborne treatment to [AS/NZS 1604.1](#), and kiln dried after treatment
- supported with dwangs or framing with a maximum span of 400mm in each direction
- laid with staggered joints (brick bond) with face grain at right angles to main supports and all edges of the sheets fully supported unless a structurally tested tongue-in-groove edge provides equivalent support.
- fixed with 10 gauge x 50mm stainless steel countersunk head screws, with no gap between sheets
- fixed at 150mm centres on edges and 200mm in the body of the sheets.
- all joints and junctions with other materials to have 25mm ARDEX Release tape applied before application of membrane
- **Note: LOSP (Light organic solvent preservative) treated plywood not to be used.**

Plywood must be dry and the timber substructure to have a maximum moisture content of 20% before the membrane is adhered. Consult with plywood manufacturer for correct testing technique.

### 3.9 BOND BREAKER/TAPE

Install bond breaker/tape to [AS/NZS 4858](#) and AS 3740. Applied over substrate joints to bridge and accommodate joint movement. Movement and control joints in the substrate must be transferred to tile finish.

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3.9 BOND BREAKER/TAPE

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### 3.10 CONCRETE SUBSTRATE - NEW

Ensure wood float (U2) concrete substrate has been allowed to cure for at least 28 days and all curing compounds removed before commencing installation. Prepare surface, including vacuum cleaning and patching as necessary to leave smooth, clean, dry and free of debris.

Moisture content: 75% maximum Relative Humidity

### 3.11 MOISTURE ABSORBENT SUBSTRATE

Lay ARDEX WPM 1000 to cover the moisture absorbent dry-laid substrate on the same day the substrate is laid, or ensure that the substrate is kept covered and dry until ARDEX WPM 1000 is laid. Seal exposed ARDEX WPM 1000 edges at the end of each work period.

#### Installation - undertile waterproofing membrane

### 3.12 ADHESIVE

Surfaces to be dry and clean before application of the adhesive. Allow ARDEX approved adhesive time to activate prior to applying the membrane. On activation i.e. the point at which the adhesive will afford the highest bond strength, the surface of the adhesive starts to change. Refer to relevant ARDEX adhesive datasheets for installation instructions.

Carefully roll the ARDEX WPM 1000 into the coated surface and compress with a pressure roller. Fold back other half of the roll of ARDEX WPM 1000 and repeat the procedure.

At upstands secure the ARDEX WPM 1000 membrane with mechanical fixings or bar in accordance with ARDEX details.

### 3.13 ARDEX WPM 1000 APPLICATION

Roll out ARDEX WPM 1000 Undertile Membrane and cut to the measured length. Smooth the membrane on contact to minimise air entrapment beneath the membrane.

Horizontal sheets of ARDEX WPM 1000 Undertile Membrane must extend up behind wall or balustrade claddings at least 150mm. Wall sheets to overlap the 150mm upstand. Ensure the membrane is laid tightly into all corners. At open deck edges, the membrane to turn down at least 70mm, with turn-down packed out from the cladding to form a drip edge. Weld seams and laps with the Leister Triac S hot air gun. Roll with a rubber roller to ensure seams and lapped are secure. Use robotic Leister machine for large areas to speed application process.

### 3.14 SEAM CHECK

Check seams once they have completely cooled using an approx 5mm wide probe with rounded edges.

A seam check is not a leak test but will help to identify weak welds.

### 3.15 PENETRATIONS

Form mould, weld and flash all upstands, downturns and penetrations to ARDEX details including raised, anti-ponding water deflectors on the upside of penetrations.

### 3.16 MOVEMENT JOINTS

Form and weatherproof movement joints as designed to ARDEX details.

### 3.17 JUNCTIONS

Check that adjoining walls and parapets are prepared ready for the installation of ARDEX WPM 1000 waterproofing membrane. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof deck.

Required work includes the following:

- Roofing installation neatly finished to all sides of openings and to all wall and parapet junctions.
- Installation of flashing (those required to be installed prior to installation of penetrating elements and/or wall linings).

#### Installation - tiles

### 3.18 INSTALL TILES - GENERAL

Installed membrane must be protected at all times to prevent mechanical damage.

Tiler to lay tiles in accordance with AS 3958.1 and BRANZ Good practice guide: Tiling. Compatibility of tile adhesive to be confirmed with ARDEX.

Movement and control joints in the substrate must be transferred to tile finish.

### 3.19 INSTALL TILES - OVER MEMBRANE

Tiles to be direct bonded to the ARDEX WPM 1000 Undertile Membrane using ARDEX approved tile adhesive, either ARDEX X 56 for timber substrates or ARDEX X 77 or X 18 for concrete substrates.

#### Completion

### 3.20 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

### 3.21 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. Provide the following temporary protection of the finished work:

- do not allow construction foot traffic on the ARDEX WPM 1000 installation after laying to avoid dirt and damage to the surface
- temporary covers until finishing/tiling completed

#### Commissioning

### 3.22 FINAL INSPECTION AND TESTING

Arrange for an inspection of the completed work. Where practical, flood test all horizontal applications with a minimum 50mm depth of water for 24 hours. Make good any lack of water tightness when the surface is completely dry. Ensure that an overflow is incorporated during the flood testing and that there are no load limitations that might prevent testing.

### 3.23 HANDOVER

Protect and maintain membrane until completion of the contract works.

## 4 SELECTIONS

For further details on selections go to [www.ardex.co.nz](http://www.ardex.co.nz). Substitutions are not permitted to the following.

#### Materials

### 4.1 ARDEX UNDERTILE MEMBRANE

Location:	Wet areas
Brand /Type:	ARDEX WPM 1000
Substrate:	concrete and H3.1 plywood
Adhesive:	ARDEX ~
Colour:	Black / Grey
Gauge:	1.2 mm
Size:	1.4m wide x 20m long
Tiles:	Refer to appropriate section for tile type and size
Tile adhesive - direct stick:	ARDEX X 56 Timber / ARDEX X 77 +E90 or ARDEX X 18 +E90 Concrete

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## 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

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## 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 1170.2:2011	Structural design actions - Wind actions
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 ( <a href="#">WGANZ</a> ) documents:	
<a href="#">Window Installation Guide</a>	Guide to Window Installation as described in E2/AS1 Amendment 7
<a href="#">PQAS</a>	Powder Coating Quality Assurance System
<a href="#">SFA 3503-03</a>	Anodic Oxide coatings on wrought aluminium for external architectural application (2005)

US Federal Specification:

<a href="#">TT-S-001543A</a>	Sealing compound, silicone rubber base (for caulking, sealing and glazing in buildings and other structures)
<a href="#">TT-S-00230C</a>	Sealing compound, elastomeric type, single component (for caulking, sealing and glazing in buildings and other structures)

## 1.4 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:

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Copies of the above literature are available from ~

Web:	~
Email:	~
Telephone:	~
Facsimile:	~

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Warranties  
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## 1.5 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.

## 1.6 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

## 1.7 QUALIFICATIONS

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

## 1.8 COMPLIANCE

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

## 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.

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PRODUCTS

Materials

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## 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 ALUMINIUM SHEET AND STRIP  
Complying with [AS/NZS 1734](#) of suitable thickness. Rolled for anodising or powder coating.  
Alloy designation: 5251 - H16 or 5005 - H16
- 2.5 STAINLESS STEEL SHEET AND STRIP  
Type: 316 austenitic steel  
Finish grade: 2B (satin lustre)
- 2.6 GLASS  
Refer to the glazing section for glass types and installation.
- 2.7 REVEALS - TIMBER PAINTED  
Timber reveals for paint finish with all sides primed grooved for wall linings or flush finished for architraves.
- 2.8 REVEALS - ALUMINIUM  
Aluminium reveals fitted to frame via thermal break.
- 2.9 REVEALS - PVC  
Prefinished PVC reveals grooved for wall linings.
- 2.10 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

- 2.11 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.
- 2.12 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

- 2.13 GLAZING GASKETS  
Thermoplastic rubber. Do not stretch glazing gaskets during installation. Measure and cut gaskets 5-10% over length before installation.
- 2.14 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.

- 2.15 SAFETY STAYS  
Stainless steel non releasable restrictors to limit window opening to [NZBC F4/AS1](#), Section 2.0, **Opening windows**.

### Sealants

- 2.16 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.



## 2.17 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.

## 2.18 FOAM TAPE

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

**Finishes**

## 2.19 POWDER COATED ALUMINIUM - HIGH-DURABILITY POLYESTER

High-performance polyester powder coating in accordance with [WGANZ PQAS](#), and AAMA 2604.

**3 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

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## 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 / PVC 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.

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### 3.21 INSTALL OVERHEAD GLAZING SYSTEM

Check that the trimmed openings are formed and constructed to suit the required units. Do not proceed until roof and structural openings are properly formed. Install and fix the overhead glazing system strictly in accordance with the roof window manufacturer's requirements and drawings. Install flashings and overflashings as detailed and as required to make the installation completely weatherproof.

### 3.22 INSTALL OVERHEAD GLAZING SYSTEM HARDWARE

Install selected accessories and hardware. Install and complete all operating systems.

#### **Installation - overhead glazing system**

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

### 3.23 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.

### 3.24 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.

### 3.25 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.

### 3.26 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**

### 3.27 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.

### 3.28 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**

### 3.29 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.

### 3.30 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.

### 3.31 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.

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- 3.32 REMOVE  
At the appropriate stage of the project, remove safety indicators and protective coverings and wipe down all joinery thoroughly.
- 3.33 REPLACE  
Replace damaged, cracked or marked elements.
- 3.34 MANIFESTATIONS  
To [NZS 4223.3](#), 2.2 Manifestation (making glass visible).

**4 SELECTIONS**

**Performance**

- 4.1 THERMAL PERFORMANCE  
R-value: ~ (as determined from [NZBC H1/VM1](#) or H1/AS1)
- 4.2 AIR INFILTRATION  
For [NZS 4211](#), table 3 **Air infiltration**.  
Non-air conditioned ~  
zones:  
Air conditioned zones: ~
- 4.3 SEISMIC SUB-FRAMES  
Windows No.: ~  
Movement: ~mm

**Performance - Wind (design by contractor)**

- 4.4 WIND - NON SPECIFIC DESIGN  
Building wind zone ~ (refer to [NZS 3604](#), table 5.4)

**Window and door system**

- 4.5 ALUMINIUM WINDOWS  
Manufacturer: ~  
Type / location: ~
- 4.6 ALUMINIUM DOORS  
Manufacturer: ~  
Type / location: ~
- 4.7 VENTILATORS  
Brand / type: ~
- 4.8 TIMBER REVEALS  
Timber species: ~  
Grade / Treatment: ~ / H3.1  
Thickness: ~mm  
Reveals: ~  
Finish: ~
- 4.9 ALUMINIUM REVEALS  
Type: ~  
Finish: ~
- 4.10 PVC REVEALS  
Brand / Type: ~  
Thickness: 19mm  
Reveals: Grooved for wall linings

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4.11 FLASHINGS

Material/type: ~  
 Pattern: Formed to suit details provided

4.12 STRUCTURAL SEALANT

Brand/type: ~  
 Movement: ~mm  
 Colour: ~

4.13 HARDWARE

	Brand/style	Material/finish
Sash fasteners:	~	
Door furniture:	~	

4.14 WEATHERING SEALANT

Brand/type: ~ 1-part polyurethane moisture curing, elastic joint sealant  
 Colour: ~

