

Thornbury House

Project Specification

Northview Terrace, Kawarau Falls, Queenstown, New Zealand

Project Ref: 531
Date: 16 November 2026

PROJECT SPECIFICATION Works, materials and workmanship for construction in accordance with the accompanying drawings.

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1013 DOCUMENT CONTROL

1 DOCUMENT CONTROL

Document Control

1.1 PREPARED BY

Company:	Kerr Ritchie Ltd
Postal Address:	P O Box 1894, Queenstown
Street Address:	271 Pennisnula road
City:	Queenstown
Telephone:	02102994217
Email:	bronwen@kerrritchie.com

1.2 DOCUMENT DETAILS

Project Name:	Stephens Residence
Project Number:	492
Client:	Richard and Linda Stephens

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1222L PROJECT PERSONNEL - LBP'S

1 TO

BCA: Queenstown Lakes District
Address: 10 Gorge Road

Copy to Contract administrator

Name: ~
Company/address: ~
Email: ~

Project details

Project: new house
Location: 17c Earnscleugh Road, Alexandra
Building Consent: tbc

Person giving advice

Name: tbc
Position: Contractor

2 GENERAL

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

2.1 SITE

Name: ~
LBP number: ~
Area of practice: Category ~
Details of RBW: ~
Address: ~
Telephone: ~
Mobile: ~
Email: ~

2.2 BRICK LAYING AND BLOCK LAYING

Name: ~
LBP number: ~
Area of practice: Bricklaying and block laying ~
Details of RBW: ~
Address: ~
Telephone: ~
Mobile: ~
Email: ~

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2.3 CARPENTRY

Name: ~
LBP number: ~
Area of practice: Category ~
Details of RBW: ~
Address: ~
Telephone: ~
Mobile: ~
Email: ~

2.4 EXTERNAL PLASTERING

Name: ~
LBP number: ~
Area of practice: Category ~
Details of RBW: ~
Address: ~
Telephone: ~
Mobile: ~
Email: ~

2.5 FOUNDATIONS

Name: ~
LBP number: ~
Area of practice: Category ~
Details of RBW: ~
Address: ~
Telephone: ~
Mobile: ~
Email: ~

2.6 ROOFING

Name: ~
LBP number: ~
Area of practice: Category ~
Details of RBW: ~
Address: ~
Telephone: ~
Mobile: ~
Email: ~

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1232 INTERPRETATION & DEFINITIONS

1 GENERAL

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

Definitions

1.1 DEFINITIONS

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

1.2 PERSONNEL

Principal: The person defined as "Principal" in the conditions of contract.

Contractor: The person contracted by the principal to carry out the contract.

Contract administrator: The person appointed by the principal to administer the contract on the principal's behalf. Where no person has been appointed by the principal, it means the principal or the principal's representative.

1.3 ABBREVIATIONS

The following abbreviations are used throughout the specification:

AAMA	American Architectural Manufacturers Association
AS	Australian Standard
AS/NZS	Joint Australian/New Zealand Standard
ASTM	American Society for Testing and Materials

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

1.4 DEFINED WORDS

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

1.5 WORDS IMPORTING PLURAL AND SINGULAR

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

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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

The following Schedule sections are contained within the specification:

1237S1 Schedule of Warranties
1238S1 Schedule of As Built Documentation
1239S1 Schedule of Operation & Maintenance Info
1278SR Schedule Of Slip Resistance Testing

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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:

NZBC F5/AS1	Construction and demolition hazards
AS/NZS 1170.2:2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 3012	Electrical installations - Construction and demolition sites
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 4210	Masonry construction: Materials and workmanship
NZS 4781	Code of Practice for Safety in Welding and Cutting
AS/NZS 5131	Structural steelwork - Fabrication and erection
NZS 6803	Acoustics - Construction Noise

Building Act 2004
Building Regulations 1992
Health and Safety at Work Act 2015
Health and Safety at Work (General Risk and Workplace Management) Regulations 2016
Health and Safety at Work (Hazardous Substances) Regulations 2017
Health and Safety in Employment Regulations 1995
New Zealand Building Code
Heritage New Zealand Pouhere Taonga Act 2014
Resource Management Act 1991
Smoke-free Environments Act 1990

WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry
WorkSafe	Good Practice Guidelines - Excavation Safety
WorkSafe	Scaffolding in New Zealand - Good Practice Guidelines
WorkSafe	Managing Work Site Traffic - Good Practice Guidelines

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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

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

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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.

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.

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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.

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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

Where 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

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



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- 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: ~
Revisions: ~

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.

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Submission

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.

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 - 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.

2 SELECTIONS

2.1 WARRANTIES - SUBMISSION NZS 3910 CONTRACT

Refer to NZS 3910 Conditions of Contract for building and civil engineering construction, for requirements relating to the time for submission of warranties and guarantees. Submit all warranties/guarantees to the Contract Administrator no later than the date that the contractor notifies that it believes the contract works qualify for practical completion or any other time stated in the Specific Conditions of Contract.

Project warranties / guarantees

Guarantees - Contractor - Master Build Services Ltd

2.2 MASTER BUILD SERVICES LTD - 10 YEAR GUARANTEE

Provide a 10 Year Guarantee, include all costs of the building in the contract price. Complete the guarantee application form, obtaining all required signatures (registered master builder and owner/s). 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 written confirmation from Master Build Services 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 (registered master builder and owner/s) and send the form to Master Build Services.

2.3 MASTER BUILD SERVICES LTD - 10 YEAR MULTI-UNIT GUARANTEE

Provide a 10 Year Multi-Unit Guarantee, include all costs of the building in the contract price. Complete the guarantee application form, obtaining all required signatures (registered master builder and owner/s). Send the completed form to Master Build Services for approval, along with a copy of the building contract and architectural drawings for approval prior to any work commencing. Obtain written confirmation from Master Build Services 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 (registered master builder and owner/s) and send the form to Master Build Services.

Weathertightness and watertightness warranty

2.4 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.



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- 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.



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1237S1 SCHEDULE OF WARRANTIES

1 GENERAL

This schedule section identifies work sections in the specification that have requirements for warranties.

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- 1237 WARRANTIES
- Identified Work Sections

Warranties

1.2 WARRANTIES

Refer to the following sections:

3114E	Expol Underslab Insulation
4131N	Nuralite Nuraply 3P Covered Tanking Systems
4161T	Kingspan Thermakraft Underlays, Foils, DPC, DPM, & Tapes
4171GR	GIB Weatherline Rigid Air Barrier
4221HV	Hermpac Vertical Weatherboard Cladding System
4239	Soffit Cladding
4252VV	Vulcan Ultraclad Vertical Weatherboards
4261	Brick Veneer Cladding
4311D	Dimond Profiled Metal Roofing
4381NJ	Nurajack Deck Support System
4421N	Nuraply 3PM Membrane Roofing & Decking
4521PT	Altus Thermal Aluminium Windows & Doors
4610MR	Metro Performance Glass - Residential Glazing
4711OR	Outright Insulation
4711P	Pink® Batts® Thermal Insulation
5111H	James Hardie® Fibre Cement Sheet Linings
5122PL	Plytech Panels Residential Linings
5124HL	Hermpac Internal Timber Linings
5231HS	Hallmark Cavity Slider & Standard Doors
5241	Fire & Acoustic Interior Doors & Windows
5538VH	Vanda Blinds & Curtain Track Systems
6211	Wall Tiling Systems
6211MW	Mapei Wall Tiling
6221	Floor Tiling Systems
6221A	ARDEX Floor Tiling Solutions
6700R	Resene Painting General
6743FB	Zone FireZone Vanguard Timber Fire Treatment
7352	Type 1 Domestic Smoke Alarm Systems
7411	Rainwater Spouting Systems
7451AL	Allproof Level Threshold Drainage Systems
7545CU	Central Heating Underfloor Heating Systems
7553DM	Devi Undertile Heating Mat System
7612	Residential Extract Systems
7701	Electrical Basic

1.3 PROJECT WARRANTIES

Refer to section 1237 WARRANTIES for project warranties.

1.4 WARRANTIES - ADDITIONAL ITEMS

Refer to separate documentation for warranties not contained within this specification.

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1237WA WARRANTY AGREEMENT

1 SPECIFICS

1.1 PARTIES TO THE WARRANTY AGREEMENT

Principal: ~
.....

Contractor: ~
.....

Warrantor: ~
.....

1.2 BACKGROUND

The principal has entered into a contract with the contractor for carrying out the contract works. The warranted works / materials are part of the contract works. The contractor has agreed to arrange for the provision of a warranty in respect of the warranted works / materials for the warranty period on the terms set out in this warranty. The warrantor has agreed to provide a warranty in respect of the warranted Works / materials for the warranty period on the terms set out in this warranty agreement.

1.3 LOCATION

Project name: ~
.....

Project address: ~
.....

1.4 WARRANTED WORKS

Warranted works: ~
.....

Warranty period: ~ years from the date of practical completion of the contract works.

1.5 WARRANTED MATERIALS

Warranted materials: ~
.....

Warranty period: ~ years from the date of practical completion of the contract works.

2 WARRANTY TERMS

2.1 WORKS ARE AS REQUIRED IN THE CONTRACT

The warrantor warrants to the principal that the warranted work performed /materials supplied shall be as required in the contract. If not otherwise specified the work shall be of good trade practice with materials and fittings of merchantable quality.

2.2 WARRANTY ADDITIONAL TO OTHER OBLIGATIONS

This warranty shall be in addition to and shall not derogate from any manufacturer's warranty or any warranty implied by law, or any contract defects liability obligations, attaching to any part of the warranted works.

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2.3 WARRANTOR TO REMEDY DEFECTS

The warrantor agrees that if within the warranty period, the warrantor is advised by the principal in writing of any defect in the warranted works / materials for which the warrantor is liable under the terms of this warranty, the warrantor will promptly take steps to remedy the defect / replace defective materials.

2.4 CARRYING OUT REMEDIAL WORK / REPLACEMENT OF DEFECTIVE MATERIALS

Any remedial work / replacement of defective materials which the warrantor is liable to undertake / provide under this warranty shall be carried out:

- to the standard required by the contract,
- in a prompt and timely manner,
- without unnecessary inconvenience to any occupants,
- at the warrantor's cost,
- subject to reasonable access being provided to the warrantor for the purpose of carrying out the remedial work.

2.5 WHERE COST OF REPLACEMENT IS OUT OF PROPORTION TO THE DEFECT

Where the cost of replacement of work and/or materials is out of all proportion to the consequences of the defect, or where the defect may not be reasonably capable of rectification without substantial expense which is out of all proportion to the cost of the contract works, the warrantor may:

- where the defect or defective material is reasonably rectified by repair rather than by replacement, the warrantor's obligation under this warranty shall be only to repair or otherwise make good the defect; or
- propose reasonable monetary compensation in lieu of remedying the defect; or
- propose a combination of both repair and compensation.

2.6 PRINCIPAL SHALL CONSIDER REASONABLE PROPOSALS

The principal must consider the warrantor's reasonable proposals and the parties shall endeavour in good faith to reach agreement. Where agreement cannot be reached, the dispute shall be resolved in accordance with the disputes clause in this warranty.

2.7 FAILURE BY WARRANTOR TO PERFORM REMEDIAL WORK

If the warrantor fails to promptly, adequately and satisfactorily carry out the remedial work or to propose acceptable repair/compensation, the principal may then arrange for the remedial work to be carried out by others.

If the warrantor fails to promptly, adequately and satisfactorily provide replacement materials or to propose acceptable repair/compensation, the principal may then arrange for the replacement materials to be supplied by others.

The principal shall first give the warrantor 10 working days notice, or such other reasonable time as agreed by the principal, to carry out and complete the remedial work / supply replacement materials. If the warrantor does not complete this work / supply replacement materials within the time, the principal shall then advise the warrantor in writing that the work will be carried out / materials will be supplied by others.

In such an event the warrantor is not released from obligations under this warranty, which continues in full force and effect, except in respect of the defect remedied / materials supplied by the principal or by another person contracted by the principal. The reasonable cost of the remedial work carried out by such other persons including all reasonable costs of the principal is to be paid to the principal by the warrantor on demand.

2.8 WARRANTOR NOT LIABLE FOR

The principal agrees that the warrantor is not liable for any defect or damage caused by any of the following:

- Wilful act or negligence of the principal or any person other than the warrantor.
- Fire, explosion, earthquake, war, subsidence, slips, faulty materials or workmanship other than caused by the defect in the warranted work.
- Any force of nature which the warrantor could not have reasonably foreseen.
- Any neglect or unnecessary delay by the principal in giving notice to the warrantor of a defect in the warranted works becoming apparent.
- Design faults, errors or discrepancies, unless the warrantor undertook the design of the part

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of the warranted works that is the subject of the defect.
- Use of the Warranted Works by the Principal or other person in any manner or for any purpose not being the intended manner of use or purpose of the Warranted Works.
- Failure by the principal or other persons to maintain the warranted works in accordance with good practice and any manufacturer's stated or recommended instructions or requirements.
- Fair wear and tear.

2.9 WARRANTY MAY BE ASSIGNED

The principal may assign the benefit of this warranty to any person.

2.10 DISPUTES

Any dispute between the principal and the warrantor arising out of this warranty is to be referred to arbitration before a sole arbitrator. If within 15 Working Days of notice of dispute, the principal and the warrantor cannot agree upon a single arbitrator, either party may request the president of the Arbitrators and Mediators Institute of New Zealand Incorporated (AMINZ) to appoint an arbitrator.

3 SIGNATORIES

3.1 SIGNED BY THE WARRANTOR

....
Signed Date

.....
Print name of person(s) authorised to sign

....
Signed by witness, include occupation and address Date

3.2 SIGNED BY THE PRINCIPAL

....
Signed Date

.....
Print name of person(s) authorised to sign

....
Signed by witness, include occupation and address Date

3.3 NOTE

The warranty shall be executed by the warrantor and the principal in the manner required for execution of a deed. In the case of a natural person, the person shall sign and their signature shall be witnessed by another person, a witness must not be a party to the deed.

Sign the warranty on behalf of a company by having 2 or more directors sign, or if there is only 1 director, by that director whose signature must be witnessed, or if the constitution of the company so provides, a director, or other person or class of person(s) whose signature(s) must be witnessed, or by 1 or more attorneys appointed by the company in accordance with section 181 of the Companies Act 1993.

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Execute the warranty on behalf of a body corporate (other than a company) by affixing its seal, which shall be attested in the manner provided for in the rules of, or applicable to, the body corporate. If signing for another type of entity for example an incorporated society, trust, school board etc. follow the protocol required for the execution of a deed.



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1238 AS BUILT DOCUMENTATION

1 GENERAL

This general section relates to common requirements for the preparation, submission and review of as built documentation referred to within this specification and referred to within separate specifications/documents relating to this project. Detailed requirements for as built documentation for particular parts of the work may be included in specific work sections.

1.1 SCHEDULE SECTION

Refer to 1238S1 SCHEDULE OF AS BUILT DOCUMENTATION for work sections contained in this specification that have requirements for as built documentation.

1.2 AS BUILT DOCUMENT REQUIREMENTS

Where requirements for the as built documents and records are not stated in a specific section, they shall include:

As built drawings recording:

- The actual positions as constructed of all sewer, stormwater, sanitary plumbing, piped and ducted services, electrical and mechanical services.
- Inverts and locations of services at key points within the building and at the property lines.
- Dimension services in relation to the structure and building grid lines.
- Ductwork, piping, conduit and equipment, including such items provided for future use.
- Depth of various elements of foundations in relationship to the ground floor level
- Field changes of dimensions
- Other significant deviations and changes which are concealed in construction and cannot be identified by visual inspection
- Access doors and panels

Records of:

- Products and materials selected for alternatives specified
- Approved substitutions and accepted alternatives
- Other approved changes and deviations to items specified.

1.3 PROVISIONAL AS BUILT DOCUMENTS

Prior to practical completion provide provisional/draft as built documents in sufficient detail to allow the principal to operate, maintain, adjust and re-assemble the contract works and to allow for review by the reviewer. Where no named reviewer has been nominated, submit the as built documentation to the contract administrator. Submit in hard copy and electronic form.

1.4 AS BUILT DOCUMENT REVIEW

As built document review indicates only that the reviewer is satisfied that the documents are legible. The review is not a check of the accuracy or completeness of the documents, however the reviewer may comment on any aspect of the documentation and require the documents to be revised and resubmitted. Review of as built documents does not relieve the contractor of responsibility for their correctness.

Where no time is stated in a specific section, allow 10 working days for review by the reviewer. Where a large amount of documentation is involved more time will be necessary.

1.5 COMPLETE AS BUILT DOCUMENTS

Prior to the end of the defects notification/liability period, provide complete as built documents reflecting any review requirements, with all Information of good quality and properly titled, numbered, cross-referenced and dated. Provide documents in sufficient detail to allow the principal to operate, maintain, adjust and re-assemble the contract works. Submit in hard copy and electronic form to the contract administrator.

1.6 AS BUILT DOCUMENTS - ELECTRONIC COPY

Provide an electronic copy of the as built documents in the following format:

Drawings:	PDF format (in addition provide DWG files if available)
Other documents:	PDF format

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1238S1 SCHEDULE OF AS BUILT DOCUMENTATION

1 GENERAL

This schedule section identifies work sections in the specification that have requirements for the submission of as built documentation.

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- 1238 AS BUILT DOCUMENTATION
- Identified Work Sections

As built documents

1.2 AS BUILT DOCUMENTS

Refer to the following sections:

7430	Drainage
7545CU	Central Heating Underfloor Heating Systems

1.3 AS BUILT DOCUMENTS - ADDITIONAL ITEMS

Refer to separate documentation for as built documentation requirements not contained within this specification.

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1239 OPERATION & MAINTENANCE

1 GENERAL

This general section relates to operation and maintenance (O&M) documentation referred to within this specification and referred to within separate specifications/documents relating to this project. This documentation is required by the principal so that they can operate and maintain the contract works.

1.1 SCHEDULE SECTION

Refer to 1239S1 SCHEDULE OF OPERATION & MAINTENANCE INFO for work sections contained in this specification that have requirements for:

- Information for operation and maintenance
- Operation and maintenance manuals
- Maintenance contract proposals

Operation and maintenance documents

1.2 OPERATION AND MAINTENANCE INFORMATION - BUILDING ACT

Provide in writing the information and documentation prescribed by regulations made under the Building Act, to the owner/principal and the relevant territorial authority.

1.3 OPERATION AND MAINTENANCE INFORMATION

Provide operation and maintenance documentation necessary to operate and maintain the works. This documentation is to include:

- Contractors name and contact details.
- A complete list of subcontractors' names, addresses and telephone numbers noting which portions of the contract each provided.
- A complete list of equipment and appliances including serial numbers, manufacturers' names and sources of supply.
- Copies of all manufacturers' and suppliers' product literature containing maintenance requirements/instructions, for any products in the building work.
- Information for operation and maintenance as required by work sections.
- Operation and maintenance manuals as required by work sections.
- Maintenance contract proposals as required by work sections.
- Final as built documents.
- Originals of all warranties and guarantees properly executed.
- Other information listed or referred to in this general section.
- Operation and maintenance information required by other project documents.

1.4 MAINTENANCE REQUIREMENTS

Provide details of any maintenance requirements required by the Building Act. In addition provide maintenance requirements for items including:

- Details of suggested building washing programme.
- Details of suggested re-painting programme.
- Location of flushing points for sub soil drainage systems.
- Location of surface water filter systems requiring regular cleaning.
- Overflow relief gully location and means of keeping charged.

1.5 APPLIANCE MANUALS AND OPERATING INSTRUCTIONS

Provide appliance manuals and operating information for all appliances including details of all isolating valves and switches including:

- Water supply isolating valve.
- Location of isolating valves for appliances including dishwasher, clothes washer and fridge with and icemaker connection.
- Gas supply isolating valve.
- Electrical main switch and all sub boards.
- Location of isolating switches for electrical appliances including cooker and cook top, kitchen extract system, electric under floor heating.
- Fire and heating device operating instructions.

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1.6 SELECTIONS INFORMATION

Provide details of actual selections used in the construction of the works including:

- Tapware type and supplier details.
- Sanitary ware including accessories type and supplier details.
- Light fitting type and supplier details.
- Door hardware type and supplier details.
- Carpet type and colour including underlay and the supplier details.
- Vinyl flooring type and colour including supplier details.
- Overlay timber floor type and supplier details.
- Tile type and supplier details.
- Fire supplier details.
- Aluminium joinery system and finish.
- Paint type and colours used.

Include brochures and other information included with the items supplied.

1.7 SELECTIONS INFORMATION - SUBSTITUTIONS

Provide details of any selections used in the construction of the works that are different from what was specified.

Documentation format

1.8 O&M DOCUMENTATION FORMAT

Unless otherwise specified in a work section,

- Provide O&M drawings at scales appropriate to the detail to enable good legibility.
- Provide manufacturers documentation at the original scale.
- Provide written text generally in A4 format using a font not less than 10 point.

Submit O&M documentation in both hard copy and as electronic portable document format (PDF) files.

Submission and review

1.9 O&M DOCUMENTATION SUBMISSION & REVIEW

Unless otherwise specified in a work section, provide draft O&M documentation no later than the date of practical completion or the date on which the principal takes occupation of the works, whichever occurs first.

Submit O&M documentation to the named reviewer for review.

- Where no time is stated in a specific section, allow 10 working days for review by the reviewer. Where a large amount of documentation is involved more time will be necessary.
- Where no person is named in a specific section as the reviewer, submit the O&M documents to the contract administrator.
- Submit a proposed index system (as required for final documentation) to the contract administrator for review.

O&M review indicates only that the reviewer is satisfied that the documents are legible. The review is not a check of the accuracy of the documents, however the reviewer may comment on any aspect of the documentation and require the documents to be revised and resubmitted. Review of operation and maintenance documentation does not relieve the contractor of responsibility for the correctness of the documentation.

The reviewer may advise that:

- The O&M documentation has been reviewed and has been accepted without the need for further modification. The information can be included in the final documentation; or
- The O&M documentation has been reviewed and the information can be included in the final documentation subject to revision required by notes, annotations or comments provided; or
- The O&M documentation has been reviewed and is not acceptable, refer to notes, annotations or comments provided. Resubmit corrected/altered documentation for review.

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Amalgamate the reviewed accepted and corrected O&M documentation into the final O&M documentation

Final documentation

1.10 SUBMISSION OF FINAL DOCUMENTATION

Prior to the end of the defects notification/liability period, provide complete O&M documentation in both hardcopy and electronic form.

1.11 FINAL O&M DOCUMENTATION - HARDCOPY

Provide the hard copy version of the O&M documentation in a loose-leaf binder with a contents index identifying operation and maintenance documents, requirements, manuals, operating instructions and selections. In addition include the project name, contractor's name and the date of practical completion on the index page.

Include indexed sections to identify all operation and maintenance manuals that are not contained within the binder. Provide a copy of the front cover or other identifying feature of the manual within the section with a note stating "this manual has been provided separately".

Provide a title on the binder edge "Operation and maintenance instructions for (project name)". If more than one binder is required identify each binder by number and ranking (e.g. Volume 2 of 3) and group information logically between the binders for ease of reference.

Provide operation and maintenance manuals clearly and neatly marked on the spine or front cover so as to identify the project name. Where operation and maintenance manuals are a collection of loose leaf documentation, provide documentation in a loose-leaf binder as described above.

1.12 FINAL O&M INFORMATION - ELECTRONIC COPY

Provide a copy of all hardcopy information in PDF format arranged in logical named folders. In addition provide DWG files of documentation if available.

1.13 REVIEW OF FINAL DOCUMENTATION

The contract administrator may review the final documentation and require alteration and resubmission.

2 SELECTIONS

O&M Documentation

2.1 FINAL DOCUMENTATION - INFORMATION FOR OPERATION AND MAINTENANCE

Provide a complete electronic copy to the contract administrator.

Provide two hardcopy sets of completed O&M documentation to the contract administrator. At least one set is to contain all available original documentation. The contractor is to retain a third hardcopy set for their records.

Provide any documentation (including required original documentation) as required to the relevant territorial authority.

2.2 FINAL DOCUMENTATION - OPERATION AND MAINTENANCE MANUALS

Provide a complete electronic copy to the contract administrator.

Provide two hardcopy sets of completed maintenance manuals to the contract administrator. At least one set is to contain all available original documentation. The contractor is to retain a third hardcopy set for their records.

Provide any documentation (including required original documentation) as required to the relevant territorial authority.

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Maintenance contract proposals

2.3 MAINTENANCE CONTRACT PROPOSALS

Unless otherwise specified in a work section, provide maintenance contract proposals to the contract administrator no later than the date of Practical Completion. Provide in electronic and hardcopy form.

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1239S1 SCHEDULE OF OPERATION & MAINTENANCE INFO

1 GENERAL

This schedule section identifies work sections in the specification that have requirements for the submission of:

- Information for operation and maintenance
- Operation and maintenance manuals
- Maintenance contract proposals

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- 1239 OPERATION & MAINTENANCE
- Identified Work Sections

Information for operation and maintenance

1.2 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the following sections:

4239	Soffit Cladding
4252VV	Vulcan Ultraclad Vertical Weatherboards
4521PT	Altus Thermal Aluminium Windows & Doors
4555	Garage Doors
5122PL	Plytech Panels Residential Linings
6700R	Resene Painting General
6743FB	Zone FireZone Vanguard Timber Fire Treatment
7352	Type 1 Domestic Smoke Alarm Systems
7612	Residential Extract Systems

Operation and maintenance manuals

1.3 OPERATION AND MAINTENANCE MANUALS

There are no work section requirements.

Maintenance contract proposals

1.4 MAINTENANCE CONTRACT PROPOSALS

Refer to the following sections:

7545CU	Central Heating Underfloor Heating Systems

Additional Items

1.5 ADDITIONAL ITEMS

Refer to separate documentation for the submission of operation and maintenance requirements not contained within this specification.

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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.

Temporary construction

1.9 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.

1.10 SITE - SAFETY SIGNAGE

Provide hazard board and other safety signage as required.

First aid

1.11 FIRST AID EQUIPMENT

Provide first aid equipment.



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1250 TEMPORARY WORKS & SERVICES

1 GENERAL

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

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

Temporary works

1.1 COSTS RELATING TO TEMPORARY WORKS

Pay all rates/fees in respect of temporary works.

1.2 MAINTENANCE OF TEMPORARY WORKS

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

1.3 SAFEGUARD THE SITE, THE WORKS AND MATERIALS

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

1.4 SITE FENCING

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

Construct the fence with:

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

1.5 SITE FENCING - NON-PUBLIC AREAS

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

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

1.6 PROVIDE SEDIMENT AND SILT RUN OFF PROTECTION

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

Prevent silt run off by:

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

Provide sediment control by:

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

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

1.7 PROVIDE CONCRETE WASHWATER RUN OFF PROTECTION

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



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Control run off from:

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

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

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

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

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

Spilt or surplus material:

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

Pump washwater away from drains, waterways and adjoining property.

1.8 EXCAVATION SAFETY

To the Health and Safety at Work Act 2015.

Carry out excavation to WorkSafe, Good Practice Guidelines - Excavation Safety. This may include deep excavation, trenching, and areas behind unfilled retaining walls.
Carry out excavation using plant and equipment suitable for the purpose.

Scaffolding

1.9 SCAFFOLDING

Provide scaffolding for the efficient execution of the works.

Comply with:

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

Temporary services

1.10 WATER

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

1.11 ELECTRICITY

To AS/NZS 3012.

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

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

1.12 TELEPHONE

Provide on-site temporary telephone facilities.



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1.13 COMPUTER FACILITIES

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

1.14 PRINTER

Provide on-site temporary printing facilities capable of printing A4 and A3 colour prints.

1.15 IMAGING

Keep available devices able to take and send quality printable digital photographs.

Care and protection - Site

1.16 LOCATE AND PROTECT SURVEY MARKS

Review information provided relating to survey marks. Physically locate and protect survey marks. Where required use a licensed cadastral surveyor to reinstate survey marks disturbed during construction.

1.17 LOCATE EXISTING SERVICES

Review information provided relating to underground and above ground services. Physically locate the position of all such services. Arrange with the network utility operator for all necessary exploratory work, location, protection, isolation, off-setting, reinstatement or alterations required. Record any alterations made to such utilities.

1.18 PROTECT EXISTING SERVICES

Protect existing services and parts of service systems, whether indicated or not, that are to remain in place during the execution of the works. Provide temporary caps or covers to prevent the ingress of dust and other contaminants into the systems, ducts, pipes etc. Reinstate where required and repair any damage resulting from carrying out the contract works.

1.19 PROTECT EXISTING LANDSCAPE ELEMENTS

Protect existing trees, fences, gates, walls, gardens and other designated landscape features which are to remain in position during the execution of the works. Construct a temporary fence at the outer edge of the drip line of trees to be protected. Comply with territorial authority requirements.

1.20 MAKE GOOD - SITE

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

Care and protection - Project

1.21 TEMPORARY PROTECTION

Provide and maintain temporary protection as required to protect products during transport, storage and handling. Provide temporary protection as required to protect the work in progress and the finished work. Refer to 1270 CONSTRUCTION for removal of protection.

1.22 SPECIAL PROTECTION GENERAL

Refer to individual work sections for any special protection requirements.

1.23 SPECIAL PROTECTION PROJECT

~

Care and protection - miscellaneous

1.24 CONSTRUCTION KEYING AND SECURITY

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

1.25 TEMPORARY STORAGE

Provide temporary storage areas and protective covers and screens to meet the requirements of the products to be stored.

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Rubbish removal

1.26 PERIODIC RUBBISH REMOVAL

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

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1256 WASTE MANAGEMENT

1 GENERAL

This general section relates to the implementation of a site waste management plan.
It includes:

- **Full REBRI requirements**
- **Part REBRI requirements**

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:

REBRI	Resource Efficiency in the Building and Related Industries

1.3 DOCUMENTS

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

REBRI Contract Specification for Waste Management
REBRI Waste Management Plan
REBRI Waste Transfer Form
REBRI Guides and Resource Recovery Documents (various)

REBRI contact details

Organisation:	REBRI
Web:	www.branz.co.nz/REBRI
Email:	branz@branz.co.nz

Special requirements

1.4 SPECIAL REQUIREMENTS - GENERALLY

Clauses in this section are additional to or modify clauses in other standard sections, particularly those covering demolition. This section should be read in conjunction with the rest of this specification with regard to all waste management for the project.

Refer to the clause RELATED WORK above for the main sections that are affected by this section.

Requirements - full REBRI

1.5 REBRI CONTRACT SPECIFICATIONS

Work to be carried out to the requirements of the project documents and the REBRI Contract Specifications for Waste Management document.

1.6 CONTRACTORS REBRI SITE COORDINATOR

Special requirements for 1222 PROJECT PERSONNEL.

The contractor to designate an on-site person (or persons) responsible for instructing and coordinating workers and overseeing and documenting results for REBRI requirements.

1.7 WASTE MANAGEMENT PLAN

Prepare and submit a waste management plan in line with the REBRI Waste Management Plan and guidelines provided in the REBRI Guides www.branz.co.nz/REBRI

The submitted plan to include the following factors:

- site planning and material storage
- waste management
- purchasing
- recycling

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- salvage

1.8 RECORD KEEPING

Maintain a record of waste materials, recycled, reused and disposed of by the project using the REBRI Waste Management Plan and REBRI Waste Transfer Form or a form generated by the contractor containing the same information.

- For each material recycled from the project, include the amount (in cubic metres or tonnes), or in the case of reuse, state quantities by number, type and size of items, and the destination (i.e. recycling facility, used building materials yard).
- For each material to landfill, include the amount (in cubic metres or tonnes) of material and the identity of the landfill, clean fill and/or transfer station.

If requested, submit to the Contract Administrator the REBRI Waste Management Plan, REBRI Waste Transfer Forms or bills, invoices and other documentation confirming that all materials have been received at the required locations.

1.9 CONTRACTORS DETAILED STATUS REPORT - REBRI REQUIREMENTS

Special requirements for 1260 PROJECT MANAGEMENT.

For Site Meetings Contractors detailed status report is to also address the following:

- Waste Management Plan and Waste Diversion Tracking Tables.
- Deconstruction and salvage.

Requirements - part REBRI

1.10 SITE COORDINATOR

The contractor is responsible for instructing and coordinating workers and overseeing and documenting results for REBRI requirements.

1.11 WASTE MANAGEMENT PLAN

Prepare and submit a waste management plan similar to the REBRI Waste Management Plan and REBRI Guides, and to suit the location of the project.

The submitted plan to include the following factors:

- site planning and material storage
- waste management
- purchasing
- recycling
- salvage.

1.12 REPORTING

Contractor provide a report to the site meeting based on the Waste Management Plan and similar to the Waste Transfer Form, of waste materials, recycled, reused and disposed of by the project.

If requested, submit to the Contract Administrator documentation confirming that all materials have been received at the required locations.

Requirements - General

1.13 ENSURE

Ensure all site management and staff, subcontractors, material and product suppliers and waste disposal companies are made aware that this is a REBRI project (in part or full) and provide access to or copies of the waste management plan.

2 PRODUCTS

Equipment

2.1 CONTAINERS

Provide appropriately sized and sited containers/bins for the storage of reusable, recyclable and waste products. Clearly label each container.

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3 EXECUTION

Conditions

3.1 STORAGE

Store all materials so they are not damaged prior to use.

3.2 PLANNING

Plan the measurement and ordering of materials and components to minimise waste.

Statutory requirements

3.3 HAZARDOUS WASTE

Conform to applicable regulations for disposal and removal of common and hazardous waste.

Handle and dispose of all hazardous and banned materials in accordance with national and local regulations - these hazardous and banned materials may include but are not limited to asbestos, underground storage tanks, polychlorinated biphenyls (PCBs), abandoned chemicals (petrol, pesticides, herbicides, flammable and combustible substances), freon from cooling equipment, lead-based paints, smoke detectors and mercury-containing switches, also contaminated soil or fill.



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4 APPLICATION

4.1 DEMOLITION

- Sort concrete and concrete block waste for recycling as aggregate, sub-base material or fill.
- Sort brick waste for reuse as whole bricks, or re-use as crushed brick for landscape cover, sub-base material or fill.
- Sort asphalt material by type for milling and recycling.

4.2 DISMANTLING/REUSE

- Dismantle, store and protect items, elements and components for reuse on site.
- Dismantle, store and protect items, elements and components for recycling off site.
- Dismantle store and protect items, elements and components for return to the owner.

4.3 SITE CLEARING

- Sort asphalt material by type for milling and recycling.
- Grind, chip or shred vegetation for mulching and composting on site.
- Grind, chip or shred vegetation for off site mulching and composting.
- Separate and recycle steel reinforcing and other metals.
- Provide suitable on-site locations for the disposal of excavated rock, soil and vegetation.

4.4 CONCRETE

- Plan for maximum re-use of concrete formwork.
- Separate and recycle concrete.
- Provide a suitable on-site location for the disposal of excess concrete.

4.5 WOOD

- Separate and recycle wood off-cuts and waste.
- Separate timber for reuse
- Provide a suitable storage area for sizeable off-cuts for use as spacers or blocking.
- Separate CCA treated timber from untreated timber.
- Chip untreated timber for mulching and composting on site.
- Chip untreated timber for off site mulching and composting.

4.6 PLASTERBOARD

- Include for both horizontal fitting of sheets and customised sheet lengths.
- Retain larger off-cuts for use around doors, windows or built-in items.
- Waste plasterboard, separate and recycle to compost (if locally available).

4.7 PLUMBING

- Select plumbing materials with a high recycled content.
- Ensure that reusable packaging materials are returned to the vendors.
- Retain PVC off-cuts for use as stubs.
- Separate and recycle plastics.

4.8 ELECTRICAL

- Select electrical materials with a high recycled content.
- Ensure that reusable packaging materials are returned to the vendors.
- Separate and recycle metals and wire.
- Separate and recycle plastics.

4.9 MECHANICAL

- Select mechanical materials with a high recycled content.
- Ensure that reusable packaging materials are returned to the vendors.
- Separate and recycle metals and wire.
- Separate and recycle plastics.

Completion

4.10 CLEANING

All cleaning materials used on the project to be biodegradable and non-toxic.



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1278SR SCHEDULE OF SLIP RESISTANCE TESTING

1 GENERAL

This section relates to the testing of surfaces for slip resistance. It includes:

- test methods and minimum test values required for slip resistance testing.
- general reporting requirements.

This section includes schedules identifying work sections with:

- slip resistant surfaces exempt from testing and slip resistant surfaces that have been tested and comply with NZBC D1/AS1 requirements for testing.
- surfaces that require slip resistance testing.

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- Work sections identified in the schedule(s)

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:

BPN	British Pendulum Number
COF	Coefficient of friction
SDV	Slope design value
SRV	Slip resistance value

Documents

1.3 DOCUMENTS

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

NZBC D1/AS1	Access routes
AS 4586	Slip resistance classification of new pedestrian surface materials

Slip resistance - surfaces not requiring testing

1.4 SLIP RESISTANCE - SURFACES EXEMPT FROM TESTING

Walking surfaces on access routes that do not require testing for slip resistance include surfaces identified in NZBC D1/AS1, Table 2 as acceptable. These surfaces are covered in the following Work sections:

6221A ARDEX Floor Tiling Solutions

1.5 SLIP RESISTANCE - PREVIOUSLY TESTED SURFACE

Walking surfaces on access routes that have previously been tested for slip resistance and found to comply with NZBC D1/AS1 requirements are covered in the following Work sections:

6221A ARDEX Floor Tiling Solutions

Slip resistance - surfaces requiring testing

1.6 SLIP RESISTANCE - SURFACES REQUIRING TESTING

Refer to the following work sections for surfaces to be tested for slip resistance, including location, test condition, slope requirement and specific reporting requirements:

3130 Precast Concrete
6221 Floor Tiling Systems
6221A ARDEX Floor Tiling Solutions

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1.7 TEST METHODS & MINIMUM TEST VALUES

Refer to tables below for test methods and minimum test values required for the stated test condition.

Test condition:	Minimum test value required:	Test method:
Level access wet	39 SRV	Wet pendulum test method of AS 4586, Appendix A using the Slider 96 rubber.
Sloping access wet	Refer to sloping access wet table below, select BPN value for stated slope.	Wet pendulum test method of AS 4586, Appendix A
Stairs wet - with slip resistant nosings	39 SRV	Wet pendulum test method of AS 4586, Appendix A using the Slider 96 rubber.
Stairs wet - without slip resistant nosings	50 BPN	Wet pendulum test method of AS 4586, Appendix A
Wet areas primarily used barefoot	“B” Classification	Obtain classification from the ramp method of AS 4586, Appendix C
Level access dry	0.4 COF	Obtain slip resistance value from the dry floor friction test method of AS 4586, Appendix B
Sloping access dry	Refer to sloping access dry table below, select COF value for stated slope.	Obtain slip resistance value from the dry floor friction test method of AS 4586, Appendix B
Stairs dry - with slip resistant nosings	0.4 COF	Obtain slip resistance value from the dry floor friction test method of AS 4586, Appendix B
Stairs dry - without slip resistant nosings	0.525 COF	Obtain slip resistance value from the dry floor friction test method of AS 4586, Appendix B
Contaminated walking surfaces	R~	Obtain classification from the oil-wet inclining platform test method of AS 4586, Appendix D

Sloping access wet - minimum test values required for a given slope

Minimum test value required (SDV)	Maximum gradient	Maximum slope in degrees
42 BPN	1 in 39	1.5°
43 BPN	1 in 29	2.0°
44 BPN	1 in 23	2.5°
45 BPN	1 in 20	3.0°
45 BPN	1 in 17	3.5°
46 BPN	1 in 15	4.0°
47 BPN	1 in 13	4.5°
48 BPN	1 in 12	5.0°
49 BPN	1 in 11	5.5°
50 BPN	1 in 10	6.0°

Sloping access dry - minimum test values required for a given slope

Minimum test value required (COF)	Maximum gradient	Maximum slope in degrees
0.433	1 in 39	1.5°
0.444	1 in 29	2.0°
0.455	1 in 23	2.5°
0.466	1 in 20	3.0°
0.477	1 in 17	3.5°

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0.488	1 in 15	4.0°
0.499	1 in 13	4.5°
0.504	1 in 12	4.76°
0.521	1 in 11	5.5°
0.525	1 in 10	5.7°
0.543	1 in 9	6.5°
0.557	1 in 8	7.125°

1.8 GENERAL REPORTING REQUIREMENTS

Provide slip resistance test results to the contract administrator, including a statement that the tested surface meets or exceeds the nominated minimum test value. Refer to individual work sections for additional requirements. If no time is nominated for the submission of test results in the work section, then provide test results prior to practical completion.

If testing identifies a failure to meet performance requirements, notify the contract administrator and manufacturer/supplier. Consult with the manufacturer/supplier to identify the cause, then correct the failure and repeat the test.

Slip resistance - additional items

1.9 SLIP RESISTANCE - ADDITIONAL ITEMS

Refer to separate documentation for slip resistance requirements not contained within this specification.

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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.



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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.

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 PROTECT EXISTING TREES, PLANTING, OR LANDSCAPE FEATURES

Protect from damage trees, shrubs, natural site features and existing landscaped areas nominated on the drawings as being retained. Ensure existing levels are undisturbed beneath the dripline of retained trees.

3.6 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.

3.7 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.

3.8 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.



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3.9 GENERAL EXCAVATION

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

3.10 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.

3.11 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.

3.12 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.

3.13 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.

3.14 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.

3.15 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.

3.16 SURPLUS MATERIAL

Remove surplus and excavated material from the site.

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3101 CONCRETE WORK - BASIC

1 GENERAL

This section relates to formwork, reinforcement, concrete mixes and the placing of concrete.

1.1 RELATED WORK

Concrete driveway included in this section

NOTE: CONSENT REQUIRED FOR NEW VEHICLE CROSSING FROM QLDC

1.2 ABBREVIATIONS AND DEFINITIONS

The following definitions apply specifically to this section:

ACRS	Australian Certification Authority for Reinforcing Steels - An independent certification scheme for reinforcing steel and structural steel, by product and manufacturer/processor. Certifies compliance with Australia/New Zealand Standards.

ACRS web site - www.steelcertification.com

Documents

1.3 DOCUMENTS

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

NZBC B1/AS1	Structural provisions for buildings
NZBC E2/AS3	External moisture provisions for concrete and concrete masonry buildings
AS 1366.3	Rigid cellular plastics for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS - M)
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
NZS 3101.1	Concrete structures standard
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber-framed buildings
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4671	Steel reinforcing materials
AS/NZS 4858	Wet area membranes
CCANZ CP 01	Code of practice for weathertight concrete and concrete masonry construction

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

~

Manufacturer/supplier contact details

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

Requirements

1.5 QUALIFICATIONS

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

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1.6 STEEL REINFORCING COMPLIANCE

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



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2 PRODUCTS

2.1 NORMAL CONCRETE

Normal concrete 17.5 to 50 MPa grade, (refer to SELECTIONS), maximum aggregate size 19mm ready-mixed to NZS 3104. Provide delivery dockets listing mix and despatch details.

2.2 REINFORCEMENT

Bars to AS/NZS 4671. Grade 300E deformed, other than for ties, stirrups and spirals, unless shown otherwise on the drawings. Welded reinforcing mesh Class E to AS/NZS 4671, and 500E mesh to AS/NZS 4671.

2.3 MESH FOR SLABS TO NZS 3604 OR NZS 4229

For slabs on ground mesh to be welded reinforcing mesh to AS/NZS 4671, Class E, minimum to B1/AS1 - Grade 500E, 2.27kg/m2 (1.14kg/m2 in each direction).

2.4 TYING WIRE

Mild drawn steel wire not less than 1.2mm diameter.

2.5 SPACERS AND CHAIRS

Precast concrete or purpose made moulded PVC to approval. Where concrete spacer blocks are used in exposed concrete work use blocks matching surrounding concrete.

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3 EXECUTION

3.1 HANDLE AND STORE

Handle and store reinforcing steel and accessories without damage or contamination. Store on timber fillets on hard ground in a secure area clear of any building operation. Lay steel fabric flat.

Ensure reinforcement is clean and remains clean so that at the time of placing concrete it is free of all loose mill scale, loose rust and any other contamination that may reduce bonding capacity.

3.2 FALSEWORK AND FORMWORK

Use falsework and formwork of sufficient strength to retain and support the wet concrete to the required profiles and tolerances. Select formwork finish to produce the specified finished quality. Ensure timber or plywood used for formwork is non-staining to the set concrete.

Securely fix and brace formwork sufficiently to support loads and with joints and linings tight enough to prevent water loss. Do not use tie wires or rods unless approved in writing by the Contract Administrator. Unless detailed otherwise, provide a 19mm chamfer or fillet strip at all interior and exterior angles of beam and column forms. Mitre at intersections.

Water blast to clean formwork. Keep formwork wet before concrete is placed.

Unless detailed otherwise, set up soffit boxing for beams and slabs to provide a camber when forms are stripped, of 3mm rise for every 3 metres of total clear span.

3.3 CUT AND BEND REINFORCEMENT

Cut and bend bars using proper bending tools to avoid notching and to the requirements of NZS 3109: 3.3 Hooks and bends. Minimum radii of reinforcement bends to NZS 3109, table 3.1, Minimum radii of reinforcement bends. Do not rebend bars. Where rebending is approved, use a purpose built tool, proper preparation and preheating.

3.4 ADJUSTMENTS

Use a purpose built tool for on site bending and to deal with minor adjustments to steel reinforcement.

3.5 TOLERANCES, BENDING

To NZS 3109, 3.9, Tolerances for reinforcement.

3.6 SECURE REINFORCEMENT

Secure reinforcement adequately with tying wire and place, support and secure against displacement when concreting. Bend tying wire back well clear of the formwork. Spacing as dimensioned, or if not shown, to the clear distance minimums in NZS 3109, 3.6, Spacing of reinforcement.

3.7 LAPPED SPLICES

Length of laps where not dimensioned on the drawings in accordance with the SELECTIONS. Provide laps only where indicated on the drawings. Tie all lapping bars to each other. Plain bars lapped splices must be hooked.
Wire mesh laps to NZS 3101.1, lap one mesh square plus 50mm minimum (do not count bar extension beyond the outermost wire).

3.8 MESH LAPS FOR SLABS TO NZS 3604 OR NZS 4229

For slabs on ground the welded reinforcing mesh to be lapped such that the outermost wires overlap by the greater of:

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

Do not count bar extensions beyond the outermost cross wire.

3.9 REINFORCEMENT COVER TO NZS 3101.1

Minimum cover to all reinforcing bars, stirrups, ties and spirals, as shown on drawings. Where cover is not shown on drawings provide minimum cover to NZS 3101.1, table 3.6, **Minimum required cover for a specified intended life of 50 years**. Sub-soil cover to NZS 3101.1, to suit soil and groundwater conditions. Fix chairs for top reinforcement in slabs at 1.0 metre centres or to ensure adequate support. Cover tolerances to NZS 3109, 3.9, Tolerances for reinforcement.

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3.10 REINFORCEMENT COVER TO NZS 3604 OR NZS 4229

For in-situ concrete, foundations and interior slabs on ground, to NZS 3604 or NZS 4229, the reinforcement and welded mesh cover to be:

Location, cover to	NZS 3604	NZS 4229
Footing, to earth	75mm	75mm
Footing, to DPM	75mm	50mm
Foundation, to edge	75mm	75mm
Slab, to slab top	30mm	30mm
Slab, to slab edge	50mm to 75mm	50mm to 75mm

3.11 EQUIPOTENTIAL BONDING REINFORCING

If it is a project requirement, ensure that reinforcing is electrically equipotential bonded (or at least conductor cable attached) before the concrete is poured. For bonded reinforcing ensure all reinforcing is interconnected with good contact at joints and tight conductive ties.

3.12 CASTING IN

Build in all grounds, bolts and fixings for wall plates and bracing elements, holding down bolts, pipes, sleeves and fixings as required by all trades and as shown on the drawings, prior to pouring the concrete.

Do not use grounds exceeding 100mm in length. Location and form of conduits to be approved in writing by the Contract Administrator. Minimum cover 40mm. Do not encase aluminium items in concrete. Do not paint steel embedded items more than 25mm into the concrete encasement. Cut back form ties to specified cover and fill the cavities with mortar.

Form all pockets, chases and flashing grooves as required by all trades and as shown on the drawings.

Wrap all pipes embedded in concrete with tape to break the bond and to accommodate expansion. Do not embed pipes for conveying liquids exceeding a temperature of 50°C in concrete.

3.13 CONSTRUCTION JOINTS

Locate and construct as shown on the drawings or in accordance with NZS 3109, 5.6, Type B.

3.14 PRE-PLACEMENT INSPECTION

Do not place concrete until all excavations, boxing and reinforcing have been inspected and passed by the Building Consent Authority.

3.15 SURFACE FINISHES

To NZS 3114, 105, Specification of finishes, as scheduled or as denoted on the drawings.

3.16 EXPOSED CONCRETE

Formwork linings and surface finishes as nominated for both fair face and concealed or exposed surfaces. Unless detailed, obtain written confirmation of the type and pattern of all joints.

3.17 CONCRETE SURFACE TOLERANCES

To NZS 3114, 104, Surface tolerances and NZS 3114, 105, Specification of finishes, with the suggested tolerances becoming the required tolerances.

3.18 PUMPING CONCRETE

Set up and supervise pump operation, placing and compaction of the mix to NZS 3109, 7.4, Handling and placing and NZS 3109, 7.6, Compaction Advise the ready-mix supplier of the type of pump and the slump required, in addition to the concrete grade, strength and quantity.

3.19 COMPACTION

Use power operated vibrators on foundations, vertical constructions and beams.

3.20 FLOOR SLABS TO NZS 3604

Generally for slabs on ground to NZS 3604 as modified by NZBC B1/AS1 and NZBC E2/AS3.

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Construct to NZS 3604, 4.5 **Concrete and concrete masonry** and NZS 3604, 7.5, **Concrete slab-on-ground floors in timber buildings** as modified by NZBC B1/AS1, 3.0 **Timber**. Lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish. Tolerance on flatness: maximum 3mm gradual deviation over a 3 metre straight-edge, to NZS 3114, 304, **Surface tolerances**.
Allow for free joints maximum 24m centres to NZBC B1/AS1, 3.1.13 **NZS 3604 New clause**.

3.21 FLOOR SLABS TO NZS 4229

Generally for slabs on ground to NZS 4229 as modified by NZBC B1/AS1 and NZBC E2/AS3.

Construct to NZS 4229, 6, **Footings** and NZS 4229, 7, **Foundation walls and concrete slab-on-ground** as modified by NZBC B1/AS1, 2.0 **Masonry**. Lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish. Tolerance on flatness: maximum 3mm gradual deviation over a 3 metre straight-edge, to NZS 3114, 304, **Surface tolerances**.
Allow for free joints maximum 18m centres to NZS 4229, 7.8.5.3 **Free joints**.

3.22 SAW CUTS TO NZS 3604 OR NZS 4229

Cut slabs where indicated on the drawings as required to control shrinkage cracking. Form by saw cutting the slab (blade width approximately 5 mm) to a quarter of the depth of the slab after it has hardened (saw cutting shall take place no later than 24 hours after initial set for average ambient temperatures above 20 ºC, and 48 hours for average ambient temperatures below 20ºC).

3.23 SAW CUTS

Cut slabs where indicated on the drawings and as required to control shrinkage cracking. Carry out cutting as soon as possible, without causing tear-out of aggregate and before shrinkage cracking has occurred, generally within 24 hours of pouring.

3.24 SPACING OF SAW CUTS

Spacing of sawcuts

Floor situation	Maximum spacing of sawcuts both ways
Industrial floor	5m
Architectural, exposed floor, thin finishes, rigid finishes	4m
Carpet on underlay flooring	6m

3.25 SURFACE DEFECTS

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

3.26 CURING OF CONCRETE

Keep damp for not less than seven days. Ensure curing of slabs commences as soon as possible after final finishing, by the use of continuous water sprays, or ponding. Alternately, apply a curing membrane. Ensure any membrane used will not affect subsequent applied finishes.

3.27 STRIKE FORMWORK

Strike formwork without damaging or overloading structure. Do not remove formwork before the following minimum periods:

12 hours:	Sides of beams, walls and columns
4 days:	Slabs in beam and slab construction (leave props under slab spans over 2 metres)
10 days:	Props from under slab spans over 2 metres
18 days:	Beams, soffits and slab spans over 5 metres

3.28 CLEAN OUT

Clean out saw cuts. Fill with cement grout where the floor will be covered with carpet or vinyl.

3.29 REMOVE

Remove all unused materials and all concrete and reinforcing debris from the site.

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4 SELECTIONS

4.1 REINFORCEMENT LAPS

Where reinforcement laps are not shown on the drawings, lap as follows:

Bar diameter	Grade 300E deformed
10mm	400mm
12mm	500mm
16mm	650mm

4.2 NORMAL CONCRETE

Normal concrete:

17.5 MPa: **refer engineer's documentation**

4.3 SURFACE FINISHES FLOOR SLABS

Surface finish class to NZS 3114: table 2, Classes of floor, exterior pavement and invert finishes.

Finish class	**Location**
U3 to garage	**refer drawings**

4.4 SURFACE FINISHES PAVEMENTS AND DRIVEWAYS

Surface finish class to NZS 3114: table 2, Classes of floor, exterior pavement and invert finishes.

Finish class	**Location**
Exposed aggregate	**driveway, entry path and north terrace**
	KERB CROSSING to QLDC standards

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3114E EXPOL UNDERSLAB INSULATION

1 GENERAL

This section relates to the supply and installation of Expol insulation foam boards for concrete slabs on ground.

It includes:

- EPS and XPS under slab insulation foam boards
- XPS slab edge insulation foam boards

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

DPM	Damp proof membrane
EPS	Expanded polystyrene
XPS	Extruded polystyrene

Documents

1.2 DOCUMENTS

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

NZBC H1/AS1-AS2	Energy efficiency
AS 1366.3	Rigid cellular plastic sheets for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS - M)
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
AS/NZS 4859.1	Thermal insulation materials for buildings - General criteria and technical provisions

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Expol under slab / slab edge insulation brochures
Expol technical product guide
Expol technical data sheets
Expol ThermaSlab edge installation instructions
Expol BPIR

Company	Expol Ltd
Web:	www.expol.co.nz
Email:	tech@expol.co.nz
Telephone:	09 634 3449 / 0800 863373
Facsimile:	09 634 0756

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years	For EPS insulation products
15 years	For XPS insulation products

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of installation

Refer to the general section 1237 WARRANTIES for additional requirements.

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1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year For installation

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

2 PRODUCTS

Materials - under slab insulation

2.1 EXPOL-X

Expol-X, XPS dense rigid foam insulation board. Available in 2500mm x 600mm and a range of thicknesses. Refer to SELECTIONS.

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.

3.3 PROTECT

Do not subject the polystyrene to prolonged saturation or exposure to sunlight. Do not allow the polystyrene to come into contact with solvents.

3.4 PRE-INSTALLATION REQUIREMENTS

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

Installation/application

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.6 INSTALLATION - GENERAL

Install under slab insulation to NZBC H1/AS1-AS2 and Expol Ltd installation requirements. Also install to NZS 4246 for all housing and buildings up to 300m².

3.7 INSTALL UNDERSLAB INSULATION

Install the polystyrene sheets once the polythene DPM has been laid. Place the polystyrene sheets on top of the polythene DPM and butt together. Do not place the polystyrene under any footings or slab thickenings. Cut holes in the polystyrene with a sharp knife to accommodate any services. Lay reinforcing steel mesh over the polystyrene on mesh chairs

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

Materials - under slab insulation

4.1 EXPOL-X

Location:	**under slab**
Brand:	**Expol-X**
Size:	**2500mm x 600mm**
Thickness:	**50mm**
Compressive resistance at 10%:	**250kPa**
R value:	**1.8**

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3130 PRECAST CONCRETE

1 GENERAL

This section relates to the off site manufacture and on site installation of precast panels for housing and small scale commercial projects.

1.1 RELATED WORK

Refer to the appropriate concrete section for concrete requirements.

1.2 ABBREVIATIONS AND DEFINITIONS

The following definitions apply specifically to this section:

ACRS	Australian Certification Authority for Reinforcing Steels - An independent certification scheme for reinforcing steel and structural steel, by product and manufacturer/processor. Certifies compliance with Australia/New Zealand Standards.

ACRS Web site - www.steelcertification.com

1.3 DOCUMENTS

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

NZBC B1/VM1	Structural design of buildings
NZBC D1/AS1	Access routes
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3112.1	Methods of test for concrete - Tests relating to fresh concrete
NZS 3114	Specification for concrete surface finishes
NZS 3121	Water and aggregate for concrete
AS/NZS 4671	Steel reinforcing materials
AS/NZS 4672.1	Steel prestressing materials - General requirements
AS/NZS 4672.2	Steel prestressing materials - Testing requirements
AS/NZS ISO 9001	Quality management systems - Requirements
WorkSafe	Safe work with precast concrete: Handling, transportation and erection of precast concrete elements (Good Practice Guidelines).

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 from ~

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

Requirements

1.5 PREPLANNING

Prior to shop drawing/manufacture of the precast panels the Contractor, Precaster and other relevant parties, must liaise, to ensure handling, installation and on site requirements are coordinated with the panel production.

1.6 SHOP DRAWINGS

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

Provide shop drawings to show the general arrangement including, but not be limited to:

- size, spacing and cover of reinforcement

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- details, position and layout of cast in items, including those for, lifting, handling, fastening and connecting
- details of panel edges
- surface finish requirements and locations
- location and size of rebates, recesses and penetrations
- grout ducts
- concrete grade and other mix requirements
- concrete volume and weight of finished unit for lifting
- for insulated panels, details of insulation, low conduction connectors/ties, vapour barrier

if requested provide the following additional information:
~

Submit shop drawings for review to ~.

- ~ working days (at least) before fabrication is planned to commence, provide shop drawings for review.
- Do not commence fabrication of any panel before shop drawing review of the panel is complete.
- Shop drawing review (and subsequent fabrication) can be carried out on an agreed sectional/staged basis.

1.7 MANUFACTURERS STATEMENT OF COMPLIANCE

Provide a Manufacturer's Statement of Compliance from: Safe work with precast concrete: Handling, transportation and erection of precast concrete elements (Good Practice Guidelines).

1.8 PANEL SURFACE

Use appropriate mould materials, moulding systems and casting methods to achieve the specified surface finishes. Refer to SELECTIONS for surface finishes.

1.9 QUALIFICATION, PRECAST MANUFACTURE

Precast concrete panels manufactured by either;

- a Concrete NZ Certified Plant
- or an off-site precast manufacturer with, an established record of panel production to a similar standard, suitable plant and a quality assurance system to AS/NZS ISO 9001

Use only precast concrete workers skilled and experienced in precast panel production.

1.10 QUALIFICATION, ON SITE WORK

Use only concrete tilt up panel, crane and rigging, contractors skilled and experienced in the erection of tilt up panels.

Performance

1.11 STEEL REINFORCING COMPLIANCE

Steel reinforcing and steel prestressing materials for concrete to AS/NZS 4671 or AS/NZS 4672.1, respectively. Steel to be manufactured in New Zealand, or by an overseas manufacturer holding a current valid (or equivalent) NZ S Mark or ACRS certificate for that type of steel.

Steel that fails to meet these requirements is not to be used (or ordered) without the contract administrators written approval, further proof and/or testing may be required.

1.12 CONFIRM STEEL REINFORCING COMPLIANCE

Certification from the supplier confirming that the steel reinforcing supplied complies with the grades specified on the drawings by producing test results to AS/NZS 4671 or AS/NZS 4672.1 and AS/NZS 4672.2. For overseas manufactured steel provide NZ S Mark or ACRS certificate details or approved equivalent.

1.13 TESTING - CONCRETE

Carry out sampling and concrete acceptance tests during construction to NZS 3109: section 9, Concrete acceptance tests during construction.

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Conduct 7 day strength tests. After a 7 day test result of less than 60% of the specified strength, concrete placement to stop until it is shown the suspect concrete complies with the specification.

Carry out slump tests, yield tests and air content tests to NZS 3112.1, sections 4, 5 and 9, and evaluate to NZS 3104.2.15. Control tests and their evaluation. Make available all test records to the contract administrator on request.

1.14 QUALITY ASSURANCE

Carry out the whole of this work to the requirements of NZS 3109 and under the regime of a quality systems for quality assurance in production and erection.

Advise the name of the suitably experienced and qualified representative who is responsible for quality control of the concrete work. The representative is to sign a written quality control checklist for each concrete pour.

1.15 INSPECTION NOTIFICATION REQUIREMENTS

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1.16 INSPECTIONS BY CONSTRUCTION REVIEWER

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1.17 INSPECTIONS BY BUILDING CONSENT AUTHORITY

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1.18 SITE LOADINGS, PERMANENT STRUCTURE

Prevent damage to supporting structure from stacking of precast items.

Performance – Slip resistance

1.19 TEST - SLIP RESISTANCE

Test walking surfaces for slip resistance, refer to SELECTIONS for test condition.

2 PRODUCTS

2.1 CONCRETE

To NZS 3104.
Refer to CONCRETE section for concrete supply and to SELECTIONS for concrete strength.

2.2 GRADE 300E STEEL

To AS/NZS 4671. Round bars are shown by symbol "R" and deformed bars by symbol "D", followed by the diameter in millimetres.

2.3 GRADE 500E STEEL

To AS/NZS 4671. Round bars shown by symbol "HR" and deformed bars by symbol "HD" followed by diameter in millimetres.

2.4 WELDED WIRE FABRIC

Hard drawn steel wire spot welded with correct gauge to AS/NZS 4671, smooth or deformed and to the spacing and dimensions either specified or shown on the drawings.

2.5 SPACERS AND CHAIRS

Precast concrete or purpose made moulded PVC to approval. Where concrete spacer blocks are used in exposed concrete work use blocks matching surrounding concrete.

Components

2.6 LIFTING INSERTS

Proprietary lifting inserts to: Safe work with precast concrete: Handling, transportation and erection of precast concrete elements (Good Practice Guidelines). Minimum finish galvanized mild steel.

Ensure all cast-in insert systems used are capable of allowing the insert void finish required in SELECTIONS.

2.7 CAST IN STEEL ITEMS

Cast in items as detailed and required. Ensure items are pre-finished where required.

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2.8 LEVELLING SHIMS

Rigid plastic or other suitable levelling shims to: Safe work with precast concrete: Handling, transportation and erection of precast concrete elements (Good Practice Guidelines).

2.9 SEALANTS

Polysulphide, polyurethane or silicone gap filling proprietary sealants.

3 EXECUTION

Conditions

3.1 HANDLE, TRANSPORT AND STACK

Handle, transport and stack panels to ensure support that avoids distortion and stress and at the same time protects the finished surfaces from chipping, scoring, cracking or other disfigurement. Storage methods and packing between panels should minimise colour variations to exposed surfaces.

Arrange delivery and erection of precast panels to minimise handling, storage or restacking on site.

Manufacture

3.2 TOLERANCES, OFF-SITE PRECAST, CRITICAL

Manufacture panels to the following tolerances:

Item			Tolerance
Length and height:		< 3.0 metres	± 3mm
	Generally	> 3.0 metres	± 5mm
	Cladding	> 3.0 metres	± 3mm
Thickness overall:			± 3mm
Deviation from square:	Length	< 4.0 metres	0.0015 L
(difference in length between two diagonals)			
Twist:			± 3mm
(any one corner out of plane passing through other three corners)			
Position of panel openings and cast in items:			± 3mm

Other tolerances to NZS 3109, Table 5.1 - Tolerances for Pre-cast components reduced by 40%. Before casting, ensure moulds will result in the finished panels complying with tolerances.

3.3 SECURE REINFORCEMENT

Secure adequately with tying wire, spacers or other suitable means, and place accurately where detailed, supported and secured against displacement. Ensure minimum concrete cover is maintained.

3.4 CONCRETE PLACING

Carefully place concrete to ensure all parts of the mould are completely filled and full contact is made with the mould surface. Use appropriate compaction techniques to achieve the required finish.

3.5 CASTING IN ITEMS

Accurately cast in all embedded items and fixings as detailed, all securely located to avoid displacement during concrete placement and compaction. Where bolts are cast in, also provide the nut (free moving on the bolt).

3.6 CURING

Confirm in writing the system to be used for curing concrete. Cure panels, for a minimum of 7 days and until minimum strength is achieved for safe lifting, handling, transportation and erection.

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Installation

3.7 INSTALLATION

Carry out work in accordance with: Safe work with precast concrete: Handling, transportation and erection of precast concrete elements (Good Practice Guidelines). Where proprietary lifting inserts are being used, ensure that lifting clutches are the correctly sized and from the same supplier.

Prior to lifting any panels from the truck, check and make a record of any damage to the panels, and obtain approval from the Contract Administrator before incorporating a damaged panel into the work.

3.8 SETTING OUT

Confirm panel dimensions, set out and site conditions. Also check starter bars, grout tube positions and fixing points. Check all temporary support work is ready, correct and capable of taking imposed loads.

3.9 TOLERANCES, ON - SITE EXECUTION

Locate precast items to the following tolerances:

Plan:	± 10mm
Vertical:	± 1mm/metre
Panel Joint width:	± 1mm/metre; but no panel joint shall be less than 10mm, or more than 20mm (unless indicated otherwise on drawings)

3.10 LIFTING

Mobile crane positions to be arranged and prepared prior to panel delivery to provide safe lifting. Ensure that all cranes can provide safe and easy movement of panels, as well as careful positioning. Check that rigging, straps, etc, suit the panel design and lifting points. Panels are to remain attached to the crane until they are either fully fixed into their final position or adequately secured by temporary means.

3.11 PROPPING AND BRACING

Provide temporary adjustable props or braces to secure the panel in position until final support is provided. They must be able to withstand the expected wind loads on the panel for the site and position.

3.12 PLACING

On positioning of the panel, check that all reinforcing and fixings line up with the appropriate items on the preceding work. Also check fixings will function as intended, in particularly fixings required to accommodate seismic movement. Ensure that there is no damage caused to the panel, surrounding surfaces or fixings during placing.

3.13 FINAL POSITION

Adjust panels into final position, check alignment, verticality, joint widths etc, and fix into place.

3.14 GROUT DUCTS

Fill grout ducts with expansive grout, ensure ducts are completely filled.

3.15 POST PLACING ADJUSTMENTS

After permanent placing check and adjust as necessary;

- all fixings for correct alignment and operation, and check the torque on all nuts and bolts - not less than 1 day after final fixing.
- recheck that all props, braces and fastenings are secure and capable of performing as required - not less than 1 day and not more than 7 days after a panel is fixed into position and held by temporary means.
- if panels are subject to, high wind loads, unintended or accidental loads during construction, recheck props braces and fastenings.

3.16 SEALANTS

Ensure at time of erection, that the limits of acceptable joint variation (from the manufacturer's requirements) for each product are maintained. Prepare joints, protect adjoining surfaces, seal joint surfaces, fit limiting rods and insert sealant to the manufacturer's requirements and temperature limits.

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3.17 CLEAN AND DRESS

Clean and dress panels externally and internally to leave them to the standard of finish specified and without blemish, ensuring following work can be completed to the required standard. Refer SELECTIONS for insert void finish.

3.18 CLEAN UP

Clean up surrounding areas of trade waste and remove temporary works required for the installation of the precast concrete items.

3.19 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 PRECAST CONCRETE STAIR

Location:	**refer engineers documentaion and drawings**
Supplier:	**tbc**
Tread finish:	**to match slabs elsewhere**
Riser finish:	**to match**
Side finish:	**to match**

4.2 INSERT VOID FINISH

Lifting/cast-in insert voids to have the following finish.

Location: **TBC by architect**

Note: inserts must not permanently project beyond panel face unless stated otherwise and for any flush finishes inserts must be removable or recessed well back from the panel face.



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3152 PRECAST PRESTRESSED FLOOR SYSTEM

1 GENERAL

This section relates to suspended flooring systems incorporating precast, prestressed concrete units.

1.1 RELATED SECTIONS

Refer to the appropriate concrete section(s) for concrete work.

Refer to 3124 FINISHES TO WET CONCRETE for finishes.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following definitions apply specifically to this section:

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

1.3 DOCUMENTS

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

AS/NZS 1170	Structural design actions -Parts 0,1,2,3.
AS/NZS 1170.1	Structural design actions -Permanent, imposed and other actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
NZS 3101.1	Concrete structures standard - The design of concrete structures
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
AS/NZS 4671	Steel reinforcing materials
AS/NZS 4672.1	Steel prestressing materials - General requirements
AS/NZS 4672.2	Steel prestressing materials - Testing requirements
AS/NZS ISO 9001	Quality management systems - Requirements
BS 5896	High tensile steel wire and strand for the prestressing of concrete
NZS 3121	Water and aggregate for concrete
NZS 3122	Portland and blended cements (General and special purpose)
WorkSafe	Safe work with precast concrete: Handling, transportation and erection of precast concrete elements (Good Practice Guidelines).

1.4 MANUFACTURER DOCUMENTS

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

~

Copies of the above literature are available from ~

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

1.5 SHOP DRAWINGS

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

Provide shop drawings to show the general arrangement including, but not be limited to:

- Layout drawings including full dimensions, openings, identify support (permanent & temporay)
- Details of each precast element including dimensions, camber if applicable, all inserts, cast-in

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elements (including those for lifting), non-standard finishes, rebates etc
- Installation sequence and procedures including handling, propping, bracing and special lifting, as required

If requested provide the following additional information:
~

Submit shop drawings for review to ~

- ~ working days (at least) before fabrication is planned to commence, provide shop drawings for review.
- Complete shop drawing review before commencing fabrication.

1.6 QUALIFICATION

Precast, prestressed concrete units manufactured by either;

- a Concrete NZ Certified Plant with an established record of precast, prestressed concrete unit production
- or an off-site precast manufacturer with, an established record of precast, prestressed concrete unit production to a similar standard, suitable plant and a quality assurance system to AS/NZS ISO 9001

Use only precast concrete workers skilled and experienced in precast, prestressed concrete unit production.

Performance

1.7 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Manufacturer warranty
- Producer Statement - Design
- Producer Statement - Construction from the installer
- Producer Statement - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

1.8 PRODUCER STATEMENT - DESIGN

Supply two copies of structural calculations including propping requirements, shop drawings and a producer statement signed by a chartered professional engineer for approval and any other information required by the Building Consent Authority for the building consent application.

1.9 COMPLIANCE WITH CODES

All proprietary design flooring to comply with the relevant current materials codes, NZS 3101.1, AS/NZS 1170, NZS 1170, AS/NZS 1170.1, NZS 1170.5 and AS/NZS ISO 9001.

1.10 DESIGN LOADS

Design the floors for the distributed and point loading conditions supplied, with consideration of all floor penetrations.

Refer to SELECTIONS / drawings.

1.11 FIRE RATING

Design the floors for the required fire rating.

Refer to SELECTIONS / drawings.

1.12 DEFLECTIONS

Deflections due to live loadings, dead loadings, shrinkage and creep deflection to not exceed the span divided by 300.

1.13 CO-ORDINATION

~

1.14 ADDITIONAL REINFORCEMENT

Include any additional reinforcement to ensure that the specified performance is achieved, including additional continuity bars at support beams.

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1.15 TESTING

Carry out sampling and concrete acceptance tests during construction to NZS 3109: section 9, Concrete acceptance tests during construction, noting that concrete may be rejected for:

- Non-compliance with this specification.
- Non-compliance with NZS 3109, section 9, Concrete acceptance tests during construction.
- Showing by appearance when in place that it does not comply with this specification, especially in respect of surface finish, segregation, or low density and which cannot acceptably be made good.

Conduct 7 day strength tests. After a 7 day test result of less than 60% of the specified strength, concrete placement to stop until it is shown the suspect concrete complies with the specification. Make all test records available.

1.16 CONFIRM STEEL REINFORCING COMPLIANCE

Certification from the supplier confirming that the steel reinforcing supplied complies with the grades specified on the drawings by producing test results to AS/NZS 4671 reinforcing steel, or AS/NZS 4672.1 and AS/NZS 4672.2 for prestressing steel.

For overseas manufactured steel provide NZ S Mark or ACRS certificate details or approved equivalent.

1.17 CONTROL TESTS

Carry out slump tests, yield tests and air content tests to NZS 3112.1, sections 4, 5, and 9 respectively and evaluate to NZS 3104: section 2.15, Control tests and their evaluation, keeping a record of all tests at the plant and making them available on request.

1.18 STRENGTH TESTS

Carry out to NZS 3112.2, section 10 and evaluate to NZS 3104: section 2.15, Control tests and their evaluation, keeping a record of all tests at the plant and making them available on request.

1.19 QUALITY ASSURANCE

Carry out the whole of this work to the requirements of NZS 3109 and under the regime of a quality systems model for quality assurance in production and erection to AS/NZS ISO 9001.

Quality assurance procedures to include all aspects of concrete construction including:

- Formwork quality
- Reinforcing steel placing
- Cast in items
- Concrete quality
- Concrete finishes
- Construction tolerances

Advise name of the suitably experienced and qualified representative who is responsible for quality control of the concrete work. The representative is to sign a written quality control checklist for each on site concrete pour. Provide a copy to the construction reviewer in sufficient time for a pre pour inspection.

1.20 INSPECTION NOTIFICATION REQUIREMENTS

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1.21 INSPECTIONS BY CONSTRUCTION REVIEWER

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1.22 INSPECTIONS BY BUILDING CONSENT AUTHORITY

~

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2 PRODUCTS

Materials

2.1 FLOORING UNITS

Precast prestressed concrete units designed as simple one-piece spans for floors/roofs, with a smooth off-the-steel mould soffit finish, filling holes and roughness with a cement mortar ground smooth. Remove oil and contamination and leave ready for later coating.

Refer to SELECTIONS for floor unit types.

2.2 REINFORCEMENT

Refer to the appropriate concrete section for reinforcement.

2.3 PRESTRESSING STEEL

Strands of stress-relieved cold-drawn wire to AS/NZS 4762.1 and BS 5896. Ensure prestressing steel is clean and free from deleterious substances. Reject steel which displays surface pitting and corrosion.

2.4 UNIT CONCRETE

The unit manufacturer is responsible for the mix design and properties to NZS 3104 with the required 28 day compressive strength. No more than 5% of tests shall fail below the compressive strength.

2.5 CONCRETE TOPPING

The topping surface shall be level under permanent loads and show a variation of less than 5mm along a 3.0m straight edge. Refer to the appropriate concrete sections.

2.6 CONCRETE

The concrete producer is responsible for mix design and properties to NZS 3104.

Cement:	To NZS 3122
Aggregate:	To NZS 3121
Rate of sampling:	For compressive strength testing - one sample per m³ but not less than one for each day of use.

2.7 TIMBER INFILLS

Radiata pine, treated H3.1 with tongue and groove joints or as detailed.

3 EXECUTION

Conditions

3.1 CONFORM

Conform with:

Safe work with precast concrete: Handling, transportation and erection of precast concrete elements (Good Practice Guidelines).
NZS 3101.1, NZS 3109 and AS/NZS ISO 9001 in design, materials, execution and manufacture of units and of stressing operations.

Assembly

3.2 TOLERANCES

Manufacture floor units within the following tolerances and to tolerances in NZS 3109: table 5.1, Tolerances for precast components.

Length		**Width**	
Up to 3 metres	± 6mm	Up to 1.2 metres	+ 0, - 10mm
3 to 6 metres	± 10mm	Over 1.2 metres	+ 0, - 15mm
6 to 12 metres	± 15mm		
Over 12 metres	± 25mm		

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Height and other cross-section dimensions:	0 to +10mm.
Deviation from longitudinal line:	+ 10mm or + 5mm per 3 metre length (whichever is the lesser)
Maximum variation in camber between units:	5mm.

3.3 CASTING

Use approved compaction techniques with power driven vibrators to produce a uniform void-free concrete. Set lifting eyes and other embedded items in units at designed location to the item manufacturers design requirements.

3.4 CURING PRECAST UNITS

Curing is to meet the requirements of NZS3101 clause 3.6. Do not transfer prestress to the precast units until the required transfer strength has been reached.

Application

3.5 HANDLING AND LIFTING UNITS

Handle, transport and erect units so that no damage is caused to them at any stage. Take adequate precautions to avoid damage or soiling in transit. Lift units only by the means and at the locations nominated by the precast unit manufacturer.

3.6 STACK UNITS

Stack units for storage or transport on timber dunnage under design bearing points to avoid damaging lifting eyes or other embedded items. Strap and secure units during transport. Stack units on flat areas capable of withstanding the bearing pressures involved without undue settlement and with each bearing dunnage placed vertically above the other.

3.7 PROTECT UNITS

Protect units from damage of any kind before and after placement. Do not load units until the topping has been placed and reached its design strength.

3.8 DO NOT

Do not cut and drill or modify the units in any way without prior approval.

3.9 SEATING FOR UNITS

Ensure seating for units is true to line, level and of correct dimensions before starting erection. Obtain written directions for new construction if seating will not allow even, uniform bearing and the correct placement of units. Provide plastic bearing strips to all floor/support beam bearing surfaces.

3.10 SITE TOLERANCES

Lay up and prop units in position to the pre-cambers specified by the unit manufacturer and as shown on the unit layout drawings. Where necessary select units at site to ensure that camber differences between adjacent units do not exceed the specified maximum. Refer to SELECTIONS.

3.11 PREPARATION

Box openings in or between units to detail and to the requirements for formwork in the appropriate concrete section and seal to prevent grout loss. Reinforce, tie into joints and connections as detailed and to the requirements of reinforcement in the appropriate concrete section. Cut off lifting eyes as directed. Remove dust, dirt, building debris. Keep clean and pre-wet before placing concrete.

3.12 HANDLING, PLACING, COMPACTION AND FINISH

Refer to the appropriate concrete section for concrete placement for concreting requirements and pour topping concrete so that the specified minimum thickness is obtained at the centre of units. Refer to SELECTIONS. Obtain written directions for new construction where unit camber is enough to cause a reduction of topping thickness. Ensure concrete surfaces are true to within 5mm under a 3.0 metre straight edge.

3.13 SAW CUTS FOR PRECAST UNITS

Do not saw cut the precast concrete without approval of the flooring designer.

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Finishing

3.14 CONCRETE
Refer to placement in the appropriate concrete section.

Completion

3.15 CLEAN AND DRESS
Clean and dress surfaces to leave them to the standard of finish specified for the work to follow.

3.16 CLEAN UP
Clean up surrounding areas following erection and casting of floor toppings.

3.17 REMOVE
Remove debris, unused materials and elements from the site.

4 SELECTIONS

Performance requirements - REFER TO ENGINEER'S DOCUMENTATION

4.1 EXPOSED RIBS WITH TIMBER INFILL TO BEDROOMS - LEVEL 2
REFER TO FINISHES SCHEDULE AND REFLECTED CEILING PLANS. TIMBER INFILLS TO BE CONFIRMED. ALLOW FOR POLYTHENE SHEETING BEHIND BOARDS TO PREVENT CONCRETE LEAKAGE.

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3410 STRUCTURAL STEEL

1 GENERAL

This section relates to the fabrication, erection and specialist coating of structural steelwork of a general nature, for Construction Category CC1 or CC2 (to AS/NZS 5131).

Refer to SELECTIONS for project Construction Category.

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:

AESS	Architecturally Exposed Structural Steelwork
CC	Construction Category
NDE	Non-Destructive Examination

1.3 DOCUMENTS

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

NZBC F5/AS1	Construction and demolition hazards
AS 1111.1	ISO metric hexagon bolts and screws - Product grade C - Bolts
AS 1111.2	ISO metric hexagon bolts and screws - Product grade C - Screws
AS 1112.1	ISO metric hexagon nuts - Style 1 - Product grades A and B
AS/NZS 1163	Cold-formed structural steel hollow sections
AS/NZS 1214	Hot-dip galvanized coatings on threaded fasteners (ISO metric coarse thread series)
AS/NZS 1252.1	High-strength steel fastener assemblies for structural engineering - Bolts, nuts and washers - Technical requirements
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 1554.1	Structural steel welding - Welding of steel structures
AS 1554.2	Structural steel welding - Stud welding (steel studs to steel)
AS/NZS 1554.3	Structural steel welding - Welding of reinforcing steel
AS/NZS 1554.4	Structural steel welding - Welding of high strength quenched and tempered steels
AS/NZS 1554.5	Structural steel welding - Welding of steel structures subject to high levels of fatigue loading
AS/NZS 1594	Hot-rolled steel flat products
AS 1627.4	Metal finishing - Preparation and pretreatment of surfaces - Abrasive blast cleaning
AS 1627.9	Metal finishing - Preparation and pretreatment of surfaces - Pictorial surface preparation standards for painting steel surfaces
AS/NZS 2312.2	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings - Part 2: Hot dip galvanizing
AS/NZS 2312.3	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings - Part 3: Thermal metal stray coatings
NZS 3404.1	Steel Structures Standard
AS 3597	Structural and pressure vessel steel - Quenched and tempered plate
AS/NZS 3678	Structural steel - Hot-rolled plates, floorplates and slabs
AS/NZS 3679.1	Structural steel - Hot-rolled bars and sections

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AS/NZS 3679.2	Structural steel - Welded I sections
AS/NZS 3750.9	Paints for steel structures - Organic zinc-rich primer
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
AS/NZS 5131	Structural steelwork - Fabrication and erection
AS/NZS ISO 13918	Welding - studs and ceramic ferules for arc stud welding
GANZ	Galvanizing Association of New Zealand - After-Fabrication Hot Dip Galvanizing. A practical reference for designers, specifiers, engineers, consultants, manufacturers and users

1.4 MANUFACTURER DOCUMENTS

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

~

Copies of the above literature are available from ~

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

Requirements

1.5 QUALIFICATIONS

Welding operators (and supervisors) to be experienced, competent workers, qualified to AS/NZS 5131, Table 7.4, to suit relevant Construction Category and weld category.

1.6 TOLERANCES

To AS/NZS 5131 Section 12 and Appendix F, Tolerance Class 1.

1.7 VERIFY DETAILS AND DIMENSIONS

Refer to drawings to ensure all required details and fixings are provided for in the structural steelwork. Verify dimensions against site measurements prior to fabrication.

1.8 TESTS

To AS/NZS 5131, Section 13, Inspection, Testing And Correction and AS/NZS 5131 Appendix I, Inspection of Welding and Bolting (New Zealand Only), as follows:

- Welds: Non-destructive examinations (NDE)

1.9 HOT WORK - FIRE SAFETY

Refer to section 1270 CONSTRUCTION

Architecturally Exposed Structural Steelwork (AESS)

1.10 AESS - SEPARATE SECTION

Refer to the separate section 3415 ARCHITECTURALLY EXPOSED STRUCTURAL STEEL for additional requirements of AESS, which are to be read in conjunction with this section.

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2 PRODUCTS

2.1 STRUCTURAL STEEL

Comply with New Zealand, Australian, British or Japanese Standards for steel as required by NZS 3404.1, section 2, including, type, category, and suppression of brittle fracture. Also to AS/NZS 5131, Section 5.

Steel members and sections steel grade table

Component	Conforming to	Grade
Hot rolled steel sections	AS/NZS 3679.1	300; 350; 300L0; 300S0; 350L0, 300L15; 350L15
Plates and flats	AS/NZS 3678; AS/NZS 1594;	250; 300; 350; 400; 450; WR350; 250L0, 300L0; 350L0; 300L15; 350L15
Plates and flats	AS/NZS 1594; TS 102	HA250; HA300; HA350; HA400; HW350
Circular hollow sections	AS/NZS 1163; TS 102	C250L0; C350L0; C450L0
Square hollow sections	AS/NZS 1163; TS 102	C350L0; C450L0
Rectangular hollow sections	AS/NZS 1163; TS 102	C350L0; C450L0
Welded beams and columns	AS/NZS 3679.2; TS 102	300; 400
Shear studs (composite slab to steel)	AS/NZS 1554.2	380
Quench & tempered plate	AS 3597	500; 600; 700; 900; 1000
Purlins and girts	AS 1397	G250; G300; G350; G450; G500; G550, Z350, Z450

2.2 WELDING CONSUMABLES

To comply with and be selected for grade of steel being welded as required by AS/NZS 1554 series of standards.

2.3 FLUX

Welding flux to be dry and from sealed containers.

2.4 BOLTS, NUTS AND WASHERS

Grade 4.6, screws AS 1111.2 and bolts to AS 1111.1. Grade 4.6 nuts to comply with AS 1112.1. Property Class 8.8 bolts and equivalent nuts and washers (high strength structural quality only) to comply with AS/NZS 1252.1. Hot-dip galvanize to AS/NZS 4680 (and AS/NZS 1214), bolts, nuts and washers forming a permanent part of a structure subject to a protective coating.

Bolt Categories and tensioning

Bolting category	Bolt standard	Property Class	Tension method	Tensioned joint type
4.6/S	AS 1111.1	4.6	Snug tight	
8.8/S	AS/NZS 1252.1	8.8	Snug tight	
8.8/TB	AS/NZS 1252.1	8.8	Full tension	Bearing
8.8/TF	AS/NZS 1252.1	8.8	Full tension	Friction

In bearing type connections where the thread position relative to the shear plane is to be controlled.
N - threads included in shear plane
X - threads excluded from shear plane
F - friction type joints - prepare faying surfaces

2.5 GROUT

To AS/NZS 5131, 5.8.

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3 EXECUTION

Preparation, assembly and Fabrication

3.1 GENERALLY

To AS/NZS 5131, Section 6.

3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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 SURFACE FINISH

Grind off all burrs and sharp arrises.

3.5 CUTTING

To AS/NZS 5131, Section 6.5.

3.6 HOLING

To AS/NZS 5131, Section 6.7

Do not use slotted holes for connections, other than those documented.

Welding

3.7 WELDING GENERALLY

To AS/NZS 5131, Section 7 and AS/NZS 1554.1. Equipment to comply with AS/NZS 1554.1, clause 1.8.2.

Site weld only when correct alignment and preset or camber have been achieved.
Weld types as documented elsewhere or on drawings
Weld categories not documented elsewhere or on drawings to be Category GP.

3.8 NON-DESTRUCTIVE WELD EXAMINATION

Non-destructive weld examination (NDE) to AS/NZS 5131, clause 13.6.2 and AS/NZS 5131 Appendix I, Inspection of Welding and Bolting (New Zealand Only).

If non-visual NDE is required, use a third party testing authority.
Repair any welds revealed as faulty by NDE and repeat the examination.

Mechanical fastening

3.9 MECHANICAL FASTENING GENERALLY

To AS/NZS 5131.

Connection contact surfaces to AS/NZS5131, 8.4.1.
Category 8.8/TF bolting to be clean, as rolled and free from applied finishes.
For washers, place one washer under the part rotated during tightening process (nut or bolt head).
Permanent bolt only when correct alignment and preset or camber have been achieved.

3.10 TENSIONING BOLTS

For tensioning of bolting categories 8.8/TB and 8.8/TF, use part-turn method or a direct tension indicator device. Ensure clear thread run out beneath the nut after tensioning is to New Zealand requirement of AS/NZS 5131, 8.2.2.

3.11 THREADS EXCLUDED FROM SHEAR PLANE

Select length of bolts such that the threaded portion does not occur within the shear plane between joined parts.



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Erection of structural steel

3.12 ERECTION GENERALLY

To AS/NZS 5131, Section 11.

Make sure every part of the structure has sufficient design capacity and is stable under construction loads produced by the construction procedure.
Comply with NZBC F5/AS1: Construction and demolition hazards, and the WorkSafe publication: Guidelines for the provision of facilities and general safety in the construction industry.

3.13 BOLTS AND ANCHORAGES

For each group of anchor bolts, provide a template with set-out lines clearly marked for positioning the bolts when casting in.

Start erection only when the holding down bolts and anchorages have been cast-in-place long enough to achieve sufficient strength.

3.14 TEMPORARY WORK

Provide temporary bracing, propping and restraint as required to make structure safe. Fix any temporary members so as not to weaken or deface permanent steelwork. Leave temporary bracing and restraint in place until the erection is sufficiently advanced to allow safe removal of temporary bracing.

3.15 SITE WORK

Other than work shown on the shop detail documentation as site work, do not fabricate, modify or weld structural steel on-site.

3.16 GROUTING SUPPORTS

Before grouting steelwork supported by concrete or masonry, set steelwork on packing or wedges as follows:

- Permanent packing or wedges - Form with solid steel or grout of similar strength to the permanent grout.
- Temporary packing or wedges - Remove before completion of grouting.

Grout at supports before constructing supported floors, walls and roofing.
Do not grout if the base plate or the footing surface temperature are outside the range 3°C to 35°C or to manufacturer's requirements.
Fill the space beneath the base plate with grout, if necessary hammered in tight to ensure complete filling of space.

3.17 DRIFTING

Use drifting only to bring members into position, without enlarging holes or distorting components.

3.18 EARTHING STRUCTURAL STEEL

If it is a project electrical requirement, ensure that any electrically at-risk, steel frames or isolated members, are earthed (or at least conductor cable attached) before the steel has any in-situ finishes applied or is enclosed.

Finishing - preparation

3.19 ENCASED STEELWORK

Clean the steelwork to be encased in concrete to remove all loose mill scale, rust, dirt and other matter affecting bond with concrete. Achieve this by wire brushing and the use of suitable solvents.

3.20 POWER TOOL CLEANING

To AS/NZS 5131, Section 9.

Remove oil and grease by the use of solvents. Scrape, wire brush and power tool clean to a minimum Class 2 finish to AS 1627.9. Clean to bright metal, but avoid producing a polished surface. Check that no burrs or sharp arrises remain which may prevent the full coating thickness being attained.

3.21 ABRASIVE BLASTING

To AS/NZS 5131, Section 9.

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Remove oil and grease by the use of solvents. Abrasive blast clean to a Class 2.5 finish to AS 1627.4. Clean to bright metal, but avoid producing a polished surface. Select grit type and equipment such that the cleaned surface profile between peaks and valleys does not exceed one third of the dry film thickness. Check that no burrs or sharp arrises remain which may prevent the full coating thickness being attained.

Finishing - paint and protective coatings

3.22 UNPAINTED SURFACES

Do not paint:

- faying face of high strength friction grip bolted joints
- areas for site welding, keeping 75mm clear all round
- surfaces being embedded in concrete.

Where steel is only partly encased then extend priming 50mm minimum into the concrete encasement area.

3.23 PRIMING GENERALLY

Coat steelwork, unless specifically noted otherwise, with the specified priming paint, including patch priming on site after erection.

3.24 PATCH PRIMING

Clean areas of damaged priming and areas left clear for site jointing to a standard comparable with that specified for shop cleaning. Wash off chemical deposits from welding fumes. Apply priming coats to the same standard as shop primers, ensuring thorough coating of bolts, nuts and connection areas. Reprime if more than 4 weeks elapse before the final coating system is applied.

3.25 COATING SYSTEMS

Apply all coatings in accordance with the coating manufacturer's requirements. Apply coatings to steel within 4 hours of cleaning and before condensation or light rusting can occur. Ensure steel is dry and atmospheric conditions warm and dry, with an air temperature of greater than 12°C and relative humidity less than 85%.

3.26 TOUCH-UP

Touch up primer. Apply protective coatings as specified.

3.27 TEMPORARY CONNECTIONS

Remove temporary elements on completion and restore the surface.

Completion & Commissioning

3.28 COMPLETION MATTERS

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

4 SELECTIONS

Finishing - preparation

4.1 STEEL

Note: Engineers documentation always takes precedent over architectural specifications

All structural steel to sit inside of framing.

Preparation: Power tool clean

4.2 PROTECTIVE COATINGS

refer to engineer's specifications

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3811 PREFABRICATED STRUCTURAL TIMBER FRAMING

1 GENERAL

This section relates to the manufacture, supply and erection, of prefabricated:

- timber trusses
- timber frames

1.1 RELATED WORK

Refer to 3821 TIMBER FRAMING for general timber framing and installation of prefabricated timber framing.

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:

FSC	Forest Stewardship Council
FTMA	Frame and Truss Manufacturers Association of New Zealand Inc.
PEFC	Programme for the Endorsement of Forest Certification
SED	Specific Engineering Design

Documents

1.3 DOCUMENTS

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

NZBC B1/VM1	Structural design of buildings
NZBC B2/AS1	Durability provisions for building elements
AS/NZS 1170	Structural Design Actions
NZS 1170.5	Structural Design Actions - Earthquake actions - New Zealand
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3640	Chemical preservation of round and sawn timber
FTMA CoP	Frame and Truss Manufacturers Association Code of Practice

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

~

Manufacturer/supplier contact details

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

Requirements

1.5 QUALIFICATIONS

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

Fabrication companies to be members of the FTMA and accredited by the connector plate manufacturers.

1.6 DESIGN CRITERIA NON-SPECIFIC DESIGN

Frames and trusses to NZS 3604.



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1.7 DESIGN CRITERIA SED

Frames and trusses to, NZBC B1/VM1, AS/NZS 1170, NZS 1170.5 and NZS 3603.

1.8 MANUFACTURING STATEMENT - PREFABRICATED TRUSSES

Provide a statement to support the manufacture of the roof trusses, issued by a fabricator after manufacture has occurred and identifying:

- The job/design reference name or number
- The site address/location
- The name and contact details of the accredited fabricator
- The name of the software/nail plate manufacturer that has accredited the fabricator
- That the trusses were manufactured in accordance with the Fabricator Design Statement
- The name and position within the company of the person providing the statement

1.9 IDENTIFICATION OF TRUSSES ON SITE

A selection of trusses in a job lot manufactured by a fabricator shall carry identification labels or markings fitted during manufacture, to NZS 3604, 10.2.2.5, **Truss identification**.

Identification shall be evident on the bottom chords of main rafter or girder trusses on a minimum of 6 trusses in a job lot, or on every truss where there are less than 6 trusses in the job lot.

Identification text shall be a minimum of 10mm high and shall include:

- The fabricator name
- The nail-plate manufacturer name
- The job/design reference name or number

2 PRODUCTS

Materials

2.1 FRAMES NOT EXPOSED

Structural grade timber to NZS 3602, NZBC B2/AS1, gauged, maximum moisture content of 20%, treated to NZS 3640, NZBC B2/AS1, hazard class H1.2 and identified with its unique identifier.

Accessories

2.2 STEEL CONNECTOR PLATES

0.8mm to 2.0mm thick steel sheet, hot-dip galvanized to NZS 3604, table 4.2, **Galvanizing of steel components other than nails and screws** and punched to form a toothed connector or nail on connector.

2.3 CORROSION RISKS

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

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

3 EXECUTION

Conditions

3.1 COMPLY

Comply with current standards, code requirements and the FTMA CoP in the design and fabrication of trusses and frames.

3.2 DELIVER, HANDLE AND STORE TRUSSES AND FRAMES

Deliver, handle and store frames and trusses so no structural damage occurs, corners and edges are not damaged, or surfaces marked or stained. Follow manufacturer's requirements. Handle all frames and trusses with nylon strops or similar to prevent damage. Store under cover and clear of the ground, to keep dry prior to installation.

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Fabrication

3.3 DIMENSIONS, NOT EXPOSED ELEMENTS

Each member calculated length ±3mm. Width and thickness to gauging tolerances. Each overall joint within ±3mm of correct outside profile (including camber allowance).

3.4 DIMENSIONS, EXPOSED ELEMENTS

Each member calculated length ±1mm width and thickness to gauging tolerances. Each overall joint within ±3mm of correct outside profile (including camber allowance). Joint thickness and width difference between members 1mm maximum. Plate location within half of the manufacturer's tolerances plus a rotation of no more than 1mm in 100mm off reference line.

3.5 INSPECTION

Request inspection when timber for exposed trusses and frames is ready for cutting prior to fabrication.

3.6 FABRICATION

Factory fabricate to FTMA CoP. Build camber into all elements to accommodate normal deflection under load. Lay up members accurately with all joints tight fitting. Mechanically press plates to manufacturer's tolerances, fully and flat over their whole area into the members forming the joint.

3.7 TRUSS AND FRAME FIXINGS

Factory fit truss and frame fixings to comply with the required loading capacity for that particular joint and in accordance with the fixing type and capacity in NZS 3604, Section 10, **Roof framing**, the manufacturer's requirements or to engineering specific design. Ensure all elements are correctly located, plumb and true to line and face.

Site installation

3.8 TRUSS ERECTION

Lift, place and fix trusses without overstressing or deformation. Use temporary supports as needed without causing damage. Fix trusses to wall plates and beams to manufacturer's requirements, but no less than NZS 3604, section 10, **Roof framing** and in particular section 10.2.2, **Roof trusses**. Fit and fix bracing as detailed and to NZS 3604: section 10.2.2, **Roof trusses** and section 10.3, **Systems to resist horizontal loads**. Ensure all trusses are correctly located, plumb and true to line and face.

3.9 FRAME ERECTION

Lift, place and fix frames without overstressing or deformation. Use temporary bracing and supports as needed without causing damage. Fix frames to floor or base plates and other walls or columns to manufacturer's requirements, but no less than NZS 3604, section 8, **Walls** and in particular section 8.7, **Plates**. Fit and fix bracing as detailed and to NZS 3604: section 5, **Bracing design** and section 8.3, **Systems to resist horizontal loads**. When necessary provide framing to suit any required cladding/lining control joints. Ensure all frames are correctly located, plumb and true to line and face.

3.10 FIT CONNECTORS AND FIXINGS - TRUSS

Fit connectors and fixings to obtain full bearing over all contact surfaces and ensure the required loading capacity for the truss and frame roof is maintained. Fix each roof framing member in accordance with NZS 3604, Section 10, **Roof framing.** Ensure the size, number and location of nails to be used in roof framing comply with requirements of Table 10.8, **Nailing schedule for hand-driven and power-driven nails**, the manufacturer's requirements or to engineering specific design. Ensure all elements are correctly located, plumb and true to line and face.

3.11 FIT CONNECTORS AND FIXINGS - FRAMES

Fit connectors and fixings to obtain full bearing over all contact surfaces and ensure the required loading capacity for the frame is maintained. Fix each framing member in accordance with NZS 3604, Section 8, **Walls.** Ensure the size, number and location of nails to be used in framing comply with requirements of Table 8.19, **Nailing schedule for hand-driven and power-driven nails**, the manufacturer's requirements or to engineering specific design. Ensure all elements are correctly located, plumb and true to line and face.

3.12 ROOF BRACING

Refer to 3821 TIMBER FRAMING for roof bracing of trussed roofs.



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3.13 WALL BRACING

Refer to 3821 TIMBER FRAMING for wall bracing.

3.14 DPC TO TIMBER

Lay DPC between all timber frames and concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier. For LOSP treated timber use only a DPC specifically suitable with LOSP treatment.

3.15 TIGHTEN BOLTS

Check and tighten all fixing bolts after erection is completed.

Completion

3.16 REPLACE

Replace or repair damaged elements.

3.17 REMOVE

Remove debris, unused materials and elements from the site.

3.18 LEAVE

Leave work to the standard required by following procedures.

4 SELECTIONS

4.1 PREFABRICATED TIMBER FRAMES, NOT EXPOSED

Location:	~
Fabricator/brand:	~
Species/grade:	~
Moisture content:	20% maximum
Treatment:	~
Connectors:	~

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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 provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
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

***A copy of** NZS 3604 **Timber-framed buildings, must be held on site.**

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 LAMINATED TIMBER

Radiata pine laminations to AS/NZS 1328.1; treated as required by NZS 3602, NZBC B2/AS1, to the requirements of NZBC B2/AS1, AS/NZS 1604.1, NZS 3640, with special attention to Appendix B "Specification advisory notes". Supply weather resistant sealed.

2.3 TIMBER TRUSSES

To FTMA CoP. Moisture content 16% at supply.

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2.4 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.

2.5 EXTERIOR CAVITY WALL BATTENS - TIMBER - NON-STRUCTURAL

H3.1 or H3.2 Radiata pine battens, minimum 20mm thickness, width and height to match timber framing studs. Temporary fix battens before being fixed into the framing with the cladding fixings. To NZS 3602, table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance.

2.6 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

2.7 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.

2.8 SCREWS

Wood screws to the requirements of NZS 3604, 2.4 Fastenings and Fabrication, and section 4, **Durability**, and of the type, number and form required for each screw application to NZS 3604, sections 6 - 10.

2.9 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.

2.10 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.

2.11 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.

2.12 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).

2.13 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

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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, nogs, 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.

3.6 FRAMING WALLS

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

3.7 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**.

3.8 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**.

3.9 INSTALLING WALL UNDERLAYS

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.10 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.).

3.11 DPC TO LOSP TREATED TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

3.12 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

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4 SELECTIONS

4.1 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 (not cavity):	Radiata pine	Merch	H1.2
Jamb battens:	Radiata Pine	Merch	H3.1

4.2 CAVITY BATTENS

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

4.3 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

4.4 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

4.5 LAMINATED TIMBER

Member	Timber/grade/treatment	Finish
refer truss design		

4.6 MISC ITEMS

Location	**Type**	**Material**	**Finish**
Living woodburner	Escea LE1250	**n/a**	**frameless fascia**

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3827E ECOPLY® PLYWOOD BRACING SYSTEM

1 GENERAL

This section relates to the supply and installation of Carter Holt Harvey Plywood Limited Ecoply® structural plywood sheets for wall bracing elements.

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:

FSC®	Forest Stewardship Council®

Documents

1.3 DOCUMENTS

Documents referred to in this section are:

NZBC B1/AS1	Structure
NZBC E2/AS1	External moisture
AS/NZS 1170.2:2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1604.3:2012	Preservative-treated wood-based products - Part 3: Plywood
AS/NZS 2269.0	Plywood - structural - specifications
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber Structures Standard
NZS 3604	Timber-framed buildings
BRANZ Technical Paper P21	BRANZ Technical Paper P21: A wall bracing test and evaluation procedure (2010)

1.4 MANUFACTURER DOCUMENTS

Carter Holt Harvey Plywood Ltd documents relating to work in this section are:

Ecoply® Specifications and Installation Guide
Ecoply® Technical Notes.

Manufacturer/supplier contact details

Company:	Carter Holt Harvey Plywood Limited
Web:	chhply.co.nz
Email:	info@ecoply.co.nz
Telephone:	0800 326 759

Requirements

1.5 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

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

Performance

1.7 BRACING SYSTEM

The Ecoply® bracing system provides bracing resistance for walls and subfloor foundations for light timber framed buildings under wind and earthquake loading to NZBC B1 Structure, and to NZS 3604 Timber Framed Buildings or specifically designed to NZS 3603 Timber Structure Standard.

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Provide braced wall systems using Ecoply® Bracing Specifications to meet the requirements of NZS 3604 when tested to BRANZ Technical Paper P21. Refer to drawings for location and type.

Refer to table for summary of P21 Ratings for 2.4m high Ecoply® wall element:

Brace No.	Minimum wall length	Lining Requirements	Bus/m Wind	Bus/m Earthquake
EP1	0.4m	7-12mm Ecoply® one side	80	95
EP1	0.6m	7-12mm Ecoply® one side	95	105
EP1	1.2m	7-12mm Ecoply® one side	120	135
EPG	0.4m	7-12mm Ecoply® one side and 10mm Gib® Standard plasterboard other side	100	115
EPG	1.2m	7-12mm Ecoply® one side and 10mm Gib® Standard plasterboard other side	150	150

Note:

- Plywood must be connected to both bottom and top plate for bracing.
- GIB Handibrac hold down connections required each end of bracing elements.
- Maximum 120 Bus/m for any bracing element on timber framed floor (NZS 3604)
- Bracing and other technical information has been specifically tested using Ecoply structural plywood. This information cannot be used with any other plywood brand and bracing data must be sought directly from the specific plywood manufacturer.

2 PRODUCTS

Materials

2.1 ECOPLY® STRUCTURAL PLYWOOD

Radiata pine veneer ply manufactured to AS/NZS 2269.0, DD face grade or better, 7mm minimum thick, H3.2 CCA treated to AS/NZS 1604.3.

Components

2.2 NAILS

Nail fixing for Ecoply® used as a structural bracing

Fixing type	Minimum nail length
Direct Fixed	50 x 2.8mm flat head hot dipped galvanized or stainless steel annular grooved nails

Accessories

2.3 TREATMENT OF SHEET CUTS

Soudal Metalex Ready to Use or Soudal Metalex Concentrated Timber Preservative. Clear or Green colour product.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

- Ecoply panels must be stored and handled with care to maintain good condition before use and after installation.
- Store protected from sun, rain and wind that would otherwise bring about rapid changes in temperature and humidity.
- Store sheets stacked flat (not on edge) and support for the sheets must be provided at both ends and middle to avoid distortion. Ensure bearers in packs above are aligned over bearers below (to avoid inducing curves in sheets).

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- The stack must be kept dry and clear of ground contact, and placed so that it will not be exposed to mechanical damage.
- To avoid staining, fading and surface checking, the sheets must not be exposed to the weather while awaiting installation.
- Store in well-ventilated areas away from sources of heat, flames or sparks.

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 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

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

Use Kiln dried framing, e.g. Laserframe, in accordance with timber framing manufacturers specifications and treated in accordance with NZS 3602. All timber frame sizes and set out must comply with NZS 3604 (or be specially designed to NZS 3603).

Ensure all Ecoply® sheet edges and joints will be fully supported. Studs maximum 600mm centres with the framing width of 45mm at each Ecoply® sheet joint.

Application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 BOTTOM PLATE FIXING

Use Gib HandiBrac® hold-down connections at each end of bracing element. Refer to the installation instructions supplied with connectors for correct bolt types to be used for either concrete or timber floors. Within the length the bracing element, bottom plates are fixed to the requirements of NZS 3604.

3.6 NAIL FASTENERS TO BRACING ELEMENT

Place nail fasteners at 150mm centres around perimeter, no less than 7mm or 3 fastening diameters from edge of the Ecoply® sheet and 300mm centres on intermediate supports of each Ecoply® sheet.

3.7 FIXING ECOPLY® STRUCTURAL PLYWOOD SHEETS

Fit and fix to Ecoply Bracing Specification and Installation Guide.

Install one layer of 7mm Ecoply plywood fixed directly to framing. If part sheets are used, ensure nailing at required centres is carried out around the perimeter of each sheet or part sheet. Allow 2-3mm expansion gap between sheets.

3.8 TREATING CUT EDGES

Treat cut edges and penetration cut outs of Ecoply® sheet with Soudal Metalex to Soudal requirements.

Completion

3.9 PROTECTION

Protect work from the weather until it is covered, coated or sealed.

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

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4.1 ECOPLY® STRUCTURAL PLYWOOD

Location:	**Refer to engineer's drawings and bracing calculations**
Manufacturer:	**Carter Holt Harvey Plywood Ltd**
Brand/grade:	**Ecoply® DD or better A BOND**
Thickness:	**as per engineer's documentation**

4.2 FASTENERS

Type/size/material: ~

4.3 BRACING SYSTEMS

Refer to Ecoply® Specification and Installation Guide for specific bracing details, and to relevant GIB® literature for bracing element fixing details. For location refer to drawn documentation and bracing calculations.

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4131N NURALITE NURAPLY 3P COVERED TANKING SYSTEMS

1 GENERAL

This section relates to the application of NURALITE NURAPLY 3P Covered Tanking Systems for basement and retaining wall tanking and damp-proofing.

It includes:

- NURAPLY 3PT for below ground walls and footings with moderate hydrostatic pressure
- NURAPLY 3PTM for underslab, footings and blindside wall tanking
- NURAPLY 3PG for root-resistant membrane for below ground walls and footings

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:

NZS 3604 Timber-framed buildings
CodeMark CM70033 - The Nuraply 3P Waterproof Tanking Membrane system

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

NURALITE NURAPLY 3P Technical Data Sheets
NURAPLY 3P Covered Membrane Installation Manual 2024
NURAPLY 3P Covered Check Sheets and Maintenance Programme
NURALITE Waterproofing Limited: CAD Tanking drawings®

Manufacturer/supplier contact details

Company:	Nuralite Group Limited
Web:	www.nuralite.co.nz
Email:	info@nuralite.co.nz
Telephone:	09 579 2046 Auckland 0800 Nuralite (0800 687 254)

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years:	For system under normal environmental and use conditions against failure

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of completion of the application

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years:	NURAPLY applicator to warrant this work under normal environmental and use conditions against failure of materials, waterproofing and execution

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT
- Commence the warranty from the date of completion of application

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Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 NO SUBSTITUTIONS

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

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Workers to be Nuralite Group Limited Authorised Membrane Applicators. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

Conditions

1.8 EXCAVATION CONDITIONS FOR DAMP-PROOFING

Ensure that excavations are free of running water and seepage during dry weather. If water is present the Contract Administrator is to be notified before any damp-proofing work is started. This specification is not suitable for any hydrostatic pressure conditions or installation below the water table.

1.9 EXCAVATION CONDITIONS FOR WATERPROOFING

Ensure that excavations are free of running water during dry weather. If running water is present the Contract Administrator is to be notified before any waterproofing work is started. This specification is not suitable for high hydrostatic pressure conditions or installation below the water table.

Performance

1.10 COMPLIANCE CODEMARK CERTIFICATE - NURAPLY 3P

NURAPLY 3P Waterproof Tanking Membrane System meets the requirements of the CodeMark® certificate CodeMark CM70033 when used within the conditions and limitations of its Certificate of Conformity.

2 PRODUCTS

Waterproofing

2.1 NURALITE UNDERGROUND WATERPROOFING MEMBRANE

NURAPLY 3PT reinforced fibre asphalt film faced flexible, tough, waterproofing system for walls, applied and joined by traditional NURALITE techniques. Thickness not less than 3mm.

2.2 NURALITE UNDERSLAB AND FOOTINGS WATERPROOFING MEMBRANE

NURAPLY 3PTM reinforced fibre asphalt with a mineral chip face to key into slab. A flexible, tough, waterproofing system applied and joined by traditional NURALITE techniques. Thickness not less than 3mm.

Waterproofing or damp-proofing near plants

2.3 NURAPLY 3PG WALL MEMBRANE NEAR PLANTING

Nuraply 3PG 4mm thick reinforced fibre asphalt waterproofing or damp-proofing membrane for walls, impregnated with anti-root additive to prevent attack from plant root systems.

Components

2.4 PRIMER

NURAFLUX QD surface primer for the tanking system, to prepare the substrate for optimum adhesion.

2.5 TOP EDGE ANCHOR STRIP

Aluminium or stainless steel anchor strip.

2.6 INSULATION SHEET – ENERTHERM PIR

Enertherm PIR is a closed cell rigid polyisocyanurate insulation board exhibiting a high compressive strength, clad on both sides with a multi-layer gastight aluminium complex.

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Available in a range of sizes and thicknesses. Refer to SELECTIONS for options.

2.7 NURADRAIN POLYETHYLENE PROTECTION SHEET

Dimpled rot-proof board for use as a protective barrier and drainage medium behind retaining walls.

2.8 NURALITE GREENDRAIN

20SRXSSc3g is a geo-composite drainage and water attenuation layer comprising a perforated cuspated HDPE (High Density Polyethylene) core with selected geotextiles thermally bonded on each side.

Accessories

2.9 ALUMINIUM TAPE

3M 150mm and 48mm wide aluminium tape.

2.10 BITUMEN FILLET

NURALITE triangular fillet.

2.11 LEVELLING COMPOUND

NURAFLUSH levelling compound.

2.12 EXPANDING FOAM

Holdplast Gorilla Nailpower fire rated expanding foam.

2.13 SEALANTS

IKO Stickall Bitumen or Millennium LPS.

2.14 TERMINATION BAR

NURALITE pre-formed termination bar.

2.15 COATING

NURACOAT BG coating to ENERTHERM PIR insulation sheet.

2.16 ADHESIVE

Selleys water based KWIK GRIP, for spot fixing of ENERTHERM PIR insulation sheet.

2.17 FIXINGS

NURALITE self-adhesive mechanical fixing.

2.18 PENETRATION SEAL

Lockin Pocket.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

- Store NURALITE rolls and accessory materials under conditions that ensure no deterioration or damage.

Store in shade or cover in hot sun. Protect liquid components from freezing.

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 COMPLY

Comply with the NURALITE requirements and instructions.

3.4 STORE

Store NURALITE rolls and accessory materials under conditions that ensure no deterioration or damage. Store in shade or cover in hot sun. Protect liquid components from freezing.



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3.5 WEATHER CONDITIONS

Apply NURALITE tanking systems only in fair weather with air temperature above 5°C. Apply adhesives and make site joints only in weather conditions compatible with perfect jointing.

3.6 DE-WATERING

Maintain water level at not less than 300mm below the level of the base concrete during the progress of the tanking work and until protective loading coats and walls are complete and fully set.

3.7 DRAINAGE

Install approved drainage system to remove water from foundations. Ensure drain is protected with geotextile cloth to prevent it clogging with fines, and that it is correctly located, 150mm from the membrane and below the footing.

3.8 CHECK SUBSTRATE

Check that the substrate will allow work of the required standard with adequate safe working space for applicators. Complete any remedial work identified and allow to cure before commencing tanking application.

3.9 CURING OF NEW CONCRETE

Allow concrete and masonry to dry to the NURALITE requirements before applying tanking. Minimum curing of new concrete: 28 days. This is not applicable for blockwork or site lean concrete.

Application - Preparation

3.10 ENSURE SUBSTRATE

Ensure all surfaces are clean and free from voids, spalled areas, loose particles, and sharp protrusions. Ensure no projections of sharp materials exist that will cause damage to tanking. Check that masonry joints are struck off flush.

Ensure form oils or release agents and curing compounds are completely removed.

3.11 PREPARE SUBSTRATE

Remove projections, wire-brush and remove all debris, leaving the surface dust-free, oil-free and clean, with nothing that could diminish the adhesion of primers. Fill tie holes flush and smooth with NURAFLUSH. Grind off steps or sharp protrusions caused by formwork joints.

3.12 TURN UPS

Where tanking is turned up against hardened concrete, ensure the surface is smooth and free of all sharp projections. Fill internal corners with NURALITE bitumen triangular fillets.

3.13 TURN DOWNS

Where NURAPLY 3PT is turned over an external corner, first grind the corner to produce a smooth 25mm radius or chamfer.

3.14 CLEAN SURFACES

Clean surfaces with a broom or oil free compressed air to remove dust, loose particles and material that could affect bonding.

3.15 DRESS OFF HARDFILL SURFACE

Dress off surface of hardfill with a 15mm layer of fine, clean sand rolled to a smooth surface. Ensure concrete surface is a smooth steel trowel U3 surface to NZS 3114. Grind off any steps or sharp protrusions.

3.16 REMOVE OTHER FORMWORK

Ensure that formwork has been removed or partially removed from the other face(s) to the membrane face, to the extent that it allows moisture to escape from the concrete to ensure no vapour pressure develops beneath the membrane..

3.17 PRIMING

Ensure concrete or masonry substrates are sufficiently cured and dry to permit the intended performance of the NURAFLUX QD primer. Apply NURAFLUX QD primer at the coverage rate recommended by NURALITE.

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3.18 ALLOW PRIMER TO DRY

Allow the primer to dry. Do not prime more than can be covered in one working day. Prevent contamination of the primed surface prior to application of the tanking system.

Waterproofing application - loose Lay for underslab

3.19 LOOSE LAY NURAPLY 3PTM

Loose lay NURAPLY 3PTM as a damp-proof membrane under a concrete slab and/or footings. The membrane to be laid with mineral chips face up. Ensure the maximum non specific design of hardfill is up to 600mm in depth. Ensure granular fill, sand blinding and compaction to comply with the requirements of NZS 3604.

Take care when placing reinforcing steel to avoid puncture or damage to the NURAPLY 3PTM membrane.
Fully heat weld all sheet joints by gas torch. Ensure all joints are well sealed with a minimum lap of 80mm for sides and 150mm for sheet ends. This is indicated by the presence of a thin bead of melted bitumen at all sheet joints after torching. Ensure excess membrane is provided to fold up beyond the footings.

The tilt slabs or pre-cast concrete must be left to cure for a minimum 4 day period before lifting takes place, to enable the chemical bond between the surface of the membrane and concrete to occur and allow correct curing of concrete. This is critical to the success of the waterproofing membrane.

3.20 NURAPLY FLOOR TO WALL JUNCTION

Protrude the under slab NURAPLY 3PTM membrane minimum of 150mm beyond the perimeter of the footing. When wall is struck, bring this portion of membrane up and torch to wall base. Install the wall membrane down over the top to form a sound seal. Ensure the 150mm flap is adequately protected from damage during construction of the walls and that foreign matter is not able to contaminate the critical lap area.