4.15 MANIFESTATIONS

Location: ~  
 Type/details: ~

**Finishes - Powder Coating**

4.16 POWDER COATED ALUMINIUM - HIGH-DURABILITY POLYESTER

Type: High-Performance Polyester organic powder coating ~  
 System integrity: ~  
 Thickness: Average of 90 microns with a minimum of 50 microns  
 Colour: ~  
 Finish: ~

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# 4554VS VELUX OPENING & FIXED SKYLIGHTS

## 1 GENERAL

This section relates to the manufacture, supply, and installation of VELUX opening and fixed skylights and roof windows:

It includes;

- operating systems
- accessories
- proprietary flashings

### 1.1 RELATED WORK

Refer to ~ for ~

#### 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 E2/AS1</a>	External moisture
<a href="#">AS/NZS 2208</a>	Safety glazing materials in buildings
<a href="#">NZS 3604</a>	Timber-framed buildings
<a href="#">NZS 4223.4</a>	Code of practice for glazing in buildings - Wind, dead, snow and live actions

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Current Sales Brochure and product datasheets

Installation instructions for GGU Roof Window and Flashing

Installation instructions for VS/VSE/VSS Skylight

Installation instructions for FS Skylight

Installation instructions for VCM curb mounted Skylight

Installation instructions for VCS curb mounted Skylight

Installation instructions for FCM curb mounted Skylight

Installation instructions for EDW flashing

Installation instructions for EDL flashing

Installation instructions for EKW flashing

Custom flashing guide (over 15° pitch)

[BRANZ Appraisal 968 - Velux Skylights](#)

[BRANZ Appraisal 969 - Velux Roof Windows](#)

[BRANZ CodeMark Certificate CM 1008 - Velux Skylights and flashings](#) Revision Date: 15 May 2023

[BRANZ CodeMark Certificate CM 1009 - Velux Roof Windows and flashings](#) Revision Date: 15 May 2023

Manufacturer/supplier contact details

Company: **VELUX New Zealand Limited**

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

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

Telephone: 0800 650 445

#### Warranties

### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years:

For VELUX Skylights, Roof Windows, insulated glazing units and flashings

1 year:

For VELUX accessories (motorised units, controls, rods, blinds, insect screens)

- 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.

## 1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

~ years: For installation of VELUX Skylights

- 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

## 1.6 QUALIFICATIONS

Installers to be 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 VELUX systems, components and associated products listed in this section.

### Performance

## 1.8 PERFORMANCE, WIND, DEAD, SNOW, AND LIVE ACTIONS

The design wind pressures and snow loads to [NZS 3604](#). Live loads and glazing design, for glass or equivalent plastics, to [NZS 4223.4](#).

## 2 PRODUCTS

### Skylights

## 2.1 SKYLIGHTS

VELUX Skylights; to BRANZ CodeMark CM 1008, either top hinged with INTEGRA motorised control (electric opening VSE or solar opening VSS), or manual opening VS, or fixed FS skylight. For roof pitches between 15° to 90°.

Manufactured from high quality treated timber, prefinished frame and sash in white, semi-gloss paint. External cappings manufactured from aluminium profile with PVDF coating in grey finish. Refer to SELECTIONS for type, finish and accessories.

### Components

## 2.2 FIXINGS

VELUX proprietary fixings and brackets compatible with the skylight/roof window.

## 2.3 GLAZING - ALL SKYLIGHTS

VELUX proprietary insulated double-glazing unit, factory fitted. Unit comprises an inner pane of laminated glass, and outer pane of toughened safety glass with NEAT™ photo-catalytic coating to exterior face. Inside face of outer pane coated with Low-E<sup>3</sup> coating. Cavity filled with Argon gas.

## 2.4 GLAZING - ROOF WINDOWS

VELUX proprietary insulated double-glazing unit, factory fitted. Unit comprises an inner pane of laminated glass, and outer pane of toughened safety glass with NEAT™ photo-catalytic coating to exterior face. Inside face of outer pane coated with Low-E<sup>3</sup> coating. Cavity filled with Argon gas.

## 2.5 HARDWARE

Fasteners, stays, locks, vents and other hardware as supplied with the unit.

## 2.6 FLASHINGS FOR MODELS FS/VS/VSE/VSS/GGU

For roof pitches between 15° to 90°.

VELUX proprietary flashing solutions to VELUX instructions.

For installations in trapezoidal profile metal roofing, contact VELUX for additional instructions.

Custom flashings can be used as an alternative to VELUX proprietary flashings (in accordance with [NZBC E2/AS1](#)). Refer to section 4821 FLASHINGS for details. Contact VELUX for correct trim frame requirements.

Refer to SELECTIONS for type.

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## Accessories

### 2.7 INSTALLATION ACCESSORIES

VELUX installation accessories as supplied with the unit, or ordered as required.

### 2.8 INTERNAL BLINDS AND SCREENS

Optional solar honeycomb blackout blind/s to suit the type of Skylight. Models available in manual or solar power operation.

Insect screens are pre-fitted to all models (except FS, FCM and GGU), and can be removed for cleaning.

Refer to SELECTIONS for type, operation and control hardware.

## Finishes

### 2.9 FINISH

VELUX proprietary finishes.

## 3 EXECUTION

### Conditions

#### 3.1 DELIVERY, STORAGE AND HANDLING

Avoid distortion of elements during transit, handling and storage. Deliver in original containers, dry, undamaged with seals and labels intact. Prevent pre-finished surfaces from rubbing together.

Prevent contact with mud, plaster and cement. Do not deliver to site any elements which cannot be immediately unloaded into suitable conditions of storage.

#### 3.2 PRE-INSTALLATION REQUIREMENTS

Site measure during roof framing stage to ensure the VELUX proprietary Skylight / Roof Window and flashings can be installed correctly and in accordance with the installation instructions. Where a unit is installed adjacent to another unit confirm the set out distance between units in accordance with the installation instructions.

Refer to VELUX at [www.velux.co.nz](http://www.velux.co.nz) for installation details.

#### 3.3 EXECUTION GENERALLY

Check that the preparation of the opening is to [NZBC E2/AS1](#), 8.4.17, Roof penetrations.

#### 3.4 HARDWARE GENERALLY

Factory fit all required and scheduled hardware.

#### 3.5 RETAIN PROTECTIVE COVERINGS

Retain protective coverings and coatings in place during fixing wherever possible. Provide additional protection to prevent marking of surfaces visible in the completed work. Remove protection on completion.

### Installation

#### 3.6 GENERALLY

Check that the trimmed openings are formed and constructed to suit the required units. Do not proceed until roof and structural openings are properly formed.

#### 3.7 INSTALL UNITS

Install and fix the Skylight or Roof Window strictly in accordance with the manufacturer's installation instructions, CodeMark BRANZ CM 1008 and Technical Manual - Velux Skylights and CodeMark BRANZ CM 1009 and Technical Manual - Velux Roof Windows.

Repack any thermal insulation around rough openings where disturbed by the installation to maintain continuity of thermal barriers.

When using VELUX flashings (EDW, EDL, EKW) with VELUX Skylights and Roof Windows, install as detailed by VELUX to make the installation completely weatherproof. Refer to VELUX at [www.velux.co.nz](http://www.velux.co.nz) for installation instructions.

If using custom flashings, ensure curb/upstand height and flashing meet [NZBC E2/AS1](#) upstand height and flashing requirements. Contact VELUX for additional information.

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### 3.8 ACCESSORIES AND OPERATING SYSTEMS

Install selected VELUX accessories and hardware and complete all operating systems.

#### Completion

### 3.9 CLEAN FRAMES AND GLAZING

On completion clean down both sides of unit frames, using the methods required by the manufacturer. Remove any manufacturer's stickers and clean glass. Ensure all installed units are adequately protected from damage and adverse weather during construction.

### 3.10 CONFIRM

Confirm the proper operation of hardware and operating systems on completion of the installation and again at completion of the contract works.

## 4 SELECTIONS

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

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

#### Skylights

### 4.1 VELUX FS SKYLIGHT - FIXED

Location:	above stairwell
Brand:	VELUX
Model:	FS Fixed
Type/size:	FS C01, 550 mm x 700 mm
Glazing:	VELUX proprietary insulated double-glazing unit, pre-installed. Comprises an inner pane of laminated glass, and an outer pane of toughened safety glass which has a self-cleaning NEAT™ coating to the exterior face, and a Low-E <sup>3</sup> coating to the interior face. Cavity filled with Argon gas.
Colour:	White, semi-gloss finish
Roof type/pitch:	20deg
Flashing:	Proprietary VELUX flashing
Accessories:	TBC
R-value:	R0.49

#### Components

### 4.2 VELUX FLASHING SYSTEM

Brand:	VELUX
Roofing type:	15 - 90 degrees
Roof pitch:	20deg
Flashing type:	to match unit/roof type
Colour:	Greyfriars

#### Accessories

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# 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 ~ for ~

### 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 B2/AS1                      Durability
- 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: 2011              Structural design actions - Wind actions
- 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

### 1.4 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:

~

Copies of the above literature are available at

Company:                            ~  
 Web:                                    ~  
 Email:                                 ~  
 Telephone:                         ~

Warranties

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**1.5 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**

**1.6 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 LAMINATED GLASS**

Grade A Safety Glass to [AS/NZS 2208](#) with PVB or CIP resin interlayer.

**2.4 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.

**Materials, screens**

**2.5 GLASS SCREENS SHOWER & BATH**

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

**Components, aluminium and uPVC glazing**

**2.6 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.

**2.7 SETTING BLOCKS**

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

**Components, steel glazing**

**2.8 STEEL GLAZING COMPONENTS**

~

**3 EXECUTION**

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**Conditions**

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### 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

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**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 Steel**

**3.16 INSTALL GLASS TO STEEL FRAMES**

Install glass to steel frame manufacturers requirements.

**Application miscellaneous**

**3.17 INSTALL GLASS SHOWER & BATH SCREENS**

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

**Finishing**

**3.18 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**

**3.19 TRADE CLEAN**

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

**3.20 REPLACE**

Replace damaged, cracked or marked glass.

**3.21 LEAVE**

Leave work to the standard required by following procedures.

**3.22 REMOVE**

Remove debris, unused materials and elements from the site.

**4 SELECTIONS**

**Performance - wind**

**4.1 WIND ZONE - NON-SPECIFIC DESIGN**

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

**Glass by type**

**4.2 CLEAR FLOAT GLASS**

Location: Refer architecture  
 Brand/type: TBC  
 Thickness: as per NZS4233:2016

**4.3 TEXTURED, PATTERNED OR OBSCURE GLASS**

Location: Refer architecture  
 Brand/pattern: TBC  
 Pattern: ~  
 Thickness: as per NZS4233:2016

**4.4 PVB LAMINATED GLASS**

Location: as per NZS4233:2016  
 Brand/type: ~ PVB  
 Colour: TBC  
 Interlayer: 0.38mm Standard  
 Thickness: as per NZS4233:2016

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**4.5 TOUGHENED GLASS**

Location: as per NZS4233:2016  
Brand/type: TBC  
Thickness: as per NZS4233:2016

**Bath and shower screens and doors****4.6 FRAMELESS GLASS SHOWER SCREENS AND DOORS**

Location: Refer Architecture  
Brand/type: ~ / ~ Safety Glass  
Glass name: ~  
Thickness: as per NZS4233:2016  
Hardware: TBC  
Accessories: TBC

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# 4710P PINK® BATTS® & PINK® BATTS® SILENCER® INSULATION

## 1 GENERAL

This section relates to Tasman Insulation **Pink® Batts®** insulation materials installed into residential buildings.