Waterproofing application - walls

3.21 3PT APPLICATION METHOD - WATERPROOFING

Apply the NURAPLY 3PT waterproofing system with laps and joints and reinforcing pieces at junctions to provide a waterproof finish.

3.22 WELD NURAPLY 3PT JOINTS

Heat fuse joints minimum laps side 80mm, ends 150mm, using self checking lap welding techniques.

Waterproofing or damp-proofing application - walls near planting

3.23 NURAPLY 3PG APPLICATION - WATERPROOFING OR DAMP-PROOFING

Apply the NURAPLY 3PG waterproofing system with laps and joints and reinforcing pieces at junctions to provide a waterproof finish.

3.24 WELD NURAPLY 3PG JOINTS

Heat fuse joints minimum laps side 75mm, ends 150mm, using self checking lap welding techniques.

3.25 JOIN TO DPM - DAMP-PROOFING

Extend the NURAPLY 3PG membrane to the base of the footing. Fold the concrete slab DPM over the NURAPLY 3PG and seal with bitumen based adhesive tape.

Application - general

3.26 ADDITIONAL THICKNESS

Provide a double layer of tanking around pipes and penetrations and at all junctions and changes of direction. Seal edges to NURALITE requirements.

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3.27 SEALING EDGES WITH ANCHOR STRIPS

At edges of the membrane, adhere firmly on to the substrate and anchor strip on all top edges of tanking.

3.28 SECTIONAL COMPLETION

As sections of tanking are completed, arrange for inspection of the work before covering with protective sheets, walls, or slabs.

3.29 PROTECT VERTICAL SURFACES

Protect vertical surfaces from damage before covering with NURADRAIN protective sheets.

3.30 PROTECT HORIZONTAL SURFACES

Protect the horizontal tanking from damage during laying by ensuring applicators wear soft soled shoes. Except for inspection purposes do not allow traffic on the tanking after installation and before protection sheets have been laid.

3.31 INSTALL ENERTHERM PIR INSULATION SHEETS

Bond the PIR with Selleys Water Based Kwik Grip. Tape any exposed edges of PIR with150mm foil tape before installing. Tape all PIR joins with 48mm foil tape once installed and before coating with Nuracoat BG, to NURALITE requirements for this work, to fully protect and insulate the whole of the tanking area.

3.32 INSTALL NURADRAIN PROTECTION SHEETS

Fix sheets with Nuralite self-adhesive mechanical fixings to NURALITE requirements for this work, to fully protect the whole of the tanking from backfill.

3.33 INSTALL GREENDRAIN PROTECTION SHEETS

Place sheets and tape joins before the placement of the Green roof medium.

3.34 SUPERVISION OF BACKFILLING

Supervise backfilling operations to ensure no damage is caused to the waterproofing system. Refer to the appropriate drainage section for subsoil drainage and backfilling.

Completion

3.35 COMPLETION MATTERS

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

3.36 CLEAN UP

Clean up as the work proceeds.

4 SELECTIONS

For further details on selections go to www.nuralite.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

4.1 PRESSURE RATING FOR WATERPROOFING

Designated water pressure head: ~ metres

For waterproofing systems only (not for damp-proofing systems).

Waterproofing - Underslab

4.2 NURAPLY 3PTM TANKING SYSTEM - UNDERSLAB AND/OR FOOTINGS

Location:	**refer detail drawings**
Supplier:	Nuralite Group Ltd
Brand:	NURAPLY 3PTM

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Waterproofing - underground walls

4.3 NURAPLY 3PT TANKING SYSTEM - UNDERGROUND WALLS

Location: **refer detail drawings**
Supplier: Nuralite Group Ltd
Brand: NURAPLY 3PT

Waterproofing or damp-proofing underground walls - near planting

4.4 NURAPLY 3PG SYSTEM

Location: **refer detail drawings**
Supplier: Nuralite Group Ltd
Brand: NURAPLY 3PG
Protection level: Waterproofing

Components: NURADRAIN POLYETHYLENE PROTECTION SHEET

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

1 GENERAL

This section relates to the supply and installation of Kingspan's Thermakraft product range including DPC, DPM, Wall & Roof Underlays, Foils, Flashing Tapes, and accessories.

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

DPC	Damp proof course
DPM	Damp proof membrane
EPDM	Ethylene propylene diene monomer

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

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials
AS/NZS 2904	Damp-proof courses and flashings
NZS 3604	Timber-framed buildings
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4347	Damp-proof courses and flashings - Methods of test
AS/NZS 4389	Roof safety mesh
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
CodeMark CMNZ10002 ver5	Watergate Plus Wall Underlay
CodeMark CMNZ30028 verK	Thermakraft Covertek 407 Roof and Wall Underlay
CodeMark CMNZ30030 verJ	Thermakraft Covertek 405 Roof and Wall Underlay
CodeMark CMNZ30069 verI	Thermakraft Covertek 403 Roof and Wall Underlay

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Thermakraft's Product Data Sheets
Thermakraft's Installation Guides
BRANZ Appraisal 329 (2022) - Supercourse 500 Damp-Proof Course and Concealed Flashing - Amendment 29 August 2023
BRANZ Appraisal 651 (2024) - Thermakraft Covertek 407 Roof and Wall Underlay - Amended 13 July 2026
BRANZ Appraisal 695 (2023) - Watergate Plus Wall Underlay - Amended 01 July 2025
BRANZ Appraisal 743(2025) - Thermakraft Covertek 405 Roof and Wall Underlay
BRANZ Appraisal 878 (2025) - Thermakraft Aluband Window Flashing Tape
BRANZ Appraisal 912 (2021) - Thermakraft 220 Synthetic Wall Underlay - Amended 01 July 2025
BRANZ Appraisal 917(2025) - Thermakraft Covertek 403 Roof and Wall Underlay

BRANZ Appraisal 942 (2022) - OneSeal Multi-fit Pipe and Cable Penetration Seals - Amended 28 July 2026
BRANZ Appraisal 943 (2021) - Thermakraft Covertek 401 Roof and Wall Underlay - Amended 01 July 2025
BRANZ Appraisal 1000 (2023) - Thermakraft Thermabar 397 Light Diffusing Reflective Underlay - Amended 01 July 2025
BRANZ Appraisal 1029 (2023) - Thermakraft Ausnet Hexagonal Wire Mesh
BRANZ Appraisal 1104 (2020) - Thermathene Orange Concrete Underlay - Amendment 06 September 2024
BRANZ Appraisal 1122 (2026) - Thermaflash Flashing Tape
BRANZ Appraisal 1229 (2023) - Thermakraft Covertek 215 Roof Underlay - Amended 19 June 2025
BRANZ Appraisal 1277 (2025) - Thermakraft RainArmor Self Adhesive Roof Underlay and Wall Underlay

Manufacturer/supplier contact details

Company:	Kingspan Insulation NZ Ltd
Web:	www.thermakraft.co.nz
Email:	technical@kingspaninsulation.co.nz
Telephone:	0800 806 595

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For Kingspan Thermakraft product range.

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

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

Compliance information - CodeMark certified

1.7 CODEMARK CERTIFICATE - THERMAKRAFT WATERGATE PLUS

Thermakraft Watergate Plus wall underlay meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity BRANZ-CM-1002 (Rev 2).

1.8 CODEMARK CERTIFICATE - THERMAKRAFT COVERTEK 407

Thermakraft Covertek 407 roof and wall underlay meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ 30028 (Rev I).

Compliance information - BRANZ appraised

1.9 BRANZ APPRAISED - THERMAKRAFT SUPERCOURSE 500

Thermakraft Supercourse 500 DPC has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 329

1.10 BRANZ APPRAISED - THERMAKRAFT COVERTEK 407

Thermakraft Covertek 407 roof and wall underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 651

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1.11 BRANZ APPRAISED - THERMAKRAFT WATERGATE PLUS

Thermakraft Watergate Plus wall underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 695

1.12 BRANZ APPRAISED - THERMAKRAFT ALUBAND

Thermakraft Aluband flashing tape has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 878

1.13 BRANZ APPRAISED - THERMAKRAFT ONESEAL

Thermakraft OneSeal multi-fit pipe and cable penetration seal has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 942

1.14 BRANZ APPRAISED - THERMAKRAFT THERMATHENE ORANGE

Thermathene Orange DPM has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 1104

2 PRODUCTS

DPC

2.1 THERMAKRAFT SUPERCOURSE 500

BRANZ appraised, 0.5mm thick embossed black film DPC composed of recycled alloyed polyethylene. Tested to AS/NZS 4347 in accordance with AS/NZS 2904. Available in various width. Refer to SELECTIONS.

DPM

2.2 THERMAKRAFT THERMATHENE ORANGE

BRANZ appraised, 0.3mm thick x 4000mm wide orange DPM composed of recycled alloyed polythene. Membrane has a vapour flow resistance of at least 90MNs/g to NZS 3604 and NZS 4229 Damp-Proof Membranes. Refer to SELECTIONS.

Synthetic underlays - fire retardant

2.3 THERMAKRAFT WATERGATE PLUS

CodeMark certified and BRANZ appraised synthetic wall underlay, white with blue logo print, composed of a water resistant vapour permeable film laminated to a non-woven polyolefin sheet. Fire retardant, tested to AS 1530.2 and assigned a Flammability Index of ≤5. Available in 685mm, 1370mm and 2740mm width. Refer to SELECTIONS.

2.4 THERMAKRAFT COVERTEK 407

CodeMark certified and BRANZ appraised self-supporting synthetic roof and wall underlay, white with red logo print, composed of a water resistant vapour permeable film laminated to two layers of non-woven, spun bonded polyolefin sheet. Fire retardant, tested to AS 1530.2 and assigned a Flammability Index of ≤5. Available in 1250mm and 2550mm width. Refer to SELECTIONS.

Components - sealing

2.5 THERMAKRAFT WHITE GENERAL PURPOSE TAPE

60mm wide, white polypropylene general purpose tape with acrylic adhesive. Refer to SELECTIONS.

2.6 THERMAKRAFT ONESEAL

BRANZ appraised black multi-fit pipe and cable penetration seal composed of adhesive coated, 1.2mm thick flexible synthetic rubber material (EPDM) with pre-notched ring markings. Refer to SELECTIONS.

2.7 THERMAKRAFT CORNER MOULDS

Orange, flexible inert polythene moulded window corner flashing. Refer to SELECTIONS.

2.8 THERMAKRAFT ALUBAND

BRANZ appraised, black, self-adhering polymeric faced bituminous flashing tape. Available in 75mm, 150mm and 200mm width. Refer to SELECTIONS.

Fixings

2.9 FIXINGS - TO TIMBER

Little grippers, staples, clouts or screws to suit application. Refer to SELECTIONS.

2.10 FIXINGS - TO STEEL

Construction grade double sided tape, adhesive or galvanized flat head screws to suit application. Refer to SELECTIONS.

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.

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation/application - generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Installation - DPC

3.5 INSTALL DPC

Ensure substrate's surface is smooth, flat and free from sharp ridges/projections that may puncture membrane. Install as a single layer with minimum 50mm overlap at joints to the Installation Guide.

Installation - DPM

3.6 INSTALL DPM - CONCRETE FLOOR

Install DPM over sand blinding below concrete floors, install in a neat fashion with a smooth surface as a single layer with minimum 150mm overlap at joints to the Installation Guide.

3.7 APPLY TAPE TO LAPPED DPM JOINTS

Ensure DPM is free of dust and contaminates, where required clean with a dry cloth. Apply tape to the Installation Guide centred over joint laps by firmly pressing down without stretching or pulling tape.

Installation - wall underlay

3.8 INSTALL WALL UNDERLAY

Install wall underlay to the Installation Guide horizontally and in true alignment over exterior face of wall framing including openings. Start by placing first sheet overlapping bearer or bottom plate by 35mm, draw taut and fix at maximum 300mm centres to wall framing members. Install additional sheets in row repeating the process for the first sheet with sheet end laps to be of at least 150mm and occurring over wall framing. Install sheets up to the top of the top plate repeating the installation process for the first row and overlapping higher over lower sheets by at least 150mm.

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3.9 INSTALL WALL PENETRATION SEALS

Ensure wall underlay is free of dust and contaminates, where required clean with a dry cloth. Install penetration seal to the Installation Guide over pipe/conduit with a tight fit. Slide seal over pipe/conduit and place on underlay in a diamond shape. Remove backing release film and push firmly down to fix in place.

Installation - roof underlay

3.10 INSTALL ROOF UNDERLAY - HORIZONTAL

Install underlay to the Installation Guide horizontally and in true alignment over exterior face of roof framing. Place first sheet overlapping guttering (max. 20mm) or if eaves flashing is used terminate on the upper side of the flashing, draw sheet taut and fix at maximum 300mm centres to roof framing members. Install additional sheets in row repeating the process for the first sheet with sheet end laps to be of at least 150mm. Install sheets up to and over the ridge repeating the installation process for the first row and overlapping higher over lower sheets by at least 150mm.

3.11 INSTALL ROOF UNDERLAY - VERTICAL

Install underlay to the Installation Guide vertically and in true alignment over exterior face of roof framing. Place first sheet up the slope to the ridge overlapping guttering (max. 20mm) or if eaves flashing is used terminate on the upper side of the flashing, draw sheet taut and fix at maximum 300mm centres to roof framing members. Install additional sheets repeating the process for the first sheet lapping joints by at least 150mm.

Preparation of wall underlay for window/door placement

3.12 FORM OPENINGS

Form openings in wall underlay to the Installation Guide. Cut underlay diagonally from corner to corner across the opening and tightly fold underlay flaps into opening over the full depth. Secure underlay to the back face of opening framing with staples. Trim excess underlay off at internal face. Remove dust and contaminates from underlay with a dry cloth.

3.13 INSTALL CORNER MOULDS

Install corner moulds with tight fit to sill/jamb corners to the Installation Guide.

3.14 FLASHING TAPE APPLICATION - GENERALLY

Install flashing tape to the Installation Guide. Fold tape back onto exterior wall surface by at least 50mm, cover opening depth in full and finish by lining up with inside edge of opening framing. Fix tape by applying even pressure by hand or a roller leaving no air bubbles beneath the tape.

3.15 APPLY FLASHING TAPE TO SILL

Use 150mm wide tape for up to 100mm deep opening framing and 200mm wide tape for deeper framing. Cut tape to sill length plus 400mm. Remove release film from tape, align back edge of tape with interior sill edge allowing for at least 200mm tape upstand at jambs, apply tape to sill and jamb. Cut tape overhang at external sill/jamb corners, fold back onto and apply to exterior wall face.

3.16 APPLY FLASHING TAPE TO HEADER

Use 150mm wide tape for up to 100mm deep opening framing and 200mm wide tape for deeper framing. Cut tape to 400mm length. Remove release film from tape, align back edge of tape with interior opening framing edge and apply 200mm along head and 200mm down jambs. Cut tape overhang at external head/jamb corners, fold back onto and apply to exterior wall face.

3.17 APPLY FLASHING TAPE ACROSS HEAD/JAMB CORNERS

Cut 75mm wide tape to 100mm length. Apply to exterior wall surface across head/jamb corners at 45°, overlap corners by 3mm to create a seal at corner junctions.

Completion

3.18 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.



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

DPC

4.1 DPC - THERMAKRAFT SUPERCOURSE 500

Location:	refer architectural drawings
Manufacturer:	Thermakraft
Brand:	Supercourse 500
Type:	Damp proof course

DPM

4.2 DPM - THERMAKRAFT THERMATHENE ORANGE

Location:	under new floor slabs - refer drawings
Manufacturer:	Thermakraft
Brand:	Thermathene Orange
Type:	Damp proof membrane
Width:	4000mm
Joint tape:	White General Purpose Tape

Synthetic underlays - fire retardant

4.3 WALL UNDERLAY - THERMAKRAFT WATERGATE PLUS

Location:	all exterior walls - refer drawings
Manufacturer:	Thermakraft
Brand:	Watergate Plus
Type:	Synthetic wall underlay

4.4 ROOF & WALL UNDERLAY - THERMAKRAFT COVERTEK 407

Location:	**under roofing typical**
Manufacturer:	**Thermakraft**
Brand:	**Covertek 407**
Type:	**Synthetic roof and wall underlay**
Maximum UV exposure:	**Walls - 60 days** **Roofs - 7 days**

Components for sealing wall underlay penetrations

4.5 PENETRATION SEAL - THERMAKRAFT ONESEAL

Location:	refer drawings
Manufacturer:	Thermakraft
Brand:	OneSeal
Type:	Pipe and service penetration seal

4.6 FLASHING TAPE - THERMAKRAFT ALUBAND

Location:	refer drawings
Manufacturer:	Thermakraft
Brand:	Aluband
Type:	Flashing tape

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4171GR GIB WEATHERLINE RIGID AIR BARRIER

1 GENERAL

This section relates to the supply and fixing of GIB Weatherline® Rigid Air Barrier to residential and commercial buildings.
It incudes;

- GIB Weatherline® Rigid Air Barrier Structural batten, screw and tape; and screw and tape systems
- GIB Weatherline® Rigid Air Barrier bracing systems
- GIB Weatherline® Rigid Air Barrier fire rated 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 B1/AS1	Structure
NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
AS/NZS 2589	Gypsum linings - Application and finishing
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
BS EN 13501-1	Fire classification of construction products and building elements - Classification using test data from reaction to fire tests
BRANZ Technical Paper P21	BRANZ Technical Paper P21: A wall bracing test and evaluation procedure (2010)

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents which refer to work in this section:

GIB® Site Guide (April 2024)
GIB® Noise Control Systems (September 2017)
GIB® Fire Rated Systems (September 2024)
GIB Ezybrace® Systems (August 2016)
GIB Ezybrace® Bracing Design Software
GIB Ezybrace® Bracing Supplement Document (December 2016)
GIB Ezybrace® for Light Steel Frame Systems (March 2017)
GIB Weatherline® Rigid Air Barrier Systems Design and Construction Manual (March 2021)
GIB Weatherline® Rigid Air Barrier Systems Supplement (November 2021)
BRANZ Appraisal 1048 (2025)- GIB Weatherline® Rigid Air Barrier Systems

Manufacturer/supplier contact details

Company:	Winstone Wallboards
Web:	www.gib.co.nz
Telephone:	0800 100 442

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	For GIB® products and/or systems for a minimum of 10 years from the date of purchase

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

~ years	For ~

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, associated GIB® products or GIB® accessories.

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

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

Performance - Wind (design by contractor)

1.10 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR

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

Performance - Fire

1.11 EXTERNAL FIRE SPREAD - NON-COMBUSTIBLE MATERIAL

GIB Weatherline® classifieds as A1 in accordance with BS EN 13501-1.

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2 PRODUCTS

Materials

2.1 GIB WEATHERLINE® RIGID AIR BARRIER

Exterior grade, glass-fibre fleece wrapped modified gypsum core sheet.
Meets NZBC requirements for Rigid Air Barriers as an Alternative Solution Proprietary System as per NZBC E2/AS1.9.1.4, and 9.1.7.2 and Table 23.

Complies with NZBC B2/AS1 Durability.
Sizes;

Standard lengths:	2750mm and 3000mm (2450 available but in 10mm thickness only)
Width:	1200mm
Thicknesses:	10mm and 13mm
Colour:	Purple

Components

2.2 SCREWS

GIB® Grabber® 41mm x 6g Ceramic Coated High Thread Screws.

GIB® Grabber® 63mm x 8g Ceramic Coated High Thread Screws.
GIB® Grabber® 32mm x 8g Ceramic Coated Drill Point Screws.
GIB® Grabber® 47mm x 8g Ceramic Coated Drill Point Screws.
Refer to GIB® requirements for appropriate details.

2.3 GIB WEATHERLINE® FLASHING TAPE

Flashing tape available in 30mm, 60mm, 100mm, 150mm and 200mm widths x 30m roll length.

2.4 GIB WEATHERLINE® SILL TAPE

Sill tapes available in 150mm and 200mm widths x 20m roll length.

2.5 STRUCTURAL CAVITY BATTENS

45mm x 18mm H3.1 Merchant Grade Pinus Radiata cavity battens.

2.6 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 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 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

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

Framing substrates shall be in accordance to AS/NZS 2589 and Weatherline® Rigid Air Barrier Systems requirements. Refer to GIB® Site Guide.

Timber framing moisture content is in accordance with requirements of AS/NZS 2589. Refer to NZBC E2/AS1 and GIB® Site Guide.

Timber framing: 18% maximum for fixing plasterboard to timber

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(8-12% recommended for fixing plasterboard to timber framing if air conditioning and/or central heating are to be installed.)

Installation

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 SCREW, TAPE AND STRUCTURAL BATTEN INSTALLATION

Fix GIB Weatherline® Rigid Air Barrier System in accordance with GIB Weatherline® Rigid Air Barrier Systems Specification and Installation Manual, Section 2.

3.6 BOARD ORIENTATION

Minimise joints by careful sheet layout using the largest sheet sizes possible. Sheets may be installed vertically or horizontally, however horizontal fixing is not acceptable when Structural Bracing or Fire Rated Systems are specified. Refer to GIB Weatherline® Rigid Air Barrier Systems Specification and Installation Manual.

3.7 INSTALL FLASHING AND SILL TAPE

Install flashing and sill tape in accordance with GIB Weatherline® Rigid Air Barrier Systems Specification and Installation Manual.

3.8 LINING WALLS AND CEILINGS GENERALLY

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

Finishing

3.9 FINISHING GENERALLY

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

Completion & Commissioning

3.10 COMPLETION MATTERS

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

3.11 COMPLETION - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

~

4 SELECTIONS

GIB Weatherline® Rigid Air Barrier

4.1 STRUCTURAL BATTEN, SCREW & TAPE NZS 3604 - GIB WEATHERLINE® RIGID AIR BARRIER

Location:	**under soffit fire rated - 1 layer of 13mm GIB Weatherline® shall be fixed at right angles to the underside of the framing members.**
Product:	**Weatherline® Rigid Air Barrier**
Sheet length:	**2450mm**
Sheet width:	**1200mm**
Thickness:	**10mm**
Battens:	**70x45mm timber - refer decking details**

Components

4.2 GIB WEATHERLINE® FLASHING TAPE

Brand/type:	**GIB Weatherline® flashing tape**



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4221HV HERMPAC VERTICAL WEATHERBOARD CLADDING SYSTEM

1 GENERAL

This section relates to the supply and fixing of **Hermpac** Vertical cladding:

- Vertical Shiplap weatherboards
- Board and Batten weatherboards
- Fascia
- Mouldings
- Proprietary flashing systems
- Vertical Shiplap 'Vertibat' cavity batten systems

1.1 RELATED WORK

Refer to painting sections for finishes to weatherboard cladding.

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:

PEFC	Programme for the Endorsement of Forest Certification

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3617	Profiles of weatherboards, fascia boards and flooring

JAS-ANZ CodeMark Certification CMNZ30036 - Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Hermpac Construction Drawings

Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System installation Specifications
Hermpac Product Technical Statement (PTS) – VertiLine Vertical Shiplap Weatherboard Cavity System (July 2023)
Hermpac Product Installation Checklist – VertiLine Vertical Shiplap Weatherboard Cavity System (Jan 2023 V2)

Hermpac Standard and Custom profiles
Hermpac Profile Portfolio
Hermpac Grade descriptions
Hermpac Nail/Screw fixings
Hermpac Legal and / or Sustainable Certification
Machinecoat - Flood Coat Inundation versus Spray Application
Maintenance of selected Wood Oil/Oil Based Stain Finishes
Hermpac WRC Information Sheet – cuts and characteristics
Hermpac WR & Yellow Cedar cuts and characteristics

BRANZ Appraisal 650 - Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System

Manufacturer/supplier contact details:

Company:	**Hermpac Ltd**
Contacts:	Kyle Deans - 021 771 857, kyle.deans@hermpac.co.nz
	Carmen Hansen - 027 809 4588, carmen@hermpac.co.nz

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Web: www.hermpac.co.nz
Email: technical@hermpac.co.nz
Telephone: 09 421 9840 Auckland
04 586 9674 Wellington
03 341 2163 Christchurch

Warranties

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years For installation of Hermpac vertical weatherboard cladding systems

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT).
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Compliance information

1.7 CODEMARK CERTIFICATE

Hermpac vertical weatherboard cladding systems meet the requirements of the NZBC when used within the Conditions and Limitations of their Certificate CMNZ30036.

1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.9 FIXINGS, WIND

Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height; as required by NZS 3604.

1.10 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed cladding system, including all penetrations. To NZBC B2 Durability and NZBC E2/AS1 External moisture.

2 PRODUCTS

Materials

2.1 WESTERN RED CEDAR

Hermpac Canadian Western Red Cedar (Thuja plicata) supplied from sustainably managed forests of British Columbia, Canada and available with PEFC certification.

2.2 VERTICAL SHIPLAP

Weatherboards to Hermpac profiles, Lap and Rebate details to BRANZ BU 411 and general design to the NZS 3617, species and grading to NZS 3602, table 2, reference 2A.1, Requirements for wood-based building components to achieve a 15-year durability performance. Weatherboards in lengths relevant to profile selection and application, with all unsound and open split knots excluded by cross cut removal prior to fixing into position.

Acceptable Solution is limited to the following types of weatherboards and their derivatives:

- Vertical Standard Shiplap and Hermpac Custom Profiles



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A selection of the above profiles are also available in Western Red Cedar and Yellow Cedar finger-joint (CedarOne Evolve and CedarLine Evolve). CedarOne Evolve is quarter-sawn cut Cedar. CedarLine Evolve is primarily flat-sawn cut Cedar. Evolve profiles are available across most standard and custom profiles. The timber is machined with a “combed” finish to the front face and the boards are finished with an oil or stain as per Hermpac literature.

2.3 COVER BOARDS, SMART CORNERS, MOULDINGS AND SCRIBERS

To Hermpac profiles as detailed, with species and grading to NZS 3602, but with all unsound and open split knots excluded by cross cut removal prior to fixing into position. To NZS 3602, table 2, reference 2A.3, Requirements for wood-based building components to achieve a 15-year durability performance.

2.4 FASCIA BOARDS

To Hermpac profiles, with species and grading to NZS 3602, but with all unsound and open split knots excluded by cross cut removal prior to fixing into position. To NZS 3602, table 2, reference 2A.3, Requirements for wood-based building components to achieve a 15-year durability performance.

2.5 WALL UNDERLAYS

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

2.6 VERTIBAT PINE EXTERIOR CAVITY WALL BATTENS - STRUCTURALLY FIXED

Vertibat Radiata Pine, H3.2 treated castellated and double bevelled cavity battens, available in a range of sizes. Refer to SELECTIONS.

Components

2.7 NAILS, STAINLESS STEEL

Hermpac Crown, Rose or Flat Head, Annular Grooved Grade 316 Stainless Steel fixings to NZBC E2/AS1 Table 24. Refer to Hermpac Construction Drawings for fixing details and to SELECTIONS for fixing sizes.

2.8 CLINCH NAILS, STAINLESS STEEL

Hermpac proprietary 40 x 2.0mm, 50 x 2.0mm and 27 x 2.0mm Clinch Nail, Annular Grooved Grade 316 Stainless Steel.

2.9 FLASHINGS GENERALLY

To NZBC E2/AS1, 4.0 **Flashings**. Material, grade and colour as detailed and scheduled and to NZBC E2/AS1; Table 21: Compatibility of materials in contact and table 22: Compatibility of materials subject to run-off. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.

2.10 SEALANT

Polyurethane or silane terminated polymers (PU-hybrid technology) construction sealant.

Finishes

2.11 FACTORY PRE-FINISHING - MACHINECOAT (NZ) - PENETRATING WOOD OIL / OIL BASED STAIN

Flood Coat Inundation: Factory application of selected oil-based stain finishes by flood inundation and enhanced penetration of timber surface by roller pressure and fibre saturation.

Refer to: www.hermpac.co.nz/our-products/coatings

Wood X Oil:	Penetrating wood oil - exclusive Machinecoat (NZ) factory formulation, standard and custom colour range.
Wood X Stain:	Penetrating stain - exclusive Machinecoat (NZ) factory formulation, standard and custom colour range.
Resene:	Machinecoat (NZ) Waterborne Woodsman oil stain - exclusive pigment and fungicide enriched factory formulation.

Site applications to manufacturers specifications. All Hermpac weatherboards and mouldings must be coated all six sides prior to installation.

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2.12 SITE APPLICATION OF WOOD OIL/OIL BASED STAIN & PAINTS

All Hermpac weatherboard cladding systems will arrive on site with a minimum of one coat factory finish. Additional coat/s will be required to achieve the desired look. Ensure site coating applications are to coating manufacturers specifications. All Hermpac weatherboards and mouldings must be coated with a specified coating system on all bare surfaces and ends must be minimum double sealed prior to installation. Refer to SELECTIONS.

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.

3.3 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

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

Before fixing commences ensure that the substrate conforms to NZS 3604, section 2, table 2.1, Timber framing tolerances, and the requirements of NZS 3604, section 6, Foundation and subfloor framing, and NZBC E2/AS1, 9.4 Timber weatherboards, governing support for timber board cladding and Hermpac Installation Specifications.

Application - generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 APPLICATION GENERALLY

Application in accordance with Hermpac Installation Specifications.

Application - preparation

3.6 SITE STAINING - WOOD OIL/OIL STAIN FINISH

If not pre-finished before delivery, prepare and coat all faces and edges with one coat of premium wood oil or oil stain to coating manufacturers specifications immediately on opening block stack. Once coated, open stack each board to dry (or penetrate) with back facing downwards ensuring faces remain well finished, untouched and unblemished during drying. Once the coating is dry (Resene Woodsman) or penetrated (Wood-X wood oil), stack the boards face to face and back to back in subsequent layers, so as not to damage the face and finish. Keep dry and undamaged.

Apply a second coat to the boards once they have been installed if using Wood-X or a second and third additional coat if using Resene Waterborne Woodsman. Coating timeframes for oils/stains will vary. Check timeframe requirements for the second or third coats with the coating manufacturer.

Application - vertical cladding over cavity battens

3.7 VERTIBAT PINE DRAINED CAVITY / STRUCTURALLY FIXED

Install 40mm minimum thickness drained cavity. Fit Vertibat cavity battens horizontally over wall underlay to wall framing at 400mm - 480mm vertical centres with top edge sloping away from wall underlay. Permanently fix battens to studs using 304 stainless steel screws at 600mm maximum centres, with 25mm minimum fixing penetration into framing.

3.8 CAVITY CLOSER / VERMIN PROOFING

Refer to Hermpac Cavity System Installation Specification. 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). Use cavity spacers where fixing is required between cavity battens.

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3.9 PENETRATIONS

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 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).

Hermpac Construction Drawings call for a compressible bond breaker, closed cell PVC foam seal to NZBC E2/AS1 9.1.10.7.

3.10 SET-OUT

Use a string line, laser or mechanical device to set out all fixing that will be visible in the finished work. Align accurately in straight lines. Refer to relevant Hermpac Installation Specification and Construction Drawings to establish correct angle of fixing and consistent, accurate placement relative to visible edge of board. For vertical shiplap boards, where possible the exposed lap should face away from the prevailing wind.

Application - fixing

3.11 FIXING - OIL / STAIN FINISH

Install level, true to line and face, to NZBC E2/AS1: 9.4 Timber weatherboards. Double coat all cut ends before fixing. Provide one face fixing per weatherboard at each Vertibat cavity batten over nogging or structurally fixed cavity batten location. Pilot drill all fixings slightly smaller than gauge of fixing to ensure a snug fit and to minimise risk of moisture entry. Finish the heads of Hermpac Crown, Rose and Flat head nails, or Hermpac Starcap screws, flush onto and not into the board surface. Do not over drive the nail/screw head and crush the timber surface beneath and surrounding the nail/screw.

3.12 FIXING/FINISH - WIND ZONE

Hermpac Western Red Cedar, Yellow Cedar, DuraLarch™ or AshinDura™ weatherboards fixed with Stainless Steel or Silicon Bronze Hermpac Crown, Rose and Flat Head nails or Hermpac Starcap screws and Kanda weatherboards fixed with Hermpac Starcap screws are limited to use in NZS 3604 Wind Zones up to and including Extra High when dwangs or structurally fixed Vertibat cavity battens are at maximum 480mm centres.

Hermpac Western Red Cedar weatherboards fixed with stainless steel jolt head nails are limited to use in NZS 3604 Wind Zones up to and including Medium when dwangs or structurally fixed Vertibat cavity battens are at maximum 480mm centres, and NZS 3604 Wind Zones up to and including Very High when dwangs or structurally fixed Vertibat cavity battens are at maximum 400mm centres.

Hermpac Yellow Cedar, DuraLarch™ and AshinDura™ weatherboards fixed with jolt head nails are limited to use in NZS 3604 Wind Zones up to and including Extra High when dwangs or structurally fixed Vertibat cavity battens are at maximum 480mm centres.

Refer to Hermpac Construction Drawings for fixing details and to SELECTIONS for fixing sizes.

3.13 FIXING VERTICAL SHIPLAP WEATHERBOARDS

Install level, true to line and face, to NZBC E2/AS1: 9.4 **Timber weatherboards**. Single face fix weatherboards to every fixing point, clear of the adjacent lapped board. Fixing to be driven in with a slightly upward slope. Line fixings horizontally across the boards. Pilot drill all fixings slightly smaller than gauge of fixing to ensure a snug fit and to minimise risk of moisture entry. Refer to Hermpac Construction Drawings for accurate weatherboard fixing information.

Using a Hermpac specialty clinch nail, prior to the next row of Vertical Shiplap boards being fixed alongside (nogs or dwangs at maximum 480mm centres) and at a position hard up against but not into the hidden lap board edge at every fixing point, restrain the hidden lap tongue by driving the clinch nail into the cavity batten so that the clinch head settles flush into the weatherboard's surface. The clinch nail head must not sit proud of the timber surface nor prevent the correct separation of each adjacent row of boards. Do not pin laps or weatherboard faces.

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Refer to Hermpac Construction Drawings and Installation Specification for suitable face fixings (options include Hermpac Silicon Bronze nails or Grade 316 Stainless Steel nails or Starcap screws. Kanda weatherboards must be fixed with Hermpac Starcap screws), correct placement of fixings, size, length and minimum penetration requirements, and for external and internal corner construction and fixing details.

3.14 INSTALL FLASHINGS

Install flashings, covers and soakers as detailed on the drawings and to NZBC E2/AS1.

3.15 SEALANT

Coated weatherboards laid over Mill Finish Grade 316 Stainless Steel:

Sika: Wipe weatherboard surfaces with a clean rag. Using an abrasive pad, rub down Stainless Steel in a single pass before cleaning with Sika Aktivator-205. Coat both weatherboards and Stainless Steel with Sika Primer 3N and apply a continuous 5mm bead of Sikaflex-11FC or Sikaflex 123 MS Bond.

Soudal: Wipe weatherboard surfaces with a clean rag before wiping Stainless Steel only with Gorilla 696 Surface Activator, being careful not to coat any powder coated surfaces. Apply a minimum 5mm thick continuous bead of Gorilla MS Sealant.

3.16 COMPLETE

Ensure the work is complete with all flashings, finishings and trim properly installed so the cladding system is completely weathertight.

Completion & Commisioning

3.17 COMPLETION MATTERS

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

4 SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise. Contact technical@hermpac.co.nz for assistance or more information.

4.1 HERMPAC - VERTICAL SHIPLAP

Location:	**refer drawings - Note: Weatherboards are profiled, fire-treated and then coated in Wood-X or Dryden Wood Oil.**
Species:	**Western Cedar**
Grade:	**Finger Joint**
Profile Number/Series:	**HP55 135x18.5mm (110mm cover)**
Profile type:	**Vertical Shiplap**
Surface finish:	Band Sawn Face (BSF)
Moisture content:	≤18 % at fixing

4.2 WEATHERBOARD FASTENINGS - STAINLESS STEEL NAILS - WOOD OIL / OIL STAIN FINISH

Nails:	**Crown Head**
Type:	Grade 316 stainless steel
Size:~	TBC

4.3 VERTIBAT PINE CAVITY BATTENS - STRUCTURALLY FIXED TO TIMBER FRAME

Product:	**Vertibat (V3)**
Material:	**H3.2 Radiata Pine**
Size:	**45mm wide x 45mm thick x 2700mm long**
Fixing:	**Grade 304 Stainless Steel Hex drive screws**
Fixing size:	**12 gauge x 75mm long**

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4.4 HERMPAC CAVITY CLOSER/VERMIN-PROOFING

Brand/type:	Sigma cavity closure
Material:	Stainless Steel or PVC with fire-treated cedar

4.5 THIRD PARTY PROCESSOR - ZONE - FIREZONE VANGUARD FP

Location:	**As per drawings (fire-rated wall)**
Brand:	**Zone Architectural Limited**
Product:	**FireZone Vanguard FP**
Process:	**In-house specialty treatment facility.**
WRC Shiplap Boards:	**Timber delivered from Hermpac to Zone after profiling and then returned to Hermpac for coating in selected Wood-X finish as per 4.7**
Cavity Battens:	**18x45mm V8 cedar cavity battens to be impregnated with FireZone Vanguard FP if fire-rating required** **45x45 H3.2 V5 pine cavity battens to be spray finished with FireZone F1E intumescent paint system if fire-rating required.**

4.6 FACTORY FINISH - WOOD OIL / OIL STAIN - FLOOD COAT INUNDATION

Brand:	Machinecoat (NZ) Ltd
Product:	Wood-X penetrating wood oil
Coating process:	Machinecoat (NZ) Ltd. Flood Coat Inundation
Colour:	**to be confirmed with architect**
Factory coats:	One
On site coats:	One, or as per coating manufacturers specification

4.7 SITE FINISH - PENETRATING WOOD OIL / OIL STAIN

Brand:	Wood-X penetrating wood oil
Colour:	**to be confirmed with architect**
On site manual coats:	Refer Manufacturers specifications

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4239 SOFFIT CLADDING

1 GENERAL

This section relates to the supply and fixing of cladding to the underside of exterior soffits, verges and eaves and includes:

- Fibre cement sheet
- Plywood
- Timber board
- Jointers
- Trim

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 provisions for timber-framed buildings up to 10 m in height
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 sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3617	Profiles of weatherboards, fascia boards and flooring
NZS 4251.1	Solid plastering: Cement plasters for walls, ceilings and soffits

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

~ ~

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

~ years For ~

- 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 QUALIFICATIONS

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

1.6 HEALTH AND SAFETY

Comply with all manufacturer/supplier and WorkSafe New Zealand requirements for health and safety.

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1.7 NO SUBSTITUTIONS

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

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents:

~

Provide this information prior to practical completion.

2 PRODUCTS

Timber board soffit cladding

2.1 SHIPLAP WEATHERBOARDS

Shiplap timber weatherboard profile as per NZS 3617 or as detailed. In long lengths with species and grading to the requirements of NZS 3602, table 2, Requirements for wood-based building components to achieve a 15-year durability performance. Select appearance grades to NZS 3631 requirements.

Timber board soffit cladding fasteners

2.2 NAILS - GALVANIZED

Refer to SELECTIONS for size and use; galvanized countersunk or stainless steel to NZS 3604, Table 4.1.

2.3 NAILS - STAINLESS STEEL

Refer to SELECTIONS for size and use; galvanized countersunk or stainless steel to NZS 3604, Table 4.1.

2.4 SCREWS - STAINLESS STEEL

Refer to SELECTIONS for size and use; galvanized countersunk or stainless steel to NZS 3604, Table 4.1.

Timber profiles

2.5 TIMBER COVER BATTENS

To profiles detailed/scheduled with 6x6 mm weather grooves. Species and grading to the requirements of NZS 3602 , table 2, Requirements for wood-based building components to achieve a 15-year durability performance, treated H3.1 unless durable heart wood., Select appearance grades to NZS 3631 requirements, but with all knots excluded.

2.6 TIMBER TRIM

18 x 18 mm timber trim with 6 mm minimum chamfer to internal corner. Species and grading to the requirements of NZS 3602 , table 2, Requirements for wood-based building components to achieve a 15-year durability performance, treated H3.1 unless durable heartwood. Select appearance grades to NZS 3631 requirements, but with all knots excluded.

Flashing

2.7 SOFFIT CLADDING/WALL CLADDING JUNCTION FLASHING

Flashing as detailed with minimum 50 mm return behind soffit cladding and 35 mm cover to wall cladding, complete with hook and kick-out. Refer to SELECTIONS for flashing material.

3 EXECUTION

Conditions

3.1 PRE-INSTALLATION REQUIREMENTS

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

Moisture content:	~% maximum

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3.2 HANDLING

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

3.3 SUBSTRATE

Do not commence work until the substrate is of the standard required for the specified finish; 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 soffits are fixed.

3.4 MOISTURE CONTENT TIMBER BOARD

Immediately before starting fixing, test the moisture content of the boards. Use an electrical moisture meter to test 5% of boards, but not less than 10 boards in the centre of the length. Do not start fixing until 90% of the values obtained are within the range in NZS 3602 table 4, Allowable moisture content (%) at time of installation.

3.5 PENETRATIONS

Form small holes to accommodate penetrations through the soffit as per the method detailed in the sheet manufacturer's technical literature.

Install timber board soffit cladding

3.6 FIXING SHIPLAP WEATHERBOARDS AS SOFFIT CLADDING

Adjust set-out to ensure there is a 2mm expansion gap between successive boards. Using full length boards only, clench nail tongue to every fixing point. Nail other side of board just clear of lap.

3.7 SCARF JOINTS

Where possible run boards/sarking full length. If this is not possible, provide scarf joints over framed support.

3.8 FIXING, PAINT FINISH

Prime all cut ends before fixing. Drill all fixings located within 25mm of board ends. Punch all fixings.

3.9 FIXING, CLEAR FINISH

Coat all cut ends before fixing. Drill all fixings located within 25mm of board ends. Finish fixings flush.

Install timber profiles

3.10 EXECUTION

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).

3.11 TIMBER TRIM

Using full lengths, scribe internal joints and mitre external and running joints. Fully support all joints and fix securely and true to line and face, fully nailed. For paint finish prime joint edges before fixing, otherwise seal them without runs onto any exposed face.

3.12 TIMBER COVER BATTENS

Using full lengths, scribe internal joints and mitre external and running joints. Fully support all joints and fix securely and true to line and face, fully nailed. For paint finish prime joint edges before fixing, otherwise seal them without runs onto any exposed face.

3.13 NAILING, PAINT FINISH

Punch nails and patch prime external trim being painted, before stopping as specified under painting preparation.

3.14 NAILING, CLEAR FINISH

Punch nails flush with the face of external trim being stained or clear finished.



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Completion

3.15 COMPLETION MATTERS

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

4 SELECTIONS

Shiplap Weatherboard soffit cladding

4.1 SHIPLAP WEATHERBOARD - SOFFIT CLADDING

Profile:	**to match cladding**
Species:	**to match cladding**
Treatment:	**to match cladding**
Fixing:	**to match cladding**
Finish:	**to match cladding**

Accessories

4.2 SOFFIT CLADDING/WALL CLADDING JUNCTION FLASHING

Material:	**0.55 steel**
Profile:	**refre drawings**
Finish & colour	**to match cladding**

Finishes - factory applied

4.3 MATERIALS SUPPLIED PRE-PRIMED

Soffit:	Refer to appropriate painting section/s for finishes
Trim:	Refer to appropriate painting section/s for finishes
Cover batten:	Refer to appropriate painting section/s for finishes

Finishes - cut edges

4.4 SITE FINISHES - CUT EDGES

Soffit:	sealed



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4252VV VULCAN ULTRACLAD VERTICAL WEATHERBOARDS

1 GENERAL

This section relates to the supply and fixing of Vulcan Ultraclad® vertical inter-locking weatherboards.

It includes:

- Aluminium weatherboards
- Timber battens
- Corner mouldings
- Starter strips
- Jointers
- Board locators
- Flashings and accessories.

1.1 RELATED WORK

Refer to 4161 UNDERLAYS, FOIL AND DPC for wall underlays.

1.2 ABBREVIATIONS AND DEFINITIONS

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

Documents

1.3 DOCUMENTS

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

NZBC C/AS1	Protection from fire for buildings with sleeping (residential) and outbuildings (risk group SH)
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC E2/VM1	Cladding systems of buildings up to 10 m in height – including junctions with windows, doors and other penetrations

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
UltraClad® Cladding - Aluminium Weatherboards Brochure
UltraClad® Profiled Metal Cladding - Specification
UltraClad® Technical Statement for Steel Framing Specification and Installation
UltraClad® Technical Statement for Vertical Cavity System
UltraClad® Aluminium Weatherboards - Installation Details
BRANZ Appraisal 796 [2024]- Ultraclad® Vertical Weatherboard Cavity System
BRANZ TR0454#1 Weathertightness Test to E2/VM1 of Ullrich Ultraclad® 205mm Shadoline and 140mm Teeboard Weatherboards.

Manufacturer/supplier contact details

Company:	Vulcan Steel Ltd
Web:	buildingsystems.vulcan.co
Email:	buildingsystems@vulcan.co
Telephone:	0800 500 338

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

25 years	For durability of Ultraclad® aluminium weatherboards
20 years	For film and colour integrity of powder coating

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- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years	For Installation

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the cleaning and maintenance information as electronic PDF format documents.

1.10 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Vulcan Ultraclad® product warranty
- Installer / applicator warranty
- Other information required by the BCA in the Building Consent Approval documents.

Performance - Fire

1.11 EXTERNAL FIRE SPREAD - NON-COMBUSTIBLE MATERIAL

Vulcan Ultraclad® weatherboards are aluminium, meeting the requirements of NZBC C/AS1, 5.3 External cladding systems, and NZBC C/AS2, 5.5 External cladding systems, for non-combustible material.

2 PRODUCTS

Materials

2.1 VULCAN ULTRACLAD VERTICAL WEATHERBOARDS

Vulcan Ultraclad® weatherboards are manufactured from 6060-T5 grade extruded aluminium to AS/NZS 1866. Weatherboard profiles are 15mm thick and available in a range of lengths, heights, profiles and finishes. Refer to SELECTIONS.

Components

2.2 ULTRACLAD WEATHERBOARD FIXINGS

8 gauge, grade 304 Stainless Steel screw fixings via locator clips to achieve min. 30mm embedment into timber framing. Refer to SELECTIONS.

2.3 CAVITY VENT STRIP

Folded aluminium profile punched with 5mm holes to base for ventilation and vermin proofing in accordance with NZBC E2/AS1, available in 2.4m lengths.



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2.4 BOARD STARTER STRIP

Powder coated extruded aluminium profile starter strip, with holes punched for drainage. Available in 5m lengths.

2.5 BOARD LOCATOR CLIP

Powder coated extruded aluminium board locator clip pre-drilled for fixing.

2.6 CORNER MOULDING

Powder coated extruded aluminium 90° two-piece internal and external corner mould, available in 5.1m and 6.1m lengths.

2.7 TWO PIECE BOARD JOINTER

Powder coated extruded aluminium two piece jointer for jointing lengths of Ultraclad® weatherboard, available in 5m lengths.

2.8 HEAD STARTER

Powder coated extruded aluminium head starter available in 5m lengths.

2.9 VERTICAL TRACK FLASHING

Dynex Dynaflash polypropylene track flashing.

2.10 INTER-STOREY JOINT FLASHING

Powder coated extruded aluminium inter-storey joint flashing, available in 5m lengths.

2.11 FLEXIBLE WALL UNDERLAY

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.12 RIGID WALL UNDERLAY

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.13 CAVITY BATTENS

Minimum 45mm wide x 18mm thick, H3.1 treated radiata pine cavity battens with 15° slope to top edge.

2.14 CAVITY BATTEN FIXINGS

Refer to SELECTIONS.

2.15 SEPARATION STRIP

50 mm wide strip of roof underlay complying with NZBC E2/AS1, Table C.2.1.1 Properties of roof underlays and wall underlays, for use between treated timber and aluminium.

2.16 INSEAL TAPE

Inseal® 3109, 19mm thick black compressible low density PVC foam tape with adhesive to one side.

2.17 FLEXIBLE SEALANT

To NZBC E2/AS1 for use as a weather sealant for exterior use.

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.

3.3 PRE-INSTALLATION REQUIREMENTS

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

Timber framing moisture content:	24% maximum at the time of cladding application.

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Installation

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 CAVITY BATTENS

Install cavity battens horizontally over wall underlay and nogs at 600mm maximum centres. 15° sloped top edge of battens to fall away from building, fix battens at 800mm maximum centres into timber framing to form a drained cavity to manufacturers details. Plan locations of fixings for battens to avoid locator clips positions.

3.6 SEPARATION

Staple separation strip to face of cavity battens to isolate aluminium weatherboards from treated cavity batten.

3.7 BOARD STARTERS

Determine the lowest point of cladding and position the starter strip between 50mm min. and 105mm max below the bottom plate. Mark precise level of weatherboard base around building and fix board starters through cavity battens to framing as per manufacturers details.

3.8 BASE CHANNEL

Use UltraClad® vertical starter as a base channel to start base of any angled cut boards.

3.9 CORNER FLASHING

Fix two-part corner flashing to cavity battens at 600mm centres. Clip second part of two-part corner flashing into place once Ultraclad® weatherboards have been installed. Where possible allow for continuous length from the lowest point of cladding to the soffit, top of the wall or inter-storey joint.

3.10 VERTICAL BACK FLASHING

Install 0.9mm folded (hemmed) aluminium back flashings vertically between cladding and cavity battens, located behind cladding joints, door and window jambs, and below penetrations as per manufacturer's details.

3.11 VENT STRIP

Install vent (vermin barrier) strip as per manufacturers details, to base of weatherboards, horizontal open junctions and over openings (windows, meter boards, etc).

3.12 ULTRACLAD WEATHERBOARD INSTALLATION

Cut UltraClad® weatherboards to length allowing for a 1mm gap each end of board for expansion. Install level, true to line and face. Lock first course of weatherboards into starter strip. Secure edge of board with locator clips screw fixed through the cavity battens to framing. Clip fixing to engage with fixing channel of board firmly with no excessive downward pressure. Lock subsequent courses of weatherboards into the channel of the previous board.

3.13 INTER-STOREY JUNCTIONS

Install inter-storey drained joints.

3.14 END CAPS

Proprietary end cap profiles to be installed at ends of weatherboards at jambs and sills. Window and door joinery to cover cladding by 10mm min. Install inseal tape between joinery and cladding as per manufacturers details.

3.15 PENETRATIONS

Cut UltraClad® weatherboards and install over penetration with 5mm equal gap all round and install sealant in accordance manufacturer's instructions.

3.16 FINISHING

Touch up of scratches to be completed in accordance with maintenance instructions.

Completion

3.17 COMPLETION MATTERS

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



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4 SELECTIONS

For further details on selections go to buildingsystems.vulcan.co
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 TIMBER CAVITY BATTENS TO 7MM PLY RAB

Timber species:	**Radiata Pine**
Treatment:	**H3.1**
Grade:	**Dressed and finger jointed**
Size:	**20mm**

4.2 RL RHOM RAIL

Bracket system to mansory walls

4.3 VULCAN ULTRACLAD HORIZONTAL WEATHERBOARDS

Location:	**refer 20 series**
Type/brand:	**Vulcan Ultraclad® horizontal aluminium weatherboards**
Profile:	**Shadoline (UA 6975)**
Fixings:	**60mm 6g stainless steel c/s screws. (via rigid wall underlay) over timber wall framing** **RL RHOM RAIL over mansory block walls (non-combustable insulation between)**
Length:	**up to 5.1m lengths. Specific cladding lengths can be manufactured to minimize waste.**
Finish:	**Dulux Duratec powder coat**
Colour:	**FLAXPOD® Matt 90Z9145M**

Components

4.4 SEPARATION STRIP

Location: **refer details**

4.5 FLEXIBLE SEALANT

Location: **refer details**

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4261 BRICK VENEER CLADDING

1 GENERAL

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

- Standard brick veneer cladding
- Proprietary two storey brick veneer system
- Proprietary stack bonded brick veneer system

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

CB&PMA	New Zealand Clay Brick & Paver Manufacturer's Association

The following definitions apply specifically to this section:

Proprietary Two Storey Brick Veneer System	Proprietary system for two storey brick veneer construction as contained in BRANZ Appraisal 690 - Two Storey Brick Veneer System.
Proprietary Stack Bonded Brick Veneer System	Proprietary system for stack bonded clay brick veneer construction as contained in BRANZ Appraisal 1045 - Stack Bonded Brick Veneer System.

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 provisions for timber-framed buildings up to 10 m in height
NZBC B1/AS3	Structure - Small Chimneys
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 2699.1	Built-in components for masonry construction - Wall ties
AS/NZS 2699.3	Built-in components for masonry construction - Lintels and shelf angles (durability requirements)
AS/NZS 2904	Damp-proof courses and flashings
AS/NZS 2918:2001	Domestic solid fuel burning appliances - Installation
NZS 3103	Specification for sands for mortars and plasters
NZS 3604	Timber-framed buildings
NZS 4210	Masonry construction: materials and workmanship
SNZ HB 4236	Masonry veneer wall cladding
AS/NZS 4455.1	Masonry units, pavers, flags and segmental retaining wall units - Masonry units
ASTM D6134M-07	Standard Specification for Vulcanized Rubber Sheets Used in Waterproofing Systems

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

CB&PMA TB1	Design Note TB1 Two Storey Clay Brick Veneer Construction - Made Easy
CB&PMA TB2	Design Note TB2 Specification For The Stack Bond Brick Veneer System
BRANZ Appraisal 690 (2022)	Two Storey Brick Veneer System - Amended 18 March 2026
BRANZ Appraisal 1045 (2019)	Stack Bonded Brick Veneer System - Amended 30 September 2024

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Manufacturer/supplier contact details
Company ~
Web: ~
Email: ~
Telephone: ~

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER
Provide a material manufacturer/supplier warranty for:
~ years: For ~

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

Refer to the general section WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER
Provide an installer warranty for:
~ years: For ~

Provide the warranty on the installer's standard form.
Commence the warranty from the date of practical completion of the contract works.

Refer to the general section WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS – GENERALLY
Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.7 NO SUBSTITUTIONS
Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

Requirements - Compliance

1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE
Provide the following compliance documentation:

- Producer Statement - Construction from the installer of proprietary brick veneer systems.
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.9 EXTERNAL FIRE SPREAD - CLADDING MATERIAL, NON-COMBUSTIBLE
Brick veneer cladding is non-combustible as defined by BPS, paragraph 8.1.1.2 as it is composed entirely of brick/block.

Compliance Information

1.10 COMPLIANCE - STANDARD BRICK VENEER SYSTEM
Brickwork to comply with SNZ HB 4236 Masonry veneer wall cladding as per NZBC E2/AS1.

2 PRODUCTS

Materials

2.1 CLAY BRICKS
To AS/NZS 4455.1.

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2.2 FLASHING - HEAD & SILL

To NZBC E2/AS1 either:

- 2 ply asphaltic pliable waterproofing membrane to AS/NZS 2904, or
- 1.5 mm butyl rubber to ASTM D6134, or
- 0.5 mm pliable polyethylene to AS/NZS 2904.

2.3 FLASHING - JAMB

To NZBC E2/AS1 either:

- 2 ply asphaltic pliable waterproofing membrane to AS/NZS 2904, or
- 0.5 mm pliable polyethylene to AS/NZS 2904.

2.4 DAMP-PROOF COURSE (DPC)

To NZBC E2/AS1 either:

- 2 coats bitumen-based paint to AS/NZS 2904, or
- 1.0 mm min. bituminous sheet or heavy kraft strip laminate (saturated and coated with bitumen) to AS/NZS 2904, or
- 1.0 mm min. butyl rubber to ASTM D6134.

2.5 DAMP-PROOF MEMBRANE (DPM)

0.25 mm min. polythene or polyethylene sheet to AS/NZS 2904.

Components - general

2.6 SILLS

Refer to SELECTIONS for type.

Components - standard brick veneer

2.7 LINTELS

Steel lintel angles over openings to AS/NZS 2699.3.

2.8 WALL TIES

To AS/NZS 2699.1. Metal ties screw fixed to framing.

2.9 REINFORCEMENT

Galvanized wire joint reinforcement. Refer to SELECTIONS for type.

Accessories

2.10 SAND FOR MORTAR

To NZS 3103. Chloride levels not to exceed 0.04% by dry weight of sand.

2.11 MORTAR

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

2.12 MORTAR COLOUR

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

2.13 ADMIXTURES

To NZS 4210.

2.14 WATER

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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3.2 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Check vertical and horizontal alignment of concrete base.

Timber substrate: 18% maximum moisture content

3.3 TIMBER FRAMING - STANDARD BRICK VENEER

Check timber framing stud spacing is in accordance with NZS 3604.

3.4 PENETRATIONS

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

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

3.5 MEASURE MATERIALS

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

3.6 WET WEATHER

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

3.7 COLD WEATHER CONSTRUCTION

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

3.8 HOT WEATHER CONSTRUCTION

When air temperature is above 25°C or there is a drying wind, take the precautions required by NZS 4210: 2.19 Hot weather construction.

3.9 KEEP FACE WORK CLEAN

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

Installation - general

3.10 STANDARDS AND TOLERANCES

To NZS 4210, table 2.2 Maximum tolerances.

Refer to the general section CONSTRUCTION for general requirements.

3.11 COLOUR MIXING

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

3.12 UNIFORMITY

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

3.13 BONDING

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

3.14 PROVIDE WEEPHOLES

Provide weepholes at the bottom of cavities and cells to SNZ HB 4236 and NZBC E2/AS1, 9.2.6 Cavities, and as necessary to drain moisture to the outside air.

3.15 CAVITY VENTILATION - STANDARD BRICKWORK

Ventilate to outside air with top and bottom openings to the requirements of NZBC E2/AS1, 9.2.6 Cavities. Seal cavity off from floor and roof space.

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3.16 CAVITY BRICKWORK BELOW GROUND

Fill all cavities below finished grade with concrete. Place a continuous damp-proof course within the first three mortar joints above ground. Seal the face of all brickwork below ground.

3.17 FORM OPENINGS

Unless detailed otherwise form openings to E2/AS1, 9.2.9 Openings in masonry veneer.

3.18 SEPARATION JOINTS

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

3.19 FORM REVEALS

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

3.20 HEAD FLASHINGS

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

3.21 JAMB FLASHINGS

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

3.22 SILL FLASHINGS

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

3.23 REBATE DAMP PROOFING

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

Installation - standard brick veneer

3.24 INSTALL LINTELS

Fit lintel angles to openings, sized to NZBC E2/AS1, 9.2.9, **Openings in masonry veneer** Table 18E and placed to NZBC E2/AS1, 9.2.9, **Openings in masonry veneer**.