It includes:

Thermal:

- **Pink® Batts® Ceiling Insulation (Pink® Batts® Classic and Pink® Batts® Ultra®)**
- **Pink® Batts® Skillion Roof Insulation**
- **Pink® Batts® Wall Insulation (Pink® Batts® Classic and Pink® Batts® Ultra®)**
- **Pink® Batts® Masonry Wall Insulation**
- **Pink® Batts® 140mm Wall Insulation**
- **Pink® Batts® Steel Wall Insulation**
- **Pink® Batts® Narrow Wall Insulation**
- **Pink® Batts® SnugFloor® Underfloor Insulation**

Acoustic:

- **Pink® Batts® Silencer®**
- **Pink® Batts® Silencer® Midfloor**

### 1.1 RELATED WORK

Refer to~ for ~

#### 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 C/AS1-AS2</a>	Protection from fire
<a href="#">NZBC H1/AS1</a>	Energy efficiency
<a href="#">NZS/AS 1530.1</a>	Methods for fire tests on building materials, components and structures - Combustibility test for materials
<a href="#">AS/NZS 3000</a>	Electrical installations (Known as the Australian/New Zealand Wiring Rules)
<a href="#">NZS 4218</a>	Thermal insulation - Housing and small buildings
<a href="#">NZS 4220</a>	Code of practice for energy conservation in non-residential buildings
<a href="#">NZS 4243.1</a>	Energy Efficiency - Large buildings - Building thermal envelope
<a href="#">NZS 4246</a>	Energy efficiency - Installing bulk thermal insulation in residential buildings
<a href="#">AS/NZS 60695.11.5</a>	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance

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/SUPPLIER DOCUMENTS

Manufacturer and supplier 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

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## 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

Lifetime Warranty	For <b>Pink® Batts®</b> insulation products
-------------------	---

- Commence the warranty from the date of practical completion of the contract works.
- Provide this Warranty on the **Pink® Batts® Lifetime Warranty Certificate** form.

Refer to the general section 1237 WARRANTIES for additional requirements.

### Requirements

## 1.5 QUALIFICATIONS, PINK® BATTS®

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

## 1.6 NO SUBSTITUTIONS

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

### Performance - combustibility

## 1.7 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 - thermal

## 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 luminaires 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

Insul anchors complete with retaining washer.

## 2.4 WIRE NETTING

Refer to [4161 UNDERLAYS, FOIL AND DPC](#) for wire netting used to support the insulation.

## 2.5 PLASTIC STRAPPING TAPES

Proprietary plastic strapping tape, stapled over framing to retain insulation in unlined wall, ceiling and underfloor locations.

For drained cavities where stud spaces are greater than 450mm and only flexible underlay is used, strapping required to [NZBC E2/AS1 9.1.8.5 Wall framing behind cavities](#).

## 2.6 ADHESIVE TAPE

Pressure sensitive adhesive tape.



### 3 EXECUTION

#### 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

#### 3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.  
Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

#### 3.3 INSPECTION

Before starting installation of 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 - general

#### 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 - NON-RESIDENTIAL

Non-residential recessed light fittings to [AS/NZS 3000](#), 4.5.2.3.5;

- Existing fittings or retrofit situations, fittings maybe unmarked
- New fittings can only be labelled - CA 80, CA 90, CA 135, IC, IC-F, IC-4, NON-IC or Do-not Cover

Refer to clause INSULATION CLEARANCES GENERALLY for clearances.

#### Application, thermal insulation

#### 3.6 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.

#### 3.7 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.

#### Application - components

#### 3.8 LAY WIRE NETTING - UNDER JOISTS / PURLINS

Lay at right angles across the rafters/roof joists (under purlins). Pull tight and fix.

#### 3.9 LAY PLASTIC STRAPPING TAPE

Lay at right angles across the framing at a minimum of 300mm centres, staple tape to each framing member with stainless steel staples.

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## Completion

### 3.10 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

## 4 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  
Brand: **Pink® Batts® Classic Ceiling**  
R-value: R3.2  
Thickness: 170mm

#### 4.2 PINK® BATTS® SNUGFLOOR™ UNDERFLOOR INSULATION

Location: Cantilivered floor  
Brand: **Pink® Batts® SnugFloor®**  
R-value: R2.6  
Thickness: 110mm

#### 4.3 PINK® BATTS® CLASSIC WALL INSULATION

Location: exterior wall  
Brand: **Pink® Batts® Classic Wall**  
R-value: R2.4  
Thickness: 90mm

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# 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
- superior finish quality systems
- bracing systems
- fire rated garage boundary wall systems
- wet area systems
- GIBFix® Framing systems

### 1.1 RELATED WORK

Refer to ~ for ~.

### 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:

AWCINZ Association of Wall and Ceiling Industries New Zealand

#### 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	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	Residential and Low-Rise Steel Framing Part 1 2010 Design Criteria

#### 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.

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**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 FIRE RATING REQUIREMENTS**

Provide the GIB® fire resistant rated garage boundary wall systems. Refer to SELECTIONS for system/FRR.

**1.8 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)
- GIB Ezybrace® Systems (2011)
- GIB Ezybrace® for Steel Frame Housing (NASH) Software 2011 (to NASH Residential and Low-Rise Steel Framing Part 1 2010 Design Criteria)

Refer to drawings for location and type.

**2 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 Wideline® plasterboard

GIB Ultraline® high quality surface plasterboard

GIB Fyreline® fire resistant plasterboard

GIB Braceline® & GIB® Noiseline® dual purpose wall bracing & noise control plasterboard

GIB Aqualine® wet area plasterboard

GIB Toughline®

GIB Toughline® Aqua

**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 GIBFIX® ANGLES**

GIBFix® Angles, 45mm x 45mm angles, 2.4m or 2.7m long.

**2.5 SCREWS**

GIB® Grabber® drywall type screws as follows:

<b>Grabber® type</b>	<b>Used for fixing:</b>
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.

**2.6 TAPE ON TRIMS AND EDGES**

GIB® Goldline™ tape-on trims

GIB® UltraFlex® high impact corner mould

GIB® Levelline® Tape on Trim

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2.7 METAL ANGLE TRIMS  
GIB® galvanized steel slim angle trims.

2.8 CONTROL JOINTS  
GIB® Rondo® P35 control joints.  
GIB® Goldline™ tape-on trims  
GIB® plastic W-profile control joints.

### Accessories

2.9 ADHESIVE  
Timber frame and/or steel frame:  
GIBFix® One ultra low VOC water based wallboard adhesive  
GIBFix® All-Bond solvent based wallboard adhesive

2.10 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

2.11 JOINTING TAPE  
GIB® jointing tape.

2.12 GAP FILLER  
GIB® Gap Filler ultra low VOC multi-purpose acrylic flexible filler

## 3 EXECUTION

### Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

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's requirements. Refer to GIB® Site Guide (September 2018).

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### 3.5 TIMBER FRAMING - GIBFIX® FRAMING SYSTEM

Ensure that the timber framing is to the manufacturers requirements for the GIBFix® Framing System.

If GIB EzyBrace® systems are used in conjunction with GIBFix® Framing System, ensure that the positioning of the GIB HandiBrac® panel hold-down brackets are to the manufacturers recommended placements for the GIBFix® Framing System.

### 3.6 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).

### 3.7 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

### 3.8 INSTALL CEILING BATTENS

Install to GIB® Rondo® Ceiling Batten Systems requirements.

### 3.9 INSTALL GIBFIX® ANGLES

Install GIBFix® Angles to the wall and ceiling junctions to the GIBFix® Framing System requirements. Install GIBFix® Angles before installation of GIB® plasterboard linings. Run GIBFix® Angles as continuous lengths between framing members. If joints are necessary for the GIBFix® Angles, overlap the angles by a minimum of 300mm and fix as per manufacturers requirements. When jointing GIBFix® Angles, locate the shorter section at the top of the stud.

### 3.10 LINING WALLS AND CEILINGS GENERALLY

Form to GIB® Site Guide (September 2018). Ensure bulk insulation thickness shall not exceed that of the wall framing.

### 3.11 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.

### 3.12 BOARD INSTALLATION FOR GIBFIX® SYSTEM

Fix the GIB® plasterboard to the GIBFix® Angle side over the stud first and then fix the GIB® plasterboard to the GIBFix® Angle only side (not over the stud). If the GIBFix® Angle only side must be fastened off first, provide additional fixings for the GIBFix® Angle to the stud, to the manufacturers requirements.

### 3.13 FORM WET AREA SYSTEMS

Form to GIB Aqualine® Wet Area Systems requirements.

### 3.14 FORM BRACING SYSTEMS

Form bracing systems to:

- GIB Ezybrace® Systems (2016)

### 3.15 FORM CONTROL JOINTS

Form control joints to GIB® Site Guide (September 2018) requirements.

### 3.16 INSTALL COVES

Install to GIB-Cove® literature using GIB-Cove® Bond.

### 3.17 INSTALL TAPE-ON TRIMS

Install to GIB® Goldline™ Tape-on trims literature and/or GIB® Ultraflex high impact corner mould literature.

### 3.18 FINISHING GENERALLY

To GIB® Site Guide (September 2018) and [AS/NZS 2589](#).

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## Completion & Commissioning

### 3.19 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

## 4 SELECTIONS

### Plasterboard

#### 4.1 GIB® STANDARD SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Dry areas	GIB® Standard plasterboard	10mm	4

#### 4.2 GIB® WATER RESISTANT SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Wet areas	GIB Aqualine® plasterboard	13mm	4

#### 4.3 GIB® STANDARD SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Dry areas	GIB® Standard plasterboard	13mm	4

#### 4.4 GIB® WATER RESISTANT SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Wet areas	GIB Aqualine® plasterboard	13mm	4

#### 4.5 GIB® BRACING SYSTEMS

Refer to:

- GIB Ezybrace® Systems (2016)
- GIB Ezybrace® Systems (2011)

For bracing element location refer to drawn documentation.

### Accessories

#### 4.6 GIBFIX® FRAMING SYSTEM COMPONENTS

Brand/type: GIBFix® Angles

Fixings: GIB® Grabber® Dual Head Screws

#### 4.7 GIB® TAPE ON EDGE OR CORNER TRIMS

Brand/type: ~

#### 4.8 GIB® EDGE PROFILES

Brand/type: ~

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## 5230 INTERIOR DOORS

### 1 GENERAL

This section relates to the supply and installation of interior doors.

#### 1.1 RELATED SECTIONS

Refer to glazing section/s for glass type and thickness.

#### 1.2 DOCUMENTS

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

[NZS 3602](#) Timber and wood-based products for use in building  
[NZS 3610](#) Specification form profiles of mouldings and joinery

#### 1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:

~

Copies of the above literature are available from ~

Web: ~

Email: ~

Telephone: ~

Facsimile: ~

### 2 PRODUCTS

#### 2.1 TIMBER

To [NZS 3602](#).

#### 2.2 PROFILES, FACINGS, SCRIBERS AND ARCHITRAVES

Traditional profiles to [NZS 3610](#). Proprietary profiles and special profiles as detailed. Pencil radius corners of profiled schedules for paint finish.

#### 2.3 DOORS, PAINTED

Doors as scheduled (without clashing strips).

#### 2.4 DOOR HINGES

Size and gauge to carry door. 3 hinges per door.

### 3 EXECUTION

#### 3.1 SITE MEASURE

Confirm framed openings on site for dimension, plumb and straightness prior to fabrication or ordering of timber joinery. Confirm lintel head and sill deflection for sliding or bi-fold door systems is within the manufacturer's specified tolerances. Provide not less than 10mm unless otherwise required.