3.25 CAVITY WIDTH

Cavity width to be between 40mm and 75mm.

3.26 PLACE WALL TIES

Place wall ties to: -

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

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

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

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

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

Installation - fireplace work

3.27 SOLID FUEL BURNING APPLIANCE

Carry out the brick linings and hearth to the requirements of AS/NZS 2918, as detailed and to the manufacturer's recommendations.



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Installation - ancillary work

3.28 BUILD IN FIXINGS

Build in necessary fixing bricks or blocks for trims.

3.29 BUILD IN ELEMENTS

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

3.30 BUILD IN DOORS AND WINDOWS

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

Completion & Commissioning

3.31 EFFLORESCENCE, WATER CLEANING

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

3.32 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials - general

4.1 VERMIN PROOFING

Location: **TYPICAL**
Brand / type: **tbc - proprietary plastic weephole vent**

4.2 VIBLOCK BRICK VENEER

REFER TO APPENDED SPECIFICATION

Dart Natural "plain" finish with a slight charcoal mortar Size: Vi Block Slim 450	**TBC**	**450mm x 52 mm x 70 mm**

4.3 WALL TIES

Brand / type: **horizontal fixings @600crs every 4th course/ vertcal @400crs**
Material: **Galvanized mild steel**

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4282 EXTERIOR SOLID PLASTER

1 GENERAL

This section relates to coatings of cement plasters, applied by hand or pump to external solid substrates.
Backgrounds include:

- brick
- concrete block masonry
- concrete
- AAC panels
- AAC blocks

Related work

1.1 RELATED WORK

Refer to 5181 INTERIOR SOLID PLASTER for interior solid plaster work.

1.2 ABBREVIATIONS AND DEFINITIONS

The following abbreviations are used in this specification.

AAC	Autoclaved aerated concrete
Background	The solid substrate to which the bond coat is applied
Solid substrate	Concrete, lightweight concrete, concrete masonry, lightweight concrete masonry or brick wall and concrete soffits

Documents

1.3 DOCUMENTS

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

AS 1478.1	Chemical admixtures for concrete, mortar and grout - Admixtures for concrete
AS 1672.1	Limes and limestones - Limes for building
NZS 3103	Sands for mortars and plasters
NZS 3121	Water and aggregate for concrete
NZS 3122	Portland and blended cements (General and special purpose)
NZS 4251.1	Solid plastering: Cement plasters for walls, ceilings and soffits

Health and Safety at Work Act 2015
WorkSafe - Guidelines for the provision of facilities and general safety in the construction industry.

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

~

Manufacturer/supplier contact details

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

Requirements

1.5 QUALIFICATIONS

Plasterers to be experienced, competent trades people familiar with the materials and techniques specified. If requested provide evidence of qualification / experience prior to commencing.

Qualifications to be:

- Recognised national certificate in solid plastering (National Certificate in Solid Plastering Level 4 or similar)
- LBP solid plastering (when supervising restricted building work)

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Health and Safety

1.6 HEALTH AND SAFETY REQUIREMENTS

Refer to the requirements of the Health and Safety at Work Act 2015. Comply with:

- Relevant New Zealand safety legislation
- WorkSafe publications including; Guidelines for the provision of facilities and general safety in the construction industry
- Relevant codes of practice, guides, guidelines and standards

2 PRODUCTS

Materials

2.1 BOND COAT

Bond coat to NZS 4251.1 Table 3 - Mixes for plastering (by volume) and Table 5 - Thickness of plaster coats for solid substrates. Bond coat mix/thickness dependent on type of background.

2.2 SCRATCH COAT

Scratch coat to NZS 4251.1 Table 3 - Mixes for plastering (by volume) and Table 5 - Thickness of plaster coats for solid substrates. Scratch coat mix/thickness dependent on type of background.

2.3 FLANKING COAT

Flanking (render) coat to NZS 4251.1 Table 3 - Mixes for plastering (by volume) and Table 5 - Thickness of plaster coats for solid substrates. Flanking (render) coat mix/thickness dependent on type of background.

2.4 FINISHING COAT

Finishing coat to NZS 4251.1 Table 3 - Mixes for plastering (by volume) and Table 5 - Thickness of plaster coats for solid substrates. Finishing coat mix/thickness dependent on type of background.

Refer to SELECTIONS for options.

2.5 BONDING AGENT

Use to form gauging liquid with water:

Bond coat:	1:1, or to manufacturers requirements
Flanking and finish coats:	1:2, or to manufacturers requirements

Use in accordance with the bonding agent manufacturer's requirements, maintaining the approved dosage throughout the work.

2.6 ADMIXTURES

To AS 1478.1. Use in accordance with the admixture manufacturer's requirements, maintaining the approved dosage throughout the work.

2.7 PIGMENT

To NZS 3122. Use in accordance with the manufacturers requirements, maintaining the required dosage throughout the work.

2.8 SAND

To NZS 3103, the grading limits of NZS 4251.1 clause 2.2.2.4 Sand, and suitable for the nominated plaster mix. Obtain from a single source, uniform in composition and colour. Chloride levels to not exceed 0.04% by dry weight of sand.

Submit service records of sands proposed in accordance with NZS 3103, clause 8.1 and confirm that they comply. Prevent contamination or segregation of sand in storage. Do not allow it to become more than slightly damp.

2.9 CEMENT

Portland Cement to NZS 4251.1 clause 2.2.2.3 Cement.

2.10 WATER

To NZS 3121, or local town supply.

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2.11 LIME PUTTY
To AS 1672.

Accessories

2.12 TRIM GENERALLY
Formed from steel, galvanized to 320 g/m².

2.13 CONTROL JOINTS
0.55mm thick steel galvanized to 320 g/m².

2.14 ARCHITRAVE BEAD
0.55mm thick steel galvanized to 320 g/m².

2.15 CASING BEAD
0.55mm thick steel galvanized to 320 g/m², slit, formed and expanded.

2.16 CORNER SECTION
0.55mm thick steel galvanized to 320 g/m², slit, formed and expanded.

2.17 SCREED SECTION
0.55mm thick steel galvanized to 320 g/m², slit, formed and expanded.

2.18 TIE WIRE
Mild drawn or annealed galvanized wire not less than 1.2mm diameter.

Plaster mixes

2.19 PLASTER MIXES
To NZS 4251.1 Table 3 Mixes for plaster (by volume).

Surface finishes

2.20 SURFACE FINISHES
For paint or decorative finish coats refer to the appropriate paint or decorative coating section(s). Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 STORE MATERIALS
Store materials in appropriate conditions ensuring adequate protection from contamination or deterioration.

3.2 PLASTERING CONDITIONS
To NZS 4251.1 clause 2.1.7 Air temperature. Carry out plastering under conditions (not too sunny, windy or freezing) which will not adversely affect the finished work. Complete in sufficient time to enable subsequent finishes to be applied under the proper conditions.

Under cold conditions:

- no plastering shall be carried out in air temperatures below 5°C or if the temperature is likely to drop below 5°C in the 24-hour period following the application of plasterwork

Under hot conditions:

- all necessary precautions shall be taken to protect plaster work against the effects of drying winds, direct sunlight, rain and water run-off for at least 24 hours after application.

3.3 DO NOT BEGIN
Do not begin laying up until:

- Linings have been fitted and fixed
- Required openings, chases or other apertures, have been cut
- Pipes, fixtures, fixing pads, and plugs, have been fixed
- Other preparation is complete
- Work that could damage the plaster is complete.

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3.4 SOURCE OF MATERIALS

Supply materials from the same source.

3.5 PROTECT

Protect existing and adjoining work and surrounds, with boards and dust sheets. Clean off immediately droppings and mortar splashes on finished work.

3.6 PROTECT CONCRETE

Protect concrete surfaces from contamination.

3.7 PLANT AND TOOLS

Clean plant and tools to ensure they are free of previous mixes.

3.8 WORKING TIME

Do not use mixes after initial set has occurred. Do not retemper mixes.

3.9 JOINING UP

If joining up is unavoidable in large areas of work, make junctions so that they are concealed in the finished work.

3.10 SURFACE TOLERANCES

Gradual undulations over the surface and measured between rise and hollow as follows:

Trowelled wall surfaces: Not exceeding 3mm over a 1200mm straight edge
Textured wall surfaces: Not exceeding 3mm over a 900mm straight edge
No abrupt deviations permitted.
Take particular care where the surface has light hitting it at an acute angle.

3.11 THICKNESS OF PLASTER

Use the plaster coat thicknesses for the different backgrounds to NZS 4251.1, Table 5 - Thickness of plaster coats for solid substrates, as below, unless dimensioned otherwise on the drawings.

Non-porous substrate - concrete walls

Bond coat	Flanking coat	Finishing coat	Total thickness
3-4mm	9-15mm	2-3mm	14-22mm

Non-porous substrate - concrete soffits

Bond coat	Flanking coat	Finishing coat	Total thickness
3-4mm	3-7mm	2-3mm	8-14mm

Porous substrate - bricks, concrete blocks, lightweight concrete and concrete blocks

Scratch coat	Flanking coat	Finishing coat	Total thickness
3-4mm	9-15mm	2-3mm	14-22mm

Porous substrate (2-coat textured finish)

Scratch coat	Textured finish coat	Total thickness
5-8mm	10-14mm	15-22mm

Note: Medium textured finishing coats (Tyrolean, textured and scraped or combed finish) shall not be greater than 6mm thick and heavily textured finishing coats (hand thrown rough cast and dry dash) shall not be greater than 14mm thick.

3.12 ALIGNMENT

Finish surfaces evenly to line or level, with angles and corners correct and walls and reveals plumb and square.

Conditions - background

3.13 CHECK BACKGROUND

Ensure that backgrounds and adjoining surfaces are, after the preparation called for in this section, of the required standard.

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3.14 PREPARE SURFACE

Before plastering is commenced, eliminate surface contaminants, remove dust and debris and make good any defects in the background which may adversely affect the quality of the plaster coating.

3.15 IRREGULARITIES

Hack off excessive projections. Fill voids, hollows and honeycomb with a mix not stronger than the background or weaker than the first coat.

3.16 ACCEPTANCE OF BACKGROUNDS

Do not commence work until the background is of the required standard.

Application - preparing the surface

3.17 CLEAN SURFACE

Remove oils, greases, retarders and loose material and leave the surface dust free and clean. Remove paint from already painted surfaces.

3.18 COVER CHASES

Cover chases and conduits in the background with 100mm wide lath bedded in the base coat, pressed down flat and trowelled in.

3.19 EMBEDDED ITEMS

Sheath or wrap water pipes and wastes passing through walls, with strip material, to permit thermal movement.

3.20 BONDING AND KEY FOR CONCRETE MASONRY

Walls flush jointed. Apply the bond coat containing the specified bonding agent thrown onto the face.

3.21 CONTROL SUCTION

Control suction by dampening if necessary but without over-wetting. Allow the surface to dry back to a surface-dry condition before plastering.

Application - joints and junctions

3.22 DISSIMILAR BACKGROUND

Fix specified screed sections centred on the junction between dissimilar backgrounds.

3.23 CONTROL JOINTS

To NZS 4251.1, 2.1.9 **Control Joints**, and as shown on drawings.

Provide movement control joints in the plaster to coincide with movement joints in the background and/or junctions between dissimilar backgrounds in the same plane and/or where shown on the drawings. Galvanized mesh or lath shall not be continuous across control joints. Set out of joints to be agreed with owner prior to commencement of plaster application.

3.24 ACCESSORY CONTROL JOINTS

Fix the specified accessory control joints to backgrounds through slots. Fill the joint with sealant before applying finishing coat.

3.25 SECRET CONTROL JOINTS

Form cut joints 3mm wide through the flanking coat plaster to the background. Fill the cut with sealant, following the sealant manufacturer's requirements for primer and masking, before applying the finish coat to provide a secret joint.

3.26 EXPOSED CONTROL JOINTS

Form neat cut joints in plaster. Rule the cut joint straight and true and cut it right through the full thickness of plaster to the background exactly on the line of the junction.

Application - trim

3.27 FIX CORNER SECTIONS

Fix specified corner sections to external angles, as required by the manufacturer for the appropriate background.



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3.28 FIX CASING BEADS

Fix specified casing beads at edge terminations of plaster not covered by other trim, as required by the manufacturer for the appropriate background.

3.29 FORM ARRISES

Where sections or beads are not specified:

- form arrises with 6mm pencil rounds
- soften down severe arrises by rubbing with a wet trowel when finishing

3.30 CHECK FLASHINGS

Ensure that flashings, including flashings to recessed sills are in place before, or are fitted as the coating proceeds so the completed work is completely watertight.

3.31 KEYING

Press plaster through the apertures of metal lath, wings of casing beads and corner sections.

Application - plaster systems

3.32 PROPORTION AND MIXES

Refer to SELECTIONS for plaster thickness and finish.

3.33 WATERPROOF RENDERING

Include waterproofing admixture as specified and as required by the manufacturer. Do not plug or puncture the waterproof render.

3.34 SELF-COLOURED RENDER

Use white cement and white sand. Include the pigment as specified and as required by the manufacturer.

3.35 FLANKING COAT AND FINISHING COAT, SOLID BACKGROUNDS

Apply in 2 coats over the bond coat to achieve a true surface in any direction with not more than 3mm deviation from a straight edge 1200mm long and a total thickness of 18mm maximum.

Application - finishing coat type

3.36 SPONGE FINISH

Lay plaster on thinly with a trowel, float up with wood float and then lightly finish with a close cellular sponge, to a thickness of 2-3mm thick. Categorized as a smooth trowelled finish to NZS 4251.1.

Application - curing

3.37 CURING

Confirm the curing and protection systems to be applied to fresh plaster coats. Plastering not to begin until systems are confirmed.

3.38 PROTECT ADJOINING WORK

Protect existing and adjoining work from damage during plastering. Mask adjacent windows and provide temporary covering if necessary. Remove droppings and mortar splashes as the work proceeds.

3.39 MOIST CURING, CEMENT BASED WORK

Cure by preventing rapid or uneven drying out for a suitable period to NZS 4251.1 clause 2.5 Application and curing of plaster coats, and appendix D Plaster on curing.

Bond Coat:	Minimum 48 hours moist curing and 24 hours drying
Flanking Coat:	Minimum 48 hours moist curing and 72 hours drying
Finish Coat:	Minimum 72 hours moist curing depending on ambient temperatures

Do not alter the above curing times.

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Completion

3.40 PROTECT FINISHED WORK

Protect finished work from sun, wind, frost, rain and hail and from damage by building operations or other causes. Provide temporary coverings if necessary.

3.41 REINSTATE

Reinstate damaged or marked areas.

3.42 LEAVE

Leave adjacent materials, fittings and finishes clean and to the standard required by following procedures.

3.43 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 EXTERIOR SOLID PLASTERING SYSTEM

Location: to exposed concrete slab edges

Surface finishes

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4311D DIMOND PROFILED METAL ROOFING

1 GENERAL

This section relates to the supply and fixing of Dimond Roofing profiled metal roofing complete with associated accessories and components.

1.1 RELATED WORK

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

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:

BMT	Base metal thickness
LBP	Licenced Building Practitioner
NZMRM	New Zealand Metal Roofing Manufacturers Inc
MS	Modified silicone

Documents

1.3 DOCUMENTS

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

BPS	Building Product Specifications
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC G12/AS1	Water Supplies
AS/NZS 2728	Prefinished / prepainted sheet metal products for interior / exterior building applications
NZS 3604	Timber-framed buidings
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 3566	Self-drilling screws for the building and construction industries
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)
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:.

~ years:	for failure of coating adhesion
~ years:	for weatherproofing by material penetration

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	for installation

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- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 NO SUBSTITUTIONS

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

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Compliance information

Performance - General

1.8 DRINKING WATER

Roofing for collecting potable water to NZBC G12/AS1.

2 PRODUCTS

Materials

2.1 STEEL - TYPE AZ COATING (ALUMINIUM/ZINC ALLOY), UNPAINTED

Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397. Prefinished /prepainted to AS/NZS 2728.

Fixings

2.2 FASTENERS GENERALLY

Fixings and fasteners are to be compatible with all materials, the environment and meeting the requirements of the NZ Building Code. Installation is to be in accordance with NZBC E2/AS1 and/or the NZMRM CoP and Dimond Roofing requirements.

For fixing patterns refer to Dimond Roofing Fixing Charts for the selected profile.

2.3 FIXING SCREWS

To AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by Dimond Roofing and with a minimum Class 4 or 5 durability and not less than the material being fixed. Screw into timber to penetrate by minimum 30mm. Screw fasteners to be head stamped identifying the manufacturer and class.

For aluminium roofing use Alutite or stainless steel fixings and for copper or stainless steel roofing use stainless steel fixings. Refer to SELECTIONS

2.4 RIVETS - ALUMINIUM

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

Components

2.5 FLASHINGS GENERALLY

To NZBC E2/AS1, 4.0 Flashings.

Formable grade 0.55 BMT for galvanized, Type AZ or AM - coated and pre-painted steel, 0.5mm BMT for Copper 0.7mm and 0.90 for aluminium (or 0.7mm 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

Supplied by the roofing manufacturer to match or to suit the roofing in the same material as the roof.

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2.7 BOOT FLASHINGS

Generally to NZBC E2/AS1, 8.4.17 **Roof penetrations** (note; NZBC E2/AS1, Figure 54 **Soaker flashing for pipe penetration**, has an error, use as guide only)

EPDM proprietary pipe flashing laid on 45° bias to roofing, with over-flashing (soaker flashing) if required.
A boot flashing should be positioned so that it dams a roofing pan no more than 50%, if this cannot be avoided use an over-flashing back to the ridge and fix the boot flashing to that.

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 MS sealant or polymer sealant as required by the roofing manufacturer and used as directed.

2.11 CLOSURE STRIPS

Non-bituminous compressible, profiled foam strips to fit the sheet profile.

2.12 LAP SEALING TAPE

Closed cell self adhesive nitrile tape.

3 EXECUTION

Conditions

Application - Preparation

3.1 SEPARATION

Isolate dissimilar materials in close proximity as necessary by painting the surfaces or fitting separator strips of compatible or inert materials. Place isolators such as flashing tapes or drainage mat between metals and CCA treated timber, cement based materials, and mixing aluminium sheet and steel mesh.

3.2 SET-OUT

Carefully set out with consideration of the position of side laps to take account of the prevailing wind and line of sight. Ensure all sheets are square and oversailing the gutter true to line. Check during fixing to eliminate creep or spread and string lines along purlin centres to keep fastenings in line.

3.3 END LAPS

End laps should be avoided, except where specifically detailed. Where end laps are necessary, seal both ends of the lap with lap sealing tape or sealant and 4mm sealed pop rivets at maximum 50mm centres, to detail in NZMRM CoP.

3.4 SEAL CUT EDGES

In very severe marine environments seal cut edges of pre-coated steel sheet with edge protection lacquer before fixing to the cladding manufacturer's requirements.

3.5 THERMAL MOVEMENT

For sheet lengths more than 18 metres, make provision for thermal expansion where required

3.6 FIXING GENERALLY

Install and fix in accordance with NZBC E2/AS1, the NZMRM CoP and the Dimond Roofing required fixing patterns and details for each area of the building roofing. Use only screws and clips as required by Dimond Roofing. Paint colour matched fixings and accessories before installation.

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3.7 MARKING AND CUTTING

Use chalk line, Chinagraph pencils or coloured pencil for marking roof sheets prior to cutting. Do not use lead pencil for marking Zincalume®, Colorsteel® and Colorcote®. Cut by shear only, using nibblers or hand snips. Remove all cutting and drilling debris from the roof.

3.8 FIX SHEETS

Fix sheets in place using the fastening system required by Dimond 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. Form downturns at the gutter line where the roof pitch is less than 8 degrees. Form using the required tools.

Application - Flashings

3.10 FLASHINGS

Flash roof to parapets, walls and penetrations to detail. Flashings to be installed on timber framing with moisture content of less than 18%. Where no detail is provided flash to NZMRM CoP recommendations and Dimond requirements. Cut accurately and fix using sealant and rivets to detail and to Dimond requirements to form a weatherproof cover. For highly visible flashings, plan joints/junction to take account of the aesthetic requirements.

3.11 USE OF SEALANTS

Select and use sealants only as recommended by Dimond. Remove any swarf and clean down, apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces. Do not use sealant on Copper material, these materials are required to be soldered to complete any joint.

3.12 FLASHING PENETRATIONS

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

Completion

4 SELECTIONS

For further details on selections go to www.dimond.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Roofing

4.1 DIMOND ROOFING - HERITAGE TRAY® ROOFING

Location:	**roofing general**
Profile:	**Dimondek® 400**
BMT/material:	**0.55mm Steel**
Coating system:	**Colorsteel Endura**
Colour:	**Flaxpod**
Effective cover:	**Cover width406*mm* Sheet width412*mm***
Profile height:	**46mm**
Purlin material:	**timber**
Fixing:	**refer 53 series roofing details**
Fixing pattern:	**Refer to Dimond Roofing literature for details appended**

Accessories

4.2 FLASHINGS - GENERALLY

Profile:	**refer drawings**
BMT/material:	**0.55mm Steel**
Coating system:	**To match roofing**
Paint colour:	**To match roofing**

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4.3 FLASHINGS - INACCESSIBLE

Material/thickness: **0.55mm Steel**

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4381NJ NURAJACK DECK SUPPORT SYSTEM

1 GENERAL

This section relates to the supply and installation of Nuralite Group Limited NURAJACK height adjustable support systems for floating timber and tile / stone paved decks.

It includes:

- support systems for self-supporting natural stone/concrete pavers
- support systems for self-supporting tiles
- support systems for timber plank and composite decking systems

Related work

1.1 RELATED SECTIONS

Refer to 4421N NURAPLY 3PM MEMBRANE ROOFING & DECKING for deck membrane specification and details.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following definition applies specifically to this section:

Self-supporting:	Self-supporting tiles/stone/pavers are those individually structurally suitable to span between the deck supports. Sometimes referred to as "structural".

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 provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

- NURALITE ACCESSORIES NURAJACKS & NURAPADS – Technical Brochure
- NURALITE CAD details
- NURAJACK Placement Graph
- NURAJACK Quantity Calculator
- NURALITE NURAJACK – Installation Video

Manufacturer/supplier contact details

Company:	Nuralite Group Limited
Web:	www.nurajack.co.nz
Email:	info@nuralite.co.nz
Telephone:	09 579 2046

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years	For Nurajack deck pedestal support materials. Warranty applies only when installed over a Nuralite membrane system.

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the

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standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of installation.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years	For installation

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of installation.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -
- Manufacturer's, importer's or distributors warranty
- Installer's warranty

2 PRODUCTS

Deck support system

2.1 DECK SUPPORT SYSTEM

NURAJACK components comprised of high-density UV resistant polypropylene injection moulding, complying with NZBC B2/AS1. Complete with all required accessories to complete installation. Refer to SELECTIONS.

2.2 GORILLA 696 SURFACE ACTIVATOR

Gorilla 696 Surface Activator, a cleaner, degreaser and primer, used to prepare Nuragrid surface before adhering pavers/tiles.

2.3 PU ADHESIVE SEALANT

Polyurethane-based adhesive and sealant, used to adhere structural tiles to the Nuragrid for containment.

2.4 STONE ADHESIVE

Rapid-set stone glue designed for high adhesion and strength applications, is used to adhere non-structural tiles/pavers to the Nuragrid.

Components - for timber deck

2.5 NURAJACK TIMBER JOIST HEAD

NURAJACK Timber Joist Head, located on top of screw adjustable Nurajack SE Pedestal; designed to accept joists to create a timber deck.

2.6 NURAJACK SE PEDESTAL

NURAJACK SE, a height adjustable, self-levelling decking pedestal with heads that pivot up to 4.5°. Available in a range of sizes from 28-38mm to 365-550m. Additional height options available. Refer to SELECTIONS for options.

2.7 NURAJACK PEDESTAL EXTENSION

NURAJACK Pedestal Extension, used to create a greater height in the Nurajack. Fits into size SE3, SE4 and SE5 Nurajack. Refer to SELECTIONS for options.

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Accessories - for timber deck

2.8 NURAPAD SHIM

NURAPAD Shim, in sizes 1, 2 or 3mm high. Used to accommodate a variance in the timber thickness when using Nurapads.

3 EXECUTION

Conditions - general

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 PRE-INSTALLATION REQUIREMENTS - GENERAL

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

Conditions - over waterproof membrane substrate

3.4 PRE-INSTALLATION REQUIREMENT - OVER WATERPROOF MEMBRANES

Before commencing work obtain confirmation from contractor administrator that the installation of the waterproof membrane complies with NZBC E2/AS1. Ensure that the deck support system is not attached to or penetrates the waterproof membrane substrate below.

Installation - general

3.5 INSTALL DECK SUPPORT SYSTEM

Install deck support system and associated decking/paving/tiling in accordance with Nuralite installation instructions.

3.6 PRIOR TO INSTALLATION

Sweep clean waterproof membrane and ensure it is clear of any foreign objects before commencing installation.

3.7 NURAJACK PLACEMENT GRAPH FOR TIMBER DECKS

Set out Nurajacks / Nurapads in accordance with Nurajack Placement Graph.

3.8 NURAJACKS - QUANTITIES

To determine the number of Nurajacks required refer to Nurajack Quantity Calculator at www.nurajack.co.nz. The number required is a function of the deck dimensions and the size and structure of the tile / timber decking.

Installation - with timber decking

3.9 SET OUT

Place pedestals on the substrate; the distance apart will depend on the supporting bearer/joist span, maximum load of pedestal and decking loading capacity.

A Nurajack is required at 600mm centres along a 90mm x 45mm joist. If joist is ripped to a thinner profile, more Nurajacks may be required, as per Nurajack Placement Graph.

3.10 FIX JOISTS

Fix joist to top of pedestals with self-drilling stainless screws through the plastic upstand of the joist head. Adjust the heights of the pedestals so that the joists are completely level.

3.11 INSTALL TIMBER DECKING

Fix timber decking to the joists using stainless steel screws or clips in accordance with manufacturer's requirements. Leave 12mm gap to edge of cladding in accordance with NZBC E2/AS1, 7.2.2 Thresholds of slatted decks.



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3.12 LARGER DECK INSTALLATION

Use a combination of Nurapads and Nurajacks. Space Nurapads and Nurajacks at intervals according to the Nurajack Placement Graph.

3.13 CLEAN OUT MANHOLES / HATCHES

Provide removable screw-fixed access panels at appropriate locations on the deck for cleaning out of sumps and other similar outlets that require servicing.

Completion

3.14 COMPLETION MATTERS

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

4 SELECTIONS

For further details on selections go to www.nurajack.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Deck support systems - for timber decks

4.1 NURAJACK DECK SUPPORT SYSTEMS FOR TIMBER

Location:	**decks generally**
Manufacturer:	**Nuralite Waterproofing L**
Components:	**as required**

Timber decking

4.2 TIMBER DECKING

Refer to timber decking sections for specification of timber decking.

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4383 TIMBER DECKING

1 GENERAL

This section relates to the fabrication and installation of exterior timber

- spaced boarding to decks
- steps and landings

1.1 RELATED SECTIONS

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:

FSC	Forest Stewardship Council
PEFC	Programme for the Endorsement of Forest Certification

Documents

1.3 DOCUMENTS

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

NZBC D1/AS1	Access routes
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
BRANZ BU 497	Stair construction

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 from ~

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

Requirements

2 PRODUCTS

Materials

2.1 SOLID TIMBER COMPONENTS

Selection to NZS 3602.

2.2 HARDWOOD SPACED BOARDING FOR EXTERIOR DECKS

Plantation-grown hardwood. Dressed four sides and with arrises, or specifically profiled decking.

3 EXECUTION

Conditions

3.1 GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).



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Check site dimensions. Carry out machining within the practices recommended for the particular timber, wood product or pre-finished wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's recommendations. Work to be accurate, square and true to line and face.

Application

3.2 LAYING TIMBER SPACED BOARDING - EXTERIOR DECKS

Confirm whether the grooved side of the boards is face up or face down. Avoid excessively short or long lengths. Drill for all fixings. Stagger end joints. Space narrow boards (<100mm) a minimum of 2mm apart in general conditions, or minimum 3mm to 4mm apart if wide boards (>100mm) or narrow boards that are likely to swell after fixing, or 5mm apart for wide boards that are likely to swell. Leave a 12mm minimum gap between the exterior wall and the adjacent decking board.

3.3 SCREW FIXING

Pre-drill for all fixings, where the screws allow, use a proprietary deck pre-drilling and countersinking tool.

Use decking screws and power drive into the deck surface to just slightly below the board surface (approx. 0.5mm). Take care to not overdrive the screw as this may result in the screw heads or the boards being damaged. Refer to SELECTIONS.

3.4 CORROSION RISKS

For exterior timber, timber in damp areas and timber subject to occasional wetting, use only stainless steel or silicon bronze, fixings and connectors, if decking or framing 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).

Completion

3.5 LEAVE

Leave work to the standard required by following procedures.

3.6 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

4.1 EXTERIOR DECKING - HARDWOOD SPACED BOARDING

Species:	**garapa**
Size:	**140mm x 18mm**
Grooved face:	down

4.2 SCREW FIXING

Location:	**refer plans**
Screw type:	**Stainless steel decking screw**
Screw size:	**65 x 10g**

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4421N NURAPLY 3PM MEMBRANE ROOFING & DECKING

1 GENERAL

This section relates to the application of Nuralite Group Limited Nuraply 3PM as a double layer, fully adhered bituminous membrane system with associated components & accessories.

It includes:

- Nurathem insulated roof system with Nuraply 3PM membrane over Nuratherm insulation installed over concrete, plywood, strandboard (for roofs only), cross laminated timber or metal tray deck substrates.
- Nuraply 3PM membrane installed directly over concrete, plywood, strandboard (for roofs only) or cross laminated timber substrates.

1.1 RELATED WORK

Refer to 4381NJ NURAJACK DECK SUPPORT SYSTEM for pedestal support systems for floating timber and tile / stone paved decks.

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 provisions for building elements
AS 2122.1	Combustion characteristics of plastics - Determination of flame propagation - Surface ignition of vertically orientated specimens of cellular plastics
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
BRANZ Good practice guide	Membrane roofing
CodeMark™ CMNZ70032 ver4	Nuraply 3PM Torch-on Membrane for Roofs, Decks, Gutters and Parapets

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Nuralite Group Limited: CAD drawings
Nuraply 3PM Roofing Membrane Installation Manual
Nuralite Group Limited: Substrate Readiness Checklist
BRANZ Appraisal 547 - Nuraply Roof and Deck Membranes
BRANZ Appraisal 732 - Nuraply Nuratherm Insulating Roof System

Manufacturer/supplier contact details

Company:	Nuralite Group Limited
Web:	www.nuralite.co.nz
Email:	info@nuralite.co.nz
Telephone:	09 579 2046 Auckland 0800 Nuralite (0800 687 254)

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years:	For Nuraply 3PM membrane roofing & decking system

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

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1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years: For membrane system installation

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 NO SUBSTITUTIONS

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

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Workers to be Nuralite Group Limited Authorised Membrane Applicators. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Applicators approval certificate from the distributor
- Distributors 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.

Performance - general

1.9 FLOOD TESTING

Where possible, flood test all gutters with a maximum 50mm depth of water at the outlet or scuppers for 24 hours. Make good any lack of water tightness when the surface is completely dry. Not all applications can be flood-test checked. All gutters should be checked.

1.10 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed Nuraply roofing system, including all penetrations through the roof and junctions with walls and parapets. In the event that there are issues relating to any aspect of this work, arrange for a meeting to resolve these issues. The following should attend:

- Nuraply roofing applicator
- Nuralite Waterproofing Limited representative
- Contractor
- Principal
- Principal's consultant(s)

1.11 AS APPROVED

"As approved" means that the materials are compatible with Nuraply 3PM roofing and are part of the system required by the roofing supplier for each specific location.

1.12 COMPLIANCE CODEMARK CERTIFICATE - NURAPLY 3PM

Nuraply 3PM Roofing Membrane System meets the requirements of the CodeMark® certificate CodeMark CMNZ70032 when used within the conditions and limitations of its Certificate of Conformity.

1.13 WIND ZONE DESIGN PARAMETERS – LOW TO HIGH

According to the wind zone parameters of NZS 3604, table 5.4 this project is rated as high or lower. Ensure that the installation is adequate for this standard or greater.



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2 PRODUCTS

Materials - Nuraply 3PM two layer system

2.1 NURAPLY WATERPROOFING MEMBRANE, FULLY BONDED BASE LAYER

Nuraply 3PB-SA provides a 3mm thick first layer in two layer applications on plywood, timber or Strandboard. Supplied in 1m wide x 10m long rolls.

2.2 NURAPLY WATERPROOFING MEMBRANE, MINERAL FACE TOP LAYER

Nuraply 3PM single layer, 4mm thick reinforced fibre asphalt waterproofing membrane with textured mineral aggregate finish. Top layer over Nuraply 3PB-SA or Nuraply 3PV-SA basesheet. Supplied in 1m x 7.5m long rolls.

Components - general

2.3 MS DETAIL

Liquid waterproofing to provide additional waterproofing protection.

2.4 NURADECK BANDAGE SYSTEM

Liquid applied elastomeric, fibre reinforced waterproofing system.

Accessories

2.5 ADHESIVES

Nuraflux No. 10, water-based adhesive for bonding NURAPLY roofing systems to plywood substrates, to Nuralite Waterproofing Limited specification.

2.6 PRIMER

Nuraflux QD or Nuraflux WB primer for substrate preparation prior to bonding Nuraply roofing systems to concrete and plywood, to Nuralite Waterproofing Limited specification.

2.7 SEALANT

IKO Stickall Bitumen - high performance bitumen mastic sealant.

Soudal Gorilla MS - single component elastomeric MS UV stable sealant.

2.8 ALUMINIUM TAPE

3M Aluminium tape in 150mmm or 48mm widths.

2.9 BITUMEN FILLET

Nuralite Triangular.

2.10 OUTLETS

As detailed and rebated into surfaces as required by Nuralite Waterproofing Limited. Refer to SELECTIONS for details.

2.11 DRIP EDGE

“L” profile 50mm x 50mm

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

Take delivery of rolls undamaged and include for site handling facilities where required. Stack on end, off the ground on a level surface and with accessories. Store in shade or cover in hot sun. Protect liquid components from freezing.

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.



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Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 GENERALLY

Work and materials to Nuraply 3PM Installation Manual, BRANZ Good practice guide - Membrane roofing, and to Nuralite Waterproofing Limited installation instructions.

3.4 LAYOUT

Refer to drawings for details. Supplement with Nuralite generic details if situation is not covered on drawings. If not detailed on the drawings, confirm the layout to suit site conditions and for the performance of the Nuraply 3PM system. Stagger junctions of Nuraply 3PM rolls to avoid 4 layer membrane build-up at corner lap joints.

3.5 INSTALLATION SEQUENCE

Install Nuraply 3PM membrane systems in sections to produce a weather tight at the end of each work period. Ensure that moisture absorbent substrates and insulation panels are covered with Nuraply 3PM membrane on the same day they are laid or ensure that the base is kept covered and dry until Nuraply 3PM membrane is laid. Seal exposed Nuraply 3PM membrane edges at the end of each work period to ensure complete system remains dry.

Installation - preparation

3.6 PRELIMINARY WORK

Ensure that preliminary work, including formation of falls, flashing rebates, grooves, ducts, provision of battens and fillets and outlets rebated to levels, is complete and properly constructed to enable the system to work as intended. This work and the substrate to be smooth, clean and dry.

3.7 ACCEPTANCE OF SUBSTRATE

Confirm that the substrate, including fillets, sumps, rebated outlets and projections, will ensure Nuraply work of the required standard. Ensure the substrate is smooth, clean and dry. Complete “Substrate Readiness Checklist” provided by Nuralite Waterproofing Limited. Refer to MANUFACTURER/SUPPLIER DOCUMENTS.

Confirm the moisture content of substrates:

Concrete substrate:	Relative humidity of 75% maximum
Plywood/ timber substrate:	Moisture Content of 20% maximum

3.8 PLYWOOD SUBSTRATE

Ensure that sheets have been stretcher bond laid to falls, are rigid, with joints flush, edges arrised, upstands filleted, no lumps or hollows, smooth, clean, dry and free of debris. Plywood grain across the line of supports below.

Constructed falls on roofs and decks to be 1 in 80 minimum and 1 in 100 for gutters.

Installation - general

3.9 WELD JOINTS

Heat fuse joints minimum width 80mm side and 100mm end laps using Nuralite Waterproofing Limited self-checking lap welding techniques.

3.10 PENETRATIONS

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

3.11 MOVEMENT JOINTS

Form and weatherproof movement joints as designed to Nuralite Waterproofing Limited details.

3.12 JUNCTIONS

Check that adjoining walls and parapets are prepared ready for the installation of NURAPLY roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof.

Required work includes the following:



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

Installation - Nuraply 3PM two layer system

3.13 FIRST LAYER ON PLYWOOD, CROSS LAMINATED TIMBER AND STRANDBOARD

Lay the first Nuraply 3PB-SA layer into Nuraflux NO.10, Nuraflux WB or Nuraflux QD primer to Nuralite Waterproofing Limited requirements, with joints to be welded lapped a minimum of 80mm down the roll edges and 100mm across the roll ends. Lay in order from low points, sumps, through gutters, valleys, eaves, verges main roof and upstands to cover flashings.

3.14 LAYING AND JOINTING SECOND LAYER - MINERAL FACE

Lay the second Nuraply 3PM layer by heat fusing over the cleaned repaired and Nuraflux QD primed (if necessary) surface of the first layer in the same sequence. Joints in the second layer must not correspond with joints in the first layer. Second layer joints to be welded lap-joints, minimum 80mm wide down roll edges and minimum 100mm wide across roll ends, to the Nuraply 3PM supplier's requirements. Roll junctions must be staggered to avoid 4-layer lap-weld build-up of Nuraply 3PM at corners. Ensure unobstructed drainage flow at outlets.

Conditions - completion

3.15 ACCESS BOARDS

Provide access boards for later operations and remove when no longer needed.

3.16 FOOT TRAFFIC

Do not allow construction foot traffic on the Nuraply 3PM installation after laying to avoid dirt and damage to the surface.

3.17 FORM WALKWAY

In areas where ongoing maintenance traffic is anticipated, fully bond a third layer of Nuraply 3PM in a contrasting colour to act as a walkway and wear course.

3.18 ACCEPTANCE

Arrange for an inspection of the completed work. Protect and maintain roofing until completion of the contract works.

3.19 SUBSEQUENT WORK

Make good any covering cut or deformed by later work. Making good to take the form of inserting a new whole or part infill sheet to maintain the appearance of the covering as originally laid.

Completion

3.20 COMPLETION MATTERS

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

4 SELECTIONS

For further details on selections go to www.nuralite.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

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Nuraply 3PM two layer system

4.1 NURAPLY 3PM TWO LAYER SYSTEM ON PLYWOOD, CROSS LAMINATED TIMBER AND STRANDBOARD

Location:	**internal gutters typical**
Supplier:	**Nuralite Waterproofing Limited**
Substrate:	**18mm ply**
Substrate adhesion:	**Nuraflux 10, Nuraflux QD or Nuraflux WB**
First layer:	**Nuraply 3PB-SA**
Second layer:	**Nuraply 3PM.**
Colour:	**Slate**

Accessories

4.2 NURAPLY ACCESSORIES

Location:	**refer detailed drawings**
Supplier:	**Nuralite Waterproofing Ltd**

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4521PT ALTUS THERMAL ALUMINIUM WINDOWS & DOORS

1 GENERAL

This section relates to fabrication, supply and installation of Altus aluminium thermal window and door systems and componentry.

1.1 RELATED WORK

Refer to glazing section(s) for glass types

1.2 ABBREVIATIONS AND TERMS

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

The following abbreviations apply specifically to this section:

AAMA	American Architectural Manufacturer's Association
PQAS	Powder Coating Quality Assurance System
WGANZ	Window & Glass Association NZ

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 provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC E2/VM1	Cladding systems of buildings up to 10 m in height – including junctions with windows, doors and other penetrations
NZBC F4/AS1	Safety from falling
NZBC F9/AS1	Means of restricting access to residential pools
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
NZBC H1/VM1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/VM2	Energy efficiency for buildings greater than 300m²
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 1664.1	Aluminium structures - Limit state design
AS/NZS 1664.2	Aluminium structures - Allowable stress design
AS/NZS 1734	Aluminium and aluminium alloys - Flat sheet, coiled sheet and plate
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
NZS 4211	Specification for performance of windows
BS EN 673	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
AAMA 2603	Performance requirements and test procedures for pigmented organic coating on aluminium extrusions and panels
ISO 10077-1	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - General
ISO 10077-2	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Numerical method for frames
TT-S-001543A	Sealing compound, silicone rubber base (for caulking, sealing and glazing in buildings and other structures)
TT-S-00230C	Sealing compound, elastomeric type, single component (for caulking, sealing and glazing in buildings and other structures)

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BRANZ BU 636	Protecting glass from damage
WGANZ	Window Installation Guide

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Altus product literature
Altus Windows & Doors Specifier's Guide

Manufacturer/supplier contact details:

Company:	Altus Limited
Web:	www.altus.co.nz
Email:	technical@altus.co.nz
Telephone:	0800 397 263

Warranties

1.5 WARRANTY

Provide warranty for:

25/15 years:	For Dulux® Duratec® Intensity® powder coat finish for 25 years for durability and 15 years for chalk and colour fade
15 years:	For Dulux® Duralloy® +PLUS powder coat finish for durability and chalk and colour fade
15 years:	For Dulux® Protexture® powder coat finish for durability and chalk and colour fade

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years:	For Altus aluminium windows, doors and hardware

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works

Refer to the general section 1237 WARRANTIES for additional requirements.

1.7 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years:	For installation

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.8 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.9 NO SUBSTITUTIONS

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

1.10 SHOP DRAWINGS

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

Provide shop drawings to show the general arrangement including, but not be limited to:
Fully dimensioned elevations of all elements (minimum scale 1:20)
Construction details (minimum scale 1:5) showing the interface between joinery elements and the building structure including:

- Jointing details and method of fixing between individual elements and between this installation and adjacent work
- Interaction between cladding and lining
- Flashing details
- Sealants and air seals
- Non-standard fixing details including bracketing
- Vertical and horizontal support members

If requested provide the following additional information:

- Rebate sizes
- Dimensions of all typical elements and of any special sizes and shapes
- Provision for the exclusion and/or drainage of moisture
- Provision for adjustment of fixings to ensure true alignment of windows and doors
- Sealant types and full size sections of all sealants and backing rods
- Sequence of installation
- Provision for thermal movement
- Provision for seismic movement and movement under wind loads
- Glazing specification and details
- Producer Statement – Design (PS1) and design calculations
- Information of Professional Indemnity Insurance held by the person providing the calculations and shop drawings

Submit shop drawings for review to ~.

- ~ working days (at least) before fabrication is planned to commence, provide shop drawings for review.
- Complete shop drawing review before commencing fabrication.

1.11 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents:
Care and Maintenance Guide - Anodised & Powder Coated Joinery
Care and Maintenance Guide - Aluminium Windows & Doors

Provide this information prior to practical completion.

Compliance information

1.12 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer / supplier warranty
- Installer / applicator warranty
- Producer Statement - Construction from the applicator / installer
- Producer Statement - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents

1.13 POWDER COATING CERTIFICATION

Certify on request, powder coating compliance with this specification and support with control and sampling records. Test for film thickness to AS/NZS 1580.108.1.

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Performance - windows and doors

1.14 PERFORMANCE - GENERAL

Deflection, operation, air permeability, lateral displacement, water penetration, ultimate and torsional strength performance and testing and labelling of windows and doors to comply with NZS 4211.

1.15 PERFORMANCE - THERMAL, HOUSING ONLY

Thermal performance of windows & doors to NZBC H1/AS1. The construction R-Value of windows & doors determined by Appendix E, Table E1.1.1 Construction R-values (R window) of selected generic windows and doors. Refer to SELECTIONS for construction R-values.

1.16 PERFORMANCE - THERMAL

Thermal performance of windows & doors to NZBC H1/AS1-AS2 & NZBC H1/VM1-VM2. The construction R-value of windows & doors determined in accordance with Appendix E, E1 Vertical windows and doors:

- Determine the thermal transmittance of window & doors in accordance with ISO 10077-1.
- Determine the thermal transmittance of framing in accordance with ISO 10077-2.
- Determine the thermal transmittance of glazing using BS EN 673.

Refer to SELECTIONS for construction R-values.

1.17 DESIGN PARAMETERS - WIND

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

Quality control and assurance

1.18 INSPECTIONS

~ ~

2 PRODUCTS

Materials - aluminium

2.1 ALUMINIUM EXTRUSIONS

Designation, chemical composition, mechanical testing and manufacturing tolerances to AS/NZS 1866 for aluminium and aluminium alloy used for extruded rod, bar, solid and hollow shapes.

2.2 ALUMINIUM SHEETS & PLATES

Designation, chemical composition, mechanical testing and manufacturing tolerances to AS/NZS 1734 for aluminium and aluminium alloy used for flat sheets, coiled sheets and plates.

2.3 ALUMINIUM STRUCTURES

Aluminium structures limited state design to AS/NZS 1664.1, allowable stress design to AS/NZS 1664.2.

Window/door systems

2.4 ALTUS ALUMINIUM WINDOW/DOOR SYSTEMS

Prefabricated and pre-finished window/door units made of aluminium frames with glazing, hardware/furniture and reveals readily installed and configured as per detailed shop and design drawings. Altus window and door systems can accommodate almost any combination of window and door types, such as fixed, awning, casement, sliding and bifold. Refer to SELECTIONS.

Components - window/door system

2.5 WINDOW/DOOR FRAMES

Aluminium window/door frames are powder coated or anodised to colour/texture of choice and come in various profiles with thermally broken and seismic frame options available (system dependent). Refer to SELECTIONS.

2.6 MULLIONS

Aluminium flat faced, external fin, internal box or split mullions. Refer to SELECTIONS.

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2.7 HARDWARE AND FURNITURE

Stainless steel or aluminium window/door hardware and furniture such as hinges, catches, fasteners, latches, locks, operating gear, safety stays etc. Refer to SELECTIONS.

Components - reveal

2.8 TIMBER REVEALS

Pre-primed H3.1 Radiata Pine timber reveals, grooved for wall linings or flush finished for architraves, available in 19mm, 25mm and 30mm thickness. Refer to SELECTIONS.

2.9 ALUMINIUM REVEALS

Aluminium reveals fitted to frame via thermal break, anodised or powder coated to match joinery.

2.10 PVC REVEALS

19mm thick thermoplastic polyvinyl chloride (PVC) reveals grooved for wall linings.

Components - sill

2.11 SILL SUPPORT BAR

Extruded aluminium angled or flat sill support bar with punched drainage and fixing holes complying with BRANZ Evaluation Method EM6, NZBC E2/VM1 tests and NZBC B2/AS1. Size suited to project specific cladding and to detailed drawings.

2.12 LOCATOR BLOCKS

85x60mm moulded polypropylene locator blocks.

Components - flashing

2.13 FLASHINGS

Extruded aluminium window, head and sill flashing to NZBC E2/AS1, Flashings and suited to project specific application. Head flashing comes powder coated to match window/door joinery colour. Moulded polypropylene head and sill flashing end cap supplied for cavity installation.

Components - sealant

2.14 STRUCTURAL SEALANT

Single component silicone rubber base joint sealing compound formulated and tested or approved equivalent with not less than a ± 40% movement factor to US Federal Specification TT-S-001543A.

2.15 WEATHERING/INSTALLATION SEALANT

Single component, cold applied silicone rubber base joint sealing compound to US Federal Specification TT-S-001543A, or single component elastomeric type joint sealing compound of medium modulus (± 25% movement) to US Federal Specification TT-S-00230C.

2.16 BACKING PEF ROD

Compressible, cylindrical closed cell polyethylene foam rod. Size to suit application.

2.17 SELF-EXPANDING FOAM

Self-expanding aerosol polyurethane gun foam.

2.18 FOAM TAPE

Closed cell PVC foam tape. Hardness, grade, compression, UV weathering to NZBC E2/AS1, Closed Cell Foam Tape.

Components - fixings

2.19 FIXINGS - WINDOW/DOOR FRAME

Minimum fixing size and type to NZBC E2/AS1, Windows and Doors.

To timber:	75 x 3.15mm galvanized jolt head nails, or 8g x 65mm stainless steel screws
To steel:	8g x 65mm stainless steel screws
To concrete:	8g x 65mm stainless steel screws driven into nylon plugs or similar



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2.20 FIXINGS - SILL SUPPORT

Minimum fixing size and type:

To timber/steel:	10g x 50mm stainless steel screws
To concrete:	10g x 50mm stainless steel screws driven into nylon plugs or similar

2.21 BRACKETS

Designed by window/door manufacturer to specific design.

Finishes - powder coating

2.22 COLOURSCAPE POWDER COAT FINISH

Thermosetting polyester powder in accordance with AS 3715, WGANZ and PQAS, formulated to meet AAMA 2603. Available in a range of colours with the option of a matt, gloss or satin finish. Refer to SELECTIONS.

3 EXECUTION

Conditions - general

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

- Confirm all window/door keys are accounted for and delivered separately to the site manager
- Store windows and doors on site in a clean and dry environment in such a manner as to prevent damage to pre-finished surfaces
- Stack the units in a vertical position resting on their sills, with layers interleaved between to prevent rubbing

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 PROTECTIVE COVERING - WINDOWS/DOORS

Prevent marking of surfaces visible on completion and protect aluminium joinery from following trades with protective covering/coating, keep in place during fixing process, remove on completion. Refer to BRANZ BU 636.

Conditions - fabrication

3.4 FABRICATION - GENERAL

Confirm site measurements of openings prior to window/door fabrication. Fabricate and finish window/door units and components, and install glazing, hardware and furniture, operating gear, safety stays and reveals to detailed shop and design drawings, the specification and as scheduled. Punch drainage and fixing holes to sill supports complying with EM6, NZBC E2/VM1 tests and NZBC B2/AS1.

3.5 SAFETY STAYS - WINDOWS

Factory fit non-releasable safety stays to limit window openings as per NZBC F4/AS1, Opening Windows.

3.6 SAFETY STAYS - DOORS

Factory fit self-closing or self-latching device to doors where required by and to NZBC F9/AS1.

3.7 PROPRIETARY FRAME BLOCKS

Factory fit proprietary frame blocks as required for direct fixed wall cladding to block up windows/door off sill tray flashings.

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3.8 FLASHINGS

Window, head and sill flashing material, profile and dimensions to NZBC E2/AS1, Flashings and suited to project specific cladding, framing and floor, and compatible with window frame materials and fixings.

Conditions - on site

3.9 PRE-INSTALLATION REQUIREMENTS

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

- Openings are prepared for window/door installation and have wall underlay dressed into opening, corner soakers installed and flashing tape applied
- Waterproof sealant is applied to concrete/masonry window and door sills, and for door sills a membrane is installed over sealant
- Window/door units have glazing, hardware and furniture, operating gear, safety stays/restrictors and reveals installed to and are finished as per detailed shop and design drawings and the specification

Installation/application - general

3.10 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.11 INSTALLATION/APPLICATION REQUIREMENTS

Ensure that all installers/applicators are familiar with the required substrate conditions and the manufacturer's or supplier's specified preparation, fixing and finishing techniques. Install/apply products in accordance with manufacturer's or supplier's technical literature, detailed shop and design drawings and to NZBC E2/AS1 and WGANZ Window Installation Guide.

3.12 CORROSION PROTECTION

Install/apply barriers of bituminous coatings, stops or underlays between dissimilar metals in contact and where aluminium is in contact with concrete/masonry.

3.13 SEALING REQUIREMENTS

To sealant manufacturer's requirements and instructions:

- Ensure joints are dry and remove loose material, dust and grease
- Prepare joints as required with solvents and primers recommended
- Mask off adjoining surfaces
- Apply back-up materials to depth no less than the minimum required
- Tool off sealant to form a smooth fillet with required profile and dimensions
- Remove excess sealant using cleaning materials recommended

Preparation for fixing to concrete/masonry

3.14 INSTALL NYLON PLUGS

Drill fixing holes in concrete/masonry to suit nylon plug size and location of sill support and reveal fixings. Fill fixing holes with silicone sealant and install plugs into hole until flush with concrete surface.

Installation - sill supports (cavity construction)

3.15 INSTALL ANGLED SILL SUPPORT BAR

Prior to installing support bar place a locator block at each end of bar. Install bar on exterior wall face centred below opening sill with locator blocks seated on sill trimmer. The upper edge of the bar to be minimum 5mm above sill trimmer. Confirm the bar is level and in true alignment, fix to framing/concrete/masonry.

3.16 INSTALL FLAT SILL SUPPORT BAR

Install sill support bar centred to opening sill onto floor surface as per design drawings. Confirm the bar is level and in true alignment and fix vertically to floor.

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Installation - window/door units

3.17 PLACE WINDOW/DOOR UNIT

Prior to placing window/door unit in opening, drill two rows of pilot holes along window/door reveal, place holes 150mm from reveal ends and at maximum 450mm intervals as per NZBC E2/AS1, or to window/door manufacturer's specific requirements. Place window/door unit in opening complying with NZBC E2/AS1 and suited to project specific cladding, detailed shop and design drawings. Confirm correct exterior cladding cover, interior lining finish and placement of unit on sill support.

3.18 FIX WINDOW/DOOR UNIT

Insert flat packers between opening frame and reveal around fixing points. Confirm window/door unit is level and of true alignment and fix through reveal (not packers) to opening framing and floor. Remove packers from head.
For bifold windows/doors additionally fix at head with supplied brackets as per window/door manufacturer's instructions.

3.19 COMPLETE AIR SEAL

To comply with NZBC E2/AS1, Air Seals. Insert continuous backing PEF rod between opening frame and reveal at 10-20mm depth, apply self-expanding foam to manufacturer's instructions over PEF rod to fully fill gap. For windows/doors fixed directly to floor (no reveal) or seated in floor rebated apply sealant as per window/door manufacturer recommendations and detailed drawings.

3.20 INSTALL HEAD FLASHING

Cut head flashing to required length and install, fix and seal to wall framing above window/door head as per detailed design drawings, NZBC E2/AS1 and suited to project specific cladding and wind zones.

Post-cladding weather sealing of windows/doors

3.21 WEATHER SEALING

Seal exterior window/door frame and flashings to cladding weathertight complying with NZBC E2/AS1 and suited to project specific cladding and detailed design drawings. Install/apply sealing products in accordance with manufacturer's or supplier's technical literature.

Completion

3.22 COMPLETION MATTERS

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

3.23 COMPLETION - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

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3.24 TRADE CLEAN

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

4 SELECTIONS

For further details on selections go to www.altus.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Performance

4.1 THERMAL PERFORMANCE - VERTICAL WINDOWS & DOORS

Window /Door Number:	Construction R-value:
refer windows and door schedule	**R0.50**

Fabrication/supply/installation

4.2 NOMINATED MANUFACTURER

Nominated manufacturer(s):



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Company: **vistalite® E13 Windows**

4.3 SUPPLY AND INSTALLATION

Supply and installation of window/door systems and componentry by one of the following options:

Supply: By manufacturer
Installation: By main contractor

Window/door units - powder coated

4.4 ALTUS PACIFIC60 THERMAL DOOR AND WINDOW SYSTEM

Location: **refer windows and door schedule**
Brand: **Altus Pacific60**
Type: **Thermal fixed window system**
Frame: **Flat face**
Finish: **ColourScape® Powder Coating**
Powder coat: **Dulux® Protexture® Duralloy Plus powder-coat colour**
Colour: **to match roofing to all windows and hardware**
DFT: **Average of 80 microns with a minimum of 50 microns**
reveal: **GIB reveals typically allow for GIB accepter to all items**

Components - window/door unit

Components - hardware/furniture Note: refer windows and door schedule

4.5 HARDWARE AND FURNITURE ZEBRATTI HARDWARE AS PER RWINDOWS AND DOOR SCHEDULE

Zebratti pull handles and snibs to noted items **Zebratti flush pull handles to sliding doors noted items**

4.6

4.7 TRIPLE GLAZING

all items triple glazed Low E Xcel x 2 sides clear glass

NZS4223, Very High wind zone requirements

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4555 GARAGE DOORS

1 GENERAL

This section relates to the manufacture, supply and installation of garage door systems including required opening/operating systems.

1.1 RELATED WORKS

Refer to ~ for ~.

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

AS/NZS 1170	Structural design actions
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
NZS 3604	Timber-framed buildings
AS/NZS 4505	Garage doors and other large access doors

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

1.3 MANUFACTURER'S DOCUMENTS

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:	~

Requirements

1.4 INFORMATION FOR OPERATION AND MAINTENANCE

Provide operating instructions for the garage doors and associated opening equipment. Provide a list of all components requiring regular maintenance.

Performance

1.5 DESIGN PARAMETERS WIND

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

1.6 LOADS - NON - SPECIFIC DESIGN - DOORS UP TO 3.0M HIGH

Garage doors complete with hinges, roller assemblies and fasteners to comply with wind performance requirements to NZS 3604.

1.7 RESPONSIBILITY FOR PERFORMANCE

Accept responsibility for the structural and weathertight performance of the completed garage door installation.

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2 PRODUCTS

2.1 GARAGE DOOR

Manufacture to AS/NZS 4505 complete with a compliance label.

2.2 MOTORISED DOOR OPENER

~

3 EXECUTION

3.1 PREPARATION FOR INSTALLATION

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

3.2 MANUFACTURER'S REQUIREMENT FOR INSTALLATION

Install door, track and operating equipment complete with all specified and necessary accessories and hardware to the manufacturer's requirements.

3.3 START UP

Carry out start up procedures and verify proper performance of the doors.

3.4 ADJUSTMENT

Lubricate bearings and sliding parts and adjust doors to operate easily, free of warp, twist or distortion with a weathertight fit round the entire perimeter.

3.5 DEMONSTRATION

Carry out start up procedures and verify proper performance of the door. Demonstrate the operation of the door to the principal/principal's representative. Set security features to principal's requirements. Reset security features at practical completion of the contract works.

Completion

3.6 ENSURE

Ensure all elements are free of marks or blemishes, with all moving parts working fully and freely.

3.7 REPLACE

Replace damaged, cracked or marked elements.

3.8 LEAVE

Leave work to the standard required by following procedures.