#### 3.2 EXECUTION GENERALLY

Manufacture to the 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 FACTORY FIT HARDWARE

Factory fit the following where specified: -

- Hinges

#### 3.4 FACTORY FINISHING

Before delivery to site: -

- Brace square and provide protection to assemblies during delivery to site. Where factory glazed, indicate the presence of transparent glasses with whiting, tape or signs compatible with the glass type.



**Internal doors**

**3.5 INTERNAL JOINERY FRAMES**

Fabricate as detailed. Wedge and rigidly fix in place without distortion, plumb, and true to line and face. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish.

**3.6 DOOR FRAMES, SOLID REBATED**

Fabricate as detailed. Hang doors to operate freely on hinges, sliding, or bi-fold gear and to the door manufacturer's requirements. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish. Fit hardware.

**3.7 DOOR LINERS**

Heads and jambs finished minimum 18mm, with 10mm planted door stops. Width to match width of lined walls. Hang doors on hinges, sliding, or sliding-folding gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.

**3.8 DOOR LINERS, EXTENDED**

Heads and jambs finished 30mm, rebated for wall linings and extended a minimum of 10mm. 10mm planted door stops. Hang doors on hinges, sliding and bi-fold gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.

**Completion**

**3.9 CHECK**

Check and adjust operation of all sashes, doors, hardware and furniture.

**3.10 TEMPORARY PROTECTION**

On completion remove any temporary protection and leave ready for following work.

**4 SELECTIONS**

**4.1 HOLLOW CORE DOOR, PAINT FINISH**

Brand/type: refer window and door schedule, Hollow-core  
 Door facing: paint quality pine  
 Glazing: single glazed safety glass where applies  
 Finish: painted  
 Hardware: to be selected by owner

**Accessories**

**4.2 DOOR HINGES**

Interior doors

Type:	Loose pin
Size:	89mm
Material:	Zinc-plated steel
Pin:	Loose-pin zinc-plated steel

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# 6711R RESENE PAINTING EXTERIOR

## 1 GENERAL

This section relates to the surface preparation, painting and clear finishing of new and existing exterior substrates using **Resene** architectural and decorative coating systems.

### Related work

### 1.1 RELATED WORK

Refer to 6700R RESENE PAINTING GENERAL for general matters related to painting work.

Refer to 6721R RESENE PAINTING INTERIOR for interior paint systems.

Refer to 6721RE RESENE ENVIRONMENTAL PAINTING INTERIOR for interior paint systems.

## 2 PRODUCTS

### Materials

### 2.1 PAINT TYPES GENERALLY/ THINNERS AND ADDITIVES

Refer to 6700R RESENE PAINTING GENERAL for product clauses.

## 3 EXECUTION

### Conditions

### 3.1 EXECUTION

Refer to 6700R RESENE PAINTING GENERAL for execution clauses.

## 4 SELECTIONS

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

### 4.1 HARDWARE

Hardware for removal: TBC

### Paint system schedules

### 4.2 EXTERIOR FINISHES

Substrate	Resene SIPDS number	Colour
Weatherboards	Refer resene	TBC
Timber Joinery/Fascias/Barges	Refer resene	TBC
Timber Deck	Refer resene	TBC

### Resene exterior paint systems

#### Exterior timber - new

### 4.3 RESENE NEW EXTERIOR TIMBER, PLYWOOD, WEATHERBOARDS - UNPRIMED

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 1/1
1st coat:	Resene Quick Dry D45, Waterborne Acrylic Primer Undercoat
2nd coat:	Resene Sonyx 101 D30, Semi-Gloss Acrylic
3rd coat:	Resene Sonyx 101 D30, Semi-Gloss Acrylic

### 4.4 RESENE NEW EXTERIOR TIMBER, WEATHERBOARDS - FACTORY PRIMED

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 2/1
1st coat:	Resene Wood Primer D40, Solvent-borne Primer (NEC)
2nd coat:	Resene Sonyx 101 D30, Semi-Gloss Acrylic
3rd coat:	Resene Sonyx 101 D30, Semi-Gloss Acrylic

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**4.5 RESENE NEW EXTERIOR PINE TIMBER DECK**

Surface Prep: Resene SIPDS No2 and Spec Sheet 2: 6/1  
1st coat: Resene Wood Primer D40, Solvent-borne Primer (NEC)  
2nd coat: Resene Walk-On Flooring & Paving Paint – D322, Waterborne  
3rd coat: Resene Walk-On Flooring & Paving Paint – D322, Waterborne

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## 6721R RESENE PAINTING INTERIOR

### 1 GENERAL

This section relates to the surface preparation, painting and clear finishing of new and existing interior substrates using **Resene** architectural and decorative coating systems.

#### Related work

#### 1.1 RELATED WORK

Refer to 6700R RESENE PAINTING GENERAL for general matters related to painting work.  
Refer to 6711R RESENE PAINTING EXTERIOR for exterior paint systems.  
Refer to 6711RE RESENE ENVIRONMENTAL PAINTING EXTERIOR for exterior paint systems.

### 2 PRODUCTS

#### Materials

#### 2.1 PAINT TYPES GENERALLY/ THINNERS AND ADDITIVES

Refer to 6700R RESENE PAINTING GENERAL for product clauses.

### 3 EXECUTION

#### Conditions

#### 3.1 EXECUTION

Refer to 6700R RESENE PAINTING GENERAL for execution clauses.

### 4 SELECTIONS

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

#### 4.1 HARDWARE

Hardware for removal: ~

#### Paint system schedules

#### 4.2 INTERIOR FINISHES

Room name	Ref	Substrate	RESENE Spec Number	Colour
General	G02	Ceiling-Plasterboard	refer resene	TBC
		Exposed Rafters	refer resene	TBC
		Walls - Plasterboard	refer resene	TBC
		Trim - Timber	refer resene	TBC
		Doors - Paint Finish	refer resene	TBC

#### Resene interior paint systems

##### Plasterboard - new

#### 4.3 RESENE NEW INTERIOR PLASTERBOARD, WALLS - DRY AREAS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1: 1/1
Fire rating:	Group 1-S. Test Report FH4967
1st coat:	Resene Broadwall D403, Waterborne Wallboard Sealer
2nd coat:	Resene Zylone Sheen D302, Waterborne Low Sheen
3rd coat:	Resene Zylone Sheen D302, Waterborne Low Sheen

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## 4.4 RESENE NEW INTERIOR PLASTERBOARD, WALLS - WET AREAS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1A: 1/1
Fire rating:	Group 1-S. Test Report 7-593235-CO
1st coat:	Resene Sureseal D42, solvent-borne Pigmented Sealer (NEC)
2nd coat:	Resene SpaceCote Low Sheen Kitchen & Bathroom D311K Waterborne Enamel
3rd coat:	Resene SpaceCote Low Sheen Kitchen & Bathroom D311K Waterborne Enamel

## 4.5 RESENE NEW INTERIOR PLASTERBOARD, CEILINGS - DRY AREAS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1: 1/1
Fire rating:	Group 1-S, Test Report FH4967
1st coat:	Resene Broadwall D403, Waterborne Wallboard Sealer
2nd coat:	Resene Ceiling Paint D305, Waterborne Flat
3rd coat:	Resene Ceiling Paint D305, Waterborne Flat

## 4.6 RESENE NEW INTERIOR PLASTERBOARD, CEILINGS - WET AREAS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1A: 1/1
Fire rating:	Group 1-S, Test Report 7-593235-CO
1st coat:	Resene Sureseal D42, solvent-borne Pigmented Sealer (NEC)
2nd coat:	Resene SpaceCote Flat Kitchen & Bathroom D314K, Waterborne Enamel
3rd coat:	Resene SpaceCote Flat Kitchen & Bathroom D314K, Waterborne Enamel

**Interior timber - new**

## 4.7 RESENE AQUALAQ: TIMBER JOINERY, MDF, CABINETRY – WATERBORNE LACQUER SOLID COLOUR

Surface Prep:	Resene SIPDS No7 and Spec Sheet 7: 1/1 Note: for use by specialist applicators only
1 to 2 coats:	Resene AquaLAQ Quick Dry Sealer - interior waterborne
2 to 3 coats:	Resene AquaLAQ Colour Coat - interior waterborne satin

Note: Contact [help@reseneauto.co.nz](mailto:help@reseneauto.co.nz) for Specialist applicator details and information

## 4.8 RESENE NEW INTERIOR TIMBER WALLS, CEILINGS - (PARTICLE BOARD, MDF, PLYWOOD)

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 14/1
1st coat:	Resene Quick Dry D45, Waterborne Acrylic Primer Undercoat
2nd coat:	Resene Spacecote Low Sheen D311, Waterborne Enamel
3rd coat:	Resene Spacecote Low Sheen D311, Waterborne Enamel

## 4.9 RESENE NEW INTERIOR TIMBER WALLS, CEILINGS - (PARTICLE BOARD, MDF, PLYWOOD) - CLEAR COAT

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 10/1
1st coat:	Resene Aquaclear Satin D59, Waterborne Urethane Varnish
2nd coat:	Resene Aquaclear Satin D59, Waterborne Urethane Varnish
3rd coat:	Resene Aquaclear Satin D59, Waterborne Urethane Varnish

## 4.10 RESENE NEW INTERIOR TIMBER FLOOR – CLEAR COAT, TWO PACK

Surface Prep:	<b>Resene</b> SIPDS No2 and Spec Sheet 2: 11/1
1st coat:	Resene Qristal ClearFloor 2K D506a, Waterborne Flooring Urethane
2nd coat:	Resene Qristal ClearFloor 2K D506a, Waterborne Flooring Urethane
3rd coat:	Resene Qristal ClearFloor 2K D506a, Waterborne Flooring Urethane

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# 7120 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.

#### 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 systems - 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: 2018	Plumbing and drainage - Water services
AS/NZS 3500.4: 2018	Plumbing and drainage - Heated water services
NZS 3501	Specification for copper tubes for water, gas and sanitation
AS/NZS 4130	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

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### 1.3 MANUFACTURER DOCUMENTS

Manufacturer and supplier documents relating to work in this section are:

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Copies of the above literature are available from ~

Web: ~

Email: ~

Telephone: ~

Facsimile: ~

#### Warranties

### 1.4 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.

#### Requirements

### 1.5 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](#).

### 1.6 INFORMATION FOR OPERATION AND MAINTENANCE

Provide the following general operation and maintenance information as electronic PDF format documents:

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Provide this information prior to practical completion.

### 1.7 HOT WATER TEMPERATURES

To [NZBC G12/AS1](#), 6.14

Storage water heaters to store water at not less than 60°C.

Hot water piping system, with temperature controls where necessary (tempering valve etc), to provide water at the outlet at the following temperatures:

For personal hygiene fixtures (showers, baths, wash hand basins etc) temperatures to be close to but not to exceed:

- 45°C - for early child hood centres, schools, elderly facilities, hospitals, psychiatric or disabled institutions.
- 55°C - for personal hygiene fixtures in all other buildings.

For non-personal hygiene fixtures (kitchen sinks and equipment, laundry tubs, cleaners sinks, industrial fixtures etc) temperatures are:

- Unrestricted - direct from water heater, approx. 60°C, must be less than 65°C (for kitchen sinks and equipment, laundry tubs, cleaners sinks etc) - in all buildings.
- Unrestricted - direct from water heater not tempered (for industrial fixtures and specific items etc) - in all buildings.

This clause excludes boiling units.

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## 1.8 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.

## 1.9 TESTING - TO AS/NZS 3500

Test to [AS/NZS 3500.1](#), Section 18, **Testing and commissioning**, for cold water.

- Test reticulation system to a pressure of 1500 kpa for period not less than 30 minutes, to [AS/NZS 3500.1](#), 18.3.1 **Hydrostatic test**. Test storage tanks to [AS/NZS 3500.1](#), 18.3.2 **Storage tanks**.

and

[AS/NZS 3500.4](#), Section 9, **Testing and commissioning**, for hot water.

- Test reticulation system (excluding tanks, water heaters, and some fixtures, valves etc) to a pressure of 1500 kpa for period not less than 30 minutes, to [AS/NZS 3500.4](#), 9.3 **Testing**.

Test complete system (including valves, pumps, water heaters etc) under normal working conditions for a minimum of 48 hours, then check visually, to [AS/NZS 3500.4](#), 9.3 **Testing**. 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.

## 1.10 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.

## 1.11 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.

## 1.12 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

## 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](#) Durability, table 1 and [NZBC G12/AS1](#), table 1. Protect from sunlight.

## 2.2 POLYETHYLENE PIPE

To [AS/NZS 4130](#) Series 1 complete with fittings and accessories brand matched to the pipe manufacturer's requirements with durability to [NZBC B2/AS1](#), table 1 and [NZBC G12/AS1](#), table 1. Except for solid black PE, protect from sunlight.

## 2.3 POLYPROPYLENE RANDOM WATER PIPE

PP-R Polypropylene pipes to DIN 8077 and DIN 8078 complete with fusion welded fittings and accessories brand-matched to the pipe manufacturer's requirements with durability to [NZBC B2/AS1](#), table 1 and [NZBC G12/VM1](#). Protect from sunlight.

## 2.4 CROSS LINKED POLYETHYLENE PIPE

Cross Linked Polyethylene Pipe to [AS/NZS 2492](#) and fittings to [AS/NZS 2537.2](#) with a minimum pressure capability of 1200 kPa complete with fittings and accessories brand matched to the pipe manufacturer's requirements with durability to [NZBC B2/AS1](#), table 1 and [NZBC G12/VM1](#). Except for solid black PE-X, protect from sunlight.

## 2.5 WATER METER

To the requirements of the network utility operator.

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## 2.6 VALVES

Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief or temperature valve, pressure relief valve and isolating valves to [NZBC G12/AS1](#).

## 2.7 BACKFLOW PREVENTION DEVICES

Provide backflow prevention devices to [AS/NZS 2845.1](#) where it is possible for water or contaminants to backflow into the potable water supply. Refer to [NZBC G12/AS1](#) 3.4 Backflow protection, and [NZBC G12/AS1](#), table 2, Selection of Backflow Protection.

## 2.8 TEMPERING VALVE

Tempering valve to [NZS 4617](#) to [NZBC G12/AS1](#).

## 2.9 HEADER TANKS

Pre-formed black polyethylene or stainless steel tank, complete with access opening and lid and overflow tray.

### Materials - Hot water heating appliances

## 2.10 GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE

Continuous flow unit with an integral gas burner and flue to [NZS 4305](#).

### Components

## 2.11 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

### Fire stopping accessories

## 2.12 FIRE STOPPING SYSTEMS

For sealing around pipe penetration through fire walls and floors use a combination of the following:

- Gunnable inorganic or silicone elastomer sealant, packed to maintain the specified fire resistance rating of the floor or wall.
- Two-part silicone foam elastomer sealant, packed to maintain the specified fire resistance rating of the floor or wall.
- Fire wrap containing intumescent material used in conjunction with the selected sealer.
- Fire collar with intumescent packing to maintain the specified fire resistant rating of the floor or wall.

Refer to SELECTIONS for requirements.

## 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 POLYETHYLENE PIPE

Seal ring compression joints and electrofusion to [NZBC G12/AS1](#).

#### Application - Pipework installation

### 3.11 WATER SUPPLY CONNECTION

Arrange with the network utility operator for a connection to the water main and from there through a water meter and gate valve. Provide back flow prevention to [NZBC G12/AS1](#).

### 3.12 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.

### 3.13 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 [G12/VM1](#) or [G12/AS1](#).

### 3.14 EQUIPOTENTIAL BONDING METALLIC WATER SUPPLY PIPES

If it is an electrical requirement, before enclosing, ensure metallic water supply pipes and metallic sanitary fixtures are equipotential bonded (or at least conductor cable attached) to [NZBC G12/AS1](#), 9.0.

### 3.15 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.

#### Application - Hot water systems

### 3.16 HOT WATER CYLINDER INSTALLATION GENERALLY

Install hot water cylinders complete to the manufacturer's requirements and to [NZBC G12/AS1](#), 6.11, Water heater installation. Valve-vented systems to [NZS 4607](#).

### 3.17 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.

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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). Also refer to section 7221 GAS APPLIANCES for installation of gas appliances.

3.19 PENETRATIONS

Provide and fit collars and escutcheon plates to match the pipework at all penetrations through constructions.

Application - Fire stopping work

3.20 FIRE STOPPING WORK

Make and prepare pipe penetration to suit fire stopping and install fire stopping system around pipes to manufacturer's installation instructions.

Installation - Valves

3.21 INSTALLING BELOW GROUND ISOLATING VALVE

Install all below ground items such as main isolating valves and water meters in preformed concrete pits or approved equivalent.

3.22 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

3.23 LABEL

Label all pipework with permanent adhesive markers at 3 metre minimum intervals.

3.24 CLEAN IN-LINE FILTER

Clean all in-line filters on completion of works.

3.25 REPLACE

Replace damaged or marked elements.

3.26 LEAVE

Leave work to the standard required by following procedures.

3.27 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

Water main

4.1 POLYETHYLENE WATER MAIN

Size: 25mm outside diameter (i.e. DN 25 in AS/NZS 4130)

Pipework

4.2 CROSS LINKED POLYETHYLENE PIPE

Manufacturer: ~  
Brand: ~  
Size: ~ Nominal Bore / OD Size (mm)

Hot water systems

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**4.3 GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE**

Brand: rinnai  
Model size: VT26  
Remote controller: ~  
Gas type: Natural gas

**Valves and accessories****4.4 MAIN ISOLATING VALVE**

Location: ~  
Brand/type: ~

**4.5 FLOOR/ZONE ISOLATING VALVES**

Location: ~  
Brand/type: ~

**4.6 APPLIANCE ISOLATING VALVES - CONCEALED**

Appliance: ~  
Brand/type: ~

**4.7 APPLIANCE ISOLATING VALVES - EXPOSED**

Appliance: Washing machine  
Brand/type: Refer to tapware selections

**4.8 IN-LINE FILTER**

Location: ~  
Brand/type: ~

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# 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES

## 1 GENERAL

This section relates to the supply and installation of sanitary fixtures, tapware and sanitary accessories.

### 1.1 RELATED WORK

Refer to 7120 or 7123 HOT AND COLD WATER SYSTEM for hot water cylinders.  
Refer to 7420 or 7421 SANITARY SYSTEMS for the supply and fitting of waste disposal pipework  
Refer to the electrical section/s for electrical connection of accessories.

### Documents

### 1.2 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: 2018	Plumbing and drainage - water services
AS/NZS 3500.2: 2018	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.

### 1.3 MANUFACTURER DOCUMENTS

Manufacturer and supplier documents relating to work in this section are:

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Copies of the above literature are available from ~

Web: ~

Email: ~

Telephone: ~

Facsimile: ~

### Requirements

### 1.4 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.

### 1.5 BUILDING SUPPLIER

A specialist in the supply of tapware, and employing experienced architectural representatives available to assist during the course of the installation.

### 1.6 SUBMIT A SUPPLIER'S SCHEDULE

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## 2 PRODUCTS

- 2.1 SANITARY FIXTURES  
Refer to SELECTIONS for product selection.
- 2.2 TAPWARE  
Refer to SELECTIONS for product selection.
- 2.3 SANITARY APPLIANCES  
Refer to SELECTIONS for product selection.
- 2.4 SANITARY ACCESSORIES  
Refer to SELECTIONS for product selection.
- 2.5 ELECTRICAL SANITARY ACCESSORIES  
Refer to SELECTIONS 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 QUALITY STANDARDS INCLUDING AS/NZS 3500.2  
Installation work to comply with [NZBC G1/AS1](#), [NZBC G12/VM1](#), [NZBC G12/AS1](#), [AS/NZS 3500.2: 2018](#), as modified by [NZBC G13/AS3](#), and the fixture manufacturer's requirements.
- 3.5 SUBSTRATE  
Ensure substrate and fixings will allow work of the specified standard.
- 3.6 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.
- 3.7 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 floors, wall linings, fixtures and the tops they are in, the tops and wall linings, to [NZBC E3/AS1](#), 3.2. Fixtures include toilets, urinals, baths, basins, tubs or sinks. Tops include, vanities, bath surrounds, sink benches, etc, and there upstands.
- 3.8 PROVIDE SUPPORT  
Confirm fixing points needed for each unit and provide solid blocking at each fixing bracket location.

#### **Conditions - tapware**

- 3.9 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.

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## 3.10 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**

## 3.11 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.

## 3.12 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.

## 3.13 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.

## 3.14 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**

## 3.15 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.

## 3.16 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**

## 3.17 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.

## 3.18 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](#).

## 3.19 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**

## 3.20 INSTALLING SHOWER FITTINGS

Shower waste, mixer and rose to be install to [NZBC G1/AS1](#) and to [AS/NZS 3662](#). Seal shower wall lining penetrations (shower head, shower hose, mixer, taps etc) to [NZBC E3/AS1](#), Fig. 6.

## 3.21 INSTALLING PROPRIETARY 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](#).

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### 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.

#### Installation - Miscellaneous

### 3.25 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

### 3.26 GENERAL

To [AS/NZS 3500.1: 2018](#) and in accordance with the manufacturer's requirements. Maintain safe water temperatures to comply with [NZBC G12/AS1](#).

#### Application - sanitary accessories

### 3.27 INSTALLING ACCESSORIES

Fit specified fittings firmly in place at required dimensions relative to floor and adjoining sanitaryware fittings, all plumb and level.

### 3.28 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.

### 3.29 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.

### 3.30 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

### 3.31 REPLACE

Replace damaged or marked elements.

### 3.32 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.

### 3.33 REMOVE

Remove debris, unused materials and elements from the site.