3.9 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

4.1 GARAGE DOOR - SECTIONAL OVERHEAD DOOR

Location:	**refer drawings**
Brand:	**Dominator or simliar**
Type:	**Flat Panel sectional PIR Insulated**
Finish:	**to match flashing TBC**
Model number:	**tbc**

4.2 GARAGE DOOR CONTROLLERS

Brand:	**tbc**
Number of remotes:	**2**
Location of internal control buttons:	**confirm with owner**
Number of internal control buttons:	**1**

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4610MR METRO PERFORMANCE GLASS - RESIDENTIAL GLAZING

1 GENERAL

This section relates to the supply and fixing of Metro Performance Glass Limited glazing for residential external and internal applications.

It includes:

- window and door glazing
- frameless shower and bath screen glass
- glass splashbacks
- balustrade and pool fence glass
- mirrors

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
EVA	Ethylene Vinyl Acetate
HSO	Heat Soaked Glass
HST	Heat Strengthened Glass
IGU	Insulating Glass Unit
LSG	Laminated Safety Glass
TSG	Toughened Safety Glass
TLSG	Toughened Laminated Safety Glass
MFG	Metro Frameless Glass

Documents

1.3 DOCUMENTS

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

NZBC F4/AS1	Safety from falling
NZBC F9/AS1	Means of restricting access to residential pools
NZBC H1/AS1-AS2	Energy Efficiency
NZBC H1/VM1-VM2	Energy Efficiency
AS/NZS 2208	Safety glazing materials in 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 4666	Insulating glass units
BPS	Building Product Specifications
BRANZ BU 636	Protecting Glass From Damage

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Refer website www.metroglass.co.nz.

Manufacturer/supplier contact details

Company: **Metro Performance Glass**

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Web: www.metroglass.co.nz
Email: technical@metroglass.co.nz
Telephone: 0800 545 800

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years: for GlassTech Insulating Glass Units (IGU)
10 years: for SafeLite Laminated Safety Glass (LSG)
10 years: for TempaFloat Toughened Safety Glass (TSG)
10 years: for TempaScreen, TempaClad and TempaPrint digital printed glass

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

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 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer / supplier warranty
- Installer / applicator warranty
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents.

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.

Performance - General

1.10 ENERGY EFFICIENCY

Provide glazing to comply with H1 Energy efficiency requirements of NZBC H1/AS1-AS2 and NZBC H1/VM1-VM2.

2 PRODUCTS

Materials

2.1 TOUGHENED SAFETY GLASS (TSG)

TempaFloat Grade A Toughened Safety Glass to AS/NZS 2208.

Heat soaked toughened glass to NZS 4223.1, Appendix E, required for critical areas.

2.2 REFLECTIVE AND COATED FLOAT GLASS

Coated float glass incorporating either both solar and thermal insulation properties, or only the thermal insulation properties. Refer to SELECTIONS.

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Materials, mirrors

2.3 MIRROR GLASS

Clear annealed mirrored float glass, including silver, activation, passivation and two protective coats.

2.4 SAFETY MIRROR GLASS

Clear mirrored float glass with organic backing (vinyl) to comply as a safety glazing material to AS/NZS 2208.

Materials, bath and shower screens

2.5 GLASS SCREENS BATH & SHOWER

Proprietary shower/bath screens, and doors shall be TempaFloat TSG complete with MFG hardware.

Components, general

2.6 JOINTING, PUTTY AND SEALING MATERIALS

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

Components, aluminium and uPVC glazing

2.7 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.

3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

To NZS 4223.1, NZS 4223.2, NZS 4223.3 as modified by NZBC B1/AS1, 7.3.1, and NZS 4223.4. All external glazing to be wind and watertight on completion.

3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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, and AS/NZS 4666 for IGUs.

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 GLASS CONDITION

All glass to have undamaged edges and surfaces in accordance with AS/NZS 4667.

3.5 GLASS THICKNESS

If not specifically stated in the glazing schedule determine the minimum thickness of glass for each pane as required by NZS 4223.1, NZS 4223.3, NZS 4223.4.

Determine the final glass thickness based on specific wind loading, human impact and any other considerations that govern.

3.6 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.

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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 as modified by NZBC B1/AS1, 7.3.1, for thickness and maximum areas of panel Safety Glass.

3.8 SAFETY GLAZING MATERIAL

Use only safety glazing materials defined in NZS 4223.3, as modified by NZBC B1/AS1, 7.3.1, that also comply with the relevant requirements of AS/NZS 2208. Ensure material is permanently marked 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. IGUs to comply with AS/NZS 4666.

Assembly

3.10 WORKING OF GLASS

All working of glass as required in NZS 4223.1.

3.11 EDGE WORK AND BEVELLING

All edges shall be clean cut unless specified in SELECTIONS or as shown on drawings.

3.12 SURFACE TREATMENT

Refer to SELECTIONS/drawings for finish.

3.13 SURFACE CUTTING

Refer to SELECTIONS/drawings for finish.

Application - generally

3.14 INSTALL SAFETY GLASS

To NZS 4223.3.

Application - aluminium

3.15 INSTALL GLASS TO ALUMINIUM FRAMES

Install glass to NZS 4223.1.

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

Application - mirrors

3.16 MIRRORS, SCREW FIXED

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

Application miscellaneous

3.17 INSTALL GLASS BATH & SHOWER SCREENS

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

Finishing

3.18 SAFETY

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



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Completion

3.19 COMPLETION MATTERS

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

3.20 TRADE CLEAN

Remove safety indicators and trade clean at completion of the building as required by the contract documents.

3.21 REPLACE

Replace damaged, cracked or marked glass that occurs during glazing.

3.22 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

For further details on selections go to www.metroglass.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Glass by type

4.1 METRO PERFORMANCE GLASS - TOUGHENED SAFETY GLASS (TSG)

eLocation:	**refer joinery plans**
Brand/type:	**tbc**
Glass type:	**TempaFloat**
Thickness:	**10 mm**

4.2 METRO PERFORMANCE GLASS - LOW EMISSIVITY (LOW E) COATED GLASS

Location:	**windows and door**
Brand/type:	**Sunergy**
Coating:	**all items triple glazed Low E Xcel x 2 sides clear glass**
Thickness:	**to suit window size**
Colour:	**clear**

Mirrors

4.3 METRO PERFORMANCE GLASS - MIRROR

Location:	**refer sanitary fittings schedule**

Glass shower & bath screens

4.4 METRO PERFORMANCE GLASS - FRAMED SHOWER SCREENS AND DOORS

Location:	**refer joinery elevations**
Brand/type:	**Metro Glass**
Glass:	**TempaFloat glass (reeded)**
Thickness:	**10 mm**
Hardware:	**tbc**

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4711OR OUTRIGHT INSULATION

1 GENERAL

This section relates to the supply and installation of Outright Continuous Insulation, ROCKWOOL stone wool continuous thermal insulation for pitched warm roofs, exterior wall applications, behind external wall linings & basement/soffit applications and acoustic insulation for internal walls / soffits.

It includes:

- ROCKWOOL insulation slabs
- Components and accessories to complete the installation.

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.

Documents

1.3 DOCUMENTS

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

BPS	Building Product Specifications
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300 m2
NZBC H1/AS2	Energy efficiency for buildings greater than 300 m2
AS 1530.1	Methods for fire tests on building materials, components and structures - Combustibility test for materials
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential building

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
ROCKWOOL Asia Product Literature on Outright Continuous Insulation website

Manufacturer/supplier contact details

Company:	Outright Continuous Insulation
Web:	www.outright.co.nz
Email:	info@outright.co.nz
Telephone:	09 579 2046

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years	For ROCKWOOL Insulation

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works

Refer to the general section 1237 WARRANTIES for additional requirements.

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Requirements

1.6 QUALIFICATIONS GENERAL

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

1.8 EXTERNAL FIRE SPREAD - NON-COMBUSTIBLE

ROCKWOOL stone wool insulation has been classified as non-combustible, tested to AS 1530.1.

2 PRODUCTS

Materials

2.1 ROCKWOOL THERMALROCK® S - INSULATION BOARD FOR EXTERNAL & INTERNAL WALLS / FLOORS AND INTERTENANCY WALLS

Rockwool Thermalrock® S, non-combustible stone wool insulation slab, available in 1200mm x 600mm slabs in a range of thicknesses, densities, and R-values. Refer to SELECTIONS.

Components

2.2 FASTENERS - GENERALLY

Fasteners to suit the particular application in accordance with Outright installation instructions. Refer to SELECTIONS.

Accessories

2.3 OUTFIX THERMAL BRICK TIES

Hot dip galvanized and 304 Stainless steel slotted 50mm high, 1.367mm BMT L-plate with 4.76mm∅ wire V-ties, available for a range of cavity depths and insulation thickness. Refer to SELECTIONS.

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.

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation - generally

3.4 INSTALL INSULATION - GENERAL

Lay, install, fit and fix insulation without gaps, tucks, folds and over compaction to NZBC H1/AS1 or NZBC H1/AS2 and insulation manufacturer's requirements. For all housing and buildings up to 300m install in accordance to NZS 4246 sections 5 Walls, 6 Ceilings & Roofs, 7 Underfloor - Suspended Framed Floors and 10 Concrete Slab-on-Ground Insulation, for residential light timber or steel framed buildings. Do not cover vents. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath.

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3.5 INSULATION CLEARANCES

Provide insulation clearances to NZS 4246 and for recessed luminaires AS/NZS 3000, 4.5.2.3. Where allowed by these standards provide insulation clearances to product manufacturer's stated clearances. Secure insulation in place so clearances are maintained and use guards/barriers , if required, where insulation is not secured.

3.6 PIPES AND PLUMBING

Cut holes in the Rockwool board with a sharp knife and notch around obstacles such as pipes and plumbing.

3.7 ELECTRICAL CABLES

Fit Rockwool board behind or in front of electrical wiring and plumbing. Ensure there are no gaps or undesirable compression at edges.
Use extreme caution when working around electrical cables.

3.8 CHECK FOILS

Ensure foils are dry, clean, bright, undamaged and free of debris before being covered.

3.9 CHECK WALL AND ROOF UNDERLAYS

Ensure these are dry, clean, undamaged and free of debris before being covered.

3.10 CHECK VAPOUR BARRIERS

Ensure this layer forms one homogeneous sheet vapour barrier and remain as such throughout the ensuing construction process.

3.11 INSULATION BOARD - CUTTING

Cut Rockwool Board by using a fine-toothed saw or by scoring with a sharp knife using a straight edge. Ensure cut is clean and all the way through. Do not rip the Rockwool Stone Wool apart as this can reduce the edge area and the thermal efficiency of the insulation.

Installation - Rockwool Thermalrock® S, with weatherboard cladding, fibre cement sheet or similar lightweight cladding styles

3.12 INSTALL INSULATION - STEEL OR TIMBER FRAMED WALL, EXTERNAL SIDE OF FRAME

Install Rockwool Thermalrock® S board to steel or timber framed walls, or engineered timber (CLT) to Outright installation instructions and as follows:

- Stud spacing to be maximum of 600mm centres.
- After structural ply, rigid air barrier or wall underlay has been installed, fix Rockwool Thermalrock® S board to external face of frame with vertical joints to coincide with studs.
- Slot slabs together to provide a continuous insulation layer and air barrier.
- Install a minimum of three insulation anchor fixings per slab to hold slabs in place temporarily where necessary.

3.13 INSTALL INSULATION - CONCRETE OR CONCRETE BLOCK WALL, EXTERNAL SIDE

Install Rockwool Thermalrock® S board to concrete or concrete block walls to Outright installation instructions and as follows:

- After wall underlay has been installed fix Rockwool Thermalrock® S board to external face of wall.
- Slot boards together to provide a continuous insulation layer and air barrier.
- Install a minimum of three insulation anchor fixings per slab to hold slabs in place where necessary.

Installation - Rockwool Thermalrock® S, with brick veneer or stone cladding

3.14 INSTALL INSULATION - BRICK / STONE VENEER OVER CONCRETE OR CONCRETE BLOCK, EXTERNAL SIDE

Install Rockwool Thermalrock® S board to concrete or concrete block walls to Outright installation instructions and as follows:

- After wall underlay has been installed, fix Outfix thermal tie L plate through to structure. Cut slit or fix Rockwool Thermalrock® S board around thermal tie to external face of wall.
- Slot boards together to provide a continuous insulation layer and air barrier.
- Install one insulation anchor fixing per slab to hold slabs in place temporarily where

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necessary.

Completion

3.15 COMPLETION MATTERS

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

4 SELECTIONS

For further details on selections go to www.outright.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 OUTRIGHT CONTINUOUS INSULATION - ROCKWOOL THERMALROCK® S

Location:	**exterior walls generally**
Manufacturer:	**Rockwool Malaysia Sdn Bhd**
Supplier:	**Outright Continuous Insulation**
Brand/type:	**ROCKWOOL Thermalrock® S80**
Board size:	**1200mm x 600mm**
Construction type:	**Continuous external wall insulation over timber or concrete blockwork walls**
Thickness:	**75mm refer details**
R-value:	**R2.25**
Facings:	**Plain**

Accessories

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4711P PINK® BATTS® THERMAL INSULATION

1 GENERAL

This section relates to Comfortech Building Performance Solutions® Pink® Batts® thermal insulation materials for walls, floors, ceilings and roofs.

1.1 RELATED WORK

Refer to 4161 UNDERLAYS, FOIL AND DPC for wire netting, wall underlays and roofing underlays.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BIB	Building Insulation Blanket

Documents

1.3 DOCUMENTS

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

NZS/AS 1530.1	Methods for fire tests on building materials, components and structures - Combustibility test for materials
AS/NZS 3000	Electrical installations (Known as the Australian/New Zealand Wiring Rules)
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
AS/NZS 4859.1	Thermal insulation materials for buildings - General criteria and technical provisions

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

Comfortech H1 Overview
Comfortech Pink® Batts® Insulation - Safety Data Sheet
Comfortech Pink® Batts® Ceiling Product & Insulation Guide (June 2025)
Comfortech Pink® Batts® Skillion Roof Insulation Product & Installation Guide (Jan 2025)
Comfortech Pink® Batts® Wall Insulation Product & Installation Guide (Jan 2025)
Comfortech Pink® Batts® SnugFloor® Insulation Product & Installation Guide (Jan 2025)
Comfortech Pink® Batts® BIB Product & Installation Guide (July 2025)
Comfortech Pink® Batts® Superbatts® Installation Instructions
Comfortech Pink® Batts® Insulation Product Warranty
BRANZ Appraisal 238 (2023) - Pink® Batts® Insulation - Amended 23 February 2026
BRANZ Appraisal 632 (2023) - Pink® Batts® SnugFloor® Insulation - Amended 12 August 2024
BRANZ Appraisal 767 (2023) - Pink® Batts® Skillion Roof Insulation - Amended 21 January 2026

Manufacturer/supplier contact details

Company:	Tasman Insulation NZ Ltd
Trading as:	Comfortech Building Performance Solutions®
Web:	www.pinkbatts.co.nz
Telephone:	0800 746 522

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

50 years	For Pink® Batts® insulation products

- Provide this warranty on the manufacturer/ supplier standard form (if not available then use

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the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year For installation

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

Compliance information

1.9 COMPLIANCE - BRANZ APPRAISAL 238

Pink® Batts® Insulation has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 238.

1.10 COMPLIANCE - BRANZ APPRAISAL 632

Pink® Batts® SnugFloor® Insulation has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 632.

1.11 COMPLIANCE - BRANZ APPRAISAL 767

Pink® Batts® Skillion Roof Insulation has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 767.

Performance

1.12 FIRE PROPERTIES

Pink® Batts® insulation products are classified as non-combustible when tested to NZS/AS 1530.1 and achieve a Group Number of 1-S.

2 PRODUCTS

Materials

2.1 PINK® BATTS® INSULATION BATTS

Bio-soluble fibrous glass wool slabs manufactured from minimum 80% recycled window glass and bonded with thermosetting resin to AS/NZS 4859.1. Coloured Pink for identification. Available in a range of R-values, sizes and thicknesses. Refer to SELECTIONS.

Components

2.2 WIRE NETTING

Refer to 4161 UNDERLAYS, FOIL AND DPC for wire netting used to support the insulation.

2.3 PLASTIC STRAPPING TAPES

Proprietary plastic strapping tape.

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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.

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALL INSULATION - GENERALLY

Install insulation in a dry protected environment. Lay, fit and fix insulation without gaps, tucks, folds and over compaction to Pink® Batts® installation instruction and to NZS 4246 for all housing and buildings up to 300m². Allow insulation to re-loft/relax prior to installation. Do not cover vents. Lift up electrical wires, lighting transformers/ controllers and lay the insulation underneath. Use insulation offcuts to fill small gaps between framing.

3.6 INSULATION CLEARANCES

Provide insulation clearances to NZS 4246 and for recessed luminaires AS/NZS 3000, 4.5.2.3. Where allowed by these standards provide insulation clearances to product manufacturer's stated clearances. Secure insulation in place so clearances are maintained and use guards/barriers , if required, where insulation is not secured.

3.7 LAY WIRE NETTING - UNDER JOISTS / PURLINS

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

3.8 LAY WIRE NETTING - OVER PURLINS

Lay at right angles across the purlins with enough slack to allow insulation to retain its nominal thickness between. Tie edges of netting together with galvanized wire clips.

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.

3.10 PREPARATION INSULATION

Before installation, gently agitate the insulation by shaking or bouncing to assist recovery to the nominal thickness stated on the product label. Maintain the insulation in a dry state.

3.11 CUTTING INSULATION TO SIZE

Tear insulation by hand or cut with an insulation saw/knife, sharp scissors, or with sharp wide-blade knife. Cut slightly oversized for snug friction fit.

3.12 INSTALL PINK® BATTS® TIMBER WALL INSULATION

Friction fit insulation slabs between framing.

3.13 INSTALL PINK® BATTS® SECONDARY WALL INSULATION LAYER

Co-ordinate with the installation of battens to fit a secondary wall insulation layer. Friction fit insulation slabs between battens.

3.14 INSTALL PINK® BATTS® CEILING INSULATION

Friction fit insulation slabs between framing. Maintain a 25mm gap clearance between the insulation slabs and roof underlay. Install to the midpoint of the top plate.

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3.15 INSTALL PINK® BATTS® SUPERBATTS® CEILING INSULATION - SINGLE LAYER INSTALLATION

Notch out the underside of the first slab to the same size as the truss cord. Friction fit slabs between truss framing with notch fit over truss bottom chord. Butt up adjacent slab under slight compression. Install to the midpoint of the top plate. Maintain a 25mm gap clearance between the insulation slabs and roof underlay.

3.16 INSTALL PINK® BATTS® SUPERBATTS® CEILING INSULATION - DOUBLE LAYER INSTALLATION

Lay upper layer slabs over truss bottom chord perpendicular to chord. From underneath, friction fit the lower layer slabs between the truss bottom chords. Install to the midpoint of the top plate. Maintain a 25mm gap clearance between the insulation slabs and roof underlay.

3.17 INSTALL PINK® BATTS® SNUGFLOOR® INSULATION

Friction fit insulation slabs between framing. Label location of wires, pipes and cables for future reference. Pieces must be 30mm wider than the distance between joist faces. Friction fit each piece between the joists. Fold on one side. Do not cover over wiring with insulation. Cut neatly around penetrations. Secure each slab with minimum 2 straps stapled to inside face of joist. Use two staples for each fixing point. Fold must not extend below bottom joist, trim if required.

Completion

3.18 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.
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 PINK® BATTS® TIMBER EXTERNAL WALL INSULATION

Location:	**timber frame walls generally**
Supplier:	**Comfortech Building Performance Solutions®**
Brand/Type:	**Pink® Batts® Ultra Wall**
two layers	**Pink® Batts® R2.8**
R-value:	**2.8**
Nominal stabilised thickness:	**90mm (each layer) 180mm total for 190mm walls**
Batt size:	**1140mm x 560mm**

4.2 PINK® BATTS® SILENCER® ACOUSTIC WALL INSULATION

Location:	**insulation between bathroom walls and adjacent rooms**
Supplier:	**Comfortech Building Performance Solutions®**
Brand/Type:	**Pink® Batts® Silencer® 100mm**
R-value:	**r2.4**
Nominal stabilised thickness:	**100**
Batt size:	**1140mm x 560mm**

4.3 PINK® BATTS® MASONRY WALL INSULATION

Location:	**strapping walls**
Supplier:	**Comfortech Building Performance Solutions®**
Brand/Type:	**Pink® Batts® Masonry Wall**
R-value:	**R1.2**
Nominal stabilised thickness:	**50mm**
Batt size:	**1220mm x 580mm**

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4.4 PINK® BATTS® CEILING INSULATION

Location:	**roof space**
Supplier:	**Comfortech Building Performance Solutions®**
Brand/Type:	**Pink® Batts® ~**
R-value:	**R7.0**
Nominal stabilised thickness:	**275mm**
Batt size:	**1220mm x 460mm**

4.5 PINK® BATTS® SILENCER® INSULATION

Location:	**under Stahlton floors in flat area**
Supplier:	**Comfortech Building Performance Solutions®**
Brand/Type:	**Pink® Batts® Silencer® Midfloor**
R-value:	**3.6**
Nominal stabilised thickness:	**150mm**
Batt size:	**1120mm x 480mm**



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4821 FLASHINGS

1 GENERAL

This section relates to the fabrication and installation of flashing systems not forming part of a proprietary system.

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:

NZBC B2/AS1	Durability provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 3566	Self-drilling screws for the building and construction industries - General requirements and mechanical properties
NZS 3604	Timber-framed buildings
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

Requirements

1.3 QUALIFICATIONS

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

1.4 VERIFY DIMENSIONS

Verify dimensions against site measurements prior to fabrication.

Standards of performance

1.5 DURABILITY REQUIREMENTS

Design and install the flashings appropriate for the durability applications in accordance with NZBC B2/AS1. The Building Code B2, 3.2 requires that all hidden elements have at least the same durability as that of the element that covers it. Refer to NZBC B2/AS1 Table 1: Durability Requirements of Nominated Building Elements and NZBC E2/AS1 Table 20 Material selection.

1.6 COMPATIBILITY REQUIREMENTS

Each flashing material shall be selected in accordance with NZBC E2/AS1 Table 20 to minimise corrosion. Refer to either NZS 3604 Clause 4.2 or AS/NZS 2728 for the relevant exposure conditions. For compatibility of materials in contact and subject to run-off, refer to NZBC E2/AS1 table 21 and NZBC E2/AS1 table 22.

1.7 PROTOTYPES - REVIEW

Refer to the general section 1270 CONSTRUCTION for details of how prototypes will be reviewed and how instructions to proceed will be given. For flashings where there are no specific details or drawings, provide full size prototypes of the flashings to integrate components into the weathertight system. Co-ordinate with the trades affected by the installation. Provide the prototype flashings to the contract administrator for review.

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2 PRODUCTS

2.1 FLASHING MATERIALS

Acceptable materials for flashings are described in NZBC E2/AS1, 4.0. Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the building and cladding materials and their fixings.

2.2 FLASHING FABRICATION

Fabricate flashings generally to NZBC E2/AS1, 4.0, from a ductile grade of metal designed for lateral strength by folding, stiffening or ribbing on external edges, having a maximum un-stiffened width of 300mm. Provide all hooks, hems, kick outs, bird's beaks, stop ends, soft edges and turn downs etc. to NZBC E2/AS1, 4.0, or as shown on the drawings.

2.3 FIXINGS

Rivets, screws, nails and cleats to be compatible with the materials being fastened. Fasteners complying with the corrosion requirements of AS 3566 are suitable for use with ZINCALUME® steel products. Use only low carbon non-conductive sealing washers.

2.4 JOINTS - SEALANTS

Neutral Curing silicone or MS polymer sealant as required, with low resistance to compression and be-able to withstand large temperature variations. MS polymer sealant to be used where the sealant is exposed and the surrounding surfaces are to be subsequently painted or coated.

3 EXECUTION

Conditions

3.1 DELIVERY

Keep flashings dry in transit. Take delivery of flashings in an undamaged condition. Reject all damaged materials.

3.2 STORAGE

Store materials and accessories on a level, firm base, in dry conditions, well ventilated, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until fixed.

3.3 HANDLING

Avoid distortion and contact with potentially damaging surfaces/substances. Do not drag flashings across each other, or across other surfaces. Protect edges, corners and surfaces from damage.

3.4 SUBSTRATE

Do not commence work until the substrate is of the standard required by the installer for the specified flashings, level and in true alignment.

3.5 PROTECT

Protect surfaces, window and door joinery, and finishes already in place, from the possibility of damage during the installation process.

3.6 CONFIRM LAYOUT

Before commencing work confirm the proposed installation of the flashings and expansion joints and other visual considerations of the finished work.

3.7 CO-ORDINATE INSTALLATION

Co-ordinate installation of flashings with associated trades.

Application

3.8 INSTALLATION

Install flashings in accordance with NZMRM CoP and in compliance with NZBC E2/AS1, 4.0 Flashings. For very high wind zones and where the pitch of the roof is below 15° the flashing joint laps shall be sealed with sealant at each end of the lap to prevent the ingress of water.

Refer to NZBC E2/AS1 Table 7 for general dimensions of flashings.

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3.9 FIXINGS

Fix flashings with fasteners appropriate to the situation. For fixing flashings with proprietary brackets or clips ensure they are aligned to allow for movement and are compatible with the flashing material.

Fix screws with the shank perpendicular to the surface of the flashing with the washer fitted firmly against the flashing. Screws to be compatible with the flashing material.

Rivets 'blind' or 'pop' are to be sealed when used. Aluminium rivets are compatible with zinc or AZ coated steel. Monel and stainless steel rivets can be used to fix galvanized steel flashings. Minimum diameter of rivet to be used is 4.0mm. Drill hole 1mm larger than the rivet size. Seal head of rivet with neutral cured silicone.

3.10 JOINTING - SEALANTS

Clean surfaces to be lapped using a solvent ensuring all traces of the solvent are removed with a clean rag. Apply sealant by gun in a continuous bead of approximately 5mm diameter. Width of sealant when compressed should not exceed 25mm. Sealant joints shall be mechanically fixed for strength. Refer to NZMRM CoP for details.

3.11 FINAL INSPECTION

A final inspection by the installer to take place after completion of the flashing work. Any defects or subsequent damage to be made good.

Completion

3.12 PROTECT

Protect new work from damage.

3.13 REPLACE

Replace all damaged or marked elements.

3.14 LEAVE

Leave work to the standard required for following procedures.

3.15 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 FLASHINGS

Type	**Material and finish/colour (confirm colour with architect)**
General flashings:	0.55 Colorsteel to match windows - refer drawings
Window/doors generally	0.55 Colorsteel to match windows - refer drawings
Cladding:	
- External corner:	0.55 Colorsteel to match windows - refer drawings
- Internal corner:	0.55 Colorsteel to match windows - refer drawings
Garage door:	0.55 Colorsteel to match windows - refer drawings
Meter box:	0.55 Colorsteel to match windows - refer drawings
Chimney flue:	0.55 Colorsteel to match windows - refer drawings
Soffit:	0.55 Colorsteel to match windows - refer drawings
Wall/roof junctions:	0.55 Colorsteel to match windows - refer drawings
Parapet capping:	0.55 Colorsteel to match windows - refer drawings
Roof penetrations:	0.55 Colorsteel to match windows - refer drawings

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5111H JAMES HARDIE® FIBRE CEMENT SHEET LININGS

1 GENERAL

This section relates to the supply and installation of **James Hardie®** Villaboard™ Lining and Hardie™ Groove Lining for:

- internal wall linings
- ceiling linings

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:

NZBC C/AS2	Protection from fire
AS/NZS 2589	Gypsum linings - Application and finishing
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in buildings

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

James Hardie® documents relating to this part of the work:

Villaboard™ Lining
Hardie™ Groove Lining
Fire and Acoustic Design Manual by James Hardie, May 2025
BRANZ Appraisal 1285 (2025) - James Hardie Fire And Acoustic Wall Systems

Manufacturer/supplier contact details

Company:	James Hardie New Zealand Limited
Web:	www.jameshardie.co.nz
Email:	info@jameshardie.co.nz
Telephone:	Ask James Hardie™ on 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 years:	For accessories supplied by James Hardie® (refer to James Hardie® product warranty)
From:	Date of purchase

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 NO SUBSTITUTIONS

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

1.6 SAFE WORKING

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

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1.7 COMPLIANCE

Fibre cement sheets to AS/NZS 2908.2.

2 PRODUCTS

Materials

2.1 PLAIN FIBRE CEMENT SHEET LININGS

James Hardie® Villaboard™ Lining manufactured from treated cellulose fibre, portland cement, sand and water. Cured by high pressure autoclaving and manufactured to AS/NZS 2908.2. Sealed on the face.

Components

2.2 BATTENS, TIMBER

Minimum 45mm wide, 35mm deep timber with depth suitable for length of fasteners used.

2.3 PACKERS

3 - 4mm timber packers.

2.4 NAILS

6mm and 9mm linings:	40mm x 2.8mm galvanized flathead Hardie™ Flex nails
Over Gypsum plasterboard:	50mm x 2.8mm galvanized flathead Hardie™ Flex nails

2.5 SCREWS FOR POWER SCREW GUN DRIVING

Timber framing

6mm and 9mm linings:	Villadrive 6 gauge x 30mm self embedding screws or Hardie™ Drive self embedding stainless steel screws
Steel framing:	Steel 8 gauge x 32mm self embedding screws

2.6 WALL BOARD ADHESIVE

Polyurethane wallboard adhesive. Refer to James Hardie® product installation manual.

Accessories

2.7 CONTROL JOINTS SECTION

45mm x 10mm shaped PVC control joint or Rondo P35 jointer.

2.8 EXTERNAL CORNER SECTIONS

30mm x 30mm x 1.2mm PVC angle.

2.9 POLYETHYLENE TAPE

Self adhesive polyethylene for behind expressed joints and expressed control joints.

2.10 JOINT REINFORCING TAPE

52mm wide perforated paper tape.

2.11 BEDDING COMPOUND

Hardie™ Base Coat compound powder.

2.12 FINISHING COMPOUND

Hardie™ Top Coat premixed.

2.13 SEALANT

Silicone or polyurethane sealant. Refer to the James Hardie® installation manual.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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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 MOISTURE CONTENT

Maximum moisture content of timber framing to NZS 3602.

3.4 PROTECT

Protect joinery, fittings and finishes already in place from water staining or damage from lining installation.

3.5 BUILDING

Ensure building is weatherproof before lining work commences.

3.6 STORAGE

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

3.7 HANDLING

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

3.8 SUBSTRATE

Do not commence work until the substrate is of the standard required by the relevant manufacturer's technical literature for the specified finish; plumb, level and in true alignment. Maximum moisture content of timber framing to NZS 3602.

Application

3.9 FIXING IN CERAMIC TILED AREAS

Prepare and fix sheets, horizontally or vertically and stagger joints where possible, to James Hardie® installation manual.

3.10 PROVIDE VERTICAL CONTROL JOINTS

Provide vertical control joints at 7.2 metre centres maximum for general application and 4.2 metres centres maximum for tiled applications. Provide acoustic sealant in walls having an acoustic rating.

3.11 PROVIDE HORIZONTAL CONTROL JOINTS

Provide horizontal control joints at 7.2 metres centres maximum for general application and 4.2 metre centres maximum for tiled applications.

3.12 PROVIDE EXTERNAL CORNER ANGLE

Provide perforated PVC external corner angle or paper faced rigid spine corner mould to external corners.

3.13 INTERNAL CORNERS

When used in tiling applications provide a Lumberlock Stud saver to framed internal corner prior to fixing of Villaboard™ Lining.

Provide perforated PVC corner mould, or paper faced rigid spine corner mould or solid blocking to internal corners.

3.14 FORMING HOLES

Required holes accurately formed and cut to James Hardie® requirements.

3.15 SILICONE JOINTS

Provide polyethylene tape behind joints finished with flexible sealant.

Levels of Finish

Refer to AS/NZS 2589.
Refer to SELECTIONS/drawings for required levels of finish.



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3.16 LEVEL 0, 1 and 2 FINISHES

Refer to James Hardie® installation manual.

3.17 LEVEL 3 FINISH

Application:	For use in areas which are to receive heavy or medium texture (spray or hand applied) finishes or where heavy paper wall coverings are to be applied as the final decoration.
Jointing/setting:	Joints and corner joints will be set with Hardie™ Base Coat reinforced with perforated paper tape and Hardie™ Top Coat.
Finish:	This level of finish must be sufficiently smooth to accept vinyl, tiles or textured coatings without blemishes.

3.18 LEVEL 4 FINISH

Application:	This is generally the accepted level of finish for domestic construction. It is used where light textures or wall coverings and smooth textured finishes and satin/flat/low sheen paints are illuminated by non-critical lighting.
Jointing/setting:	Refer to flush jointing recommendations on page 11 James Hardie® Villaboard™ Lining installation manual.
Finish:	For use where light-texture coatings or wallpaper or other lightweight wall coverings are to be applied. For painted finishes in non-critical lighting areas flat and low-sheen textured paints are to be applied. Gloss and semi-gloss paints are not generally suitable over this level of finish as any minor blemish will show under critical light. The weight, texture and sheen level or wall coverings applied over this level of finish must be carefully evaluated. Joints and fasteners must be adequately concealed if the wallcovering material is lightweight, contains limited pattern, has a gloss finish, or any combination of these features is present. Unbacked vinyl wall coverings are not suitable over this level of finish.

3.19 LEVEL 5 FINISH

Application:	This level of finish is for use where gloss or semi-gloss paints are specified or where critical lighting conditions occur on satin, flat or low sheet paints.
Jointing/setting:	Typically all joints and corner joints will have tape embedded in Hardie™ Base Coat applied over all joints, angles, fastener heads and accessories. A thin skim coat of Hardie™ Top Coat must be applied to the entire surface to be plastered. The surface must be finished smooth and free of tool marks and ridges and special care must be taken with the application of the finishing compound to achieve a smooth, true surface suitable for these critical finishes.
Finish:	This level of finish is for use where gloss, semi-gloss, low-sheen or non-textured paints are specified or where critical lighting conditions occur.

Joint Finishing

3.20 JOINT FINISHING FOR TILED AREAS

Joints and corner joints set with Hardie™ Base Coat reinforced with perforated paper tape to achieve a level 3 finish.

Completion & Commissioning

3.21 COMPLETION MATTERS

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



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4 SELECTIONS

Linings

4.1 JAMES HARDIE® VILLABOARD™ LINING

Location:	**tile substrate generally**
Type:	**James Hardie® Villaboard™ Lining**
Thickness:	**9mm**
Fixing method:	**tbc**

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5113G GIB® PLASTERBOARD LININGS

1 GENERAL

This section relates to the supply and installation of Winstone Wallboards Ltd GIB® plasterboard linings to walls and ceilings.

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

AWCINZ	Association of Wall and Ceiling Industries New Zealand

Documents

1.2 DOCUMENTS

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

BPS	Building Product Specifications
AS/NZS 2588	Gypsum plasterboard
AS 1530.4	Methods for fire tests on building materials, components and structures - Fire-resistance tests for elements of construction
ISO 5660.1	Reaction-to-fire tests – heat release, smoke production and mass lose rate – Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Smoke production rate (dynamic measurement)
BRANZ Technical Paper P21	A wall bracing test and evaluation procedure (2010)

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

GIB® Noise Control Systems Specification and Installation Manual (September 2017)
GIB® Fire Rated Systems Specification and Installation Manual (September 2024)
GIB® Wet Area Systems Specification and Installation Manual (February 2021)
GIB Weatherline® Rigid Air Barrier Systems Design and Construction Manual (March 2021)
GIB Curveline® Specification and Installation Manual for Curved Walls and Ceilings (November 2025)
GIB Ezybrace® Systems Specification and Installation Manual (August 2016)
GIB Ezybrace® Bracing Design Software
GIB Ezybrace® for Light Steel Frame Systems (March 2017)
GIB® Tough Systems Design and Installation Guide (May 2025)
GIBFix® Framing System (August 2016)
GIB® Rondo® Metal Batten Systems Specification and Installation Manual (September 2024)
GIB® Site Guide
GIB® Product BPIS
GIB® Plasterboard Lining Systems Care and Maintenance
GIB® Product and System Warranty
BRANZ Appraisal 289 (2024) GIB® Fire Rated Systems
BRANZ Appraisal 394 (2025) GIB® Noise Control Systems
BRANZ Appraisal 427 (2021) GIB® Wet Area Systems
BRANZ Appraisal 928 (2021) GIB EzyBrace® Systems
BRANZ Appraisal 1048 (2025) GIB Weatherline® Rigid Air Barrier Systems

Manufacturer/supplier contact details

Company:	Winstone Wallboards Ltd
Web:	www.gib.co.nz
Telephone:	0800 100 442

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Requirements

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

1.5 INSTALLER WORK SKILLS AND QUALIFICATIONS

GIB® plasterboard fixers and plasterers to be experienced competent workers, familiar with GIB® plasterboard lining systems installation and finishing techniques. Submit evidence of experience on request. For example:

- National Certificate of Interior Systems; or
- Certified Business member of AWCINZ.

Performance

1.6 INSPECTIONS AND ACCEPTANCE

Allow for inspection of the finished plasterboard surface:

- before applying sealer and
- before applying finish coatings or decorative papers,

so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

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

Components

2.2 SCREWS

GIB® Grabber® drywall type screws as follows:

Grabber® type	Used for fixing:
High Thread	GIB Ezybrace® or Standard systems to timber
Self Tapping	Standard systems to light gauge steel or timber
Dual Thread Screws	GIBFix®, GIB Ezybrace®, or Standard systems, to light gauge steel or timber
Wafer Head Needle Tip	Light gauge metal to timber not directly under plasterboard
Pancake Head Drill Tip	Light gauge metal to light gauge metal directly under plasterboard

Refer to GIB® requirements for appropriate details.

2.3 TAPE ON TRIMS AND EDGES

GIB® Goldline™ tape-on trims

GIB® UltraFlex® high impact corner mould
GIB® Levelline® Tape on Trim

2.4 METAL ANGLE TRIMS

GIB® galvanized steel slim angle trims.

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2.5 CONTROL JOINTS

GIB® Rondo® P35 control joints.

GIB® Goldline™ tape-on trims
GIB® plastic W-profile control joints.

Accessories

2.6 ADHESIVE

Timber frame and/or steel frame:

GIBFix® One ultra low VOC water based wallboard adhesive
GIBFix® All-Bond solvent based wallboard adhesive

2.7 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

2.8 JOINTING TAPE

GIB® jointing tape.

2.9 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 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 LEVELS OF PLASTERBOARD FINISH

Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in AS/NZS 2589.

3.4 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.

3.5 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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3.6 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 LINING WALLS AND CEILINGS GENERALLY

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

3.9 BOARD ORIENTATION

Minimise joints by careful sheet layout using the largest sheet sizes possible, and generally fixing horizontally. Where part sheets are required for various stud heights they should be positioned so the cut sheet is as low as possible to keep joints below eye level.

3.10 FORM WET AREA SYSTEMS

Form to GIB Aqualine® Wet Area Systems requirements.

3.11 FORM CONTROL JOINTS

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

3.12 INSTALL TAPE-ON TRIMS

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

Finishing

3.13 FINISHING GENERALLY

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

Completion & Commissioning

3.14 COMPLETION MATTERS

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

4 SELECTIONS

Plasterboard

4.1 GIB® STANDARD SYSTEMS WALLS & CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
refer drawings	GIB® Standard plasterboard	10mm &13mm	

4.2 GIB® WATER RESISTANT SYSTEMS WALLS & CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
refer drawings	GIB Aqualine® plasterboard	10mm &13mm	

Accessories

4.3 GIB RONDO

GIB Rondo to plasterboards ceilings generally



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5122PL PLYTECH PANELS RESIDENTIAL LININGS

1 GENERAL

This section relates to the supply and fixing of Plytech Panels plywood and non-plywood sheets used for interior linings and for specialist panelling. Plywood panels are also installed as bracing (as lining or under lining).
It includes:
- Pre-finished plywood
- Un-finished plywood
- Non-plywood panels

1.1 RELATED WORK

Refer to 5511PT PLYTECH PANELS CABINETRY & JOINERY for panels in cabinetry & joinery.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FSC	Forest Stewardship Council
MDF	Medium Density Fibreboard
PEFC	Programme for the Endorsement of Forest Certification

Documents

1.3 DOCUMENTS

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

NZBC B1/AS1	Structure
NZBC C/AS2	Protection from fire
NZBC C/VM2	Protection from fire
NZBC E2/AS1	External moisture
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
AS/NZS 2269.0	Plywood - Structural - Specifications
AS/NZS 2270	Plywood and block-board for interior use
NZS 3604	Timber-framed buildings
ISO 5660.1	Reaction to Fire Tests - Heat Release Smoke Production and Mass Loss Rate Part 1: Heat Release Rate (Cone Calorimeter Method)
BS EN 635	Plywood. Classification by surface appearance.
BS EN 636	Plywood. Specifications

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Handling & Cleaning Recommendations
Product Datasheet
Fire Testing Certificate

Manufacturer/supplier contact details

Company:	Big River Group Ltd.
Trading as:	Plytech Panels
Web:	www.plytech.co.nz
Email:	sales@plytech.co.nz
Telephone:	0800 900 905 (09 573 5016)

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Refer to Plytech Panels Terms & Conditions of Trade for material warranty details and conditions.

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- Provide this warranty on Plytech Panels standard form.
- Commence the warranty from the date of Practical Completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer warranty:

2 years	For installation

- Provide this warranty on the installer standard form.
- Commence the warranty from the date of Practical Completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Provide maintenance documentation in accordance with Plytech Handling & Cleaning Recommendations as necessary for the Principal to maintain the works. Provide documentation no later than the date of Practical Completion or the date on which the Principal takes occupation of the works.

Quality control and assurance

1.10 INSPECTIONS

Give sufficient notice so that inspection may be made of the following, before installation;

- Pre-assembled fittings/cabinetry fabricated and ready to be delivered to site.
- Site-assembled fittings/cabinetry on site ready for installation.
- Areas of the building prepared to receive fittings/cabinetry.

Performance - General

1.11 SURFACE FIRE PROPERTIES - SPECTRUM ECO

Plytech Spectrum ECO panels tested to ISO 5660.1 achieve a Group Number Classification of '3' to NZBC C/AS2, Table 4.3, as determined in accordance with NZBC C/VM2 Appendix A.

2 PRODUCTS

Materials - pre-finished plywood

2.1 PLYTECH PANELS BIRCH ELITE A-GRADE

A decorative panel constructed using 'A'-grade European Birch veneer to ensure a consistent finish, manufactured to BS EN 636.2, available pre-finished clear and satin white-tinted. The multi-ply edge detail can be accentuated with a clear finish. Supplied as 2440mm x 1220mm x 12mm (9 ply, A-Grade face and kraft-paperback) and 2700mm x 1220mm x 12mm (9 ply, A-Grade face and kraft-paperback) available in unfinished and pre-finished in the ultra-matt only, as well as 18mm (13 ply, AA-Grade 2 sides) thick. Refer to SELECTIONS.

Components

2.2 CLIP/PLUG PANEL MOUNTING SYSTEM

Concealed removable panel mounting system for interiors. Refer to the panel manufacturer's how to and clip layout guides.

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Accessories

2.3 PANEL JOINTERS

Run to profiles as detailed. Treated H1.2.

2.4 ADHESIVES - GENERALLY

Use only multi-purpose water or solvent based wallboard adhesives as required by the panel manufacturer.

2.5 ADHESIVES - SOUDAL PRODUCTS

Refer to 4811SG SOUDAL GORILLA SEALANTS & ADHESIVES for fixing options for wall linings.

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.

3.3 FRAMING AND/OR SUBSTRATE

To NZS 3604 and the plywood manufacturer's requirements

Maximum moisture content: ~ %.

Application - general

3.4 SUPPORT

Fully support all edges and joints, except where tongue and groove is used.

3.5 SITE MEASURE

Site check and confirm dimensions before wall linings are cut and fixed. Verify positions of electric power outlets, wiring to light fittings included in joinery fixtures, water supplies and waste pipe locations.

3.6 SHRINKAGE & EXPANSION

Arrange jointing and fixing so that shrinkage in any part and direction does not impair the strength or appearance of the finished work or damage the adjoining work.

Allow a 2-3mm gap at edges of linings for sheet expansion and 2-3mm at each sheet joint. In areas with an expected high level of internal moisture, allow a gap of 4 - 6mm every 1.2 metres.

Application - linings

3.7 FIXING GENERALLY

A combination of panel pins, gluing and nailing or screwing.

3.8 FIT AND FIX PLYWOOD SHEETS

Fit and fix as detailed to the plywood manufacturer's requirements with sheets and trim in plumb, true alignment, face and grain.

3.9 APPLY ADHESIVES - SOUDAL PRODUCTS

Refer to 4811SG SOUDAL GORILLA SEALANTS & ADHESIVES for fixing options for wall linings.

Completion

3.10 COMPLETION MATTERS

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

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4 SELECTIONS

For further details on selections go to www.plytech.co.nz.
Substitutions are not permitted to the following, unless stated otherwise

Materials - pre-finished plywood

4.1 PLYTECH PANELS MERANTI BS 1088

Location:	**garage walls and ceiling**
Supplier:	**Plytech Panels**
Brand:	**Meranti BS1088 - butt finished**
Sheet thickness:	**12mm**
Panel size:	**2440mm x 1220mm**



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5124HL HERMPAC INTERNAL TIMBER LININGS

1 GENERAL

This section relates to the supply and fixing of Hermpac interior timber lining.
It includes:

- Ceiling and sarking lining/finishing timber
- Wall lining/finishing timber.

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:

FSC®	Forest Stewardship Council®
PEFC	Programme for the Endorsement of Forest Certification

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
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
AS/NZS 4600	Cold-formed steel structures
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - coatings of zinc and zinc alloyed with aluminium and magnesium

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Hermpac Timber Panelling & Boards/Battens (D4S) Interior Sarking or Walls V2
Hermpac Panelling / Sarking / Soffit Lining (Hermpac Panelling Brochure).
Hermpac Profile Portfolio.

Manufacturer/supplier contact details

Company:	Hermpac Ltd.
Web:	www.hermpac.co.nz
Email:	technical@hermpac.co.nz
Telephone:	09 421 9840 Auckland 04 586 9674 Wellington 03 341 2163 Christchurch
Contacts:	Kyle Deans - 021 771 857, kyle.deans@hermpac.co.nz Carmen Hansen - 027 809 4588, carmen@hermpac.co.nz

Warranties

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years:	For installation

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

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Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

1.8 NO SUBSTITUTIONS

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

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Manufacturer / supplier warranty
- Installer / applicator warranty
- Other information required by the BCA in the Building Consent Approval documents.

Performance - General

1.10 SURFACE FIRE PROPERTIES FOR LININGS

Group Number to NZBC C/AS2, Table 4.3. Refer to SELECTIONS.

Quality control and assurance

1.11 INSPECTIONS

~ ~

2 PRODUCTS

Materials

2.1 TIMBER LINING BOARDS

Solid timber panelling boards to Hermpac profiles, available in various widths, thicknesses and lengths for jointing on site as required (Refer to Hermpac Profile Portfolio). Band sawn or dressed and sanded finish. Species and grading to NZS 3602, moisture content 12 - 14% maximum at time of fixing. Refer to SELECTIONS for profiles.

2.2 ASHIN

Hermpac Ashin (Tsuga heterophylla) also called Western Hemlock harvested from the sustainable managed forests of British Columbian, Canada. Hermpac Ashin is supplied from forest sources, certified legal and sustainable, and available with PEFC or FSC third party verified certification.

Available in quarter sawn cut, Premium Clears No.1 (PC1) Grade.

Coatings

2.3 SITE-APPLIED COATING

Interior coating suitable for specified timber, profile and application. Refer to 6721 PAINTING INTERIOR.

Components

2.4 BATTENS - TIMBER

SG6 radiata pine gauged.

Moisture content: 14 - 18% at fixing.

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2.5 BATTENS - METAL

Steel battens to AS/NZS 4600. Steel Grade and zinc coating class G2 Z275 to AS 1397.

2.6 HERMPAC PANELLING CLIPS

Stainless steel or galvanized Hermpac proprietary panelling clip to suit specified standard or custom panelling profile.

2.7 PANELLING CLIP FIXINGS

Flat head Grade 316 SS nails 30mm x 2.0mm, or 4-gauge pozi head 30mm SS screws.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

Timber to be stored inside, in an environment close to the ambient temperature in which the timber is going to be installed. Timber to be stored off the ground, wrapped and protected to ensure it does not get wet, dirty, contaminated or damaged. Care must be taken to avoid any damage to the timber prior to installation.

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 PRE-INSTALLATION REQUIREMENTS

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

Do not start cutting down and fitting and fixing linings before the building is enclosed and external moisture excluded from the area.
Before starting fixing, ensure that the substrate conforms to NZS 3604, and that the relative humidity is suitable to receive lining.

Moisture content of framing:	14% maximum
Moisture content of concrete:	less then 5%

If timber has been stored on-site prior to installation, boards must be checked and wiped down prior to installation. Wear gloves to avoid contaminating the timber and/or coating.

3.4 MOISTURE CONTENT - LINING

Immediately before starting fixing, test the moisture content of the lining to ensure the moisture content is acceptable. Use an electrical moisture meter to the board manufacturer's requirements, testing 5% of not less than 10 boards in the centre of the length. Do not commence laying if 90% of values obtained are not within the range specified.

3.5 PRE-COATING/FINISHING REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for specified finish. Carry out such additional preparatory work as required to bring the substrate to suitable condition. Wipe boards clean before any subsequent coating is applied. Pre-seal backs and edges of boards where fixing in damp areas or areas of high humidity. Always follow coating manufacturer's instructions.

3.6 ENVIRONMENTAL CONDITIONS - HEATING

The heating is designed to provide spaces with continuous/intermittent heating. Refer to SELECTIONS. Fix timber strip lining to suit these conditions.

Make arrangements for operating the heating installation up until completion of the works.

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3.7 ENVIRONMENTAL CONDITIONS - AIR CONDITIONING

The air conditioning system is designed to provide spaces with heating and humidity control. Refer to SELECTIONS. Fix timber strip lining to suit these conditions.

Make arrangements for operating the air conditioning installation up until completion of the works.

Installation/application

3.8 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.9 FIX TIMBER BATTENS (SUBSTRATE)

Rigidly fix in place in straight lines with bolts or power fixing and damp-proof course separation, with butt joints staggered and all true to plane for fixing of linings.

3.10 FIX METAL BATTENS (SUBSTRATE)

Rigidly fix in place in straight lines with bolts or power fixing and damp-proof course separation, with butt joints staggered and all true to plane for fixing of linings.
Refer to framing/purlin manufacturers details.

3.11 FIX PANELLING

Fix panelling/boards in accordance with Hermpac Timber Panelling & Boards/Battens (D4S) Interior Sarking or Walls. Fix directly to the wall framing, or over a plywood or other sheet substrate. Install level, true to line and face. Fix panelling to backing in pattern as detailed in straight parallel lines with tongues tightly fitted into grooves. Slightly undercut end joints square, fully supported, fitted tight and random staggered across adjacent boards. Allow for movement at all corners. Select board lengths to give a minimum number of end joints.

Fixings for linings

3.12 SECRET FIX - HERMPAC PANEL CLIP FIX

Screw or nail fix Hermpac panel clips with suitable screw or nail into a timber stud or nog/dwang line. Drive screw or nail heads flush.
Place groove in the board into the open side of the clip. Place tongue of subsequent board into the groove and repeat process. Fix at the following spacings:

- Panelling profiles up to 9-12mm thick at 400mm centres
- Panelling profiles 12-28mm thick at 600 centres.

For fixing into metal battens, use the clips and suitably sized screw to fit through pre-drilled panel clip hole and fix through into the metal batten. Confirm suitable fixing type and size with metal batten manufacturer, for the specified timber, including maximum spans.

Place groove in the board into the open side of the clip. Place tongue of subsequent board into the groove and repeat process.

3.13 SAND LININGS

Sand linings with a machine sander to the standard required for the finish specified. Do not sand linings if they already have a coating applied, unless specified in the coating manufacturer's documentation / specification.

Coating

3.14 SITE APPLIED COATING

Refer to 6721 PAINTING INTERIOR.

Completion & Commissioning

3.15 COMPLETION MATTERS

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

4 SELECTIONS



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For further details on selections go to www.hermpac.co.nz.
Substitutions are not permitted to the following.

4.1 ENVIRONMENTAL CONDITIONS, HEATING

Temperature range: ~°C to ~°C

4.2 ENVIRONMENTAL CONDITIONS, AIR CONDITIONING

Temperature range: ~°C to ~°C
Relative humidity: ~%

Materials

4.3 T&G CEILING AND FIREPLACE WALL LINING TIMBER - ASHIN

Location:	**ceilings as per finishes pland and FINISHES PLAN**
Supplier:	**Herman Pacific Limited (Hermpac)**
Species:	**"Ashin"**
Grade:	**Prime Grade**
Face finish:	**band sawn finish TBC**
Profile / size:	**HP85 172mm Cover, 18mm Thick TBC**

Coatings

4.4 SITE-APPLIED COATING

Refer to 6721 PAINTING INTERIOR.

Components

4.5 BATTENS - TIMBER (SUBSTRATE)

Treatment:	**studs refer framing plan**
Dimensions:	**140mm or 90x 45mm**
Spacing:	**refer plans**
DPM:	

4.6 FIXING CLIPS

Manufacturer:	**Hermpac Galvanized TBC**

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5131 VENEER WALL PANELING LININGS

1 GENERAL

This section relates to the supply and fixing of prefinished panels to timber framing or battens.

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:

FSC	Forest Stewardship Council
PEFC	Programme for the Endorsement of Forest Certification

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 for buildings other than risk group SH
AS/NZS 1859.3	Reconstituted wood-based panels - Specifications - Decorative overlaid wood panels
AS/NZS 1859.4	Reconstituted wood-based panels - Specifications - Wet-processed fibreboard
NZS 3604	Timber-framed buildings

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

~

Manufacturer/supplier contact details

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

2 PRODUCTS

Materials

2.1 DAMP-PROOF COURSE

Heavy kraft paper strip laminate saturated and coated with bitumen.

Accessories

2.2 ADHESIVE

To suit panel and substrate and to the panel manufacturer requirements.

2.3 SEALANT

To suit panel and substrate and to the panel manufacturer requirements.



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3 EXECUTION

Conditions

3.1 HANDLING AND STORAGE

Handle and store panels to the manufacturer requirements taking care to avoid breakage, damage to edges and corners and scratching of surfaces. Always lift without sliding.

3.2 SUBSTRATE

Ensure the building is completely enclosed before starting this work. Timber framing dimensions and moisture content to the panel manufacturer requirements and to NZS 3604. All other adjacent materials to be free of dampness.

3.3 TECHNIQUE

Before beginning this work obtain confirmation of the proposed layout of jointers and other visual considerations of the finished work.

Application - Preparation

Application - Panels Generally

3.4 JOINTS AND JUNCTIONS

Formed strictly in accordance with the panel manufacturer required details and technical information.

3.5 APPLY ADHESIVE

Apply adhesive to the framing to the panel manufacturer requirements using sufficient to hold panel firmly in place but without restricting movement within it.

3.6 FIX PANELS

Scribe fit panels allowing tolerance for fitting and expansion. Mark and cut-out for any fittings using radius formed corners to avoid cracking. When adhesive is touch dry insert panel edge in the jointer and roll the panel into place with the next jointer already sprung onto the opposite edge and finish by fixing to the FIT JOINTERS clause.

Completion

3.7 REPLACE

Replace damaged or marked elements.

3.8 LEAVE

Leave work to the standard required by following procedures.

3.9 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

Materials

4.1 HALLMARK VENEER TO MDF

Product name:	**Luxe American White Oak**
Location:	**wall paneling to match joinery**
Species:	**Luxe American White Oak**
Cut:	**Planked**
Texture:	**Brushed**
	The Luxe range uses a mismatched lay-up pattern

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5171G GIB® PLASTERBOARD FIRE & SOUND 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:

- fire rated systems including lift shafts and ducting
- sound rated systems

1.1 RELATED WORK

Refer to 5113G GIB® PLASTERBOARD LININGS for standard linings

Refer to 5174G GIB® PLASTERBOARD IMPACT RESISTING LININGS for high impact linings
Refer to 5173G GIB® PLASTERBOARD RADIATION PROTECTION LININGS for radiation resisting linings

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FRR	Fire resistance rating
IIC	Impact insulation class
STC	Sound transmission class
AWCI NZ	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 for buildings other than risk group SH
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
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)

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

GIB® Site Guide (April 2024)
GIB® Noise Control Systems (September 2017)
GIB® Fire Rated Systems (September 2024)
GIB® Wet Area Systems (February 2021)
GIB Toughline® Aqua (July 2018)
GIB Rondo® Metal Batten System (September 2024)
GIB-Cove®
GIB RocTape®
GIB® Goldline™ Platinum Tape-on Trims
GIB UltraFlex® high impact corner mould
GIB® Tough Systems (November 2014)
BRANZ Appraisal 289 (2024) - GIB® Fire Rated Systems
BRANZ Appraisal 394 (2025) - GIB® Noise Control Systems

Manufacturer/supplier contact details

Company:	Winstone Wallboards
Web:	www.gib.co.nz
Telephone:	0800 100 442

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Requirements

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

1.6 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 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.

1.8 FIRE RATING REQUIREMENTS

Provide the GIB® fire rated systems. Refer to SELECTIONS for system/FRR.

1.9 SOUND INSULATION REQUIREMENTS

Provide the GIB® Noise Control Systems. Refer to SELECTIONS for system/STC. Include for forming and treating of perimeters of openings and penetrations in the elements to ensure the specified performance. Ensure absence of adjoining flanking paths.

Compliance

1.10 COMPLIANCE - BRANZ APPRAISAL 289

GIB® Fire Rated Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 289.

1.11 COMPLIANCE - BRANZ APPRAISAL 394

GIB® Noise Control Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 394.

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 Ultraline® high quality surface plasterboard
GIB Fyreline® fire resistant plasterboard
GIB Braceline® GIB Noiseline® dual purpose high density sound control plasterboard
GIB Aqualine® wet area plasterboard
GIB Toughline® plasterboard
GIB Toughline® Aqua plasterboard GIB (previously GIB Superline®)

Components

2.2 SCREWS

GIB® Grabber® High tread drywall screws.