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**4 SELECTIONS**

**4.1 TOILET**

Location: Bahtroom and Ensuite  
 Toilet pan: TBC  
 Trap type: ~  
 Toilet seat: ~  
 Flush system: ~  
 Isolating valve: ~

**4.2 BASIN**

Location: Bathroom and Ensuite  
 Basin: TBA  
 Basin taps/mixer: ~  
 Waste/plug: ~  
 Trap: ~  
 Isolating valves: ~

**4.3 VANITY UNIT - INTEGRAL BASINS**

Location: Bathroom and Ensuite  
 Vanity: TBA  
 Colour: ~  
 Taps/mixer: ~  
 Waste/plug: ~  
 Trap: ~  
 Isolating valves: ~

**4.4 SHOWER ENCLOSURE**

Location: Bathroom and Toilet  
 Shower tray: TBA  
 Liner: ~  
 Door: ~  
 Screen: ~  
 Trap/waste: ~  
 Mixer: ~  
 Shower set: ~  
 Shower seat: ~  
 Grab rails: ~

**4.5 BATH**


Location: Bathroom  
 Bath model: TBA  
 Bath taps/mixer: ~  
 Bath spout: ~  
 Bath/shower set: ~  
 Bath/ shower screen: ~  
 Waste/plug: ~  
 Trap: ~  
 Accessories: ~

**4.6 KITCHEN SINK BOWL**

Location: Kitchen  
 Sink bowl model: TBA  
 Accessories: ~  
 Mixer: ~  
 Waste/plug: ~  
 Trap: ~  
 Isolating valves: ~

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**4.7 SANITARY APPLIANCES**

Dishwasher: Kitchen  
Waste disposal unit: ~  
Washing machine: ~

**4.8 SANITARY ACCESSORIES**

Location: Bathroom and ensuite TBC  
Roll holder: ~  
Towel rail: ~  
Towel ring: ~  
Hooks: ~  
Toothbrush holder: ~  
Soap dispenser: ~  
Wall cabinet: ~

**4.9 ELECTRICAL SANITARY ACCESSORIES**

Location: Bathroom and Ensuite TBC  
Heated towel rail: ~  
Hair dryer: ~  
Hand dryer: ~  
Finish: ~

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## 7221 GAS APPLIANCES

### 1 GENERAL

This section relates to the supply and installation of gas-powered appliances using low pressure gas.

#### 1.1 RELATED WORK

Refer to ~ for ~

Refer to hot and cold water system section for gas water heaters

#### 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  
 NZBC G4/AS1 Ventilation  
 NZBC G10/AS1 Piped services  
 NZBC G11/AS1 Gas as an energy source  
 NZBC G12/AS1 Water supplies  
 AS/NZS 5601.1 Gas Installations - general installations  
 Electricity (Safety) Regulations 2010 (Reprint as at 4 April 2016)  
 Gas (Safety and Measurement) Regulations 2010  
 Plumbers, Gasfitters and Drainlayers Act 2006

#### 1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:

~

Copies of the above literature are available from ~

Web: ~

Email: ~

Telephone: ~

Facsimile: ~

#### Warranties

#### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

~ years: For; range, wall oven, hob  
 ~ years: For; central heating, room heater, fireplace

- 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

#### 1.5 COMPLY

Comply with the Gas (Safety and Measurement) Regulations 2010, Electricity (Safety) Regulations 2010 and the network utility operator's/gas suppliers requirements. Give notices for inspections and carry out tests as required.

#### 1.6 QUALIFICATIONS

Gasfitters to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying gasfitter under the Plumbers, Gasfitters and Drainlayers Act 2006.

Performance

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## 1.7 FINAL INSPECTION AND TEST

Submit the work for inspection and test and prove to the satisfaction of the network utility operator that the installation complies with all Acts and Regulations and has been tested for leakage and proved to be sound.

## 1.8 GAS CERTIFICATE OF COMPLIANCE

Provide a Gasfitting Certificate of Compliance as required by Clause 46 and 47 of the Gas (Safety and Measurement) Regulations 2010 and when required provide a copy to the energy supplier.

## 1.9 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.

## 1.10 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 GAS APPLIANCES

Refer to SELECTIONS for product selection.

### 2.2 GAS TYPE

All appliance to be specifically suited to the gas type supply, refer to SELECTIONS.

## 3 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](#).

### Application

### 3.2 INSTALL GAS APPLIANCES

Fit and connect gas appliances to [AS/NZS 5601.1](#), complete with isolation valves as required to the appliance manufacturer's requirements.

### 3.3 SEISMIC RESTRAINTS - GAS APPLIANCES

Where gas appliances require seismic restraints, restrain to manufacturer's requirements, [AS/NZS 5601.1](#) and [NZBC C/AS1-AS2](#), 7.2 Gas-burning Appliances.

### 3.4 CONNECT UP GAS HOT WATER HEATERS

Connect gas hot water heaters supplied and fitted under Hot and Cold Water system section or by gas fitter, to [NZBC G10/AS1](#), [G11/AS1](#), [G12/AS1](#) and to [AS/NZS 5601.1](#) and the water heater manufacturer's requirements.

### Completion

### 3.5 REPLACE

Replace damaged, cracked or marked elements.

### 3.6 LEAVE

Leave appliances clean and in full working order and leave work to the standard required by following procedures.

### 3.7 REMOVE

Remove debris, unused materials and elements from the site.

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**4 SELECTIONS****4.1 GAS TYPE**

Gas type: natural gas

**4.2 GAS APPLIANCES**

Appliance	Make and code	Supplied by
Water heating unit	Rinnai VT26	TBC
Cooker top:	TBC	TBC

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## 7420 SANITARY SYSTEMS

### 1 GENERAL

This section relates to above ground gravity flow sanitary systems;

- for foul water
- from sanitary fixtures to first underground drain connection
- including system wastes, floor wastes, floor waste gullies, traps, vents and valves
- with associated components and accessories to make the system work

#### 1.1 RELATED SECTIONS

Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures tapware and accessories.

Refer to 7430 DRAINAGE for underground drains.

#### 1.2 DOCUMENTS

Documents referred to in this section are:

<a href="#">NZBC G1/AS1</a>	Personal hygiene
<a href="#">NZBC G13/AS1</a>	Foul water - Sanitary plumbing
<a href="#">NZBC G13/AS3</a>	Foul water - Sanitary plumbing and drainage
AS 2887	Plastic waste fittings
<a href="#">AS/NZS 1260</a>	PVC-U pipes and fittings for drain, waste and vent applications
<a href="#">AS/NZS 2032</a>	Installation of PVC pipe systems
<a href="#">AS/NZS 3500.2: 2018 Plumbers, Gasfitters and Drainlayers Act 2006</a>	2018 Plumbing and drainage - Sanitary plumbing and drainage

#### 1.3 MANUFACTURER DOCUMENTS

Manufacturer and supplier documents relating to work in this section are:

~

Copies of the above literature are available by phoning ~.

#### 1.4 QUALIFICATIONS

Carry out all work under the direct supervision of a certifying plumber under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

### 2 PRODUCTS

#### 2.1 PVC-U WASTE, DISCHARGE AND VENT PIPES

PVC-U pipe to [AS/NZS 1260](#) complete with fittings brand-matched to the pipe manufacturer's requirements.

#### 2.2 EXPOSED PIPES AND TRAPS

Chrome plate on copper pipes and associated copper and brass fittings.

White polybutylene or PVC, including all associated fittings.

### 3 EXECUTION

#### 3.1 FIRE STOPPING SYSTEMS

For sealing around pipe penetration through fire walls and floors use singularly or combinations of the following:

- Gunnable inorganic or silicone elastomer sealant, packed to maintain the specified fire resistance rating of the floor or wall.
- Two part silicone foam elastomer sealant, packed to maintain the specified fire resistance rating of the floor or wall.
- Fire wrap containing intumescent material used in conjunction with the selected sealer.
- Fire collar with intumescent packing to maintain the specified fire resistant rating of the floor or wall.

Refer to SELECTIONS for requirements.

#### 3.2 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.**

**3.3 ELECTROLYTIC ACTION**

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

**3.4 INSTALL TRAPS, WASTE AND VENT PIPES - NZBC G13/AS1**

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to [NZBC G13/AS1](#) and [AS/NZS 2032](#). Discharge wastes into the drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to all roof vents and vermin proof mesh to all untrapped waste pipes.

**3.5 INSTALL TRAPS, WASTE AND VENT PIPES - AS/NZS 3500.2: 2018**

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to [AS/NZS 3500.2: 2018](#), as modified by [NZBC G13/AS3](#), and jointing to [AS/NZS 2032](#). Discharge wastes into the drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to all roof vents and vermin proof mesh to all untrapped waste pipes.

**3.6 PENETRATIONS**

At penetrations through constructions provide and fit collars and escutcheon plates to match pipework.

**3.7 TEST**

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to [NZBC G13/AS1](#) or [AS/NZS 3500.2: 2018](#), 15 as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

**3.8 CLEAN UP**

Remove labels and clean fittings. Remove unused materials from the site.

**4 SELECTIONS****4.1 PVC-U WASTE, DISCHARGE AND VENT PIPES**

Brand/type: refer plumbing plan, and in accordance with NZBC or NZS3500.2

**4.2 EXPOSED PIPES AND TRAPS**

Brand/type: refer plumbing plan, and in accordance with NZBC or NZS3500.2

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## 7430 DRAINAGE

### 1 GENERAL

This section relates to the supply and laying of gravity foul water (sewage), stormwater and groundwater drainage.

#### 1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC B1/AS1	Structure
NZBC E1/AS1	Surface water
NZBC E1/AS2	Surface water
NZBC E1/VM1	Surface water
NZBC G1/AS1	Personal hygiene
NZBC G13/AS1	Foul water - sanitary plumbing
NZBC G13/AS2	Foul water - drainage
NZBC G13/AS3	Foul water - sanitary plumbing and drainage
AS/NZS 1254	PVC-U pipes and fittings for Stormwater and Surface Water applications
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 2033	Installation of polyethylene pipe systems
AS 2439.1	Perforated Plastics Drainage and Effluent Pipes and Fittings - Perforated drainage pipe and associated fittings
AS/NZS 2566.1	Buried Flexible Pipelines - Structural Design
AS/NZS 2566.2	Buried Flexible Pipelines - Installation
AS/NZS 3500.3: 2018	Plumbing and drainage - Stormwater drainage
NZS 3104	Specification for concrete production
NZS 3111	Method of test for water and aggregate for concrete
AS/NZS 3500.2: 2018	Plumbing and drainage - sanitary plumbing and drainage
NZS 3604	Timber-framed buildings
NZS 4229	Concrete masonry buildings not requiring specific engineering design
NZS 4402 (set)	Method of testing soils for civil engineering purposes
AS/NZS 4671	Steel reinforcing materials
AS/NZS 5065	Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications
NZCMM	NZ Concrete Masonry Manual section 6.1 Masonry Retaining Walls
NZTA F2	Specification for pipe subsoil drain construction
Plumbers, Gasfitters and Drainlayers Act 2006	

#### 1.2 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:

~

Copies of the above literature are available from ~

Web:	~
Email:	~
Telephone:	~
Facsimile:	~

#### 1.3 AS BUILT DOCUMENTS

Supply a 1:100 scale as-built drawing of drains and fittings to the territorial authority and to the owner on completion.

#### 1.4 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](#).

### 2 PRODUCTS



- 2.1 CONCRETE  
17.5 MPa prescribed mix to [NZS 3104](#).
- 2.2 REINFORCEMENT  
Plain round and/or deformed steel bars, Grade 300 to [AS/NZS 4671](#).

### Components

- 2.3 PVC-U PIPES  
PVC-U pipes bends, junctions, fittings and joints to [AS/NZS 1254](#) and [AS/NZS 1260](#).  
Underground PVC-U pipe to be classified as follows:
- |                 |   |
|-----------------|---|
| Classification: | Use:                                      |
| SN4 - SN6       | Domestic & light load areas               |
| SN8 - SN10      | Commercial & Industrial medium load areas |
| SN16            | Public roads & high load areas            |
- 2.4 SURFACE WATER SUMP GRATINGS  
Cast iron frame with lift-up grating.

### Foul water

- 2.5 TRENCH BACKFILLING MATERIAL, FOUL WATER - NZBC G13/AS2  
Bedding and backfilling material to [NZBC G13/AS2](#), 2.0 **Materials**, for methods shown in [NZBC G13/AS2](#), figure 7, **Bedding and backfilling**.

## 3 EXECUTION

- 3.1 EXCAVATE  
Excavate for drains to a firm even base with correct gradients set in straight runs.  
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.
  - [AS/NZS 3500.3](#): 2018, 6.2.8, **Installation near and under buildings**, as modified by [NZBC E1/AS2](#).
  - [NZBC G13/AS2](#), 5.6, **Proximity of Trench to Building**, for foul water drains.
- 3.2 MANUFACTURER'S REQUIREMENTS  
All drainage installations to the pipe and fitting manufacturer's requirements.
- 3.3 FOUL WATER DRAINAGE GENERALLY - NZBC G13/AS2  
Carry out foul water drainage work to [NZBC G13/AS2](#) and [NZBC G1/AS1](#) and complete all tests to [NZBC G13/AS1](#), 7.1 Test Methods.  
Lay uPVC pipe systems to relevant sections of [AS/NZS 2032](#), [AS/NZS 2566.1](#) and [AS/NZS 2566.2](#).  
Lay polyethylene pipes and fittings to relevant sections of [AS/NZS 2033](#) and [AS/NZS 2566.1](#).
- 3.4 SURFACE WATER DRAINAGE GENERALLY - E1/AS1  
Carry out stormwater drainage work to [NZBC E1/AS1](#), and complete all tests to [NZBC E1/VM1](#), 8.0 Drain Leakage Tests.  
Lay uPVC pipe systems to relevant sections of [AS/NZS 2032](#), [AS/NZS 2566.1](#) and [AS/NZS 2566.2](#).  
Lay polyethylene pipes and fittings to relevant sections of [AS/NZS 2033](#) and [AS/NZS 2566.1](#).
- 3.5 LAY FOUL WATER DRAINS  
Lay drains in straight runs to correct gradients, to discharge into the network utility operator's sewer.  
Set inspection fittings on a concrete base.

- 3.6 LAY STORMWATER DRAINS  
Confirm the required location of downpipes and finished ground levels before commencing pipe work. Set downpipe bends in concrete with the concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the network utility operator's stormwater system.

- 3.7 INSTALL SURFACE WATER SUMP  
To [NZBC E1/AS1](#) or to [AS/NZS 3500.3](#): 2018 section 7 as modified by [NZBC E1/AS2](#), complete with ceramic half-siphon pipe and cast iron frame with a lift out grating.

### 3.8 TESTING - FOUL WATER

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to [NZBC G13/AS1](#) or [AS/NZS 3500.2: 2018](#), 15 as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

### 3.9 TESTING - SURFACE WATER

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to [NZBC E1/VM1](#), 8.0 Drain Leakage Tests or [AS/NZS 3500.3: 2018](#), section 9, as modified by [NZBC E1/AS2](#) as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

### Backfilling and encasement - Foul water and surface water

#### 3.10 CONCRETE ENCASEMENT

Concrete encase shallow drains and drains under driveways, on a 100mm deep 17.5 MPa concrete bed reinforced with three 10mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100mm 17.5 MPa concrete.

#### 3.11 TRENCH BACKFILLING GENERALLY - FOUL WATER

Granular bedding and selected fill shall be placed in layers no greater than 100 mm loose thickness and compacted. Base bedding (beneath the pipe) shall be placed and compacted before pipes are laid. Up to 300mm above the pipe, compaction shall be by tamping by hand tool over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing or distorting the drain. Run marker tape along line of the pipe on top of the bedding.

Up to 300mm above the pipe, compaction shall be by tamping by hand using a rod with a pad foot (having an area of  $75 \pm 25$  mm by  $75 \pm 25$  mm) over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing the drains.

More than 300 mm above the pipe, compaction shall be by at least four passes of a mechanical tamping foot compactor (whacker type) with a minimum weight of 75 kg. For plastic based pipes, ensure care taken to avoid impact loading of the pipe.

#### 3.12 TRENCH BACKFILLING GENERALLY - SURFACE WATER - NZBC E1/AS1

Granular bedding and selected fill shall be placed in layers no greater than 100 mm loose thickness and compacted. Base bedding (beneath the pipe) shall be placed and compacted before pipes are laid. Up to 300mm above the pipe, compaction shall be by tamping by hand tool over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing or distorting the drain. Run marker tape along line of the pipe on top of the bedding.

More than 300 mm above the pipe, compaction shall be by at least four passes of a mechanical tamping foot compactor (whacker type) with a minimum weight of 75 kg. For plastic based pipes, ensure care taken to avoid impact loading of the pipe.

#### 3.13 FOUL WATER TRENCH BACKFILLING - NZBC G13/AS2

Carry out foul water trench backfilling to [AS 2](#), 5.3 to 5.5 and fig 7. PVC-U pipe to [AS/NZS 2032](#) and polyethylene pipes to [AS/NZS 2033](#).

#### 3.14 SURFACE WATER TRENCH BACKFILLING - NZBC E1/AS1

Carry out surface water trench backfilling to [NZBC E1](#), 3.9.6 and fig. 13. PVC-U pipe to [AS/NZS 2032](#) and polyethylene pipes to [AS/NZS 2033](#).

## 4 SELECTIONS

### 4.1 PVC-U PIPES

Brand/type: ~

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## 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
- fire rated sealers, liners and accessories

#### 1.1 RELATED WORK

Refer to ~ for ~.

#### 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:

AFDD	Arc Fault Detection Device
ELV	Extra Low Voltage
GLS	general lighting service
IP	international (ingress) protection classification
NUO	Network Utility Operator
PCB	printed circuit board
PIR	passive infrared
SIA	security integration architecture
TPS	tough plastic sheathed
TCF	Telecommunications Carriers' Forum

#### Documents

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## 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
NZBC G9/AS1	Electricity
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 using scattered light, transmitted light or ionization
NZS 4514:2009	Interconnected smoke alarms for houses
NZS 4246	Energy Efficiency - Installing bulking thermal insulation in residential buildings
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 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance.
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 21 January 2019).	
TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services	

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.

## 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

Manufacturer/supplier contact details:

Company:	~
Web:	~
Email:	~
Telephone:	~

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Warranties

1.5 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

1.6 COMPLY

Comply with the Electricity (Safety) Regulations 2010, AS/NZS 3000, AS/NZS 3008.1.2, and TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services 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.

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

Workers and supervisors to be appropriately qualified to applicable legislative requirements. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.9 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.

1.10 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 high risk electrical work as required by regulation 70.

1.11 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010, Reg 74A, to the owner and when required the BCA. To be provided no later than 20 working days after connection and prior to Practical Completion.

Quality control and assurance

1.12 INSPECTIONS

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2 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> high temperature cable 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 (roof spaces above insulation etc).

## 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 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.

## 2.7 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.

## 2.8 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. Label all switch units that control electrical equipment or special lighting circuits by proprietary engraved switch mechanisms where applicable. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units and 2 way units. Refer to SELECTIONS.

## 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 SWITCH UNITS - PERSON WITH DISABILITIES

In addition to clause SWITCH UNITS above, units shall comply with [NZBC G9/AS1](#), 2.0.1.b) and d). Refer to SELECTIONS.

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## 2.11 CEILING ROSES

White plastic mounting base with screwed cover, manufactured to [AS/NZS 3113](#). Terminal type. Suspended fittings to have sheathed round flexible cord to [AS/NZS 3008.1.2](#). Refer to SELECTIONS.

## 2.12 HOT WATER SYSTEM SWITCH

One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

## 2.13 BATTEN HOLDERS

Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.

## 2.14 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.

## 2.15 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.

## 2.16 RECESSED LIGHT FITTINGS - RESIDENTIAL

Residential recessed light fittings to [AS/NZS 3000](#), 4.5.2.3.5:

- Existing fittings or retrofit situations, fittings maybe unmarked.
- New fittings can only be labelled - CA 80, CA 90, CA 135, IC, IC-F, & IC-4.

Refer to clause INSULATION & GENERAL CLEARANCES for clearances from insulation and other elements.

## 2.17 EXHAUST FANS

Ceiling, wall or duct mounted exhaust fans for ventilation to [NZBC G4/AS1](#), and compliant with [AS/NZS 60335.1](#).

## 2.18 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.

## 2.19 EXTERIOR SWITCHES AND SWITCHED SOCKET UNITS

Using materials with superior UV protection, impact strength, and addition chemical resistance when compared with interior polycarbonate fittings. Weather protected, switches and sockets to IP56 minimum. Sockets fitted with safety shutters behind socket pins, and all products able to be padlocked off or on.

## 2.20 EXTERIOR LIGHT FITTINGS

Using materials with superior UV protection, impact strength, and addition chemical resistance. Weather protection minimums:

- IP54 for protected areas under eaves or verandahs etc.
- IP55 for exposed areas not subject to pressurised water (hoses).
- IP66 for areas subject to pressurised water or major splashing.
- IP67 for inground lights
- IP68 for submerged pool fittings

**Security system**

## 2.21 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.

## 2.22 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.

## 2.23 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.

## 2.24 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>.

## 2.25 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.

## 2.26 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.

# 3 EXECUTION

## Conditions

### 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

### 3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

## Installation

### 3.3 MAIN SUPPLY

Lay underground mains to the NUO requirements. Excavate trench, install cable and marker tape and backfill.

### 3.4 METER BOX

Fit to meter box manufacturer and Electricity Retailer requirements. Recess into external wall in sheltered area and flash to weatherproof to [NZBC E2/AS1 fig 69](#). Arrange for meter installation and connection.

### 3.5 DISTRIBUTION BOARD

Fit to [AS/NZS 3000](#) and board manufacturer requirements. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

### 3.6 CIRCUIT PROTECTION

Install MCBs at distribution board to [AS/NZS 3000](#) to protect each final sub circuit.

### 3.7 EARTHING CONDUCTIVE STRUCTURE & MATERIALS

Earth all at risk structural metalwork and conductive building materials to [AS/NZS 3000](#), 5.4.6, and the Electricity (Safety) Regulations 2010.

If they form part of the building, this includes:

- Structural steel frames or members
- Light steel framing
- Exposed conductive materials, like metal sink/tub or vanity benches etc, with attached electrical units or equipment

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### 3.8 EQUIPOTENTIAL BONDING

Equipotential Bond extraneous conductive parts together and to the electrical installation earthing system to [AS/NZS 3000](#), 5.6, and the Electricity (Safety) Regulations 2010 and the fitting manufacturer requirements.

If they form part of the building, this includes:

- Conductive water piping (including tap etc) and exposed related connected conductive surfaces (like metal sink benches or metal cladding etc). Not required where isolated by non-conductors (plastic pipe etc) from the mass of earth.
- Other conductive piping (not earthed by other means) and exposed related connected conductive surfaces.
- Concrete reinforcing - for floor or wall forming part of a room with a shower or bath, or the shell and surround of a swimming/spa pool
- Built-in Swimming pool and spa pool - exposed conductive parts of electrical equipment, as well as exposed conductive, fixtures, fittings and pool structures within 1.25m of pool edge

### 3.9 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.

### 3.10 ARC FAULT DETECTION DEVICE (AFDD)

To [AS/NZS 3000](#) clause 2.9, AFDD on all final sub-circuits not exceeding 20A.

### 3.11 EARTH LEAKAGE PROTECTION

Install RCD protection to [AS/NZS 3000](#).

### 3.12 SURGE PROTECTION

Install surge protection devices to manufacturer 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.