GIB® Grabber® Self tapping drywall screws.
GIB® Grabber® Drill Point Fine Thread Screws.
GIB® Grabber® Laminator screws.

2.3 CEILING BATTENS

GIB® Rondo® metal ceiling battens, batten joiners, perimeter channel and clips.

2.4 GIB RAIL

GIB Rail® 70x13mm folded, galvanized mild steel rail used in GIB Noise Control wall systems.

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2.5 GIB RONDO STWC RESILIENT CLIP

GIB® Rondo® STWC (ST-001 Clip) acoustic resilient mounting clip for metal wall and ceiling battens used in GIB Noise Control wall systems.

2.6 METAL FYREDUCT 900 FRAMING

GIB® Fyreduct™ 900 framing comprising of galvanized steel 64x34mm (0.5mm BMT) C-section and 32x32mm (0.5mm BMT) angles.

2.7 METAL FYREDUCT 600 FRAMING

GIB® Fyreduct™ 600 framing comprising of GIB Rondo 340 Perimeter Channel.

2.8 METAL VENTSHAFT FRAMING

GIB® Ventshaft framing comprising 50x25mm (0.75mm BMT) metal angles.

2.9 METAL SHAFTWALL FRAMING

GIB® Shaftwall framing comprising RONDO® CH stud, E stud and J track.

2.10 CONTROL JOINTS

GIB® Rondo® P35 control joints.

GIB® Goldline™ tape-on trims.

2.11 TAPE ON TRIMS AND EDGES

GIB® Goldline™ tape-on trims and edges or GIB® UltraFlex® high impact corner mould or GIB® Levelline® Tape on trim.

2.12 METAL ANGLE TRIMS

GIB® galvanized steel slim angle trims.

Accessories

2.13 ADHESIVE

Timber frame and/or steel frame:

GIBFix® One ultra low VOC water based wallboard adhesive.
GIBFix® All-Bond solvent based wallboard adhesive.

2.14 JOINTING COMPOUND

Bedding compound:	GIB Tradeset®, GIB Lite Blue®, GIB MaxSet®, GIB ProMix® All Purpose, GIB Plus 4®, GIB Trade Finish® Multi
Finishing compound:	GIB ProMix® All Purpose, GIB ProMix® Lite, GIB Trade Finish®, GIB Trade Finish® Lite, GIB Trade Finish® Multi, GIB® U-Mix, GIB Plus 4®
Cove:	GIB-Cove® Bond

2.15 JOINTING TAPE

GIB® Paper Joint Tape

GIB® RocTape®

2.16 ACOUSTIC/FIRE SEALANT

GIB Fire Soundseal™ low VOC highly flexible multi use acoustic sealant.

2.17 GAP FILLER

GIB® Gap Filler 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.



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3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Framing substrates shall be in accordance to AS/NZS 2589, GIB® Site Guide and GIB Fire Rated System and/or GIB Noise Control System literature.

3.4 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

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

Framing substrates shall be in accordance to AS/NZS 2589, GIB® Site Guide and GIB Fire Rated System and/or GIB Noise Control System literature.

Check timber framing moisture content is in accordance with requirements of AS/NZS 2589. Refer to NZBC E2/AS1 and GIB® Site Guide.

Timber framing:	18% maximum for fixing plasterboard to timber (8-12% recommended for fixing plasterboard to timber framing if air conditioning and/or central heating are to be installed)

3.5 LEVELS OF PLASTERBOARD FINISH

Provide the selected plasterboard surfaces to the pre decorative Levels of Finish specified in AS/NZS 2589.

3.6 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.

3.7 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.

Application

3.8 INSTALL CEILING BATTENS

Install to GIB® Rondo® Ceiling Batten Systems.

3.9 LINING WALLS AND CEILINGS GENERALLY

Form to GIB® Site Guide and in accordance to relevant GIB Fire Rated or Noise Control System. Sheet joins are touch fitted and shall occur over framing where required by system requirements. Ensure bulk insulation thickness shall not exceed that of the wall framing.

3.10 BOARD ORIENTATION

Minimise joints by careful sheet layout using the largest sheet sizes possible. Ensure plasterboard orientation is in accordance to the relevant GIB Fire Rated or Noise Control System. Where a double layer of GIB plasterboard is required, ensure the outer sheets are offset from the inner layer in accordance with system requirements.

3.11 FORM SOUND INSULATION SYSTEMS

Form to GIB® Noise Control Systems.

3.12 FORM FIRE RATED SYSTEMS
Form to GIB® Fire Rated Systems and Penetrations in GIB® Fire Rated Systems.

3.13 RISERS, SHAFTS AND DUCTS
Form to GIB® Fire Rated Systems.

3.14 FORM CONTROL JOINTS
Form control joints to AS/NZS 2589 and GIB® Site Guide (September 2018).

3.15 INSTALL TAPE-ON TRIMS
Install to GIB® Goldline™ Tape-on trims literature and/or GIB® Ultraflex® high impact corner mould literature and/or GIB® Levelline® to GIB® Site Guide (September 2018).

Finishing

3.16 FINISHING GENERALLY
To GIB® Site Guide and AS/NZS 2589.

Completion

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

4 SELECTIONS

For further details on selections go to www.gib.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Noise control intertenancy wall systems

4.1 GIB® NOISE CONTROL, INTERTENANCY WALL - SINGLE TIMBER FRAMING

Location:	**between flat and main house**
System:	**GBTLA 45r**
Acoustics:	**55 STC / 54Rw**
FRR:	**45/45/45**
Framing:	**Timber frame with GIB Rail and acoustic resilient mount**
Insulation:	**R2.2 90mm refer to insulation specs**
Lining:	**2x13mm Standard or Aqualine GIB**
Finish level:	**4**

Noise control intertenancy floor/ceiling systems

4.2 GIB® WEATHERLINE SOFFIT CEILING SYSTEMS - TIMBER JOISTS

Location:	**refer to 4171GR clause for fire rated soffit linings**

Accessories

4.3 GIB® TAPE ON EDGE AND CORNER TRIMS

Brand/type:	~

4.4 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, TIMBER VENEER

Doors as scheduled complete with matching 6mm clashing strip to both sides and to the exposed edge of cavity slider doors.

2.4 DOORS, PAINTED

Doors as scheduled (without clashing strips).

2.5 CAVITY SLIDERS

Doors hung within a proprietary cavity slider frame and complete with brand-matched sliding door gear.

2.6 FRAMED AND GLAZED DOORS

Solid timber framed doors, stop end jointed and bead glazed.

2.7 DOOR HINGES

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

2.8 SLIDING DOOR GEAR

To suit door/sash size and glazed weight and as detailed.

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.



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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.

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4 SELECTIONS

4.1 TIMBER VENEER DOOR

Finish: Factory-applied clear low-sheen lacquer, colour and tone TBC

Door Reveals / Jamb Liners
Solid Oak, 30 mm thick (nom.), square-edged with 1–2 mm arris. Mitred corners to head and jambs, concealed fixings only. Finish to match door veneer.
finish: Clear low-sheen polyurethane (or approved equivalent), colour and tone to match door veneer, shop applied; seal all faces and end grain.

4.2 POLYCORE CORE DOOR, PAINT FINISH REFER SCHEDULES

Finish: as per windows ad door schedule (40 series of architectural drawings)

Door Reveals / Jamb Liners. 30 mm thick pine (nom.), square-edged with 1–2 mm arris. typical for paint finihsh
recessed jambs to secret doors as per schedule (40 series architectural drawings).

Internal door frames: to be polycore door generally. Confirm with Owner prior to order.

4.3 OVER THE WALL SLIDER DOOR GEAR

Brand/type: **Brio sliding door gear or by contractor's choice TBC**
RECESSED PULL hardware TBC

Accessories

4.4 DOOR HINGES

Interior doors

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

4.5 MISCELLANEOUS HARDWARE

allow for Bankston Berlin in matt black

- Lever Handles to be Round Rose, type and finish TBC
- CS doors and over the wall sliding doors (left and right hand grip) type and finish TBC
- PANTRY secret door: Push-to-open (secret door) Hardware: Heavy-duty magnetic push latch, concealed hinges, no visible hardware

confirm with manufacturer if system is available for door panel

For all hardware locations and type refer to door and window schedule (architectural 40 series drawings)

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5231HS HALLMARK CAVITY SLIDER & STANDARD DOORS

1 GENERAL

This section relates to the supply and installation of **Hallmark Group** range of standard and cavity slider doors for interior use.

1.1 RELATED WORK

Refer to relevant painting sections for finishes

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:

MDF	Medium density fibreboard

Documents

1.3 DOCUMENTS

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

AS/NZS 1170.1	Structural design actions - Permanent, imposed and other actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3610	Specification for profiles of mouldings and joinery
AS 3715	Metal finishing - Thermoset powder coatings for architectural application of aluminium and aluminium alloys
NZS 4223.3	Glazing in buildings - Human impact safety requirements
BS 6510	Steel-framed windows and glazed doors

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Hallmark Architectural Collection brochure
Hallmark Cavity Slider & Sliding Doors brochure
Hallmark Cavity Slider T-Guide info sheet
Hallmark CavZero® info sheet
Hallmark Classic Collection brochure
Hallmark door construction brochure
Hallmark interior doors warranty
Hallmark MDF flush panel specification sheet
Hallmark Milano Collection brochure
Hallmark pre-finished doors brochure
Hallmark timber veneer doors brochure
Hallmark Vogue Collection brochure
Hallmark Ultimate Cavity Slider Door data sheet

Manufacturer/supplier contact details

Company:	Hallmark Group Ltd
Web:	www.hallmarkgroup.co.nz & www.cavityslider.co.nz
Email:	sales@hallmarkgroup.co.nz
Telephone:	0800 846 237

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years	For Hallmark Group Interior Standard & Cavity Slider Doors up to 2600mm high x 1600mm wide.

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT).
- Refer to the Hallmark Interior Doors Standard Warranty for all warranty terms and conditions. The warranty applies to the bow, warp, twist or cup of doors however it will only be considered a defect when the bow, warp, twist or cup exceeds ± 7mm.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

2 PRODUCTS

Materials - Hallmark standard door & cavity slider door panels

2.1 POLYSTYRENE CORE DOORS

Hallmark polystyrene core doors manufactured with timber frame & if required lock blocks, core of polystyrene and selected door skin material in a range of thicknesses and finishes, glued under compression to the frame and core to form the door leaf. Available with steel box inserts to 2 vertical sides for cavity sliders or if required. Refer to SELECTIONS for details.

2.2 OVER-SIZED POLYSTYRENE CORE DOORS

Hallmark over-sized polystyrene core doors manufactured with a timber frame with steel box inserts to all four sides, and if required vertically mid span, with a core of polystyrene and with moisture resistant MDF door skins which are glued under compression to the frame and core to form the door leaf. Refer to SELECTIONS for details.

Materials - Hallmark standard door & cavity slider door panel finishes

2.3 HALLMARK TIMBER VENEER TO MDF PANEL DOOR

Hallmark timber veneer doors are available in hollow core, polystyrene core or solid core options, with moisture resistant MDF skins with solid timber clashing. Available in a range of New Zealand native or exotic veneers. Vision panels are available with solid timber beading. Refer to Hallmark Timber Veneer Doors and Architectural Collection for standard ranges. Refer to SELECTIONS for details.

Materials - frames

2.4 FRAMES - TIMBER

To NZS 3602. Moisture content approximately 10-14%. To profile as detailed and dimensioned, including stops.

2.5 FRAMES - ALUMINIUM

Alloy designation to comply with AS/NZS 1866. Branded and extruded for anodising or powder coating.

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2.6 TIMBER 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.

Components - cavity slider / wall mounted surface slider

2.7 HALLMARK CLASSIC WHEEL CARRIAGE SYSTEM

Hallmark Classic wheel carriage system, screw fastened to top of the door, with a quick release system, allowing the door to be easily removed from the track. 80kg or 120kg options.

2.8 HALLMARK CAVZERO® WHEEL CARRIAGE SYSTEM

Hallmark CavZero® wheel carriage system allows a minimal space between the top of the door and the head track & allows the removal of door without removing trims or architraves. The CavZero® housing is screw fixed into a rebate in the top of the door with paintable end caps. 80kg or 120kg options.

2.9 HALLMARK SMOOTH GLIDE TRACK & T-GUIDE

Hallmark high grade extruded aluminium head track and T-Guide to suit single or double cavity slider configurations and either 90mm or 140mm wide walls.

2.10 HALLMARK SURFACE SLIDER TRACK & GUIDE

Hallmark high grade extruded aluminium head track & Hallmark concealed channel and ball bearing guide for surface slider applications.

2.11 HALLMARK SOFT CLOSE UNITS

Hallmark Soft Close units are available for all Hallmark cavity slider configurations with Soft Close and/or Soft Open functions. Units are designed to suit a range of door weights from 15kg to 80kg.

2.12 HALLMARK ALUMINIUM CAVITY SLIDER FRAMING REINFORCEMENT SYSTEM

Hallmark aluminium cavity slider framing system with one cell, two cell or three cell sections and a range of steel reinforcement inserts for extra wide or extra high units.

Solid plywood cavity panels are also available to create a solid cavity walls to allow for fixings into the walls. Available either single sided or double sided.

Components - generally

2.13 SCREWS

Stainless steel or non-corrodible metal. Length sufficient to penetrate into the background support up to the shank. Screws for fixing hinges, hardware or furniture to match the item being attached.

2.14 NAILS

Length sufficient to penetrate into the background support at least half the nail length, except if into radiata pine then three-fifths their length.

2.15 DOOR HINGES

Number, size and gauge to carry door size and weight. Generally:

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

2.16 DOOR HARDWARE

Refer to SELECTIONS for door furniture & hardware.

Finishes

2.17 ALUMINIUM - POWDER COATED

Polyester powder organic coating in accordance with AS 3715. Refer to SELECTIONS for type, thickness and colour.



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2.18 PAINT FINISH / CLEAR FINISH

Refer to relevant paint finish for on-site finishes.

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.

3.3 PRE-INSTALLATION REQUIREMENTS

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

3.4 GENERALLY

Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.5 CHECK ALL OPENINGS

To NZS 3604. Check all openings on site for size and standard of execution before installing door frames. For cavity sliders, refer to www.cavityslider.co.nz for calculating framing trim size.

Assembly

3.6 FABRICATION - STANDARD DOORS

Fabricate doors and frames in the Hallmark Group factory as detailed and specified, with provision for lock block placement and size. Doors are suppled pre-hung in frames, unless requested otherwise. Fit Hallmark Group hinges to doors of appropriate type to support the door size and weight. Provide temporary bracing and protection for transport.

3.7 FABRICATE DOORS - CAVITY SLIDERS

Fabricate cavity slider body and doors in the Hallmark Group factory as detailed and specified, with provision for lock block placement and size. Provide temporary bracing and protection for transport.

3.8 INSTALL HARDWARE

Where required, fit supplied door hardware in factory. Key alike all lockable hardware able to be keyed alike, including other interior doors. Account for all keys and deliver separately to the site manager.

Installation - generally

3.9 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements. Installation tolerances of cavities sliders subject to earthquake design to comply with AS/NZS 1170.1 or NZS 1170.5.

3.10 FIXING FRAMES - STANDARD

Fit to frame as required. Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion. Fit architraves, if required.

3.11 FIXINGS

Fix frames so that nail heads are covered by applied stops and beads. Punch all nail heads below timber surfaces which will be visible in completed work. Ensure that at least one frame fixing is adjacent to each hanging point.

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3.12 DISTORTION

Do not distort frames when wedging or other packing, or when tightening fixings. If necessary adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

3.13 BOTTOM CLEARANCE

Provide for specified floor coverings plus 5mm clearance at any point of swing. When floor covering is not specified, allow 25mm total.
For ventilated and/or air conditioned spaces allow 20mm clearance above finished floor coverings for supply/return air.

3.14 PROPRIETARY ELEMENTS

Fix in accordance with Hallmark Group requirements.

Application - Doors Standard

3.15 INSTALLATION - STANDARD DOORS

Wedge frames into opening and fix through into the wall framing. Locate all wedges and fixing at hinge positions and opposite, with one fixing in the vicinity of the lock.

3.16 INSTALLATION - SURFACE SLIDERS

Install in accordance with Hallmark instructions and requirements. Install aluminium head track to wall complete with selected aluminium covers and base floor guide. Install Hallmark CavZero® wheel carriage brackets to the rebates to the top of door and insert the CavZero® wheel carriage into the top track and install door. Ensure door is plumb, level and true to line and face without distortion and runs freely on track. Adjust wheel carriage or base guide as required.

3.17 TIMBER STUD WALLS - TIMBER FRAMES

Wedge into opening and nail through into the studs. All wedges and fixing to be at hinge positions and opposite, with one fixing in the vicinity of the lock.

3.18 TIMBER STUD WALLS - STEEL AND ALUMINIUM FRAMES

Using a pilot hole in the frame, fix to timber studs with countersunk self-drilling corrosion proof screws. Fix at hinges and opposite, with one fixing in the vicinity of the lock.

Application - Doors Cavity Sliders

3.19 INSTALLATION - CAVITY BODY

Install and fix cavity slider body to the framed wall opening in accordance to Hallmark instructions and requirements. Ensure fixed rigidly in place, plumb, level and true to line and face without distortion. After lining installation, fit selected frames and if required architraves.

3.20 INSTALL CAVITY SLIDER - WITH CLASSIC WHEEL CARRIAGE SYSTEM

Install cavity slider on classic wheel carriage system in accordance with Hallmark installation instruction videos, available on www.cavityslider.co.nz or by scanning QR code on Hallmark cavity slider door.

Ensure door is straight & true and correct size for pocket. Install carriage brackets to top of door using the supplied screws into the pre-drilled holes. Insert carriage into head track, remove jamb spreader & ensure frame is square and cavity is perfectly aligned. Place back door bracket into the carriage and slide door onto floor T-guide and into cavity pocket followed by the leading edge bracket into carriage.

Adjust hanging bolts to ensure door is square, level & true to line, with correct bottom clearance. Once complete lock door in place with carriage head nut. Install opening head trims and install head rail end cap. Check leaf is centred in pocket, adjust base T-guide as required.

3.21 REMOVE CAVITY SLIDER

Remove doors from the sliding track to paint all six sides for finishing and if necessary to protect them. Store safely and near completion refit them, all without any damage.

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Application - Finishing

3.22 FINISHING

Refer to appropriate PAINTING section(s) for selection of paint and preparation requirements. All two faces and all four edges of doors (including lock holes and check outs) must be sealed and coated within four days of arriving on site.

3.23 INSTALL FURNITURE

Install latches, locks and door furniture as scheduled. Check and adjust operation of all doors.

Completion

3.24 COMPLETION MATTERS

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

4 SELECTIONS

For further details on selections go to www.hallmarkgroup.co.nz & www.cavityslider.co.nz. Substitutions are not permitted to the following, unless stated otherwise.

Hallmark Standard Doors

4.1 HALLMARK STANDARD DOOR - TIMBER VENEER TO MDF PANEL DOOR

Location:	**refer 41 series drawings for schedule**
Door type:	**polystyrene core**
Door size:	**refer 41 series drawings for schedule**
Door thickness:	**38mm**
Door Pane/finish:	**Hallmark Timber Veneer Doors - MDF / ~**
Vision Panels:	**None**
Jamb type/finish:	**Finger Jointed Pine - grooved for linings or flush with archi**
Wall thickness:	**~mm (including linings)**
Configuration:	**refer 41 series drawings for schedule**
Leaf edge:	**timber clashed**
Hardware:	**refer to inernal doors for selected hardware**

Hallmark Cavity Slider Doors

4.2 HALLMARK CAVITY SLIDER - TIMBER VENEER TO MDF PANEL DOOR

Location:	**refer 41 series drawings for schedule**
Product:	**Hallmark Classic Cavity Slider.**
Door Pane/finish:	**Luxe American White Oak brushed**

Finish

4.3 PAINT FINISH - SITE APPLIED

Refer to relevant painting sections for paint or clear finishes.

Hardware

4.4 DOOR HARDWARE SCHEDULE

Location Door No.	Type	Finish	Fitting Height to centre	Door Thickness	Comments
~	~	~	~	~	~

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5241 FIRE & ACOUSTIC INTERIOR DOORS & WINDOWS

1 GENERAL

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

- windows
- doors, frames
- doorsets

1.1 RELATED WORK

Refer to ~ for ~

1.2 ABBREVIATIONS

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

The following abbreviations apply specifically to this section:

FRR	Fire-resistance rating
FSC	Forest Stewardship Council
PEFC	Programme for the Endorsement of Forest Certification
Sm	Smoke stopping capability level
STC	Sound transmission class

Documents

1.3 DOCUMENTS

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

BPS	Building Product Specifications
NZBC F8/AS1	Signs
AS 1191	Acoustics - method of laboratory measurement of airborne sound transmission insulation of building elements.
AS 1530.4:2005	Methods for fire tests on building materials, components and structures - Fire-resistance test of elements of construction
NZS 3602	Timber and wood-based products for use in building
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4232.2	Performance criteria for fire resisting enclosures - Fire resisting glazing systems
NZS 4520	Fire resistant doorsets
AS/NZS 4666	Insulating glass units
ISO 717.1	Acoustics - rating of sound insulation in buildings and of building elements - airborne sound insulation.
ISO 2063	Thermal spraying - Metallic and other inorganic coatings - Zinc, aluminium and their alloys

1.4 MANUFACTURER DOCUMENTS

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

~

Manufacturer/supplier contact details

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

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Warranties

1.5 WARRANTY

Provide warranty for:

5 years	Materials
5 years	Execution

- 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

1.6 QUALIFICATIONS

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

1.7 NO SUBSTITUTIONS

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

1.8 CERTIFY COATINGS

Certify on request, compliance with this specification and support with control and sampling records. Test for film thickness to AS 3894.3, and retest where any dispute arises as to the thickness provided.

Performance

1.9 CERTIFY PERFORMANCE

Provide certificate of compliance with the requirements of this specification for fire and/or acoustics.

Performance - fire - doorsets and windows

1.10 FIRE REQUIREMENTS

To BPS, 8.3 Closures including fire doors, smoke control doors, glazing, and dampers, and BPS, 8.3 Closures including fire doors, smoke control doors, glazing, and dampers. Provide doorsets of the scheduled fire resistance rating, tested to NZS 4520.

1.11 VARIATIONS FROM STANDARD

Submit before manufacture a written opinion from a registered testing laboratory, that any variation from a production model satisfies the criteria laid down in NZS 4520.

1.12 FIRE DOORSETS REGISTER

Manufacturer to list doorsets in their "Register of Doorsets" to NZS 4520. Supply to building owner at practical completion.

1.13 EVIDENCE OF COMPLIANCE

When installation is completed provide written confirmation to NZS 4520, 6.4.2.

1.14 FIRE AND SMOKE SEALS

To BPS, 8.3 Closures including fire doors, smoke control doors, glazing, and dampers, and BPS, 8.3 Closures including fire doors, smoke control doors, glazing, and dampers.

Performance - acoustic - doorsets and windows

1.15 ACOUSTIC REQUIREMENTS

To AS 1191, and ISO 717.1. Manufactured to meet required STC rating. Complete with perimeter and bottom seals if required.

1.16 ACOUSTIC DOOR SEALS

To AS 1191and ISO 717.1.

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2 PRODUCTS

Materials - general - fire

2.1 FIRE DOORS

To comply with NZS 4520, supplied with frame. Refer to SELECTIONS for details.

2.2 FIRE DOORSETS

To comply with NZS 4520. Frames to profile as detailed and dimensioned. Refer to SELECTIONS for details.

Make provision for the scheduled fire-rated hardware to be supplied and fitted. Make arrangements on delivery to the site, for the installer's certificate to be returned to the manufacturer.

2.3 SMOKESTOP DOORSETS

To comply with NZS 4520 and BPS, 8.3.2 Smoke control doors, and BPS, 8.3.2 Smoke control door,. Frames to profile as detailed and dimensioned.

Refer to SELECTIONS for details.

2.4 FIRE RATED HARDWARE

Make provision for the scheduled fire-rated hardware to be supplied and fitted. Make arrangements on delivery to the site, for the installer's certificate to be returned to the manufacturer.

Materials - general - acoustic

2.5 ACOUSTIC DOORS

Frames to profile as detailed and dimensioned. Refer to SELECTIONS for details.

2.6 ACOUSTIC DOORSETS

Frames to profile as detailed and dimensioned. Refer to SELECTIONS for details.

Components

2.7 WINDOW AND DOOR FURNITURE

Refer to 5521 HARDWARE for hardware selections and/or to SELECTIONS for type.

2.8 SCREWS

Zinc plate, zinc chromate, nickel plate or stainless steel. Length sufficient to penetrate into the background support up to the shank. Screws for fixing hinges, hardware or furniture to match the item being attached.

2.9 NAILS

Length sufficient to penetrate into the background support at least half the nail length, except if into radiata pine then three-fifths their length.

2.10 INSERTS, BOLTS AND FASTENERS

Items to be built into corrosive environments, to be hot-dip galvanized to AS/NZS 4680.

2.11 DOOR HINGES

Tested and approved with size and gauge to carry door size and weight. Refer to SELECTIONS for details.

2.12 FIRE AND SMOKE SEALS

PVC or silicone, suitable for plain or rebated frames.

2.13 ACOUSTIC DOOR SEALS

PVC or silicone, suitable for plain or rebated frames.

Finishes - General

2.14 PAINT FINISH PRIMER

Steel to be abrasive blasted prior to application of Epoxy Primer to paint manufacturers recommendations. Refer PAINT section for details.

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2.15 PAINT FINISH

Refer PAINT section for details.

3 EXECUTION

Conditions

3.1 GENERALLY

Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, and stairs).

3.2 CHECK ALL OPENINGS

Check all openings prior to manufacture for size and standard of execution before installing frames.

3.3 DELIVERY, STORAGE AND HANDLING

Take delivery of materials and goods and store on site and protect from damage.

Protect finished surfaces, edges and corners from damage.
Move/handle goods in accordance with manufactures requirements.
Reject and replace goods that are damaged or will not provide the required finish

3.4 CONFIRM PREPARATION OF WALL OPENINGS

Confirm that 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.

3.5 PROTECT

Protect all elements against damage to arrises and glazing beads. Store frames and doors flat on pallet or upright at an angle no greater than 15 degrees from perpendicular, and away from moisture or direct sunlight.

Assembly

3.6 FABRICATION GENERALLY

Manufacture and fabricate frames and doors as detailed. Install hinges and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

3.7 FABRICATE DOORSETS

Fabricate doorsets in the factory with doors hung and provision for furniture made as required.

3.8 FABRICATE DOORS

Fabricate doors in the factory, with provision for door furniture.

3.9 ANCHORAGES

Install all required anchorages to the manufacturers requirements, for the fire rated windows and doors, including sleeves, concrete inserts, anchor bolts and items with integral anchors that are to be embedded in concrete and/or masonry.

3.10 HARDWARE GENERALLY

Make provision for the scheduled fire-rated hardware to be supplied and fitted either in the factory or on site. Key alike all lockable hardware able to be keyed alike, including other interior doors. Account for all keys and deliver separately to the site manager.

Make arrangements on delivery to the site, for the installer's certificate to be returned to the manufacturer.

3.11 HINGES

Fit hinges to doors to support the door size and weight with a minimum of:

3 hinges	Doors up to 2.1 metres
4 hinges	Doors 2.1 - 2.4 metres
5 hinges	Doors 2.4 - 3.0 metres



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3.12 FACTORY FINISHING

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.

3.13 ON SITE FINISHING - TIMBER FRAMES

Before installation:

- Prime both faces and all edges of timber doors not primed with an alkyd wood primer.
- Re-prime any subsequently cut edge.
- Refer to painting section/s for finishing.

Installation - generally

3.14 INSTALL FIRE WINDOWS, DOORS AND DOORSETS

Install and fix to comply with NZS 4520, NZS 4232.2, the stated fire rating requirements and the manufacturer installation details.

3.15 INSTALL ACOUSTIC WINDOWS, DOORS AND DOORSETS

Install and fix to comply with the stated STC rating requirements and the manufacturer installation details.

3.16 FIXING FRAMES

Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion to the manufacturer requirements.

3.17 DISTORTION

Do not distort frames when wedging or other packing, or when tightening fixings. If necessary adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

3.18 FIXINGS - TIMBER FRAMES

Fix frames to manufacturers requirements. Punch all nail heads below timber surfaces which will be visible in completed work. Ensure that at least one frame fixing is adjacent to each hanging point when fixing timber frames.

3.19 ANCHORAGES

Install all required anchorages to the manufacturers requirements, for the fire rated windows and doors, including sleeves, concrete inserts, anchor bolts and items with integral anchors that are to be embedded in concrete and/or masonry.

3.20 TOLERANCES

Install the finished prehung door to a dimensional accuracy of ± 2mm.

Installation - fire and acoustic doorsets and windows

3.21 INSTALL FIRE, SMOKESTOP AND ACOUSTIC FRAMES

Fix in accordance with NZS 4520 and the manufacturer instructions.

3.22 CONCRETE MASONRY WALLS - TIMBER FRAMES

Fix in place with 10mm expanding masonry anchors with countersunk heads. At hinge side fix direct to opening and pack on the other side to wedge in place. Fix at hinges and opposite, with one fixing in the vicinity of the lock. Separate concrete/masonry and timber by a damp proof membrane. Seal between back of frame and concrete with intumescent sealant for fire walls and acoustic sealant for acoustic walls.

3.23 HANG DOORS

Hang doors on hinges as specified and to operate freely.

3.24 BOTTOM CLEARANCE

Provide for specified floor coverings plus 7mm clearance at any point of swing. When floor covering is not specified, allow 25mm total.

For fire and smokestop doorsets, this clearance above finished floor coverings must not exceed 10mm. Jambs to be cut down to suit if necessary.



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3.25 REMOVE DOORS

Remove doors from the frames prior to, or on installation, and immediately seal on all 6 sides. Finish as required, store safely and near completion refit to avoid any damage.

3.26 INSTALL FURNITURE

Install to NZS 4520. Install latches, locks and door furniture as scheduled.

Finishing

3.27 CHECK

Check and adjust operation of all doors.

3.28 MARKING OF FIRE-RATED DOORSETS

The marking of fire-rated doorsets to be according to NZS 4520, 6 **Marking and Documentation**.

3.29 FIRE-RATED DOORSET SIGNS

To NZBC F8/AS1, 5.2,**Fire and smoke control doors**.

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.

Completion

3.31 ROUTINE CLEANING

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

3.32 DEFECTIVE OR DAMAGED WORK

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

3.33 REMOVE

Remove safety indicators and protective coverings, and wipe down all joinery thoroughly to leave it perfectly clean. Remove debris, unused materials and elements from the site.

4 SELECTIONS

Where there is a NO SUBSTITUTIONS clause in GENERAL, no substitutions are permitted to any of the specified systems, components and associated products listed in the following SELECTIONS.

Fire

4.1 DOORSET - FIRE AND SMOKESTOP 30 MINUTE INTERIOR FIRE DOOR

Door Reference:	**INTERNAL DOOR TO FLAT - apartment door**
Manufacturer:	**TBC**
Door function:	**Single hinged**
FRR/Sm:	**-/30/30 Sm**
Leaf size:	**refer 40 series drawings**
Thickness:	**55mm**
Leaf material:	**reconstituted wood fibre**
Leaf core:	**Solid**
Leaf skin:	**for paint finish**
Leaf finish:	**on site**
Edge clashing:	**Clashed 2 vertical edges**
Frame material:	**30mm Hardwood – Hinged Single**
Seals:	**Smoke seals, Intumescent seals, Acoustic seals**

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Acoustic

Hardware

4.2 HARDWARE SCHEDULE

Item	Type of hardware	Number off
Lockset & latch		
Roller catch		
Door closer		
Push/pull handles		
Eye viewers		
Magnetic clamps		
Power transfer		
Door coordinator		
Jamb seals		
Sill seals		
Grilles		

4.3 HARDWARE

Refer to 5521 HARDWARE section.

4.4 HINGES

Type: **13mm Radius**
Size: **100mm x 75mm**
Pin: **Fixed pin ball bearing**
Material: **Stainless steel**

Finishes

4.5 PRIMER

Brand/type: **refer Manufacturer for recommendation of project-specific application.**

4.6 PAINTING

Refer to painting section/s for painting.

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5510 JOINERY & PROPRIETARY FIXTURES

1 GENERAL

This section relates to custom joinery fixtures and proprietary fixtures.
It includes:

- fabrication, including off site finishing and installation of cabinetwork and joinery items
- assembly, placing, installation of proprietary fixtures
- fitting out of specialty spaces and cupboards
- fabrication and installation of timber staircases.

Documents

1.1 DOCUMENTS

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

NZBC D1/AS1	Access routes
AS/NZS 1859.2	Reconstituted wood based panels - Specifications - Dry processed fibreboard
AS/NZS 1860.1	Particleboard flooring - Specifications
NZS 3602	Timber and wood-based products for use in building

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:	~

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Requirements

2 PRODUCTS

2.1 MEDIUM DENSITY FIBRE BOARD, MELAMINE

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 overlaid both sides with melamine resin impregnated sheet.

2.2 MEDIUM DENSITY FIBRE BOARD, WOOD VENEER

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 overlaid with natural wood veneer.

2.3 BENCHTOPS

As detailed on the drawings and as required for specified fittings and appliances.

2.4 CARCASE CONNECTORS

One-piece steel, straight deep-cut thread, fibre board screws with press fit plastic trim cap or tight joint connectors.

2.5 CARCASE FASTENERS

Knock down type centric sphere zinc alloy connectors with connecting bolts, sleeves and dowels, to suit each particular fastening location.

2.6 BUTT HINGES

Butt, broad butt, flush butt or overlay, steel, zinc-plated steel, stainless steel, or brass, to suit the location, or as detailed.

2.7 CONCEALED HINGES

All-metal zinc alloy with automatic spring and screw-fixed. Plastic button door stops.

2.8 DRAWER RUNNERS

Single action under mounted or side mounted powder coated runners or groove mounting type, precision running ball-mounted single-stage extension, bright steel finish system.

2.9 GLUES AND ADHESIVES

As approved by the manufacturer for the timber, timber product, or pre-finished timber product joint being used.

2.10 LIGHT DUTY COATING SYSTEM

Single pack, clear or pigmented nitro-cellulose or pre-catalysed lacquer.

2.11 MEDIUM DUTY COATING SYSTEM

Two pack, clear or pigmented acid catalysed coating.

2.12 HEAVY DUTY COATING SYSTEM

Two pack, clear or pigmented polyurethane coating.



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3 EXECUTION

3.1 JOINERY FIXTURES GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs). Take responsibility for the completed joinery fixtures including fittings included within fixtures and the on site installation.

3.2 SITE MEASURE

Site check and confirm dimensions after wall linings have been fixed. Verify positions of electric power outlets, wiring to light fittings included in joinery fixtures, water supplies and waste pipe locations.

3.3 FABRICATION QUALITY

Carry out machining within the practices required for the particular timber, wood product or pre-finished wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's requirements. Ensure work is accurate, square and true to line and face.

3.4 FABRICATE JOINERY FIXTURES

Carry out jointing, dowelling and other operations necessary for the proper assembly of the fittings as detailed, with fixings concealed unless otherwise detailed. Use glue joints where provision for shrinkage is not required, with contact surfaces, glueing and pressure all applied to the glue manufacturer's requirements. Locate and drive connectors and fasteners to the bolt manufacturer's requirements. Scribe fit adjustable shelves with 4 shelf pins and locate force fit pin holes at 50mm maximum centres in solid cheeks. Hang doors on concealed hinges.

3.5 MAKE CUT OUTS FOR APPLIANCES AND FITTINGS

Obtain fitting templates from the appliances and other fittings to be installed within joinery fixtures and bench tops. Ensure appliances and fittings can be installed with the required tolerances and clearances. Where bench tops are being provided under other work sections, provide templates and confirm dimensions to others.

3.6 FABRICATE DRAWERS

Construct drawers as detailed, using proprietary metal section drawer runners. Fit drawers with 3mm clearance into the drawer space.

3.7 TRANSIT AND DELIVERY

Load, transport and unload fittings without distortion or damage and keep covered to protect from the weather. Do not deliver fittings until floor, wall and ceiling surfaces are in place and the fittings can be placed in their final location.

3.8 ASSEMBLE PROPRIETARY ITEMS

Check all components are included. Assemble to manufacturer's instructions and to achieve finished item.

3.9 INSTALL JOINERY FIXTURES

Scribe fit on site and install level, square, plumb and true to line and face.

3.10 WARDROBE AND COAT CUPBOARD

Fit out with 300mm wide melamine faced board shelf, on ex 25mm scotia bead to back and ends. Exposed edges clashed to match. Fit a selected white powder-coated aluminium coat rail to the front edge of the shelf. Shelf heights as shown on the drawings.

3.11 STORAGE CUPBOARD

Fit out with 5 full depth melamine faced board shelves of thickness to suit span supported on ex 25mm beads along back and ends. Exposed edges clashed to match. Shelf heights as shown on the drawings.

3.12 LINEN CUPBOARD

Fit out with 2 full depth 19mm x 70mm timber slat shelves on ex 25mm scotia bead along ends. Shelf heights as shown on the drawings.

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3.13 COATING SYSTEM, PREPARATION

- Fill timber defects with proprietary wood filler. (e.g. cracks, holes, etc)
- Sand timber to a smooth even finish using 180 grit paper.
- Remove all sanding dust using air guns and tack rags.
- Ensure substrate is free from dust, grease, dirt and other contaminants.
- Ensure moisture content of the timber is less than 15% immediately before commencing coating operations.

3.14 COATING SYSTEM, APPLICATION

To coating manufacturer's requirements.

4 SELECTIONS

4.1 JOINERY PROPRIETARY ITEMS

Location: **refer joinery plans and elevations**

4.2 MEDIUM DENSITY FIBRE BOARD, MELAMINE

Manufacturer: **refer joinery plans and elevations**
Product name: **Melamine**
Pattern/colour: **white**
Clashing: **square pvc edge**

4.3 MEDIUM DENSITY FIBRE BOARD, WOOD VENEER

Manufacturer: **HALLMARK**
Product name: **Luxe American White Oak**
Species/cut: **The Luxe range uses a mismatched lay-up pattern**
Clashing: **BUTT FINISHED**
Finish: **TBC**
Coulor: **clear**

4.4 BENCHTOP

Brand/material: **6mm thick Stainless Steel**
Finish: **burnished**

4.5 BENCHTOP

Brand/material: **20mm natural stone**
Finish: **TBC**

4.6 DRAWER RUNNERS

Manufacturer: **Blum**
Product name: **tbc**

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5538VH VANDA BLINDS & CURTAIN TRACK SYSTEMS

1 GENERAL

This section relates to the supply and fixing of **Vanda Holdings Ltd** blinds and curtain track systems.
It includes:

- Vanda roller, roman and motorised blinds
- Vanda flush fit track
- Forest hand drawn, cord drawn and motorised tracks
- Somfy motorised tracks
- Roller Blind recessed flush box Recess Flush Box; full or part

1.1 RELATED WORK

Refer to 5530 BLINDS & CURTAINS for curtains and accessories.

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:

FMS	Forest Motorised Tracking System

The following definitions apply specifically to this section:

One Touch Start/ Touch Impulse Technology	Gently pulling the curtain by hand will activate the motor
Integrated Emergency Control	In case of power failure, drapes can be moved manually

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Vanda Information and Technical Sheets
Forest Information and Technical Sheets

Manufacturer/supplier contact details;

Company:	**Vanda Holdings Ltd**
Web:	www.vanda.co.nz
Email:	admin@vanda.co.nz
Telephone:	0800 826 326

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

~ years	For materials

Refer to Vanda Holdings Ltd for product specific warranty details.

- Provide this warranty on the Vanda Holdings Ltd 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.

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1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

~ years For installation

Refer to installer for product specific warranty details.

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

Quality control and assurance

1.9 INSPECTIONS

~

2 PRODUCTS

Materials - blinds

2.1 ROLLER BLINDS

Vanda Roller Blinds, available in a range of sheer, translucent and blackout fabric, incorporating Acmeda System componentry. Refer to SELECTIONS for product range and fabrics.

2.2 ROMAN BLIND

Vanda Roman Blind, supplied in a range of fabrics and uses an aluminium spline to hold the pockets. Cord, chain or motor operated. Refer to SELECTIONS for product range and fabrics.

Materials - fabrics, curtains and shades for curtain tracks

2.3 FABRICS, CURTAINS & SHADES

Refer to 5530 BLINDS & CURTAINS for fabrics, curtains and shades.

Components - Roller Blind Recess Flushbox

2.4 Roller Blind Recess Flushbox - Full

Vanda Full Flushbox extruded aluminium section with a removable cover plate. 106mm wide x 120mm depth with an 8mm bottom flange to conceal plasterboard edge. Available in 4.2m lengths, mill or custom powder coat finish. The Full Flushbox is supplied with end caps and cover plate.

Refer to SELECTIONS.

Components - curtain tracks

2.5 CURTAIN TRACK - RECESSED

Vanda Flush Fit Curtain Track, a recessed track 16mm wide x 13mm high to match standard plasterboard ceiling thickness. Track has a 5mm flange either side of the glide channel for the cut edge of the ceiling sheet to sit on. Supplied with glides, end stops and cover plates. Tracks pre-drilled at 500mm centres for supplied pan square self-tapper screw fixings. Available in 6m lengths in "Classic White" finish. Custom powder coat and brushed finishes available on application.

Refer to SELECTIONS.

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Components - motorised curtain track systems

2.6 CURTAIN TRACK - MOTORISED, FMS MOTOR

Forest FMS Motorised Curtain Track, a belt driven motorised curtain track system.

Key functions include:

- High Frequency Technology operated by wall switch, remote control or time switch.
- silent 45 and 60 Watt motors (speed 15 cm/sec)
- motor pulley to connect motor and FMS track
- 20mm x 20mm track comprised of aluminium extrusion with adjustable face fix brackets or ceiling mounted brackets. All KS tracks available.
- motor connectable to Building Automation systems. Bi-directional Bus-controller also available.
- Motor can be used with one or two bends of 90°, bent and reverse bent with radius of 200mm or continuous curving.

Refer to SELECTIONS.

Accessories - curtains

2.7 CURTAIN RODS, RINGS, HOLDBACKS AND AUTOMATION ACCESSORIES

Refer to 5530 BLINDS & CURTAINS for curtain rods, rings, holdback and automation accessories.

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.

3.3 ROLLER BLIND FULL FLUSHBOX - RECESSED

Accurately frame out to fit 106mm wide x 120mm deep pelmet Full Flushbox at wall to ceiling junction. Refer to installation details for requirements. The Flushbox can be fitted after ceiling linings are fixed, stopped and painted as the box has an 8mm flange to conceal the plasterboard edge.

3.4 CURTAIN TRACK - RECESSED

To accommodate the Vanda Flush Fit Curtain Track width, allow a parallel gap of 18mm in the ceiling sheet.

Installation/application

3.5 INSTALLATION

Carry out the fixing, installation and fitting to finish rigid, plumb, true to line and face and square, to the manufacturer's requirements.

3.6 INSTALL COMPONENTS

Fix all components to the manufacturer's requirements.

3.7 CURTAIN TRACK - RECESSED

The Vanda Flush Fit Track is cut 11mm shorter than the given length to provide access to the glides, without having to take down the track.

To fit the Vanda Flush Fit Curtain Track, position one end of the track hard up to one end to allow the 11mm gap at the other. Attach the cover plate to the end stop to cover the gap.

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Completion & Commissioning

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

4.1 FABRICS, CURTAINS & SHADES

Refer to 5530 BLINDS & CURTAINS for fabrics, curtains and shades selections.

Components - curtain tracks

4.2 VANDA FLUSH BLIND BOX

Location:	**as per reflected ceiling plans and details**
Type:	**Recessed BOX - RECSSED INTO ROOF SPACE**
Model:	**Vanda Flush BLIND BOX**
Material:	**Aluminium**
Dimensions:	**120mm high**
Fixing:	**Pan square self-tapper screws (supplied) at pre-drilled 500mm centres**
Colour/finish:	**POWDERCOATED TO MATCH WINDOW JOINERY**

Components - motorised curtain track systems

4.3 FOREST CURTAIN TRACK MOTOR - FMS CONFIRM WITH OWNER

Location:	**as per reflected ceiling plans and details**
Type:	**Belt drive motorised curtain track system**
Model:	**FMS Motor**
Dimensions:	**60mm x 50mm x 230mm (60 watt motor) with 50mm x 85mm x 85mm receiver box**
Track:	**20mm x 20mm FMS track**
Brackets:	**ceiling mounted bracket**
Operation:	**confirm with owner**

Accessories - curtains

4.4 CURTAIN RODS, RINGS, HOLDBACKS AND AUTOMATION ACCESSORIES

Refer to 5530 BLINDS & CURTAINS for curtain rods, rings, and holdback and automation accessories selections.

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5574 INTERIOR HANDRAILS & TIMBER BALUSTRADES

1 GENERAL

This section relates to the fabrication and installation of interior timber balustrades.

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:

FSC	Forest Stewardship Council
PEFC	Programme for the Endorsement of Forest Certification

Documents

1.3 DOCUMENTS REFERRED TO

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

NZBC B2/AS1	Durability provisions for building elements
NZBC F4/AS1	Safety from falling
NZS 3602	Timber and wood-based products for use in building

1.4 MANUFACTURER DOCUMENTS

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

~

Copies of the above literature are available from ~

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

2 PRODUCTS

2.1 SOLID TIMBER COMPONENTS

Timber species, grade, installation moisture and treatment to NZS 3602, table 2, and NZBC B2/AS1. Refer to SELECTIONS/DRAWINGS.

2.2 NON-TIMBER HANDRAIL

Proprietary handrail or non-fabricated handrail to manufacturer/supplier specifications and instructions. Refer to SELECTIONS for options.

2.3 HARDWARE

Handrail brackets, metal supports, angles and sundry fittings, all as shown and described on the drawings.

3 EXECUTION

Conditions

3.1 GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).



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Check site dimensions. Carry out machining within the practices recommended for the particular timber, wood product or pre-finished wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's recommendations. Work to be accurate, square and true to line and face.

Application

3.2 HANDRAILS

Fabricate and install the handrails as detailed, complete with all associated metal componentry and hardware. Unless otherwise detailed construct to comply with NZBC F4/AS1.

Completion

3.3 LEAVE

Leave work to the standard required by following procedures.

3.4 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

4.1 NON-TIMBER HANDRAIL

Location:	**stairwell**
Description:	**42mm dia steel tube handrail on hollow st steel handrail brackets, with LED strip to underside**
Finish:	**powdercoating - Colour TBC**

4.2 ACCESSORIES

Brackets:	**to suit system - refer 90 series drawings**
Finish:	**to match handrail**

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6192 FLOORING SUBSTRATE PREPARATION

1 GENERAL

This section relates to the preparation of a flooring substrate for floor coverings over existing and new floors.
It includes:

- preparation of new and existing floors
- sheet underlays/overlays
- levelling screeds

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:

AS/NZS 1859.2	Reconstituted wood-based panels - Specifications - Dry processed fibreboard
AS/NZS 1859.4	Reconstituted wood-based panels - Specifications - Wet processed fibreboard
NZS/AS 1884	Floor coverings - Resilient sheet and tiles - Installation practices
AS/NZS 2269.0	Plywood - Structural - Specifications
AS/NZS 2908.2	Cellulose-cement products - Flat sheet

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

~

Manufacturer/supplier contact details

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

Requirements - moisture in concrete slabs

1.4 MOISTURE CONTENT OF CONCRETE SLAB

Check moisture content to NZS/AS 1884, Appendix A and do not commence laying of floor covering until readings for the whole area show 75% relative humidity or less, for textile, resilient sheet and tile floor finishes and 60-70% for timber overlay floor finishes. If non-complying, the slab is to be sealed in accordance with this specification, refer to 4. SELECTIONS.

2 PRODUCTS

Materials

3 EXECUTION

Conditions

3.1 DO NOT START

Do not start work before the building is enclosed, all wet work is complete, doors are hung and lockable, finishes and trim complete and good lighting is available.

3.2 INSPECT

Inspect the substrate to ensure it is a suitable finish. Do not start work if it will not allow work of the required standard.

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Application - substrate preparation

3.3 PREPARING NEW CONCRETE FLOOR

To be level, smooth, clean, cured and dried. Check moisture content to NZS/AS 1884, Appendix A. Add cure and seal catalytic agent to concrete or seal as required. Remove loose material and dust.

Completion

3.4 REPLACE

Replace damaged or marked elements.

3.5 REMOVE

Remove all debris, unused materials and elements from the site.

3.6 PROTECT

Protect completed work from damage for the period between completion of the preparation work and completion of flooring.

4 SELECTIONS

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



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6211 WALL TILING SYSTEMS

1 GENERAL

This section relates to the supply and installation of interior and exterior wall tiling systems:
It includes:

- Tiles
- Tile adhesives and grouts
- All relevant underlays, components and accessories necessary to complete installation.

1.1 RELATED WORK

Refer to 6221 FLOOR TILING SYSTEMS for floor tiling systems.

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:

WMAI	Waterproofing Membrane Association NZ Inc

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 E3/AS1	Internal moisture
NZBC E3/AS2	Internal moisture
AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
AS/NZS 4671	Steel reinforcing materials
AS/NZS 4858	Wet area membranes
AS ISO 13007.1	Ceramic tiles - Grouts and adhesives -Terms, definitions and specifications for adhesives
AS ISO 13007.3	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for grouts
BS EN 12004.1	Adhesives for ceramic tiles. Requirements, assessment and verification of constancy of performance, classification and marking
BS EN 13888.1	Grouts for ceramic tiles. Requirements, classification, designation, marking and labelling.
WMAI	Code of Practice for Internal Wet-area Membrane Systems

Health & Safety at Work Act: 2015

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

~ ~

Manufacturer/supplier contact details

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

Warranties - tiling

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

~ years	For ~

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- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years For installation of tiling systems

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Warranties - waterproofing

1.7 WARRANTY - MANUFACTURER/SUPPLIER - FOR WATERPROOFING SYSTEMS

Provide a material manufacturer/supplier warranty:

~ For waterproofing system

- Provide this warranty on manufacturer/supplier standard warranty form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.8 WARRANTY - INSTALLER/APPLICATOR - FOR WATERPROOFING SYSTEMS

Provide an installer/applicator warranty:

5 years For installation of waterproofing systems

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.9 QUALIFICATIONS GENERALLY - TILING SYSTEMS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.10 QUALIFICATIONS - WATERPROOFING SYSTEMS

Workers to be approved / accredited / registered / licensed / certified by manufacturer / supplier. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.11 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.

1.12 NO SUBSTITUTIONS

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

1.13 HEALTH & SAFETY - SILICA DUST

Comply with Health & Safety at Work Act:2015 and take all necessary precautions as recommended in WorkSafe guidelines for Respirable Crystalline Silica (RCS).

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Compliance information

1.14 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Manufacturer / supplier warranty -waterproofing membrane
- Installer / applicator warranty -waterproofing membrane
- Producer Statement - Construction (PS3) from the waterproof membrane applicator / installer
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.15 INTERNAL MOISTURE - WET AREA MEMBRANES

Wet area membranes under tiled areas to comply with NZBC E3/AS1 & sections 1-4 of WMAI Code of Practice for Internal Wet-area Membrane Systems as modified by NZBC E3/AS2 for interior applications.

2 PRODUCTS

Materials

2.1 TILES

Refer to SELECTIONS.

Materials - preparation & underlays

2.2 WATERPROOFING MEMBRANE - INTERIOR

Proprietary interior wet area waterproofing system to AS/NZS 4858. Refer to SELECTIONS.

Materials - adhesive and grout

2.3 TILE ADHESIVE

Tile adhesive, and if required primer, to suit particular location/use. To AS ISO 13007.1 and BS EN 12004.1. Refer to SELECTIONS.

2.4 PROPRIETARY GROUT

Proprietary grout to suit particular location/use. To AS ISO 13007.3 and BS EN 13888.1. Refer to SELECTIONS.

Accessories

2.5 MOVEMENT JOINT SEALANT

Neutral cured or acid-cured sealant to AS 3958.1, 2.7.5 Sealant. Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

Inspect tiles on delivery to ensure that they are as specified, from the same batch, of a consistent colour and pattern and sufficient to complete the work. Reject tiles that vary widely in colour or pattern and any tiles that are damaged.

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 PRE-INSTALLATION REQUIREMENTS

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

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Ensure that the substrate, with the preparation called for in this section, are of the quality necessary to allow tiling of the required standard. Ensure all services and accessories are in place and located to suit the tile layout.

Ensure concrete or concrete masonry walls are fully cured and dry. Ensure new concrete has cured for 28 days or more.

If in doubt check for moisture content by hygrometer. Ensure moisture content is:
Concrete 75% relative humidity or less

3.4 CONFIRM LAYOUT

Before commencing work confirm the proposed layout of tiles, movement joints and other visual considerations of the finished work. Minimise in number of cut tiles and where possible, no cut tiles less than half size and only at the perimeter of the work.

3.5 TEMPERATURE

Unless otherwise specified by selected tiling installation product manufacturer, do not carry out tiling where the air temperature is below 5°C or substrate temperature is above 40°C.

3.6 EXTERNAL CONDITIONS

Ensure any areas of external tiling, waterproofing, floor levelling, grouting or concrete repair must be protected from hot windy conditions, rain and/or frosts during application.

3.7 LIGHTING

Light the tile work as closely and clearly as possible to that of the finished lighting, to ensure that differences in plane surface are highlighted during installation.

Installation/application

3.8 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.9 GENERALLY

Prepare surface and complete tiling installation in accordance with AS 3958.1 and if required complete interior waterproof membrane installation to sections 1-4 of WMAI Code of Practice for Internal Wet-area Membrane Systems as modified by NZBC E3/AS2.

Application - substrate preparation

3.10 PREPARE SUBSTRATES

Prepare backgrounds as described in AS 3958.1, Section 4. All surfaces to be structurally sound, dry, clean and free from movement, dirt, dust, oil, grease, wax and any other loose or contaminating materials. Concrete substrates should also be free of laitance, efflorescence, curing compounds and release agents.

Remove any projections or unevenness. Substrate material must be even and true with a maximum variation in plane of no greater than 4mm in every 2m, in accordance with AS 3958.1, section 4.

Suitably prepare backgrounds and substrates in accordance with the manufacturer's instructions of the tiling installation products for the relevant substrate type.

3.11 PRIME SUBSTRATE

If required, surfaces should be primed as per manufacturer's instructions for the selected products and substrate types. Refer to SELECTIONS.

Application - waterproofing

3.12 INSTALL WATERPROOFING MEMBRANE - INTERIOR WET AREAS

Install interior waterproofing membrane to manufacturers requirements and in accordance with NZBC E3/AS1 and sections 1-4 of WMAI Code of Practice for Internal Wet-area Membrane Systems as modified by NZBC E3/AS2.

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3.13 INSPECT - INTERIOR WET AREAS

Prior to application of tiling over, visually inspect waterproof membrane in accordance to WMAI Code of Practice for Internal Wet-area Membrane Systems, 4.0.5. Make good any damage that is identified in accordance with waterproof membrane manufacturer/supplier requirements.

Application -tiling

3.14 FITTING TILES

Setting out, cutting and fitting of tiles to be as described in AS 3958.1, section 5. If not shown on drawings, confirm set out, bond and pattern before installation.

- Ensure cut edges are smooth and installed without jagged or flaked edges.
- Always use whole tiles or if tiles have to be cut the largest portion of a cut tile possible.
- Maintain the heights of wall tile work in full courses to the nearest dimension.
- Within allowed tolerances, ensure corners of tiles are flush and level with corners of adjacent tiles.
- Keep joint lines, including mitres, straight and of an even width.
- Fully bed trim units, moulded or shaped pieces and other accessories with an appropriate bedding material.
- Fix accessories level, plumb and true to the designated projection at detailed locations and heights.

3.15 TILE FINISH AND JOINTS

Provide tile finish and joints, including tolerances, as described in AS 3958.1, 5.4.6. Joint widths to be suited to tile and to the manufacturer's instructions.

- Ensure finished surfaces are flat and true to a tolerance of ±4mm in 2 metres from the required plane.
- Lippage between adjacent tiles shall not exceed 2mm and where joint widths are less than 3mm wide lippage shall not exceed 1mm. For tiles ground flat, such as polished tiles, lippage shall not exceed 1.5mm.
- Ensure joint widths are consistent throughout the installation, measured at the tile face.
- Ensure joint alignment is consistent throughout the installation and to a tolerance of ±4mm in 2 metres from the detailed joint alignment.
- Clean surplus bedding material from joint spaces and tile surface.

3.16 ADHESIVE APPLICATION - THIN BED

Apply a thin bed of selected tile adhesive to the adhesive manufacturer's requirements, generally final bed thickness does not exceed 3mm. Install using the following methods:

Notched trowel method

- Adhesive application to be as described in AS 3958.1, 5.6.2(a) and to adhesive manufacturers requirements. Apply adhesive to substrate to a uniform thickness and rib using notched trowel. Select trowel square notch size to suit tile size and type, to achieve full coverage. Press tile firmly onto substrate and beat into place. Additional back buttering of tiles may also be required, usually required for tiles 400x400mm and larger.

Floating method

- Adhesive application to be as described in AS 3958.1, 5.6.2(b) and to adhesive manufacturers requirements. Apply adhesive to substrate to a uniform thickness. Apply tiles with a twisting or sliding action and tap back firmly into the floated bedding.

Buttering method

- Adhesive application to be as described in AS 3958.1, 5.6.2(c) and to adhesive manufacturers requirements. Apply adhesive evenly to the back of each tile with a flat edged trowel. Press tile firmly onto substrate and tap into place. This method is not suitable for mosaic tile installation.

Tiles in awkward locations

- The buttering method may be required, or fixing might be necessary to achieve full bedding, even though the notched trowel method is used generally.



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Ensure that the whole of the back of the tile is in good contact with the adhesive with no voids. Remove a tile periodically during installation to ensure correct coverage. Do not fix tiles over skinned adhesive.

3.17 APPLY GROUTING

Remove any spacer inserts, prepare joints and apply grout in accordance with manufacturers requirements and as described in AS 3958.1, 5.7 Grouting. Ensure finish is uniform in colour, smooth and without voids, pinholes or low spots.

Application - movement joints

3.18 FORM MOVEMENT AND EXPANSION JOINTS

Install movement joints in accordance with AS 3958.1, 5.4.5 Movement Joints. Joints to go right through the tile and bed to the background, maintaining any waterproofing.