### 3.13 RCD - RESIDENTIAL 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](#).

### 3.14 RCD-AFDD COMBINED - RESIDENTIAL INSTALLATIONS

Install a 30mARCD - AFDD combined device (RCD Type II) at the switchboard for all final sub circuits not exceeding 20A, to control and protect outlets and lighting to [AS/NZS 3000](#), (2018, 2.6 & 2.9). Protect over 20A to 32A final sub circuits with separate RCD and to [AS/NZS 3000](#).

### 3.15 RCD - SPECIFIC INSTALLATIONS

Install fixed wired RCD protected outlets (SRCD) in the following higher risk 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.

### 3.16 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.

### 3.17 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.

### 3.18 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.

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### 3.19 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 noggs. Fix switch panel wall boxes to solid blocking.

### 3.20 SWITCHES AND SWITCHED SOCKET UNITS

Fit all switch units and socket units to the manufacturers requirements with heights and mounting directions as indicated in SELECTIONS.

### 3.21 SWITCHES AND SWITCHED SOCKET UNITS - FOR PERSON WITH DISABILITIES

Fit all switch units and socket units to the manufacturers requirements with heights (& mounting direction) and location to [NZBC G9/AS1](#) and SELECTIONS.

### 3.22 ISOLATING SWITCHES

Locate isolating switches in positions as confirmed by the owner, when not specifically shown on the drawings.

### 3.23 LIGHT FITTINGS

Install light fittings in locations and at heights specified and confirmed by the owner, in accordance with the fitting manufacturer requirements.

### 3.24 EXTRA LOW VOLTAGE LIGHTING

Use electronic, transformers (halogen) or drivers (LED) for ELV lamps, one transformer/driver per lamp. Locate to manufacturer 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](#).

### 3.25 INSULATION & GENERAL CLEARANCES

Some electrical and mechanical services, and equipment may need to have a gap to insulation and some building elements. The gaps should be to the [NZS 4246](#) based tables below or to the equipment manufacturers requirements if they require larger gaps. Smaller gaps to manufacturers requirements can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings).

Installed gap not to be more than 50mm bigger than the required gap.

The following tables are subject to:

- The requirements of [NZS 4246](#) for insulation.
- The insulation is exposed to the source of heat or equipment etc.
- Insulation, has passed the needle flame test to [AS/NZS 60695.11.5](#) and/or is non-combustible.
- Gaps to hot surfaces may have to be increased with non-compliant insulation and plastic/polymeric type insulation (EPS, XPS, PIR, etc), check with insulation manufacturer.
- Gaps to hot surfaces may be able to be reduced with non-combustible insulation, check with equipment manufacturer.
- "Secure insulation" if required means, glue, mechanical fix, or provide fixed barriers at gap edge of insulation to hold in place. Rigid or semi rigid insulation may only need a firm friction fit (secure loose pieces).
- Loose fill insulation will require fixed barriers to [NZS 4246](#) to maintain gaps.

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## 3.26 LIGHT FITTINGS TO INSULATION

Type of fitting	Minimum insulation clearance	Comments
Recessed, marked NON-IC, or unmarked	100mm (increase if over 100W)	To <a href="#">NZS 4246</a> . NON-IC fittings and new or old unmarked & unknown fittings, and/or insulation. Insulation to be secured.
Recessed, CA 80, CA 90, or CA 135.	Abut fittings	To <a href="#">NZS 4246</a> . Do not cover the fittings.
Recessed, IC, IC-F, or IC-4.	Abut & cover fittings.	To <a href="#">NZS 4246</a> . Ensure insulation complies.
Recessed, marked Do-Not-Cover	Manufacturer clearances	To <a href="#">NZS 4246</a> . Do not cover the fittings.
Independent control gear	Place on top of insulation & 50mm from fittings	To <a href="#">NZS 4246</a> . If not on top allow 50mm clearance to insulation, do not cover. Includes, transformers, ballasts & drivers etc.
Surface fittings not exposed to insulation	Nil	To <a href="#">NZS 4246</a> . Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings.
Surface fittings & exposed insulation	200mm	To <a href="#">NZS 4246</a> . This is exposed insulation to any part of the exposed fitting & bulb/tube (e.g. exposed light in an unlined basement). Insulation to be secured.

## 3.27 RECESSED LIGHT FITTINGS TO COMBUSTIBLE BUILDING ELEMENTS

Type of recessed fitting	Minimum building element clearance **	Comments
Marked NON-IC, or unmarked, ≤100W	100mm, vertical & horizontal	To <a href="#">AS/NZS 3000:2018</a>
Marked NON-IC, or unmarked, >100W	200mm, vertical & horizontal	To <a href="#">AS/NZS 3000:2007</a>
CA 80, CA 90 or CA 135	100mm, vertical & horizontal	To <a href="#">AS/NZS 3000:2018</a>
IC, IC-F or IC-4	100mm, horizontal NA, vertical	To <a href="#">AS/NZS 3000:2018</a> To be NA vertical, fitting must be covered by insulation. If not covered use 100mm clearance.
Marked Do-Not-Cover	100mm, vertical & horizontal	To <a href="#">AS/NZS 3000:2018</a> . Manufacturer clearances if greater than 100mm

\*\* Combustible building elements exclude metal elements, but include timber framing or other timber based elements, and normal linings etc. Highly flammable materials & those likely to melt will need more clearance.

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## 3.28 INBUILT RECESSED HOT APPLIANCES TO INSULATION

Appliance	Minimum insulation clearance	Comments
Electrical heaters	Manufacturer clearances	To <a href="#">NZS 4246</a> .
Electrical heaters	100mm	Manufacturer clearances not known. To <a href="#">NZS 4246</a> . Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.
Heat producing appliances & equipment	Manufacturer clearances	To <a href="#">NZS 4246</a> .
Heat producing appliances & equipment	50mm	Manufacturer clearances not known. To <a href="#">NZS 4246</a> . Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.

Note - Appliances and equipment excludes cables, junction boxes, light switches & power sockets etc

## 3.29 EXTRACTS, VENTS &amp; ROOF UNDERLAY TO INSULATION

Appliance	Minimum insulation clearance	Comments
Ducted fan motors	50mm	To <a href="#">NZS 4246</a> . Includes ducted rangehoods, extractors etc. Applies to the motor unit and electrical enclosures (not the ducts).
Ducted fan ducts	Abut	To <a href="#">NZS 4246</a> . Excludes motor unit and electrical enclosures.
Unducted fan motors usually discharging to ceiling space	200mm	To <a href="#">NZS 4246</a> . Includes unducted, rangehoods, extractors etc, discharging into roof space. To prevent debris falling into motor. Clearance may be able to be reduced, by providing a fixed barrier around the vent.
Roofing material/underlay	25mm	To <a href="#">NZS 4246</a> . Maintain clearance from underside of roofing or flexible roofing underlay, to prevent wicking.

## 3.30 ELECTRIC HOT WATER SYSTEM

For storage heaters, wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end. Hot water cylinders, thermostats and 3000 watt element supplied and fitted under the hot and cold water system section.

## 3.31 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 requirements. Fit neatly and without damage to the surrounding finish.

## 3.32 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire fittings and equipment to individual fittings and equipment manufacturer requirements. Refer to the drawings for required layouts and locations for equipment. Refer to SELECTIONS for schedules of fittings.

## 3.33 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](#).

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3.34 OUTDOOR/EXTERIOR SERVICES

Install all wiring systems in accordance with AS/NZS 3000 and in accordance with the manufacturer 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 and sockets to IP56. Install to manufacturer 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.

3.35 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

3.36 SECURITY SYSTEM

Install to the system manufacturer 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 & Commissioning

3.37 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

3.38 COMPLETION - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

~

3.39 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

~

4 SELECTIONS

Materials

4.1 SELECTIONS - FITTINGS AND HARDWARE

Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.

4.2 METER BOX

Location: ~

Brand / type: ~

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4.3 DISTRIBUTION BOARD

- Location: ~
- Brand / type: ~
- MCB: ~
- RCCB: ~
- RCBO: ~
- Surge protectors: ~
- Modular contactors: ~
- Main switch: ~
- Timers ~

4.4 SECURITY SYSTEM

Location	Brand / type	Detector
TBC	~	~

**Outlets - fittings**

4.5 INTERIOR SWITCHES AND SWITCHED SOCKET UNITS

**Item Brand / type TBC**

- Switch / socket outlets:
- Coverplate colour:
- Switch module colour:

**Item Brand / type TBC**

- Light dimmers:
- Timer switch:
- Push button switch: ~
- Symbol switch: ~
- PIR sensor switch: ~
- Toggle switch: ~
- Waterproof switches: ~

**Item - RCD Brand / type TBC in wet areas**

- Socket outlet: ~
- Shaver outlet: ~
- Safety switch: ~

4.6 INTERIOR SWITCHES AND SWITCHED SOCKET UNITS - PERSONS WITH DISABILITIES

In addition to clause INTERIOR OUTLETS, unit set out shall comply with NZBC G9/AS1, 2.0.1.

Item	Height to centre of unit	Orientation	Location
Switch	1000mm above FFL	vertical	Refer to drawings
Switch narrow	1000mm above FFL	vertical	Refer to drawings
Socket outlet	600mm above FFL	horizontal	Refer to drawings
Socket outlet	150mm above FFL	horizontal	Refer to drawings

**Item: Brand / Type TBC**

- Switch / socket outlets:
- Coverplate colour: ~
- Switch module colour: ~

**Note:**

- Light switches to be horizontally aligned with door handles.
- Bedrooms to have at least one light switched from bedside.
- Socket outlets shall be at least 500mm from internal corners.

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4.7 INTERIOR LIGHT FITTINGS

<b>Fitting</b>	<b>Brand / type TBC</b>
Pendant lights:	~
Pendant cord:	~
Ceiling lights:	~
Recessed ceiling lights:	~
Recessed wall lights:	~
Recessed floor lights:	~
Wall lights:	~
Spotlights:	~
Fluorescent lights:	~
Strip lights:	~
Emergency lights:	~
Transformers:	~
LED Drivers:	~

4.8 SMOKE ALARMS

Location:	refer plan
Brand / type:	TBC

4.9 EXTERIOR SWITCHES AND SWITCHED SOCKET UNITS

<b>Item</b>	<b>Brand / type TBC</b>
Weatherproof socket outlets:	~
Timer switch:	~
Weatherproof switch:	~
Daylight switch:	~

4.10 EXTERIOR LIGHT FITTINGS

<b>Fitting</b>	<b>Brand / type TBC</b>
Wall lights:	~
Bulkhead lights:	~
Spotlights:	~
Recessed lights:	~
Strip lights:	~
Floodlights:	~
Pole lights:	~
Security lights:	~
Security light sensors:	~
Transformers:	~
LED Drivers:	~

4.11 MISCELLANEOUS ELECTRICAL ITEMS

<b>Item</b>	<b>Brand / type</b>
Door bell system:	TBC
Extractor fan:	refer architecture plan
Water heater:	Rinnai VT26

4.12 HEATED TOWEL RAILS

<b>Location</b>	<b>Brand / type</b>
TBC in bathroom	TBC

4.13 BATHROOM FANS AND HEATERS

<b>Location</b>	<b>Brand / type</b>
Bathroom / ensuite-Heating:	TBC
Bathroom / ensuite-Extractor:	refer architecture plan

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4.14 ELECTRICAL APPLIANCES

<b>Item</b>	<b>Brand / type TBC</b>
Range:	
Wall oven:	~
Cooker top/hob:	~
Waste disposal unit:	~
Range hood:	~

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