Movement joints to walls to be a minimum of 6mm wide and to be located:

- Over existing movement joints
- At junction between different background materials
- Where tiling abuts other materials, including sanitary fixtures and windows/doors frames.
- At inter-storey height horizontally and at 3m to 4.5m apart vertically.
- At internal vertical corners in shower compartments.

3.19 MOVEMENT AND EXPANSION JOINTS, INSTALL COMPOUND/SEALANT FILL

Carefully clean out the joint, if required install bond breaker or backing rod to control width/depth ratio, and fill with compound/sealant placed by gun. After the correct interval, finish the surface off smooth, and flush on flat areas or concave in corners, to the compound/sealant manufacturer's requirements.

Cleaning

3.20 CLEAN TILES

Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave them completely clean and without blemish. Finally polish glazed tiles with a clean dry cloth.

Completion

3.21 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials - Tiles

4.1 WALL TILES

Location:	**Bathrooms generally- Floor and walls. Detail tiles to splashbacks.**
Supplier:	**To be confirmed**
Tile type:	**porcelain**
Tile colour:	**To be confirmed**
Tile size:	**1200mm x 600mm TBC**
Grout colour:	**To be confirmed**
Grout width:	**To be confirmed**
Sealant colour:	**supplier recommends applying "Aquamix grout release" prior to grouting for easy cleaning**

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4.2 WALL TILES

Location:	grooved/ texture tiles
Supplier:	**To be confirmed**
Tile type:	**ceramic textured tile**
Tile colour:	**To be confirmed**
Tile size:	**300x600mm TBC**
Grout colour:	**To be confirmed**
Grout width:	**To be confirmed**
Sealant colour:	**Apply "Aquamix grout release" prior to grouting for easy cleaning - to be confirmed for this product**

Materials - adhesive and grout

4.3 TILE ADHESIVE

Location:	**bathrooms & splashbacks.**
Substrate:	**concrete, fibre cement sheet, and plasterboard**
Primer:	**Check selected tile adhesive for primer requirements.**
Tile adhesive:	**Ardex X18 grey**

4.4 GROUT

Location:	**Generally**
Grout type:	**To Be confirmed**

Accessories



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6211MW MAPEI WALL TILING

1 GENERAL

This section relates to the supply and installation of MBP (NZ) Ltd internal and external wall tiling systems.

It includes:

- primers
- waterproofing membranes
- adhesives
- grouts
- sealants

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

PVC	Polyvinyl chloride
WMAI	Waterproofing Membrane Association (NZ) Incorporated
WPM	Waterproofing membrane

Documents

1.2 DOCUMENTS

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

AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
ISO 13007.1	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for adhesives
ISO 13007.3	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for grouts
NZS 4121	Design for access and mobility - Buildings and associated facilities
WMAI CoP	Code of Practice for Internal Wet Area Membrane Systems

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Mapei® Technical Manual - Tile Installer's Manual - Products for Ceramic Tiles (Sept 2016)
Mapei® Technical Manual - Cementitious adhesives for installing ceramic tiles and natural stone (Sept 2016)
Mapei® Technical Manual - Guide for the Installation of Ceramic Materials (Sept 2018)
Mapei® product Technical Data Sheets
BRANZ Appraisal 484 (2018) - Mapegum WPS, Mapelastic, Mapelastic Smart, and Mapelastic AquaDefense Wet Area Membranes - Amended 6 October 2022
BRANZ Appraisal 485 (2018) - Mapelastic Smart and External Waterproofing Membranes - Amended 6 October 2022
Mapei® product BPIR

Manufacturer/supplier contact details

Company:	MBP (NZ) Ltd.
Web:	www.mbpltd.co.nz
Email:	enquiries@mbpltd.co.nz
Telephone:	09 921 1994

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For Mapelastic AquaDefense, Mapelastic Smart and Mapegum WPS
10 years	For other Mapei ceramic tile and stone products (excluding Ultracare products)

- Provide this warranty on the manufacturer/supplier standard form. (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of purchase

1.) Limited Warranty

- MBP (NZ) LIMITED (MBP) warrants that when MAPEI products are prepared, applied and installed in accordance with the products' Technical Data Sheet (TDS) plans, specifications, as well as with the relevant provisions of the New Zealand building code, the products will have the properties and characteristics set out in the TDS and will retain these properties and characteristics for the duration of the Warranty Period listed under the relevant MAPEI product warranty.
- MBP warranties are limited to its products, and do not cover installation, workmanship or product mixing and preparation aspects. It is the sole responsibility of the applicator of the products to assess the substrate and the product/s' suitability for the intended application and final service provision of the product.
- A full list of all MBP product warranty terms and conditions is available upon request.

2.) No Responsibility

- The applicator of a MAPEI product is not an agent or employee of MBP or MAPEI and therefore neither MBP nor MAPEI takes no responsibility and assumes no liability for their workmanship or their use of the product in inappropriate circumstances or surfaces.

- Where expressly agreed with you in writing, MBP's representatives may supervise the preparation of MAPEI products to ensure that the preparation meets the products' specifications, on the basis that MAPEI does not take any responsibility for such supervision, as well as for:

- any failure to apply the product in accordance with any relevant specifications, standards, regulation or similar; and
- the use of the product in inappropriate circumstances or on inappropriate (or inappropriately prepared) surfaces; and
- the workmanship of the applicator of the product, even if our representatives are present at the time of application.
- Any guidance MBP's representatives provide during their supervision will not modify any express manufacturers' warranty or product warranty relating to the relevant MAPEI products.

- MBP provides product information, including this specification, on a non-reliance basis. All information and proposals are given in response to the information provided to us. MBP is not liable for the assessment of whether the products and methodologies are suitable for your particular circumstances or whether they meet the requirements of the NZ Building Code or other regulatory requirements. This assessment and decision whether or not to use the products must be made by you.

3.) Consumer Guarantees

- Nothing in this Specification is intended to modify or negate a consumer's rights and remedies under the Consumer Guarantees Act 1993.
- In the event of inconsistency between the provisions of this Specification, our Terms of Trade and the relevant manufacturers' or product warranty, the order of priority set out below will apply (with (a) having the highest priority):
- MBP's Terms of Trade;
- Manufacturer's or product warranty;
- This Specification.


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See also our terms of trade.

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/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 QUALIFICATIONS WORKERS - MANUFACTURER / SUPPLIER REQUIREMENTS

Waterproofing applicators to be approved by MBP (NZ) Ltd. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

Compliance information

1.9 COMPLIANCE - BRANZ APPRAISAL 484

Mapegum WPS, Mapelastic AquaDefense and Mapelastic Smart internal wet area membranes have been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 484.

1.10 COMPLIANCE - BRANZ APPRAISAL 485

Mapelastic Smart external wet area membrane has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 485.

1.11 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicator approval certificate from the manufacturer / importer / distributor
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents

2 PRODUCTS

Levelling mortar

2.1 NIVORAPID

Cement-based, thixotropic levelling mortar for thicknesses from 3mm to 20mm.

2.2 NIVORAPID & LATEX PLUS

Cement-based, thixotropic levelling mortar with flexible polymer water dispersion for thicknesses from 3mm to 20mm.

2.3 PLANITOP SMOOTH & REPAIR R4 ZERO

Cement-based, fibre reinforced levelling mortar for thicknesses from 3mm to 40mm.

2.4 PLANITOP FAST 330

Cement-based, fibre-reinforced levelling mortar with synthetic resin additives, for thicknesses from 3 to 30mm.

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Primers

2.5 PRIMER 3296
Acrylic polymer based primer in water dispersion for porous substrates.

2.6 ECO PRIM T PLUS
Acrylic resin primer in water dispersion.

2.7 ECO PRIM GRIP PLUS
One component synthetic resin primer in water dispersion.

2.8 PLANISEAL MR
Two component water based epoxy primer/barrier hydrostatic resistant coating.

Waterproofing membrane

2.9 MAPEGUM WPS
One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Grey colour.

2.10 MAPELASTIC AQUADEFENSE
One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Light blue colour.

2.11 MAPELASTIC SMART
Two component flexible cementitious liquid waterproofing membrane.

Adhesives

2.12 GRANIRAPID
Two component, cementitious adhesive with synthetic rubber latex. Classified C2FS1 to ISO 13007.1.

2.13 KERAQUICK MAXI S1
Cementitious adhesive. Suitable for application in layers up to 15mm thick. Classified C2FTS1 to ISO 13007.1.

2.14 KERAQUICK MAXI S1 & LATEX PLUS
Cementitious adhesive with flexible polymer water dispersion. Suitable for application in layers up to 15mm thick. Classified C2FS2 to ISO 13007.1.

2.15 KERABOND PLUS & ISOLASTIC
Cementitious adhesive with elastic polymer water dispersion. Classified C2TS2 to ISO 13007.1.

2.16 KERALASTIC T
Two component, polyurethane adhesive. Classified R2T to ISO 13007.1.

2.17 KERAFLEX MAXI S1 ZERO
Cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.18 KERAPOXY ADHESIVE
Two component epoxy adhesive. Classified R2T to ISO 13007.1.

2.19 ULTRAMASTIC III
Pre-mixed acrylic resin paste adhesive. Classified D2TE to ISO 13007.1.

2.20 ADESILEX P10 & ISOLASTIC FOR MOSAICS
Two component cementitious adhesive with elastic polymer water dispersion. Classified C2TES1 to ISO 13007.1.

2.21 ULTRALITE S1 FLEX ZERO
One component cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

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2.22 ULTRALITE S2 T FLEX

One component thixotropic cement and synthetic resin based adhesive. Classified C2ES2 to ISO 13007.1.

Grouts

2.23 ULTRACOLOR PLUS

Cement-based, polymer-modified grout for joints from 2mm to 10mm, with water repellent DropEffect and anti-mould with BioBlock technologies.

2.24 KERAPOXY

Two-component, chemical resistant epoxy grout for joints 3mm to 10mm wide. Classified RG to ISO 13007.3.

2.25 KERAPOXY EASY DESIGN

Two-component, chemical resistant epoxy grout with anti-mould BioBlock technology for joints 3mm to 15mm wide. Classified RG to ISO 13007.3.

Components - waterproofing

2.26 MAPEBAND SA TAPE

Alkali resistant butyl self-adhesive waterproofing tape.

2.27 MAPEBAND SA GASKET

Alkali resistant butyl self-adhesive waterproofing gasket, 370mm x 370mm square.

2.28 MAPEBAND EASY TAPE

Alkali resistant rubber waterproofing tape with a non-woven fabric face and back.

2.29 MAPEBAND EASY GASKET

Alkali resistant rubber waterproofing gasket with a non-woven fabric face and back, available 200mm x 200mm and 400mm x 400mm square.

2.30 MAPENET 150 REINFORCING MESH

Alkali-resistant fiberglass reinforcing mesh.

2.31 MAPETEX SEL REINFORCING FABRIC

Alkali resistant non-woven polypropylene reinforcing and anti-fracture fabric.

Components - cleaning

2.32 ULTRACARE KERANET EASY

Acid-based, pre-mixed general tile and grout cleaner.

2.33 ULTRACARE KERAPOXY CLEANER

Concentrated liquid detergent for removing epoxy grout.

Accessories

2.34 TRIMS

Tile trim, edge strips, floor finish divider strips and weather bars. Available in aluminium, brass and stainless steel. Refer to SELECTIONS.

2.35 MOVEMENT JOINT - ANGLE

Metal or PVC angle. Refer to SELECTIONS.

2.36 MOVEMENT JOINT - INSERT

Polyurethane or neoprene insert. Refer to SELECTIONS.

2.37 MOVEMENT JOINT - SILICONE SEALANT

One part, flexible silicone sealant, Mapesil AC for acetic cure or Mapesil LM for neutral cure. Refer to SELECTIONS.

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2.38 MOVEMENT JOINT - POLYURETHANE SEALANT

Mapeflex PU40, one part flexible thixotropic polyurethane based sealant. Refer to SELECTIONS.

2.39 MOVEMENT JOINT - BACKING ROD

Polyethylene foam (PEF) backing rod. Refer to SELECTIONS.

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.

3.3 PRE-INSTALLATION REQUIREMENTS

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

Moisture content concrete:	75% maximum relative humidity, minimum 28 day cured

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 APPLICATION GENERALLY

To AS 3958.1, Mapei technical data sheets, and to WMAI CoP recommendations. Surfaces to be clean, sound and free of dust, oil, grease, curing compounds or release agents.

3.6 APPLY PRIMER

Brush or roll primer over surface.

3.7 APPLY LEVELLING MORTAR

Mix levelling mortar to Mapei instructions. Trowel onto prepared substrate to required thickness and fall, where required:

3.8 APPLY WATERPROOFING MEMBRANE

Reinforce corners and penetrations with waterproofing tape. Mix waterproofing components to Mapei instructions. Trowel, brush or roll on liquid waterproofing membrane over prepared surface. Apply two coats to achieve required minimum total dry film thickness to Mapei product technical data sheet.

3.9 SETTING OUT

Confirm tile layout and bond pattern. Cut tiles to tile manufacturer's recommendations. Provide joint widths to the tile manufacturer's recommendations.

3.10 MOVEMENT JOINTS GENERAL

Provide movement joints to AS 3958.1:

Depth:	Movement joints to go right through the tile and bed to the background.
Width:	6mm
Locations:	At junctions with floors, columns, nibs, and similar. Around sanitary fixtures. Around fixtures interrupting the tile surface (e.g. at junctions with joinery fixtures, window/door frames, and built in cupboards). At changes in substrate.
Large areas:	Provide vertical joints at not less than 3.5 metres spacing along the length of a wall.

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Provide horizontal joints at each storey rise in the height of a wall.
Provide joints over existing joints in the substrate.

3.11 ADHESIVE APPLICATION GENERAL

For general wall tiling, use a 6mm x 6mm x 6mm notched trowel.

For mosaics, use a 4.5mm x 4.5mm x 4.5mm notched trowel.

3.12 APPLY ADHESIVE

Mix adhesive to Mapei instructions. Spread adhesive over prepared surface with a notched trowel to Mapei recommended bed thickness.

3.13 INSTALL TRIM

Press trim into wet adhesive.

3.14 INSTALL MOVEMENT JOINT ANGLE

Press angle into wet adhesive.

3.15 LAY TILES

Firmly press tiles into the adhesive bed for full contact between tile and adhesive with no voids. Butter the back of tiles with ribbed or keyed underside before laying into adhesive bed by spreading a thin layer of adhesive on the back of the tile. Remove a tile periodically during installation to check for correct adhesive coverage. Do not fix tiles over skinned adhesive. Remove surplus adhesive from tile surfaces before adhesive sets.

3.16 APPLY GROUT

Mix grout to Mapei instructions. Work grout into joints with a rubber trowel to AS 3958.1. Allow the grout to firm up in the joint before wiping tile surface with a damp, dense sponge.

3.17 INSTALL MOVEMENT JOINT INSERT

Place insert between movement joint angles.

3.18 INSTALL MOVEMENT JOINT BACKING ROD & SEALANT

Place PEF backing rod into movement gap. Apply a continuous bead of silicone sealant over PEF backing rod.

Completion & Commissioning

3.19 COMPLETION MATTERS

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

4 SELECTIONS

For further details on selections go to www.mbpltd.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 BRICK SLIPS/TILES

Location:	**entry wall/SHELVING TBC**
Supplier:	**Viblock**
Type:	**Vi block Brick Slips Slim 450 size: 450(l)x52(h) 10mm (appox. depth)**
Bond pattern:	**stacked**

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Tiled Internal Walls

4.2 MAPEI INTERNAL WALL TILING SYSTEM OVER FIBRE CEMENT SHEET

Location:	**entry wall.**
Supplier:	**MBP (NZ) Ltd.**
Substrate:	**Fibre cement sheet (villaboard)**
Levelling mortar:	**Nivorapid & Latex Plus**
Primer:	**Primer 3296**
Adhesive:	**Kerabond Plus mixed 100% with Isolastic or for rapid set Keraquick Maxi S1 mixed 100% with Latex Plus**
Grout:	**Ultracolor Plus**
Grout colour:	**TBA**

Tiled External Walls

4.3 MAPEI EXTERNAL WALL TILING SYSTEM OVER MASONRY

Location:	**REFER DETAILING OF TOP OF LANDSCAPE WALL - CONTINIUATION OF GARAGE WALL**
Supplier:	**MBP (NZ) Ltd.**
Substrate:	**Masonry**
Levelling mortar:	**Planitop Fast 330**
Primer:	**Eco Prim Grip Plus**
WPM:	**Mapelastic Smart**
Adhesive:	**Kerabond Plus mixed 100% with Isolastic or for rapid set Keraquick Maxi S1 mixed 100% with Latex Plus**
Grout:	**Ultracolor Plus**
Grout colour:	**TBA to match cladding elsewhere**

Components

4.4 MAPEI WATERPROOFING DETAILING & REINFORCEMENT

Location:	Exterior Masonry
Supplier:	MBP (NZ) Ltd.
Edges/expansion joints:	Mapeband Easy
Penetrations:	Mapeband Easy and Gaskets
Reinforcement:	Mapenet 150 imbedded in the 1st 1mm coat of the Mapelastic Smart

Accessories

4.5 MOVEMENT JOINT - BACKING ROD & SEALANT

Location:	**Interior and Exterior**
Type:	**Mapesil LM**
Diameter:	
Sealant:	
Sealant colour:	**TBA**

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6221 FLOOR TILING SYSTEMS

1 GENERAL

This section relates to the supply and installation of interior and exterior floor tiling systems. It includes:

- Tiles
- Tile adhesives and grouts
- All relevant underlays, components and accessories necessary to complete installation

1.1 RELATED WORK

Refer to 6211 WALL TILING for wall tiling systems.

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:

WMAI	Waterproofing Membrane Association NZ Inc

Documents

1.3 DOCUMENTS

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

NZBC D1/AS1	Access routes
NZBC E2/AS1	External moisture
NZBC E3/AS1	Internal moisture
NZBC E3/AS2	Internal moisture
AS/NZS 2908.2	Cellulose-cement products - Flat sheets
AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
NZS 4121	Design for access and mobility - Buildings and associated facilities
AS/NZS 4671	Steel reinforcing materials
AS/NZS 4858	Wet area membranes
AS ISO 13007.1	Ceramic tiles - Grouts and adhesives: Terms, definitions and specifications for adhesives
AS ISO 13007.3	Ceramic tiles - Grouts and adhesives: Terms, definitions and specifications for grouts
BS EN 12004.1	Adhesives for ceramic tiles. Requirements, assessment and verification of constancy of performance, classification and marking
BS EN 13888.1	Grouts for ceramic tiles. Requirements, classification, designation, marking and labelling.
WMAI	Code of Practice for Internal Wet-area Membrane Systems

Health & Safety at Work Act: 2015

1.4 MANUFACTURER/ SUPPLIER DOCUMENTS

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

~

Copies of the above literature are available from ~

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

Warranties - tiling

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

~ years:	For ~

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- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT).
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years: For installation of tiling systems

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT).
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Warranties - waterproofing

1.7 WARRANTY - MANUFACTURER/SUPPLIER - FOR WATERPROOFING SYSTEMS

Provide a material manufacturer/supplier warranty:

~ years For waterproofing system

- Provide this warranty on manufacturer/supplier standard warranty form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.8 WARRANTY - INSTALLER/APPLICATOR - FOR WATERPROOFING SYSTEMS

Provide an installer/applicator warranty:

5 years: For installation of waterproofing systems

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT).
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.9 QUALIFICATIONS - TILING SYSTEMS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.10 QUALIFICATIONS - WATERPROOFING SYSTEMS

Workers to be approved / accredited / registered / licensed / certified by manufacturer / supplier. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.11 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.

1.12 NO SUBSTITUTIONS

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

1.13 HEALTH & SAFETY - SILICA DUST

Comply with Health & Safety at Work Act:2015 and take all necessary precautions as recommended in WorkSafe guidelines for Respirable Crystalline Silica (RCS).

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Compliance information

1.14 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Manufacturer / supplier warranty -waterproofing membrane
- Installer / applicator warranty -waterproofing membrane
- Producer Statement - Construction (PS3) from the waterproof membrane applicator / installer
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.15 INTERNAL / EXTERNAL MOISTURE - WATERPROOFING SYSTEMS

Wet area membranes under tiled areas to comply with NZBC E2/AS1 for exterior applications, NZBC E3/AS1 & sections 1-4 of WMAI Code of Practice for Code of Practice for Internal Wet-area Membrane Systems as modified by E3/AS2 for interior applications.

Performance - Slip resistance

1.16 TEST - SLIP RESISTANCE

Test walking surfaces for slip resistance, refer to SELECTIONS for test condition.

2 PRODUCTS

Materials

2.1 TILES

Refer to SELECTIONS.

Materials - preparation & underlays

2.2 FIBRE CEMENT TILE UNDERLAY

Minimum 6mm thick sheet of Portland cement, sand, fine cellulose fibre and water, with a smooth finish. Underlays to AS/NZS 2908.2 Cellulose-cement products Part 2: Flat Sheets.

Materials - waterproofing

2.3 WATERPROOFING MEMBRANE - INTERIOR

Proprietary interior wet area waterproofing system to AS/NZS 4858. Refer to SELECTIONS.

Materials - adhesive and grout

2.4 TILE ADHESIVE

Tile adhesive to suit particular location/use, and if required primer. To AS ISO 13007.1 and BS EN 12004.1. Refer to SELECTIONS.

2.5 PROPRIETARY GROUT

Proprietary grout to suit particular location/use. To AS ISO 13007.3 and BS EN 13888.1. Refer to SELECTIONS.

Accessories

2.6 MOVEMENT JOINT SEALANT

Neutral cured or acid cured sealant to AS 3958.1, 2.7.5 Sealants. Refer to SELECTIONS.

2.7 UNDERFLOOR HEATING

Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for underfloor heating section for electric undertile heating system.

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3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE AND HANDLING

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

Inspect tiles on delivery to ensure that they are as specified, from the same batch, of a consistent colour and pattern and sufficient to complete the work. Reject tiles that vary widely in colour or pattern and any tiles that are damaged.

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 PRE-INSTALLATION REQUIREMENTS

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

Ensure that the substrate, with the preparation called for in this section, are of the quality necessary to allow tiling of the required standard and that all services and accessories are in place and located to suit the tile layout.

Ensure concrete floors are fully cured and dry. New concrete must have cured for 28 days or more.

If in doubt check for moisture content by hygrometer. Ensure moisture content is:
Concrete 75% relative humidity or less

3.4 CONFIRM LAYOUT

Before commencing work confirm the proposed layout of tiles and expansion joints and other visual considerations of the finished work. Minimise in number of cut tiles and where possible, no cut tiles less than half size and only at the perimeter of the work.

3.5 TEMPERATURE

Unless otherwise specified by selected tiling product manufacturer, do not carry out tiling where the air temperature is below 5°C or substrate temperature is above 40°C.

3.6 EXTERNAL CONDITIONS

Ensure any areas of external tiling, waterproofing, floor levelling, grouting or concrete repair must be protected from hot windy conditions, rain and/or frosts during application.

3.7 LIGHTING

Light the tile work as closely and clearly as possible to that of the finished lighting, to ensure that differences in plane surface are highlighted during installation.

Installation/application

3.8 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.9 GENERALLY

Prepare surface and complete tiling installation in accordance with AS 3958.1 and if required complete interior waterproof membrane installation to sections 1-4 of WMAI Code of Practice for Interior Wet Area Membrane Systems as modified by E3/AS2 or exterior waterproofing to NZBC E2/AS1.

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Application - substrate preparation

3.10 PREPARE SUBSTRATES

Prepare backgrounds as described in AS 3958.1, Section 4. All surfaces to be structurally sound, dry, clean and free from movement, dirt, dust, oil, grease, wax and any other loose or contaminating materials. Concrete substrates should also be free of laitance, efflorescence, curing compounds and release agents. Remove any projections or unevenness.

Concrete floor substrates, after any levelling compounds or screeds applied, must be even and true with a maximum variation in accordance with AS 3958.1 Table 4.3:

- For adhesive fixing, thin bed 5mm in every 3 m
- For adhesive fixing, thick bed 10mm in every 3 m
- For mortar cement fixing, 5mm in every 3m

Suitably prepare backgrounds and substrates in accordance with the manufacturer's instructions of the tiling installation products for the relevant substrate type.

3.11 PRIME SUBSTRATES

Surfaces should be primed as per manufacturer's instructions for the selected products and substrate types. Refer to SELECTIONS.

3.12 FIBRE CEMENT TILE UNDERLAY TO TIMBER FLOORS

Cover timber floors with selected fibre cement sheet tile underlay on the flooring and across the joists, glued and nailed with relief joints, to the overlay manufacturer's requirements.

Application - underlays

3.13 INSTALL WATERPROOFING MEMBRANE - INTERIOR WET AREAS

Install waterproofing membrane to manufacturers requirements and in accordance with NZBC E3/AS1 and sections 1-4 of WMAI Code of Practice for Interior Wet Area Membrane Systems as modified by E3/AS2.

3.14 INSPECT & FLOOD TEST - INTERIOR WATERPROOF MEMBRANE

Prior to application of tiling over, visually inspect and flood test waterproof membrane system, in accordance to WMAI Code of Practice for Interior Wet Area Membrane Systems, 4.0.5. Make good any damage that is identified in accordance with waterproof membrane manufacturer/supplier requirements.

Application - Undertile heating

3.15 INSTALL UNDERTILE FLOOR HEATING

Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for electric undertile heating system.

Application –tiling

3.16 FITTING TILES

Setting out, cutting and fitting of tiles to be as described in AS 3958.1. If not shown on drawings, confirm set out, bond and pattern before installation.

- Ensure cut edges are smooth and installed without jagged or flaked edges.
- Always use whole tiles or if tiles have to be cut the largest portion of a cut tile possible.
- Maintain the heights of wall tile work in full courses to the nearest dimension.
- Within allowed tolerances, ensure corners of tiles are flush and level with corners of adjacent tiles.
- Keep joint lines, including mitres, straight and of an even width.
- Fully bed trim units, moulded or shaped pieces and other accessories with an appropriate bedding material.
- Fix accessories level, plumb and true to the designated projection at detailed locations and heights.

3.17 TILE FINISH AND JOINTS

Provide tile finish and joints, including tolerances, as described in AS 3958.1, 5.4.6. Joint widths to be suited to tile and to the manufacturer's instructions.

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- Ensure finished surfaces are flat and true to a tolerance of ±4mm in 2 metres from the required plane.
- Lippage between adjacent tiles shall not exceed 2mm and where joint widths are less than 3mm wide lippage shall not exceed 1mm. For tiles ground flat, such as polished tiles, lippage shall not exceed 1.5mm.
- Ensure joint widths are consistent throughout the installation, measured at the tile face.
- Ensure joint alignment is consistent throughout the installation and to a tolerance of ±4mm in 2 metres from the detailed joint alignment.
- Clean surplus bedding material from joint spaces and tile surface.

3.18 ADHESIVE APPLICATION - THIN BED

Apply a thin bed of selected tile adhesive to the adhesive manufacturer's requirements, generally final bed thickness does not exceed 3mm. Install using the following methods:

Notched trowel method

- Adhesive application to be as described in AS 3958.1, 5.6.2(a) and to adhesive manufacturers requirements. Apply adhesive to substrate to a uniform thickness and rib using notched trowel. Select trowel square notch size to suit tile size and type, to achieve full coverage. Press tile firmly onto substrate and beat into place. Additional back buttering of tiles may also be required, usually required for tiles 400x400mm and larger.

Floating method

- Adhesive application to be as described in AS 3958.1, 5.6.2(b) and to adhesive manufacturers requirements. Apply adhesive to substrate to a uniform thickness. Apply tiles with a twisting or sliding action and tap back firmly into the floated bedding.

Buttering method

- Adhesive application to be as described in AS 3958.1, 5.6.2(c) and to adhesive manufacturers requirements. Apply adhesive evenly to the back of each tile with a flat edged trowel. Press tile firmly onto substrate and tap into place. This method is not suitable for mosaic tile installation.

Tiles in awkward locations

- The buttering method may be required, or fixing might be necessary to achieve full bedding, even though the notched trowel method is used generally.

Ensure that the whole of the back of the tile is in good contact with the adhesive with no voids. Remove a tile periodically during installation to ensure correct coverage. Do not fix tiles over skinned adhesive

3.19 APPLY GROUTING

Remove spacer inserts, prepare joint, apply and finish off grout to the manufacturer's requirements and as described in AS 3958.1, 5.7 Grouting. Ensure grout finish is uniform in colour, smooth and without voids, pinholes or low spots.

Application - movement joints

3.20 FORM MOVEMENT AND EXPANSION JOINTS

Install movement joints in accordance with AS 3958.1, 5.4.5 Movement Joints. Joints to go right through the tile and bed to the background, maintaining any waterproofing.

Joints, except those with reinforced edges, subject to traffic heavier than light pedestrian should not be wider than 10mm. Movement joints to floor to be located at:

- Over existing movement joints
- Intermediate movement joints to be provided to internal floors at approximately 4.5m centres where any floor dimension exceeds 9m or 6m if subjected to direct sunlight.
- Intermediate movement joints to be provided to external floors at approximately 4.5m centres where any floor dimension exceeds 4.5m.
- At perimeter where abutting perimeter walls, columns, curbs and steps. Also, where there is a change of conditions such as under-floor heating, substrate type or tile type.

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3.21 MOVEMENT AND EXPANSION JOINTS, INSTALL COMPOUND/SEALANT FILL

Carefully clean out the joint, if required install bond breaker or backing rod to control width/depth ratio, and fill with compound/sealant placed by gun. After the correct interval, finish the surface off smooth, and flush on flat areas or concave in corners, to the compound/sealant manufacturer's requirements.

Cleaning

3.22 CLEAN TILES

Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave them completely clean and without blemish. Finally polish glazed tiles with a clean dry cloth.

Completion

3.23 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials - Tiles

4.1 FLOOR TILES

Location:	**Bathrooms generally- Floor and walls. Detail tiles to splashbacks.**
Supplier:	**tbc**
Tile type:	**porcelain**
Tile colour:	**tbc**
Tile size:	**large format 1200x1200mm TBC**
Grout width:	**To be confirmed**
Grout colour:	**To be confirmed**
Sealant colour:	**supplier recommends applying "Aquamix grout release" prior to grouting for easy cleaning**

Materials - preparation & underlays

Materials - adhesive and grout

4.2 TILE ADHESIVE

Location:	**Bathroom floors generally**
Substrate:	**Concrete and Tilemax shower substrate**
Primer:	**check selected tile adhesive for primer requirements**
Tile adhesive:	**Ardex X18 grey**

4.3 GROUT

Location:	**Check selected tile adhesive for primer requirements**
Type:	**To be comfirmed**

Accessories



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6221A ARDEX FLOOR TILING SOLUTIONS

1 GENERAL

This section relates to the preparation of floor and wall surfaces for tiling systems with ARDEX Tiling Solutions:

- Acoustic underlays
- Levelling screeds
- Primers
- Undertile heating
- Waterproofing systems
- Adhesives
- Sealants
- Grouts

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:

DTA	DTA New Zealand
WMAI	Waterproofing Membrane Association (NZ) Incorporated

Documents

1.3 DOCUMENTS

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

NZBC D1/AS1	Access routes
NZBC E3/AS1-AS2	Internal moisture
AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
AS/NZS 4671	Steel reinforcing materials
WMAI	Code of Practice for Internal Wet Area Membrane Systems

1.4 MANUFACTURER'S DOCUMENTS

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

ARDEX Tiling Solutions
BRANZ Appraisal 472 - ARDEX Undertile Internal Liquid Waterproofing Membranes
BRANZ Appraisal 473 - ARDEX Undertile External Liquid Waterproofing Membranes
BRANZ Appraisal 727 -ARDEX Undertile Sheet Membrane (WPM 750 and WPM 1000)

DTA New Zealand - Architectural Trims catalogue. Refer to www.dtanz.co.nz

Copies of the above literature are available from ARDEX

Web:	www.ardex.co.nz
Email:	info@ardexnz.com
Telephone:	0800 227339

Warranties - waterproofing

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For materials

- Provide this warranty on the ARDEX standard form (if not available then use the standard

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form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

15 years For execution

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Warranties - tiling

1.7 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years For materials

- Provide this warranty on the ARDEX standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.8 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years For execution

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.9 NO SUBSTITUTIONS

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

1.10 QUALIFICATIONS

Waterproofing work to be carried out by an ARDEX approved waterproofing applicator.

Tiling to be carried out by competent workers experienced with the materials and in the techniques specified.

1.11 DEFLECTION CRITERIA FOR SUSPENDED FLOORS

Check that the floor is rigid enough for the tiling. Deflection of suspended floors should not exceed 1/360th of the span under dead load and live load.

1.12 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.

Web: www.ardex.co.nz
Email: info@ardexnz.com
Telephone: 0800 2 ARDEX (27339)

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Performance

1.13 QUALITY ASSURANCE

Follow and complete ARDEX QA documents and submit to ARDEX on completion with request for warranty.

Performance - Slip resistance

1.14 SLIP RESISTANCE - SURFACES EXEMPT FROM TESTING

Walking surfaces comply with NZBC D1/AS1, Table 2 for slip resistance requirements and are exempt from testing.

1.15 SLIP RESISTANCE - PREVIOUSLY TESTED SURFACE

The following walking surfaces have previously been tested for slip resistance, and comply with NZBC D1/AS1 requirements.

~

1.16 TEST - SLIP RESISTANCE

Test walking surfaces for slip resistance, refer to SELECTIONS for test condition.

2 PRODUCTS

Materials -

2.1 ARDEX LQ 92

ARDEX LQ 92 is a cement-based underlay for levelling uneven concrete floors prior to tiling. When mixed with water, LQ 92 provides a smooth, pourable, free-flowing and self-smoothing material that can be applied to a thickness of 25mm down to a feather edge.

2.2 ARDEX MULTIPRIME - POROUS SUBSTRATES

ARDEX Multiprime is an internal or external primer suitable for porous substrates. Suitable for concrete, wood and fibre-cement sheet substrates. Alternatively. Contact ARDEX for recommendations.

2.3 ARDEX P9 - NON-POROUS SUBSTRATES

ARDEX P9 is a single-part, water-based primer for non-porous substrates. Contact ARDEX for recommendations.

Materials - Waterproofing

2.4 INTERNAL WATERPROOFING SYSTEM

Refer to SELECTIONS for option.

- ARDEX Superflex WPM 001, is a BRANZ Appraised, pre-mixed liquid waterproofing membrane specifically designed for use under tiles.
- ARDEX WPM 002 is a BRANZ Appraised, two-part liquid waterproofing membrane specifically designed for use under tiles especially in external applications. Suitable for permanent immersion.
- ARDEX WPM 750 is a BRANZ Appraised sheet waterproofing membrane for internal use under tiles.
- ARDEX WPM 155 is a BRANZ Appraised, rapid-drying, liquid waterproofing membrane for internal or external use.

Materials - Tile adhesives

2.5 ARDEX X 18

A superior, white polymer-fortified, cement-based wall and floor tile adhesive that has been specially formulated with mastic type properties. ARDEX X 18 is suitable for use with a wide range of substrates and tile types including permanent immersion and swimming pools.

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Materials - Sealants - grouts

2.6 ARDEX SEALANTS

ARDEX SE acetic cure silicone is ideal for movement joints within a tiling system.

ARDEX ST neutral cure silicone is ideal for bond breakers or movement joints within a tiling system. Sealants and back-up materials as described in clause 2.7 of AS 3958.1 and clause 2.6 of AS 3740. Colours match some grout colours

2.7 ARDEX GROUTS

ARDEX FG 8 cement-based grout for joints 1mm to 8mm wide. Ideal for wet areas when mixed with ARDEX Grout Booster additive.

ARDEX FS DD cement-based, fine sanded grout for joints 1mm - 4mm.
ARDEX EG 15 epoxy grout with excellent stain and chemical resistance for joints 1.5mm to 15mm wide.

2.8 ARDEX GROUT BOOSTER

A water-based, synthetic polymer grout additive formulated for use with cement-based grouts for improved adhesion strength, flexibility and abrasion resistance.

Undertile heating

2.9 UNDERTILE HEATING

Refer to appropriate underfloor heating section for electric heating systems under tiles.

Components

2.10 STRIPS AND WEATHERBARS

Unless otherwise specified DTA tile trim, edge strips, floor finish divider strips and weather bars shall be aluminium.

2.11 EXPANSION JOINT, METAL AND RUBBER

DTA expansion joints available in Aluminium, Brass and Stainless Steel with either a polyurethane or Neoprene insert. All come in a large range of sizes and should be selected based on the flooring material used. The standard widths of expansion joint are 6mm and 10mm, larger custom sizes can be made to suit the requirements of each job.

2.12 EXPANSION JOINT, METAL AND COMPOUND

DTA expansion joints available in Aluminium, Brass and Stainless Steel with either a polyurethane or Neoprene insert. All come in a large range of sizes and should be selected based on the flooring material used. The standard widths of expansion joint are 6mm and 10mm, larger custom sizes can be made to suit the requirements of each job.

2.13 EXPANSION JOINT, PLASTIC

DTA PVC movement joints are available in 3 sizes; 8mm, 10mm and 13mm. They have a flexible central section and are designed for external corners with a tiling system where PVC is specified.

3 EXECUTION

General

3.1 HANDLING AND STORAGE

Take delivery of packets of tiles undamaged and dry. Handle tiles with care to avoid chipping, soiling and damage. Store on hard level standings in non-traffic, non-work areas that are enclosed, clean and dry.

3.2 CHECK TILES

Check tiles to ensure that they are as specified, from the same batch, of a consistent colour and pattern and sufficient to complete the work. Reject tiles that vary widely in colour or pattern. Reject tiles that are damaged.

3.3 CONFIRM LAYOUT

Before commencing work confirm the proposed layout of tiles and expansion joints and other visual considerations of the finished work.

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3.4 SETTING OUT

Before commencing the setting out confirm the number and location of cut tiles. Minimise in number with no cut tiles less than half size and only at the perimeter of the work.

3.5 PREPARATION OF BACKGROUNDS

Prepare backgrounds in accordance with AS 3958.1, section 4 and to the manufacturer's instructions for the selected substrate. See also the ARDEX Flooring manual by visiting www.ardex.co.nz/

Conditions

3.6 SERVICES AND ACCESSORIES

Ensure that all services and accessories are in place and located to suit the tile layout, and that the substrate, background and adjoining surfaces (with the preparation called for in this section) are of the quality necessary to allow tiling of the required standard.

3.7 DO NOT START

Do not start laying tiles until concrete floors are cured, moisture content of floors is such that shrinkage is complete, thermal movement has been accommodated and the levels and surface finish will allow for tile laying of the required standard.

3.8 SUBSTRATE TEMPERATURE

Do not carry out tiling where the substrate temperature is below 5°C or above 40°C.

3.9 MOISTURE CONTENT

Ensure the floor is dry and if in doubt check for moisture content by hygrometer. Do not proceed with tiling work until readings for the whole area show 75% relative humidity or less. Alternatively, see ARDEX moisture barriers.

Application

3.10 APPLICATION GENERALLY

Prepare backgrounds as described in AS 3958.1, Section 4. Suitably prepare backgrounds and substrates to the manufacturer's instructions to receive the bedded finish. Remove all dirt, dust, grease, oil, loose particles and any other form of contamination or deleterious material. Ensure that substrates are sound and dry.

Installation to be in accordance with AS 3958.1, Section 5, including setting out, fitting, movement joints, sealants, tile finish and joints, and grouting.

3.11 BACKGROUND MATERIALS

Ensure that the installation of background materials and substrate materials meets relevant standards and the manufacturer's instructions. Inspect background and substrate materials for any conditions unsuitable for tiling over. Do not commence work until the affected area is rectified. Confirm any specific preparation required for the adhesive being used.

Waterproofing

3.12 WET AREA WATERPROOFING

Provide waterproofing to wet areas in accordance with NZBC E3/AS1-AS2 and WMAI - Code of Practice for Internal Wet Area Membrane Systems

Material:	Refer to SELECTIONS
Installation:	Supply and install waterproofing membrane to the manufacturer's recommendations by an approved ARDEX installer.

Undertile heating

3.13 INSTALL UNDERTILE HEATING

Refer to appropriate underfloor heating section for electric heating system under tiles.

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Tiling

3.14 ADHESIVE APPLICATION METHODS

Ensure that the whole of the back of the tile is in good contact with the adhesive with no voids. Remove a tile periodically during installation to ensure correct coverage. Do not fix tiles over skinned adhesive.

Notched trowel method

- Adhesive application to be as described in AS 3958.1, clause 5.6.2(a). Notched trowel sizes shall be 4.5mm x 4.5mm x 4.5mm (mosaics) 6mm x 6mm x 6mm, 10mm x 10mm x 10mm, 12mm x 12mm x 12mm. Use an appropriately notched trowel to achieve full coverage.

Buttering method

- Adhesive application to be as described in AS 3958.1, Clause 5.6.2(c).

Tiles in awkward locations

- The buttering method may be required, or fixing might be necessary to achieve full bedding, even though the notched trowel method is used generally.

3.15 SETTING OUT

Setting out, cutting and fitting of tiles to be as described in AS 3958.1, clauses 5.4.2 and 5.4.3. Set out tiling as shown on the drawings. Confirm bond and pattern before installing. Provide even and correct falls to floor tiles where required, including falls to floor wastes. Ensure that a level finish is provided at wall lines. Where falls are not required ensure that the tiles are laid level.

3.16 TILE FINISH AND JOINTS

Provide tile finish and joints, including tolerances, as described in AS 3958.1, clause 5.4.6. Joint widths to be suited to tile and to the manufacturer's instructions.

3.17 MOVEMENT JOINTS

Provide movement joints as described in AS 3958.1, clause 5.4.5 and AS 3740, clause 3.13.7.

Depth:	Movement joints to go right through the tile and bed to the background.
Width:	Minimum 6mm.
Corner locations:	In wall tiling at internal vertical corners; in floor tiling at walls, columns, nibs, hobs and similar.
Interruptions:	Around sanitary fixtures, around fixtures interrupting the tile surface; at junctions with joinery fixtures, including window and door frames and built in cupboards; at changes in substrate or background.
Large areas:	In floor tiling provide joints at not less than 4.5 metres spacing in both directions and 3.5 metres externally. In wall tiling provide vertical joints at not less than 3.5 metres spacing along the length of a wall. In wall tiling, provide horizontal joints at each storey rise in the height of a wall. Over all existing expansion joints.

3.18 GROUTING

Grout tiling to AS 3958.1, clause 5.7.

3.19 SILICONE

Apply ARDEX SE acetic cure or ARDEX ST neutral cure silicone to movement joints between tiles, and at junctions to tiled walls and tiled floors. The silicone should only be fixed to two surfaces to allow movement. On flat joints use a polyethylene tape or release agent and on floor to wall joints greater than 10mm deep use a backing rod.

Completion

3.20 REPLACE

Replace damaged tiles or elements.



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3.21 CLEANING

Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave them completely clean and without blemish. Finally polish glazed tiles with a clean dry cloth.

3.22 LEAVE

Leave work to the standard required by following procedures.

3.23 REMOVE

Remove debris, unused materials and elements from the site.

3.24 PROTECT TILES

Protect tiles from damage. Ensure tiles are not disturbed by foot traffic for at least 24 hours after laying and after grouting. Provide protection to tiles by laying sheet material such as insulating board for the period between completion of laying and completion of the contract works.

4 SELECTIONS

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

Tile Selections

4.1 TILES

Location:	**refer drawings**
Supplier:	tbc
Type:	**selected porcelain tiles generally**

ARDEX system - residential floors & walls

4.2 ARDEX SYSTEM - FOR CERAMIC OR PORCELAIN TILES

Substrate floors:	**concrete**
Substrate Walls	**9mm fibre cement sheet**
Primer:	**ARDEX Multiprime**
Levelling:	**ARDEX LQ 92**
Tile adhesive floor:	**ARDEX X 18**
Tile adhesive wall:	**ARDEX X 18**
Grout:	**Ardex FG 8, 4 - 8mm joints with Ardex Grout Booster**
Grout colour:	**match tiles**
Silicone:	**Ardex SE or Ardex ST**

4.3 ARDEX SYSTEM - WATERPROOFING

Waterproofing:	**ARDEX WPM 750**

Spares & maintenance products

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6700R RESENE PAINTING GENERAL

1 GENERAL

This section relates to the general matters related to **Resene** painting work.

1.1 RELATED WORK

Refer to 6721R RESENE PAINTING INTERIOR

Refer to 6711R RESENE PAINTING EXTERIOR
Refer to 6721RE RESENE ENVIRONMENTAL PAINTING INTERIOR
Refer to 6711RE RESENE ENVIRONMENTAL PAINTING EXTERIOR

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:

MPNZA	Master Painters New Zealand Association Inc.
SIPDS	Surface Information & Preparation Data Sheets

Documents

1.3 DOCUMENTS

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

Health and Safety at Work Act

AS/NZS 5131	Structural steelwork - Fabrication and erection
AS/NZS ISO 9001	Quality management systems - Requirements
MPNZA	Health and Safety Programme

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Resene	Surface Information & Preparation Data Sheets (SIPDS) (hard copy or at www.resene.co.nz)
Resene	Product Data Sheets (hard copy or at www.resene.co.nz)
Resene	Putting your safety first

Copies of the above literature are available from **Resene**
Telephone: 0800 RESENE (0800 737 363)

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal conditions of use against failure referring to the **Resene** Promise of Quality in the **Resene** One-Line specifications and product data manual.

Requirements

This painting specification is written based on information available at the time of writing.

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Resene** coating system, or associated components and products. Do not combine paints from different manufacturers in a paint system.

If in the applicator's own expertise and judgement an amendment to this specification is required, or where a substrate preparation, or required painting system is not covered in this specification, this shall be brought to the attention of the contract administrator and any amendment agreed before work proceeds any further.

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1.7 QUALIFICATIONS

Painters to be experienced competent workers, familiar with the materials and the techniques specified and with the **Resene** coating systems and be members of the Master Painters New Zealand Association Inc.

The applicator is to have the necessary skill, experience and equipment to undertake the work. The applicator remains responsible for ensuring proper completion of the work.

Painters to be selected from the **Resene** Eco Decorator programme. The **Resene** Eco Decorator programme is designed to recognise a nationwide network of environmentally responsible, quality focussed painting contractors.
Refer to www.resene.co.nz/ecodecorator.htm for a list of Eco Decorators in your area.

1.8 SAMPLES

Refer to the general section 1270 CONSTRUCTION for details of how samples will be reviewed and how instructions to proceed will be given. Provide the following samples for review:

	Sample A	Sample B	Sample C
Sample description:	~	~	~
Sample type:	~	~	~
Number:	~	~	~
Location:	~	~	~
Supporting documentation:	~	~	~
Reviewer:	Contract administrator ~	Contract administrator ~	Contract administrator ~
Time for review:	10 working days ~	10 working days ~	10 working days ~
Review criteria:	~	~	~

1.9 PRIOR TO WORK COMMENCING

Before any work commences painters should verify, with Architects or specifying authority, that their paint matches a previously supplied standard card or panel. Differently coloured paints will vary in price, opacity and durability. **Resene** normally only specify two coats of colour but with certain colours, such as yellows and oranges, three coats may be needed. Refer to SELECTIONS for location and type.

1.10 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents:

Maintenance guide for **Resene** paint finishes www.resene.co.nz/comn/services/maintenance.htm.

Provide this information prior to practical completion.

1.11 HEALTH AND SAFETY

Refer to and comply with the requirements of the Health and Safety at Work Act 2015 including the obligation to:

- Eliminate hazards and if hazards cannot be eliminated or isolated, then minimise the hazards in this work by using the proper equipment and techniques as required by the MPNZA Health and Safety Programme.
- Supply protective clothing and equipment.
- Inform the contractor as well as the employees and others on site of those hazards and put in place procedures for dealing with emergencies.

1.12 SAFETY DATA SHEETS

Obtain from **Resene** (phone 0800 RESENE, or www.resene.co.nz) the safety data sheet for each product used and comply with the required safety procedures. Keep sheets on site.

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Performance

1.13 RESENE INSPECTION

Permit representatives of **Resene** to inspect the work in progress and to take samples of their products from site if requested. **Resene** will take care when inspecting the work, but does not accept any responsibility for the proper completion of the work before or after such inspection.

1.14 INSPECTION OF THE WORK

Inspection of the whole of the work at each of the stages set out in SELECTIONS may be made. Agree on a programme that will facilitate such inspection, including notification when each part and stage of the work is ready for inspection.

2 PRODUCTS

Materials

2.1 MATERIALS GENERALLY

Do not combine paints from different manufacturers in a paint system.

Use only **Resene** products (which are guaranteed for consistency and performance under AS/NZS ISO 9001 and APAS) prepared, mixed and applied as directed in the **Resene** One-Line Specifications and Product Data Manual. This specification has been written using where practical and available both low/no VOC.

2.2 DARK COLOURS

Darker colours in areas of high sun exposure place significant stress on the coating and substrate. **Resene 'CoolColour'** technology reduces heat absorption of a wide range of colours. Contact your local **Resene** Representative or visit www.resene.co.nz for more information or visit www.resene.co.nz/coolcolour. View a list of **Resene** colours that can be made using **Resene CoolColour** technology at www.resene.co.nz/colourlibrary.

2.3 THINNERS/ADDITIVES

Use only if and when expressly directed by **Resene** for their particular product in a particular application. Always wear gloves when handling any solvents including turpentine as harmful chemicals may be absorbed into the body through the skin.

Accessories

2.4 ACCESSORIES

Contact your local **Resene ColorShop** for a full range of accessories and usage advice.

3 EXECUTION

Conditions

3.1 EXECUTION

To conform to required trade practice, which shall be deemed to include those methods, practices and techniques contained in the Master Painters New Zealand Association Inc. Specification manual.

3.2 CORROSION PROTECTION SUPERVISION FOR STRUCTURAL STEEL

To AS/NZS 5131, 9.9.20, for corrosion protection of structural steel. Provide an Inspection and Test Plan (ITP) to AS/NZS 5131, 13.9.1, prior to commencement.

Corrosion protection painting to be supervised by a competent person.

3.3 TREATED SURFACES

Where surfaces have been treated with preservatives or fire retardants, check with the treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance. If they are not compatible, obtain instructions before proceeding.

3.4 BACK PAINTING

Co-ordinate with cladding and/or lining installer as to who will do the work and timing.

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Exterior
For exterior cladding and trim that require on site finishing, paint the back and exposed bottom edges at the base of the cladding (generally, bottom plate overhang and horizontal flashings) to the manufacturer's requirements, but at least to 150mm up from base. Coating to match front finish, generally apply 2 coats or 1 coat if pre-primed.
Refer to appropriate exterior paint sections SELECTION clauses for claddings to be back painted.

Interior
For lining and trim that require on site finishing and/or back painting (usually wet areas), paint the back and exposed bottom edges at the base of the lining, to the manufacturer's requirements, but at least to 150mm up from base. Coating to match front finish, generally apply 2 coats or 1 coat if pre-primed, or if no front finish, seal to manufacturer's requirements.
Refer to appropriate interior paint sections SELECTION clauses for linings to be back painted.

3.5 ANCILLARY SURFACES

The descriptions of areas in schedules and elsewhere are of necessity simplified. Coat ancillary exposed surfaces to match similar or adjacent materials or areas, except where a fair-faced natural finish is required or items are completely prefinished. In cases of doubt obtain written instructions before proceeding.

3.6 HARDWARE

Do not paint hinges or hardware that cannot be removed. Before commencing work carefully remove hardware, fixtures and fittings, set aside where they cannot be damaged or misplaced and replace on completion. Refer to SELECTIONS for hardware, fixtures and fittings for removal.

3.7 PROTECTION

Supply, lay and fix drop sheets, coverings and masking necessary to protect adjoining, fixtures, fittings and spaces from paint drops, spots, spray and damage.

Application - preparatory work

3.8 SURFACE PREPARATION

Refer to the **Resene** Surface Information & Preparation Data Sheets (SIPDS) and product data manual for surface preparation sheets (or obtain them by phoning 0800 RESENE, or at www.resene.co.nz) listed in the materials systems schedule clauses. Carry out the preparatory work required by them for each of the substrates.

3.9 SHARP EDGES, CRACKS AND HOLES

Remove and/or repair sharp edges, cracks and holes if present, as outlined in the preamble of the **Resene** One-Line specifications and product data manual.

Elastomeric sealants, if used, should not be painted. The paint film will not match the flexibility of the sealant and may severely limit its effectiveness.

3.10 REMEDIAL WORK

If any substrate or surface, that even with the preparation work called for in this section, cannot be brought up to a standard that will allow painting or clear finishing of the required standard then do not proceed until remedial work is carried out.

3.11 GAP FILLING

Make good cracks, holes, indented and damaged surfaces. Use suitable gap fillers to match the surface being prepared. Any special priming requirements of the fillers must be satisfied. Allow to dry or set before sanding back level with the surface. Prime or seal timber before using putty.

Exterior and wet areas: Use only Portland cement base or water-insoluble organic base gap fillers.

3.12 OFF-SITE WORK

Carry out this work under cover in a suitable environment with suitable lighting. Store items, both before and after coating, in a clean, dry area protected from the weather and mechanical damage, properly stacked and spaced to allow air circulation and to prevent sticking. Specific instructions for transport to site to avoid damage to the factory applied paint system may be required particularly for metallic top coat paints.

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3.13 PRIMING JOINERY

Pre-treat any cut surfaces of preservative treated timber before priming. Ensure L.O.S.P treated joinery has dried sufficiently to lose solvent odour. Pre-treat bare timber with **Resene TimberLock** (see Data Sheet D48) to improve the durability of subsequent coats.

Liberally coat end grain, allow to soak in and then recoat.

3.14 CONCEALED JOINERY SURFACES

Where off-site coatings are specified they must be applied to surfaces including those concealed when incorporated into the building.

3.15 CONCEALED METAL SURFACES

Apply primer to suit the coating system to surfaces which will be concealed when incorporated into the building.

3.16 EXTERNAL DOORS

Prime or seal and paint bottom edges before hanging.

3.17 BEAD GLAZING

Stained, varnished, or painted joinery to have the first two coats of a suitable primer and one undercoat, applied to rebates and beads before glazing.

3.18 PUTTY FRONTING - LINSEED GLAZING PUTTIES

According to the putty manufacturer's instructions allow putty to set, then prime with **Resene Wood Primer** (see Data Sheet D40) or **Resene Enamel Undercoat** (see Data Sheet D44). Fully protect the putty by completing the **Resene** coating system as soon as it is sufficiently firm.

Glazing putties not based on linseed oil to be over coated according to the putty manufacturer’s instruction.

Application - generally

3.19 PAINTING GENERALLY

Comply with the **Resene** SIPDS Surface Information & Preparation Data Sheets or **Resene** One-Line specifications and product data manual data sheets and the additional requirements of this work section.

Ensure large wall areas that require more than one container of paint per coat, have enough paint boxed (mixed) together to complete the final coat. This will not apply if a single factory batch of paint, rather than shop tinted paint, is applied.

3.20 MIXING

Although generally supplied ready to use, all paints must be thoroughly mixed to lift any settled pigment and ensure the paint is homogeneous.

3.21 ENVIRONMENT

Defer painting of exterior surfaces until weather conditions are favourable - warm dry days without frost or heavy dews. Avoid painting in direct sunlight any surfaces that absorb heat excessively. As far as possible apply paint in the temperature range 15°C to 25°C. If temperatures fall outside the range of 10°C and 35°C do not paint unless paints with the necessary temperature tolerance have been specified. **Resene Hot Weather Additive** can be added to most **Resene** waterborne top coats to extend open time when application is undertaken at elevated temperatures or conditions that will cause rapid loss of water from the applied wet film. Do not apply solvent borne paint if moisture is present on the surface.

3.22 SEQUENCE OF OPERATIONS

Painting work to generally follow the following sequences:

- Back painting and pre-installation painting, then post-installation exposed-face painting
- Complete surface preparation before commencing painting.
- Apply primers, sealers, stains, undercoats, paints and clear coatings in the sequences laid down by **Resene**.
- Allow the full drying time between coats laid down by **Resene**.
- Do not expose primers, undercoats and intermediate coats beyond **Resene** recommendations before applying the next coat.

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- Finish broad areas before painting trim.
- Ensure batch numbers of tins are matched for whole areas.
- Internally, paint ceilings before walls and walls before joinery, trim and other items.

3.23 APPLICATION

Select brush, roller, or pad and apply coatings to the requirements of **Resene** to obtain a smooth, even coating of the specified thickness, uniform gloss and colour.

3.24 LIGHTLY SAND

Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. A more thorough sanding to provide a mechanical key for the new paint system may be required depending upon the condition or age of the existing paint system..

3.25 DEFECTIVE WORK

Correct defective work immediately and recoat as required, following precisely the **Resene** system being applied. The same applies to transportation damage to site of factory painted items.

3.26 EACH COAT

Each coat of paint and the completed paint system to have the following qualities and properties:

- Uniform finish, colour, texture, sheen and hiding power and the proper number of coats applied.
- No blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, significant brush marks, ladder marks and blistering.
- Proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application.

Completion

3.27 CLEAN

Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at the completion of the building works. Clean glass inside and out to a shining finish. Use the **Resene Washwise** on site 'paint equipment clean-up water' reclamation system to minimise the environmental impact of cleaning paint application tools.

3.28 LEAVE

Leave the whole of this work uniform in gloss and colour, of correct thickness, free from painting defects, clean and unmarked and to the standard required by following procedures.

3.29 REMOVE

Remove drop sheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.

3.30 REPLACE

Replace hardware without damage to it or the adjoining surface and leave hardware properly fitted and in working order.

3.31 DISPOSAL OF PAINTS AND THINNERS

Note: The use and disposal of paint and thinners represents a significant environmental hazard.

Ensure all paint and thinners are disposed of in the following manner:

- When requested hand over part used paint containers to client for maintenance touch ups.
- Recycle leftover paint at a **Resene ColorShop** as part of the **Resene "Paintwise programme**". Contact your local **Resene ColorShop** for details or view information online at www.resene.co.nz/paintwise.htm.
- Donate left over paint to local community groups.
- Solvent based paints, paint thinners, turpentine, mineral spirits and solvents require special disposal procedures. Do not pour down sewer or stormwater drains, sinks or into the ground. If they cannot be recycled they must be disposed of in a refuse dump licensed to take toxic waste.

3.32 MAINTENANCE

Good maintenance of coating systems involves a routine of regular cleaning as well as regular inspections. Regular inspections of the coating systems are recommended to identify breakdown, accidental damage to or undesirable deterioration of the paint.

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Wash down of exterior coatings should be undertaken on an annual basis using **Resene Paint Prep** and **Housewash** (see Data Sheet D812).

Refer the **Resene** Caring for your paint finish brochure and the **Resene** website, www.resene.co.nz/comn/services/maintenance.htm.

4 SELECTIONS

4.1 SELECTIONS

Refer to 6711R RESENE PAINTING EXTERIOR and 6721R RESENE PAINTING INTERIOR for selections.
Refer to 6711RE RESENE ENVIRONMENTAL PAINTING EXTERIOR and 6721RE RESENE ENVIRONMENTAL PAINTING INTERIOR for selections.

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6721RE RESENE ENVIRONMENTAL PAINTING INTERIOR

1 GENERAL

This section relates to the surface preparation, painting and clear finishing of new and existing interior substrates using **Resene** environmental 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 6711RE RESENE ENVIRONMENTAL PAINTING EXTERIOR for exterior paint systems.

Requirements

1.2 SAMPLES

Refer to the general section 1270 CONSTRUCTION for details of how samples will be reviewed and how instructions to proceed will be given. Provide the following samples for review:

	Sample A	Sample B	Sample C
Sample description:	~	~	~
Sample type:	~	~	~
Number:	~	~	~
Location:	~	~	~
Supporting documentation:	~	~	~
Reviewer:	Contract administrator ~	Contract administrator ~	Contract administrator ~
Time for review:	10 working days ~	10 working days ~	10 working days ~
Review criteria:	~	~	

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

For further details on selections go to www.resene.co.nz
Substitutions are not permitted to the following, unless stated otherwise.

4.1 HARDWARE

Hardware for removal: **all hardware**

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Resene interior paint systems

Environmental interior plasterboard - new

4.2 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

4.3 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 Waterborne Sureseal D42a, Waterborne Pigmented Sealer
2nd coat:	Resene SpaceCote Low Sheen Kitchen & Bathroom D311K, Waterborne Enamel
3rd coat:	Resene SpaceCote Low Sheen Kitchen & Bathroom D311K, Waterborne Enamel

4.4 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

4.5 NEW INTERIOR PLASTERBOARD CEILINGS; WET AREAS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1A: 1/1
Fire rating:	Group 1-S
1st coat	Resene Waterborne Sureseal D42a, Waterborne Pigmented Sealer
2nd coat:	Resene SpaceCote Flat Kitchen & Bathroom D314K, Waterborne Enamel
3rd coat:	Resene SpaceCote Flat Kitchen & Bathroom D314K, Waterborne Enamel

Environmental interior timber - new

4.6 NEW INTERIOR TIMBER DOORS, JOINERY, SKIRTING

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 9/1
1st coat	Resene Quick Dry D45, Waterborne Acrylic Primer Undercoat
2nd coat:	Resene Lustacryl D310, Waterborne Enamel
3rd coat:	Resene Lustacryl D310, Waterborne Enamel

4.7 NEW INTERIOR TIMBER WALLS AND CEILING OSB – CLEAR COAT

Surface Prep:	**2 coats of Resene Colorwood – rolled on and wiped off and clear matt lacquer.**
1st coat	**Resene Product Data Sheet D50a - Resene Colorwood waterborne natural wood stain**
2nd coat:	**Resene Colorwood D50a, Waterborne Natural Wood stain**
3rd coat:	**Resene Colorwood D50a, Waterborne Natural Wood stain**
	Confirm colour and finish application with architect

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4.8 NEW INTERIOR (T&G CEILINGS) – CLEAR COAT

Surface Prep:	**dressed Ashin timber**
1st coat (**factory coated)**	Drysden Wood Oil - interior clear matt finish
2nd coat: (**factory coated)**	Drysden Wood Oil - interior clear matt finish
	or **allow for x2 coats of Osmo Clear finish to all timber**

4.9 NEW VENEER WALL PANELING - CLEAR COATING

COATING TBC BY ARCHITECT



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6743FB ZONE FIREZONE VANGUARD TIMBER FIRE TREATMENT

1 GENERAL

This section relates to the factory application of Zone Architectural Products FireZone™ Vanguard fire retardant systems for timber substrates in interior and exterior applications.

It includes:

- Fire retardant systems providing Group 1-S classification for plywood and solid timber linings.
- Fire retardant system providing a Type A classification for solid western red cedar and thermally modified nordic pine timber claddings

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:

MPNZA	Master Painters New Zealand Association Inc
TMT	Thermally Modified Timber
VOC	Volatile Organic Compounds

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	Protection from fire for buildings with sleeping (residential) and outbuildings (risk group SH)
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC C/VM2	Framework for Fire Safety Design
AS/NZS ISO 9001	Quality Management Systems - Requirements
ASTM D2898	Standard practice for accelerated weathering of fire-retardant-treated wood for fire testing
EN 927	Paints and varnishes - coating materials and coating systems for exterior wood: Performance specification
EN 13501-1	Fire classification of construction products and building elements
EN 16755	Durability of reaction to fire performance. Classes of fire-retardant treated wood products in interior and exterior end use applications
ISO 5660.1	Reaction to Fire Tests: Heat release, smoke production and mass loss rate
BPS	Building Product Specifications
WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry
MPNZA	Health and Safety Programme

Health and Safety at Work Act 2015

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

- FireZone™ Vanguard FP Safety Data Sheet
- FireZone™ Vanguard SP Safety Data Sheet
- FireZone™ Vanguard FP Technical Data Sheet
- FireZone™ Vanguard SP Technical Data Sheet
- BC Materials, Assessment of European classification of the NZBC requirements, dated 03 December 2023
- BC Materials, Letter, Comparison between ASTM 2898-10 and EN 16755, dated 09 November, 2022

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- BRANZ Fire Test Reports - various

Manufacturer/supplier contact details

Company:	Arahuri Ltd
Trading as:	Zone Architectural Products
Web:	www.zone.net.nz
Email:	specification@zone.net.nz
Telephone:	09 623 1699 Auckland
Freephone	0800 508 800

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

~ years	For the supply and application of FireZone™ fire treatment for timber substrates

- Provide this warranty on the Zone Architectural Products standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of application of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS WORKERS - MANUFACTURER / SUPPLIER REQUIREMENTS

Application of FireZone™ Vanguard products by Zone Architectural Products only. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified FireZone™ products listed in this section.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of operation and maintenance information as electronic PDF format documents. Information to include the expected life of the system & maintenance requirements.

Provide this information prior to practical completion.

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer / supplier warranty
- Supply Certificate - from Zone Architectural Products
- Other information required by the BCA in the Building Consent Approval documents.

Performance - FireZone™ Vanguard FP

1.10 EXTERNAL FIRE SPREAD - CLADDING MATERIALS

FireZone™ Vanguard FP when used on minimum 16mm, western red cedar and thermally modified Nordic Pine has been tested to ISO 5660.1 to specific requirements of BPS, paragraph 8.4.1.3 or BPS, paragraph 8.4.1.3, and to requirements of EN 16755 with accelerated weathering in accordance to EN 927 achieving:

Type A classification (peak heat release rate ≤ 100 kW/m², total heat release rate ≤ 25 MJ/m²).

Classification is supported by BC Materials Report dated 03 December 2023.

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Quality control and assurance

1.11 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety at Work Act 2015 and WorkSafe: Guidelines for the provision of facilities and general safety in the construction industry. If the elimination or isolation of potential hazards is not possible then minimise hazards in this work on site by using the proper equipment and techniques as set out in the MPNZA Health and Safety Programme. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put in place procedures for dealing with emergencies.

1.12 QUALITY ASSURANCE RECORD

Zone Architectural Products maintain a quality assurance programme for the factory application of FireZone™ Vanguard FP and FireZone™ Vanguard SP. Zone Architectural Products to provide a project specific Supply Certificate with each batch of timber treated. The Supply Certificate records the following:

- Substrate type including species and profile
- Quantity
- Coating type
- Fire treatment Group Number classification Group 1-S
- Fire treatment Exterior cladding classification Type A
- Moisture content records at time of dispatch - storage and handling guidance must be strictly followed

2 PRODUCTS

Materials - Fire treatment

2.1 FIREZONE™ VANGUARD FP

FireZone™ Vanguard FP is a non toxic, VOC free, factory applied fire retardant system. Suitable for interior and exterior applications.

For plywood and solid timber internal lining substrates providing a Group 1-S classification to NZBC C/AS2, Table 4.12.1.1: Maximum permitted Group Number for internal surface finishes. For Western Red Cedar and Thermally Modified Nordic Pine external claddings providing a Type A Classification to NZBC C/AS1, 5.3 External cladding systems, and NZBC C/AS2, 5.5 External cladding systems.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

Plywood & solid timber substrates requiring FireZone™ treatement to be supplied direct to Zone Architectural Products for factory-only processing. After processing, the finished timber products to be stored on site under cover protected from weather including direct UV light.

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 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Finishing of surfaces to the required standard be completed by the timber supplier prior to delivery to Zone Architectural Products.

Ensure moisture content is:
Timber between 10-20%

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Application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 PREPARATION

Ensure that substrate surfaces are clean and dry prior to delivery to Zone Architectural Products.

3.6 APPLICATION - FIREZONE™ VANGUARD FP

Carry out factory-only application of FireZone™ Vanguard FP in accordance with manufacturer's requirements.

3.7 APPLICATION - OIL OR PAINT FINISH OVER FIREZONE™ VANGUARD FP - BY OTHERS

For external cladding applications, timber treated with FireZone™ Vanguard FP must be over-coated with a factory applied oil or paint finish to all four sides, to timber suppliers and Zone Architectural Products requirements. All cut edges to be touched up on site with the same oil or paint finish prior to installation. Co-ordinate with timber supplier.

Completion & Commissioning

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.zone.net.nz.
Substitutions are not permitted to the following Zone Architectural Products systems, unless stated otherwise.

FireZone™ Vanguard FP

4.1 FIREZONE™ VANGUARD FP - EXTERNAL CLADDING SOLID TIMBER SUBSTRATE

Location:	**to western cedar vertival weatherboard cladding and timber battens**
System:	**FireZone™ Vanguard FP**
Classification:	**Type A**
Substrate:	**Solid Timber Cladding. Refer to ~ for details**
Species:	**Hermpac western cedar**
Thickness:	**18.5mm**
Profile:	**HP55 135x18.5mm (110mm cover)**
Finish:	**FireZone™ Vanguard FP is clear, however treated timber must be oiled or painted after fire treatment. Finish must be factory applied to all sides. Cut ends to be touched up with the same oil or paint onsite, prior to installation. Contact Zone Architectural Products for compatible finishing systems. Stain Wood-X penetrating wood oil factory applied after**
Fixings:	**Stainless Steel**

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7352 TYPE 1 DOMESTIC SMOKE ALARM SYSTEMS

1 GENERAL

This section relates to the installation and commissioning of Type 1 domestic smoke alarm systems.

It includes:

- Power supply
- Associated components to complete the installation

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:

dB(A)	A-weighted decibel
VAC	Volts alternating current
VDC	Volts direct current

The following definitions apply specifically to this section:

Heat alarm	Integral device containing heat detector and alarm sounding feature.
Hush-button	Feature that temporarily silences audible alarm signals triggered by conditions resembling a fire i.e. steam or dust but not generated by sources of fire (nuisance alarm).
Smoke alarm	Integral device containing smoke detector and alarm sounding feature.
Type 1	To NZBC C/AS1 Type 1 is a single smoke alarm or multiple interconnected smoke alarm devices each containing smoke detector and alarm sounding feature.

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	Protection from fire
AS/NZS 1125	Conductors in insulated electric cables and flexible cords
AS 1603.17	Automatic fire detection and alarm systems - Warning equipment for people with hearing impairment
AS/NZS 2201.1	Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance
AS/NZS 3000	Electrical Installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3808	Insulating and sheathing materials for electric cables
NZS 4512	Fire detection and alarm systems in buildings
NZS 4514	Interconnected smoke alarms for houses
AS/NZS 5000.2	Electric cables - Polymeric insulated - For working voltages up to and including 450/750 V
BS 5446.3	Detection and alarm devices for dwellings, specification for fire alarm and carbon monoxide alarm systems for deaf and hard of hearing people

Electricity (Safety) Regulations 2010

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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



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~

Manufacturer/supplier contact details
Company: ~
Web: ~
Email: ~
Telephone: ~

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER
Provide a material manufacturer/supplier warranty:
~ years For ~

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY
Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 TYPE 1 DOMESTIC SMOKE ALARM SYSTEM
Comply with NZBC C/AS1 providing Type 1 domestic smoke alarm system to NZS 4514.

1.8 NO SUBSTITUTION
Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

1.9 INFORMATION FOR OPERATION AND MAINTENANCE
Refer to the general section 1239 OPERATION & MAINTENANCE for provision of manufacturer's operation and maintenance information as electronic PDF format documents. Documents to include maintenance, checks, tests and replacement requirements to NZS 4514, Maintenance.

Provide this information prior to practical completion.

2 PRODUCTS

Alarm devices

2.1 MULTI-SENSOR SMOKE ALARM
Multi-sensor smoke alarm to NZS 4514 comprising two or more detection technologies i.e. ionisation and photoelectric smoke sensor or photoelectric smoke and heat sensor. Completed with alarm sounding feature and hush-button. Available wireless with long-life (minimum 10 years), non-removable, sealed battery or hard wired with back-up battery power supply. Refer to SELECTIONS.

2.2 PHOTOELECTRIC SMOKE ALARM
Photoelectric smoke alarm to NZS 4514 comprising photoelectric smoke detecting technology. Completed with alarm sounding feature and hush-button. Available wireless with long-life (minimum 10 years), non-removable, sealed battery or hard wired with back-up battery power supply. Refer to SELECTIONS.

2.3 HEAT ALARM
Heat alarm to NZS 4514 comprising heat detecting technology. Completed with alarm sounding feature and hush-button. Available wireless with long-life (minimum 10 years), non-removable, sealed battery or hard wired with back-up battery power supply. Refer to SELECTIONS.

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Components

2.4 SEALED BATTERY - WIRELESS ALARMS

To NZS 4514, Power Supplies. Long-life (minimum 10 years), non-removable, sealed batteries.

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.

3.3 PRE-INSTALLATION REQUIREMENTS

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

3.4 COMPATIBILITY

Confirm all interconnected devices are compatible.

Installation - generally

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.6 LOCATION & SPACING

Location and spacing of smoke alarms to NZS 4514. Install smoke alarms within 10m of each other and a maximum of 5m away from any wall.

3.7 AUDIBLE ALARM

Install smoke alarms so that audible alarm sound pressure level when measured at 1.8m height is between 75dB(A) and 110dB(A) to NZS 4514, Alarm Signals.

Installation - smoke alarm system

3.8 INSTALL BATTERIES

Install primary and secondary batteries to NZS 4514 and manufacturer's instructions. Indelibly mark batteries with the date of installation.

3.9 INSTALL ALARMS

Install alarm devices to manufacturer's instructions fitted neatly and without damage to the surrounding finish using brackets and mounts supplied or recommended by the manufacturer.

3.10 INTERCONNECT

Interconnect devices so that when one activates all alarms sound.

Completion & Commissioning

3.11 COMPLETION MATTERS

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

3.12 COMPLETION - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

Completed smoke alarm system to be inspected, tested and where required for electrical installations certified to NZS 4514, including (but not limited to):

- Correct location of alarm devices
- Correct sound pressure level of audible alarm signals

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- Correct installation to manufacturer's installation instructions
- Correct and fault free operation of the smoke alarm system and interconnected devices

4 SELECTIONS

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

Alarm devices

4.1 PHOTOELECTRIC SMOKE ALARM

Location:	**generally refer electricall plans** Provide smoke alarms in all bedrooms, all hallways and landings, living spaces.
Brand:	**Orca® 10 Year Wireless Interlink Smoke**
Type:	**Multi-sensor smoke alarm**
Sensor:	**Black**
System:	**Smoke alarm**
Compliance:	**Photoelectric smoke sensor**



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7411 RAINWATER SPOUTING SYSTEMS

1 GENERAL

This section relates to rainwater disposal systems including spouting and downpipes in:

- metal
- PVC

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.

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
Spouting	Roof gutter bracketed off the roof edge or fascia.
Gutter	Internal gutter or gutter formed as integral part of the roof fabric.

Documents

1.3 DOCUMENTS

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

NZBC E1/AS1	Surface water
NZBC E1/AS2	Surface water
AS 1273	Unplasticised PVC (uPVC) downpipe and fittings for rainwater
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

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 from ~

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

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal environmental and use conditions:

10 Years	For failure of coating adhesion
10 Years	For weatherproofing by material penetration
Form:	Manufacturer's standard warranty form
From:	Commence the warranty from the date of completion of installation

Refer to the general section 1237 WARRANTIES for details of when completed warranty must be submitted.

1.6 WARRANTY - INSTALLER/APPLICATOR

Warrant this work under normal environmental and use conditions against:

3 years:	For weatherproofing by substandard workmanship:
From:	Commence the warranty from the date of completion of installation

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Form: Installers standard warranty form

Refer to the general section 1237 WARRANTIES for details of when completed warranty must be submitted.

Requirements

1.7 QUALIFICATIONS

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

Performance

1.8 TEST

Test the completed rainwater disposal system with water to ensure spoutings are laid to correct falls, that both spouting and downpipes are unobstructed and that no ponding occurs in spoutings.

2 PRODUCTS

Materials - metal

2.1 SPOUTING

Complete with matching brackets to suit spouting and screws. Refer to SELECTIONS for type.

2.2 SPOUTING BRACKETS

All exposed brackets to be colour matched before installation. Brackets to be hot-dipped galvanised, zincalume, aluminium, stainless steel or brass as specified and to suit application. Electroplated components are not acceptable. Refer to SELECTIONS for type.

2.3 DOWNPIPES

Complete with stand-off brackets, screw fixed. Refer to SELECTIONS for type.

Components

2.4 DROPPERS

Metal or uPVC droppers, compatible with spouting material and sized to fit inside the downpipe.

2.5 FASTENERS GENERALLY

Minimum Class 4 durability and not less than the roofing material being fixed.

2.6 RIVETS

Sealed aluminium, minimum diameter 4mm.

2.7 SEALANT

MS Polymer sealant.

3 EXECUTION

Conditions

3.1 HANDLE AND STORE

Handle and store downpipes, spouting and accessories to avoid damage. Store on site under cover, on a clean level area, stacked to eliminate movement and away from work in progress. Avoid exposure to sunlight if strippable film is still on the product.

3.2 SUBSTRATE

Check that fascias, barges or cladding are level and true to line and face and will allow work of the required standard without distortion to the product alignment. Do not proceed until they are up to standard.

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3.3 THERMAL MOVEMENT

Make adequate provision in the fixing and jointing of the spouting for thermal movement in the length of the spouting. Provide an expansion joint in spouting over 18 metres in length for steel gutter.

3.4 CORROSION

Separate metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips. Do not allow copper downpipes to discharge onto lower galvanized or zinc aluminium coated steel roofs.

Application - metal

3.5 INSTALLATION GENERALLY

Install to NZMRM CoP recommendations where not otherwise specified.

3.6 INSTALL VALLEY GUTTERS

Attach valley gutters to valley boards by clips allowing for thermal movement to NZMRM CoP, clause 5.6, **Valley Gutters**. Separate valley gutter from valley boards with a layer of bituminous roof underlay.

3.7 INSTALL SECRET GUTTERS

Install secret gutters to fall allowing for thermal movement to NZMRM CoP, clause 5.5.7 **Secret Gutters**. Rivet and seal joints with MS Polymer sealant.

3.8 INSTALL METAL SPOUTING

Establish minimum falls necessary (minimum 1:500, 2mm in 1 metre) to outlets to prevent ponding and screw fix brackets, true to line at 750mm centres maximum for external gutters less than 175mm wide and at 600mm centres maximum for gutters 175mm to 300mm wide. In areas where snow fall is possible the centres should be reduced to 600mm maximum. Lap spouting joints a minimum of 40mm, silicone seal between surfaces and pop rivet to the manufacturer's recommendations. Ensure the joint is fixed over its full girth. Cut out neatly for and fit the pre-formed downpipe dropper and rivet and seal around the joint. All installation to NZMRM CoP recommendations.

3.9 INSTALL PRE-PAINTED METAL SPOUTING

Establish minimum falls necessary (minimum 1:500, 2mm in 1 metre) to outlets to prevent ponding and screw fix brackets true-to-line at 750mm centres maximum for external gutters less than 175mm wide and at 600mm centres maximum for gutters 175mm to 300mm wide. In areas where snow fall is possible the centres should be reduced to 600mm maximum. Lap spouting joints a minimum of 40mm and silicone seal and pop rivet to the manufacturer's recommendations. Cut out neatly for and fit the pre-formed downpipe dropper and silicone seal around the lap joint. All installation to NZMRM CoP recommendations.

3.10 INSTALL DROPPERS

Install either 2 outlets or one outlet and an overflow to each spouting section. Cut out neatly for and fit the pre-formed downpipe dropper and rivet and seal around the joint. All installation to NZMRM CoP recommendations.

3.11 INSTALL METAL DOWNPIPES

Form downpipes complete with angle bends as needed with joints lapped and sealed. Screw fix with pipe clips to rigidly stand off the wall plumb and discharging into stormwater gully or inlet pipe. All installation to NZMRM CoP recommendations.

3.12 INSTALL RAINWATER HEADS

Install rainwater heads where required to NZMRM CoP, clause 5.8.1, **Rainwater Heads**.

3.13 INSTALL OUTLETS AND OVERFLOWS

Install outlets and overflows where required to NZMRM CoP, clauses 5.8.2, **Outlets and Overflows.**

Completion

3.14 REPLACE

Replace damaged or marked elements.



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3.15 LEAVE

Leave the whole of this work discharging completely and freely into the stormwater system and free of all debris. Leave work to the standard required by following procedures.

3.16 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 DOWNPIPES

Profile/size:	**refer drawings**
Material:	**steel**
Thickness:	**0.55mm**
Coating system:	**to match wall cladding**
Colour:	**to match**

4.2 DOWNPIPE BRACKETS

Type:	to match

Miscellaneous items

4.3 RAINWATER HEADS

Material:	**steel**
Thickness:	**0.55mm**
Finish/colour:	**to match**

4.4 BOX GUTTERS

Box gutters to be formed over 18mm H3.2 treated plywood substrate, laid to a minimum fall of 1:100 to outlet. Line with 2-layer torch-on modified bitumen membrane system (Nuraply 3PM) installed strictly in accordance with the manufacturer's specifications. Provide overflow in accordance with NZBC E1/AS1.



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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 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures tapware and accessories.

Refer to 7430 DRAINAGE for underground drains.

1.2 DOCUMENTS

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

NZBC G1/AS1	Personal hygiene
NZBC G12/AS1	Water supplies
NZBC G13/AS1	Foul water - Sanitary plumbing
NZBC G13/AS3	Foul water - Sanitary plumbing and drainage
AS 2887	Plastic waste fittings
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage

Plumbers, Gasfitters and Drainlayers Act 2006

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.

Stainless steel pipe and associated fittings
PVC,PE polyethylene or polypropylene pipe including all associated fittings.

2.3 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.

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3 EXECUTION

3.1 EXECUTION GENERALLY - NZBC G13/AS1

Carry out this work to NZBC G13/AS1 and NZBC G1/AS1 and complete all tests to G13/AS1, 7.1 Test Methods.

3.2 EXECUTION GENERALLY - AS/NZS 3500.2

Carry out this work to AS/NZS 3500.2, as modified by NZBC G13/AS3, and complete all tests to AS/NZS 3500.2, section15 Testing of Sanitary Plumbing and Sanitary Drainage Installations.

3.3 ELECTROLYTIC ACTION

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

3.4 EQUIPOTENTIAL BONDING METALLIC WASTE PIPES

If it is an electrical requirement, before enclosing, ensure metallic waste pipes connected to metallic drains and attached metallic sanitary fixtures are equipotential bonded (or at least conductor cable attached) similar to NZBC G12/AS1, 9.0.

3.5 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 jointing for PVC-U pipes 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 INSTALL TRAPS, WASTE AND VENT PIPES - AS/NZS 3500.2

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to AS/NZS 3500.2, as modified by NZBC G13/AS3, and jointing to PVC-U pipes 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.

3.7 PENETRATIONS

At penetrations through constructions provide and fit collars and escutcheon plates to match pipework.

3.8 FIRE STOPPING WORK

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

3.9 TEST

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC G13/AS1, 7.1 Test Methods or AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations,as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

3.10 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: ~

4.2 FLOOR WASTES SQUARE

Manufacturer:	**Code Interiors**
Brand/type:	**Tilers Choice 110x110 Tile Over Shower Waste SKU: PD-TC-110GM**
Grate/finish:	**tiled - REFER TO INTERNAL ELEVATION DRAWINGS**

SANITARY FITTING SCHEDULE Refer to: appended sanitary schedule

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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

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

NZBC B1/AS1	Structural provisions for buildings
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	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	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.

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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 GULLY TRAPS - AS/NZS 3500.2

Gully traps complete with grating to AS/NZS 3500.2, 4.6 Gullies, as modified by NZBC G13/AS3.

2.5 SURFACE WATER SUMP GRATINGS

Cast iron frame with lift-up grating.

2.6 STRIP DRAIN CHANNEL

Proprietary, modular, variable invert, plastic, steel (various types), or polymer concrete drainage channel sections and drainage sump, embedded in site concrete and fitted with selected metal gratings.

2.7 INSPECTION COVERS

Cast iron frame with screw-down cover.

Foul water

2.8 TRENCH BACKFILLING MATERIAL, FOUL WATER - AS/NZS 3500.2

Bedding and backfilling material to AS/NZS 3500.2, 5.4, Bedding of drains, and for concrete, if required, AS/NZS 3500.2, 5.3 Concrete Support.

3 EXECUTION

Surface water

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, 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 - AS/NZS 3500.2

Carry out this work to AS/NZS 3500.2 and complete all tests to AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations.



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Lay uPVC pipe systems to relevant sections of AS/NZS 2032. Lay polyethylene pipes and fittings to relevant sections of AS/NZS 2033.

3.4 SURFACE WATER DRAINAGE GENERALLY - AS/NZS 3500.3

Carry out stormwater drainage work to AS/NZS 3500.3, and complete all tests to AS/NZS 3500.3, section 9, as modified by NZBC E1/AS2.

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 CONSTRUCT GULLY TRAPS - AS/NZS 3500.2

Set in a minimum 100mm thick concrete with top surround 25mm above paving and 75mm above other surfaces, to AS/NZS 3500.2, section 4.6, Gullies.

3.7 LAY STORMWATER DRAINS

Confirm the required location of downpipes and finished ground levels before commencing pipework. 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.

3.8 INSTALL STRIP DRAIN CHANNEL

Excavate trench and form site concrete base to fall. Set interlocking channel sections, sumps and accessories in place, all in accordance with the channel manufacturer's requirements. Check falls and install gratings and covers.

3.9 INSTALL SURFACE WATER SUMP

To NZBC E1/AS1 or to AS/NZS 3500.3 section 7 as modified by NZBC E1/AS2, complete with ceramic half-siphon pipe and cast iron frame with a lift out grating.

3.10 INSTALL FOUL WATER INSPECTION CHAMBERS - AS/NZS 3500.2

Construct as detailed on a poured concrete footing to AS/NZS 3500.2, 4.7 Inspection openings and 4.8 Inspection chambers, as modified by NZBC G13/AS3. Provide all necessary haunching to channels. Fit a cast iron cover and frame.

3.11 TESTING - FOUL WATER

Confirm timing before carrying out any tests. Supply potable water and apparatus needed.

Test to NZBC G13/AS1, 7.1 Test Methods or AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations, as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

3.12 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, 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

3.13 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.

3.14 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.

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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 ± 25 mm by 75 ± 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.

3.15 TRENCH BACKFILLING GENERALLY - SURFACE WATER - AS/NZS 3500.3

Trench fill to be placed in loose layers not more than 200 mm thick and compacted to not less than 90% or 95% under pavements of the standard maximum dry density specified in AS 1289.5.4.1 or AS 1289.5.6.1, in such a way that the pipes are neither dislodged nor damaged.

The finished surface (top of trench fill) and the trench surround shall be restored, as near as practicable, to the level and condition of the existing surface before commencement of the excavation.

3.16 FOUL WATER TRENCH BACKFILLING - AS/NZS 3500.2

Carry out foul water trench backfilling to AS/NZS 3500.2, 5.1, 5.2 and 5.5 as modified by NZBC G13/AS3.

PVC-U pipe to AS/NZS 2032 and polyethylene pipes to AS/NZS 2033.

3.17 SURFACE WATER TRENCH BACKFILLING - AS/NZS 3500.3

Carry out surface water trench backfilling to AS/NZS 3500.3, 6.3.5.2.

PVC-U pipe to AS/NZS 2032 and polyethylene pipes to AS/NZS 2033.

4 SELECTIONS

4.1 PVC-U PIPES

Brand/type: tbc

4.2 STRIP DRAIN

Location: Refer 7451AL AllProof Level Threshold Section



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7451AL ALLPROOF LEVEL THRESHOLD DRAINAGE SYSTEMS

1 GENERAL

This section relates to **Allproof Industries** level threshold drainage systems suitable for residential and commercial applications.
It comprises of an in-ground drainage channel complete with a range of grate options and fittings including connection to the network utility operators system.
It includes:

- Allproof Perimeter Drain
- Allproof Cantilever Bracket (CB) level threshold drainage system
- Allproof Threaded Leg (TL) level threshold drainage system

1.1 RELATED WORK

Refer to 7431 DRAINAGE COMMON REQUIREMENTS for general matters

Refer to 7441 GROUNDWATER DRAINAGE for sub-soil drainage
Refer to 7461 FOUL WATER DRAINAGE for waste/foul water drainage

Documents

1.2 DOCUMENTS

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

NZBC E1/AS1	Surface water
NZBC E1/AS2	Surface water
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage

Plumbers, Gasfitters and Drainlayers Act 2006

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Allproof Industries Level Threshold Brochure
Allproof Industries Level Threshold Technical Details
Allproof Industries Level Threshold Installation Details

Manufacturer/supplier contact details

Company:	**Allproof Industries**
Web:	www.allproof.co.nz
Email:	info@allproof.co.nz
Telephone:	09 481 8020

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For Allproof Industries Level Threshold Drainage System components. For warranty conditions and details refer to Allproof Industries.

- Provide this warranty on Allproof Industries Ltd standard form.
- Commence the warranty from the date of purchase.

Refer to the general section 1237 WARRANTIES for additional requirements.

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Requirements

1.5 QUALIFICATIONS

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

1.6 NO SUBSTITUTIONS

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

1.7 ORDERING REQUIREMENTS

Allow manufacturing / delivery lead time after on-site measurement for the following custom products:

- Allproof Perimeter Drain Stainless Steel Grates
- Allproof Cantilever Bracket (CB) System
- Allproof Threaded Leg (TL) level threshold drainage System

1.8 SITE CONFIRMATION

Meet with the territorial authority drainage inspector to confirm the drainage layout in relation to site conditions. Confirm changes resulting and seek written site instruction before carrying out any work.

1.9 SITE CONDITIONS

Before starting work check on site the drainage layout, dimensions, levels and invert levels and ensure that line, level, falls and cover are correct.

Performance

1.10 TECHNICAL APPLICATION

Refer to Allproof Industries for technical support on grate performance and engage a hydraulics engineer for hydraulic performance, run layout and scheduling, ponding analysis and information on the chemical resistance of the trench and grate materials.

1.11 COMPLIANCE WITH NZ BUILDING CODE

All work to comply with:

- NZBC E2/AS1, paragraph 7.4.2.2, system materials and construction.
- NZBC E1/AS1: Surface water, 3.0 Drainage system materials and construction.

2 PRODUCTS

Materials - Allproof level threshold drainage systems

2.1 ALLPROOF PERIMETER DRAIN

Perimeter Drain level threshold drainage system, complies with NZBC E2/AS1, paragraph 7.4.2.2, and Figure 7.4.2.1: Level thresholds for ground level, and is comprised of the following:

- L Shaped pre-cast polymer concrete channel 200mm wide x 195mm high (internal depth 180mm) with two standard and two custom grate options.

Refer to SELECTION for options.

3 EXECUTION

Conditions

3.1 GROUND CONDITIONS

Specific ground conditions or contaminated ground may require an increase in the concrete surround dimensions or the addition of reinforcement.

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3.2 TEMPORARY INSTALLATION

Allproof Industries level threshold drainage channels are not trafficable until fully installed. During site work and after the trench run is laid, route site traffic away from the trench. If temporary crossings are required lay base course of minimum 1 metre wide either side of the trench for protection and install temporary protective cover or timber infill for support.

Installation

3.3 GENERAL

All work to NZBC E2/AS1, paragraph 7.4.2.2, system materials and construction, AS/NZS 3500.3 as modified by NZBC E1/AS2 : and Allproof Industries Installation Details.

3.4 INSTALL ALLPROOF PERIMETER DRAIN

Install Allproof Perimeter Drain in accordance with Allproof Industries Level Threshold Technical Details, and as follows:

- Set channel up against building line. Level channel and make any cuts that are required working from the centre outwards.
- Install grates or insert timber into channel. This will reduce any movement when pouring the concrete.
- Pour concrete.
- Lay screeding towards the outlet to create a 1:200 fall in accordance with NZBC E2/AS1, paragraph 7.4.2.2, and Figure 7.4.2.1: Level thresholds for ground level.
- Install grates. Cut down grates and place into the channel keeping a 12mm distance between the grate and the building line. Clip grates into place or install into bracket. Or measure and order custom fabricated grates.

Installation - connection

3.5 CONNECT TO SURFACE WATER DRAIN

Connect Allproof level threshold drainage system to stormwater drain to the requirements and satisfaction of the network utility operator.

3.6 CLEAN

Clean and flush out the whole installation and remove all silt and debris before handing over.

Completion

3.7 REPLACE

Replace damaged or marked elements.

3.8 LEAVE

Leave the whole of this work discharging completely and freely into the stormwater system and free of all debris. Leave work to the standard required by following procedures.

3.9 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

For further details on selections go to www.allproof.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

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Materials - Allproof level threshold drainage systems

4.1 ALLPROOF PERIMETER DRAIN

Location:	**refer drawings for location**
Manufacturer:	**Allproof Industries**
Grate code:	**PC180L GFP TL OR PC180LHCI confirm with supplier**
Grate type:	**1m length of perimeter drain with Heelproof Cast Iron grate**
Grate width:	**Adjustable up to 185mm on selected grates**
Grate finish:	**Heelproof Cast Iron (HCI)***
Threshold finish:	**as per details**
Load rating:	**A - Pedestrian (330kg nominal wheel load)**

4.2 COMMERCIAL CC200 CHANNEL DRAIN - GARAGE

CC200 channel drain system with a cast iron grate - 200mm Commercial Channel for garage door



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7545CU CENTRAL HEATING UNDERFLOOR HEATING SYSTEMS

1 GENERAL

This section relates to the supply and installation of **Central Heating New Zealand Ltd** hydronic underfloor heating system for concrete floors including heat source.

It includes:

- Multitubo pipework
- Chofu air to water heat pump
- All components and accessories to complete installation

1.1 RELATED WORK

Refer to electrical section for power supply.

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:

UFH	Underfloor Heating

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 provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC G10	Piped services
NZBC H1/VM3	Energy efficiency of HVAC systems in commercial buildings
BS EN 1264	Water based surface embedded heating and cooling systems
HSNO Act	Hazardous Substances and New Organisms Act 1996 (Reprint 1 November 2022)

Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).
Plumbers, Gasfitters and Drainlayers Act 2006

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

BRANZ Appraisal 740	Multitubo Piping Systems
BRANZ Appraisal 916	Multitubo PE-RT Inverse Pipe System for Underfloor Heating
Central Heating NZ	Chofu Heat Pump Sheet
Central Heating NZ	Controls
Central Heating NZ	Controls Model PRT-RP NZ-V3
Central Heating NZ	SmartOne Controls Technical Sheet
Central Heating NZ	Underfloor Installation Technical Manual
Chofu Heat Pump	Operating / Installation Manual
ITap	Pre-assembled Stainless Steel Manifolds
ITap	Stainless Steel Manifolds Technical Brochure
FAR	Manifold and mixer overview
Fiorini	Cold water storage tanks. MINI-HC Series (Hot & Cold wall mounted)

Manufacturer/supplier contact details

Company:	**Central Heating New Zealand Ltd**
Web:	www.centralheating.co.nz
Email:	specifier@centralheating.co.nz

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Telephone: 0800 357 1233

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

25 years	For Multitubo Pipework
5 years	For Chofu heat pump (1 year only for electrical relays temperature sensor)

- Provide this warranty on the Central Heating NZ Product Warranty standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT).
- Warranty is subject to the Underfloor Heating System being serviced annually.
- The Multitubo warranty allows for 0-10 years replacement product and replacement costs, 10-25 years replacement product only. Refer to Central Heating NZ Product Warranty for details.
- The Chofu Heat pump warranty requires proof of annual service and water treatment. Refer to Central Heating NZ Product Warranty for details.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS WORKERS - MANUFACTURER / SUPPLIER REQUIREMENTS

Installers to be approved by Central Heating NZ, familiar with the materials and the techniques specified and, if required, completed the Central Heating NZ training course.

Handling or recovering refrigerant to be carried out by the appropriate Approved Filler and/or Handler, with a test certificate under the HSNO Act.

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

1.8 DESIGN DATA

The installer shall obtain installation details and pipe loop layout drawings from Central Heating NZ prior to any installation work. The layout and spacing of in-slab heating circuits shall ensure even distribution and the required output in each space to be confirmed in accordance with BS EN 1264.

1.9 AS BUILT DOCUMENTS

Refer to the general section 1238 AS BUILT DOCUMENTATION for the requirements for submission and review of as built documents and records.

Provide the following as built documents and records:

- Photographs of installation prior to concrete pour - particular attention to be given to complex areas or areas of non-standard installation.
- Drawings showing the as built layout - the length of each loop recorded and marked on plan alongside the design length.
- Pressure Test Report.
- Provide to main contractor on completion of the UFH installation.

1.10 MAINTENANCE CONTRACT PROPOSAL

Provide a priced proposed maintenance contract for the heat pump annual service and water treatment.

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Compliance information

1.11 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer / supplier warranty
- Other information required by the BCA in the Building Consent Approval documents.

Quality control and assurance

1.12 INSPECTIONS

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2 PRODUCTS

Materials

2.1 MULTITUBO COMPOSITE PIPING - FEED & UNDERFLOOR HEATING CIRCUITS

Multitubo composite piping suitable for feed pipework and underfloor heating circuits, consists of a multi-layer composite pipe formed of longitudinally overlapped welded aluminium with inner and outer layers of polyethylene raised temperature (PE-RT), complete with press fittings. Piping to meet NZBC B2/AS1 and NZBC G10 performance G10.3.1(a). Refer BRANZ Appraisal 740 for details.

Maximum operating pressure 10 Bar and maximum operating temperature 95°C @ 7Bar. Pipe sizes range from 16mm to 75mm nominal external diameter. Refer to SELECTIONS.

2.2 MULTITUBO PE-RT INVERSE PIPING - UNDERFLOOR HEATING CIRCUITS

Multitubo PE-RT inverse piping suitable for underfloor heating in-slab circuits, it consists of a polyethylene (PE-RT) pipe with an embedded oxygen diffusion (EVOH) barrier complete with brass fittings used to connect to manifold. Piping to meet NZBC B2/AS1 and NZBC G10 performance G10.3.1(a). Appraised as an Alternative Solution, refer BRANZ Appraisal 916 for details.

Maximum operating pressure 6 Bar and maximum operating temperature 70°C @ 4Bar Pipe available in 16mm or 20mm diameter. Refer to SELECTIONS.

2.3 PIPEWORK INSULATION

Pre-formed closed cell foam polymer insulation to UFH feed pipework .

For commercial applications, the piping R-value shall be in accordance with NZBC H1/VM3 Table 7.2.1.2A Piping - Minimum insulation R-value.

Components

2.4 CHOFU AIR TO WATER HEAT PUMP

Chofu heating and cooling monobloc Type DC Inverter, air to water heat pump using R32 refrigerant, with remote controller unit. Available in 6kW, 10kW and 16kW models.

2.5 MANIFOLD - ITAP

ITAP pre-assembled stainless steel thermostatically controlled manifold complete with metal fixing brackets, flow manifold with flow meters or regulation lockshields, return manifold with cut-off valves set up for electrothermal actuators, ball valves equipped with thermometer, end pieces with drain valve and air vent valve. Available with 4 to 14 outlet ports, refer to SELECTIONS for port arrangement.

2.6 MANIFOLD - FAR

FAR pre-assembled, modular manifold with chrome plated brass components complete with fixing brackets, isolation valves, drain/fill valves, air admittance valves, flow and return ports complete with integral flow meters, balancing valves, thermostats and temperature gauges. Optional actuators to each manifold port. Available with 2,3 or 4 port modular units for custom configurations up to 20 ports. Refer to SELECTIONS for port arrangement.

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2.7 BUFFER TANK

Fiorini Mini-HC Series, carbon steel thermal store buffer tank with high density rigid polyurethane insulation and painted galvanized metal sheet exterior covering for wall mounting. Available in 45 litres and 85 litres.

For commercial applications, the buffer tank insulation R-value shall be in accordance with NZBC H1/VM3 Table 7.2.1.2B Vessels, heat exchangers and tanks - Minimum insulation R-value.

2.8 VALVES / METERS / GAUGES

All required isolation valves, drain/fill valves, non-return valves, pressure relief valves, bypass valves, mesh filters, mesh filter balls, flow meters, auto air vents, temperature gauges and/or flow switches as required by Central Heating NZ system schematic.

2.9 PROGRAMMABLE THERMOSTAT - SMARTONE

SmartOne smart thermostat / controller, is a wi-fi controlled time and temperature programmable, electronic thermostat. Remote control with Apps iOS and Android.

2.10 DIGITAL PROGRAMMABLE THERMOSTAT - PRT-RP NZ-V3 SLIMLINE SERIES

Digital Programmable Thermostat, programmable controller and room thermostat, with LCD display.

Accessories

2.11 PRESSURE TESTING KIT

Central Heating NZ supplies a test kit which contains the required fittings necessary for pressure testing an underfloor heating system.

2.12 MANIFOLD CABINET

Powder coated cream galvanized steel underfloor manifold cabinet for flush or surface mount applications. Available in a range of sizes.

2.13 WATER INHIBITOR

Fernox Protector F1 Express inhibitor to prevent scale, corrosion and bacterial growth within the system.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

Pipework to be stored where it is not exposed to sunlight.

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 PRE-INSTALLATION REQUIREMENTS - FOR IN-SLAB INSTALLATIONS

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

Ensure concrete slab provides a minimum pipe cover of 30mm and has damp proof membrane and floor slab insulation to meet the requirements of NZBC H1/AS1 & AS2 for a heated floor. Refer to relevant concrete and thermal insulation section for details.

3.4 MARK OUT SLAB

The main contractor shall mark out all walls, doors, cupboards, benches and permanent fixtures with dazzle spray and identify all construction joints and saw cuts in concrete floors prior to the installation of underfloor heating circuits.

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3.5 CO-ORDINATE WITH SLAB POUR

Co-ordinate the installation of underfloor heating circuits with the concrete slab pour. Multitubo underfloor pipework is not UV stable and to be laid 1-2 days prior to the scheduled slab pour. The pipe not to be left exposed for more than 2 weeks.

Installation/application

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 GENERALLY

Install in accordance with Central Heating NZ installation manual and requirements.

3.8 LAY PRIMARY FEED PIPES

Lay Multitubo composite feed pipes pipework typically in the most direct path from heat source to manifold position, laid either in or under the structural slab, unless directed otherwise.

Use a plastic conduit sleeve where pipe enters and returns through concrete foundations. Apply pipe insulation supplied by Central Heating NZ. If pipework is going through hardfill or underground pipe to be sleeved in waterproof bagging, sealed at each end. If pipework extends beyond the building envelope protect from mechanical damage with rigid conduit such as PVC or un-punched Novacoil.

If installed in hardfill, backfill around pipes or if installed in insulation, the insulation may be sufficient to hold them in place, if required use spray foam to lock in place.

3.9 BENDING PRIMARY FEED PIPES

Refer to BRANZ Appraisal 740 for minimum bending radius of Multitubo composite feed pipes. Multitubo composite pipe 32mm and greater to be bent with the aid of a bending tool.

3.10 INSTALL VALVES / METERS / GAUGES

Install all required valves, meters and gauges in accordance with Central Heating NZ system schematic.

3.11 INSTALL BUFFER TANK

Install wall mounted buffer tank in accordance with manufacturer's requirements and Central Heating NZ system schematic.

3.12 HEAT SOURCE / REMOTE CONTROLLER

Install Chofu air to water heat pump in accordance with manufacturers requirements. Comply with Electricity (Safety) Regulations 2010.

Install the Chofu remote controller unit in accordance with the manufacturer's requirements. Confirm the position of the remote control unit with the contract administrator.

3.13 UNDERFLOOR HEATING CIRCUITS - PIPEWORK GENERALLY

Construct a temporary manifold placeholder where the manifold cabinet is to be installed. Lay pipes in continuous lengths, that start and finish at the manifold position, to pre-designed UFH layout plans. Piping shall be installed completely free of twists, warps or buckles with no pipes crossing over each other.

Pipe joints shall be avoided within the slab/screed, however if a joint is unavoidable contact Central Heating NZ for confirmation of correct jointing method. The maximum loop length shall be confirmed with the designer prior to installation (typically 110-120m).

Where necessary pipes that extend through construction joints shall either be in conduit or wrapped in decoupling tape for minimum 200mm each side of construction join and sealed at each end to prevent concrete entering. At saw cuts, pipes to dip under mesh level. Refer to Central Heating NZ Installation Technical Guide for details.

Identify each loop on pipework at manifold location and record length of each loop as as-built plans.

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3.14 UNDERFLOOR HEATING CIRCUITS - TIED TO REINFORCEMENT

Install selected Multitubo PE-RT Inverse or Multitubo composite UFH circuit pipework after the reinforcing mesh has been raised on chairs. The pipework shall be tied using cable ties or reinforcing tiles to the reinforcing mesh and laid so a minimum of 30mm below the floor slab surface.

3.15 UNDERFLOOR HEATING CIRCUITS - TIED TO INSULATION

Install Multitubo Composite UFH circuit pipework after the installation of under-slab insulation, or on-slab insulation if using a screed topping. The pipework shall be clipped to the insulation using proprietary plastic clips, ensuring pipework is a minimum of 30mm below the floor slab/ screen surface.

3.16 BENDING UNDERFLOOR HEATING CIRCUITS - MULTITUBO PE-RT INVERSE PIPE

The minimum bending radius of Multitubo PE-RT Inverse underfloor heating circuit pipework is 5 times the pipe diameter; 80mm for 16mm diameter pipe.

3.17 BENDING UNDERFLOOR HEATING CIRCUITS - MULTITUBO COMPOSITE PIPE

Multitubo composite pipe 16mm diameter can be bent with or without bending tools. The minimum bending radius of Multitubo composite feed pipes are 80mm without tools and 65mm with bending tool for 16mm diameter.

3.18 INSTALL FLOOR PROBES

Install floor probes in a conduit (can use off-cut circuit pipework), at locations indicated on UFH layout plans.

Run conduit from manifold or nearest wall and terminate centrally between two pipes at this location. The conduit shall be installed within the slab or screed before the concrete is laid and to be situated evenly at the same level as the heating pipes (i.e above the reinforcing mesh). Seal the end of the conduit to prevent ingress of concrete.

3.19 FLOW AND PRESSURE TESTING

Allow to flow test, with oil free compressed air, each loop to ensure no blockages or kinks. Pressure test system with air to minimum 6 bar and to remain at pressure test during the construction of the slab and thereafter until manifold is installed. During construction the main contractor to periodically check the pressure gauge to ensure pressure has held.

Where pipes terminate at manifold position, pipes to be wrapped or similar to protect from UV damage during construction.

Complete flow and pressure test report and take many photos for future referencing.

3.20 INSTALL MANIFOLD & CONNECT TO HEAT SOURCE

Once the walls have been built and building is weathertight, install the manifold and, if required, manifold cabinet. Connect all underfloor pipe circuits using appropriate Multitubo fittings. Connect feed pipes from heat source ensure to thread seal feed pipe connections.

Label all loops for future reference.

3.21 INSTALL PROGRAMMABLE THERMOSTAT

Install selected programmable thermostat in accordance with manufacturer's requirements.

Completion & Commissioning

3.22 FLOOR FINISHES

The floor to be fully dried out before floor finishes are installed. Relative Humidity reading of less than 75% required at time of laying in accordance with NZBC E2/AS1 or lower if required by floor adhesive manufacturer.

3.23 COMPLETION MATTERS

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



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3.24 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

Once the manifold and heat source have been installed, fill the system with water (with inhibitor added) either using a garden hose and systematically opening and closing each loop or alternatively use a high powered flushing cart. Ensure all air is expelled from the system. Balance the system and adjust the flow rate through each loop by adjusting the flow meters.

Start-up procedure to be carried out in accordance with BS EN1264 and in accordance to Central Heating NZ requirements. Water to be introduced at 20-25°C flow temperature for 3 days then increase by 5°C every 24 hours until maximum operational flow temperature is reached. Cool system until the working temperature is acquired.

Ensure the complete central heating system, including radiators if present, is working to required operational temperature.

Add inhibitor after commissioning when system operation is confirmed and the system is watertight and free of air.

4 SELECTIONS

For further details on selections go to www.centralheating.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

4.1 DESIGN INFORMATION

Location:	**Refer to underfloor heating system appended**
Type:	**Central Heating NZ ~ UFH System**
Insulation:	**as per plans**
Floor coverings:	**as per plans**

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7553DM DEVI UNDERTILE HEATING MAT SYSTEM

1 GENERAL

This section relates to the supply and installation of **Devi™** Heating Systems Ltd electric underfloor heating mats and control systems for domestic commercial or industrial applications installed:

- under floor tiles

1.1 RELATED WORK

Refer to ~ for ~

1.2 ABBREVIATIONS

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

The following abbreviations are used in this specification.

UFH	Under Floor Heating

Documents

1.3 DOCUMENTS

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

NZBC G9/VM1	Electricity
NZS 6110	Electrical installations - floor and ceiling heating systems

1.4 MANUFACTURER DOCUMENTS

Devi™ Heating Systems Ltd documents relating to work in this section are:

Devi™ Installation instructions (supplied with all product).

Copies of the above literature are available from:

Web:	www.devi.co.nz
Email:	mail@devi.co.nz
Telephone:	South Island 03 348 0070 or 0800 468 356 North Island 09 415 7250 or 0800 927 635

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide the manufacturer warranty.

20 years	For **Devi™** Devimat™ heating mat
2 years	For **Devi™** DEVIreg™ Manual thermostats DEVIreg™ 330 & DEVIreg™ 530/531/532
5 years	For **Devi™** DEVIreg™ Touch & Smart thermostats

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 QUALIFICATIONS

Installation to be performed by a registered electrician or a **Devi™** approved installer to **Devi™** recommendations.

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

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1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any **Devi™** system, associated products, components or accessories.

1.9 MANUFACTURERS DOCUMENTATION

Refer to **Devi™** Heating Systems Ltd for all product information and installation instructions.

1.10 COMPLY

Comply with Electricity (Safety) Regulations 2010, AS/NZS 3000, NZBC G9, NZS 6110 Electrical installations - floor and ceiling heating systems.

Quality control and assurance

1.11 INSPECTIONS

~

2 PRODUCTS

Materials - heating mat

2.1 SINGLE CONDUCTOR HEAT MAT

Devi™ Devimat™ 150 DSVF, single conductor fully screened heating mat in ready made lengths.

Materials - thermostat controls

2.2 MANUAL ELECTRONIC THERMOSTAT - 530 / 531 / 532

Devi™ DEVIreg™ 530 / 531 / 532 thermostat, flush box mounted

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.

3.3 GENERALLY

All work and materials to comply with **Devi™** installation instructions.

3.4 CONFIRM LAYOUT

Before commencing work confirm the proposed location of heating cables and controls.

3.5 CO-ORDINATE SERVICES

Co-ordinate and co-operate with other sub-trades to avoid any conflict with the installation of the system with other subcontractors work.

Application - general

3.6 PRELIMINARY WORK

Ensure all walls (where required) and floor penetrations are clearly marked.

Installation - Devimat™ under tile floor heating

3.7 PRELIMINARY WORK

The floor is to be cleaned and primed prior to the installation of the heat mat. All fixings such as door stops and floor mounted cabinetry to be clearly marked out on the floor.

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3.8 INSTALL DEVIMAT

Install the **Devimat™** ensuring as much of the floor area is covered in each of the zones shown on the plan / **Devi**™ schedule.

3.9 TILING

After installation of the Devimat™ the floor tiler is to install tiles on a screed or tile directly over the mat using an approved adhesive. Refer to the appropriate tiling section for the supply and installation of the tiles.

3.10 COLD TAIL CONNECTIONS

Terminate all cold tails in a flush box mounted approximately 300 mm above F.F.L.

Installation - thermostat controls

3.11 THERMOSTAT INSTALLATION

Install and connect all thermostat and controls as per the **Devi™** schedule and type listed in SELECTIONS.

3.12 INSTALL THERMOSTAT SENSORS

Install thermostat sensors for each zone as per the **Devi™** schedule. Install sensors within a conduit so they are easily replaced after completion. For a timber floor install the sensor higher than the heating cables / directly under the flooring.

3.13 TEST ALL ELEMENTS

All elements to be tested for continuity, resistance and insulation resistance prior installation of flooring, and after installation and prior to livening. Fill out the pre and post floor placement test result sheets and forward these results to the owner. It is recommended that all elements are tested at prewire stage of the installation.

3.14 TEST AND ACTIVATE ALL CONTROLS

All thermostats to be activated and checked for correct operation. Where programmable or intelligent thermostats are installed the correct day and time to be programmed in. Once these thermostats have been checked, leave in manual and off unless instructed otherwise.

Completion & Commissioning

3.15 COMPLETION MATTERS

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

3.16 COMPLETION - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

~

3.17 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

- Allow to commission the system fully to **Devi™** instructions.

4 SELECTIONS

Where there is a NO SUBSTITUTIONS clause in GENERAL, no substitutions are permitted to any of the specified systems, components and associated products listed in the following SELECTIONS.

4.1 DESIGN INFORMATION

Brand:	**Devi™**
Substrate:	**concrete**
UFH type:	**Devi™ Devimat™ system - under tile**
Floor covering:	**tiles**

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Heating element

4.2 DEVI HEATING MAT

Brand: **Devi™**
Type: Devimat™ DSVF 150

Thermostat control

4.3 DEVI THERMOSTATS

Brand: **Devi™**
Thermostat type: **DEVIreg™ ~**
Accessories: **~**

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7612 RESIDENTIAL EXTRACT SYSTEMS

1 GENERAL

This section relates to the supply and installation of extract systems for residential applications. It includes:

- Kitchen extract systems
- Bathroom and laundry extract systems

1.1 RELATED WORK

Refer to the electrical section(s) for general electrical requirements.

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:

NZBC E2/AS1	External moisture
NZBC E3/AS1	Internal moisture
NZBC G4/AS1	Ventilation
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 60335.1	Household and similar electrical appliances - Safety - General requirements

Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).

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 part of the work:

~ ~

Manufacturer/supplier contact details

Company:	~
Web:	~
E-mail:	~
Telephone:	~

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

~ years For ~

- 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 ~

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

Refer to the general section 1237 WARRANTIES for additional requirements.

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Requirements

1.6 CO-ORDINATE WORK

Co-ordinate all items with the main contractor, in particular cutting of penetrations and waterproofing. Exterior penetrations to NZBC E2/AS1 as consistent with the project requirements.

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 ELECTRICAL QUALIFICATION

Registered electrician to carry out work to Electricity (Safety) Regulations 2010.

1.9 NO SUBSTITUTIONS

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

1.10 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1234 DOCUMENTATION for provision of the following general operation and maintenance information as electronic PDF format documents:

~

Provide this information prior to practical completion.

1.11 EXTRACT FLOW RATES

To NZBC G4/AS1.

Extract fans (including associated ducts) to have a minimum flow rate of:

- 25 L/s for showers and baths
- 50 L/s for cooktops

Compliance information

1.12 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer, importers or distributors warranty
- Installer warranty
- Other information required by the BCA in the Building Consent Approval documents.

Quality control and assurance

1.13 INSPECTIONS

~

2 PRODUCTS

Kitchen extract systems

2.1 KITCHEN DOWNDRAFT EXTRACT SYSTEM - DUCTED TO EXTERIOR WALL

Mechanical extract system installed in benchtop or backsplash wall area comprised of downdraft componentry, extract fan, filter, controls, metal ducting, solid duct wall sleeve, exterior grille and weatherproof cowl.

Refer to SELECTIONS for options.

Bathroom and laundry extract systems

2.2 CEILING MOUNTED FAN, DUCTED TO EXTERIOR WALL / SOFFIT

Mechanical fan ducted system comprised of ceiling fan, filters, controls, aluminium foil flexi ducting joined to a solid duct sleeve sloped to remove condensation, exterior weatherproof grille and flashing.

Refer to SELECTIONS for options.

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Component

2.3 ELECTRICAL FAN SWITCH

Independent switch connected to socket outlet located near fan / unit.

Refer to SELECTIONS for run on timer requirements.

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 - mechanical ventilation

3.3 INSTALL KITCHEN DOWNDRAFT EXTRACT SYSTEM

Install downdraft extract system to AS/NZS 3000, AS/NZS 60335.1 and manufacturer installation instructions. Connect unit with ducting to exit either through roof or exterior wall / soffit. Plug into electrical socket.

3.4 INSULATION CLEARANCE

Provide 50mm clearance between insulation and motor unit / electrical enclosure. Insulation can abut ducts.

3.5 ELECTRICAL INSTALLATION

Install switch and socket outlets to AS/NZS 3000 and AS/NZS 60335.1. Refer to electrical section(s) for requirements.

Completion & commissioning

3.6 COMPLETION MATTERS

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

3.7 COMPLETION - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

~

3.8 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

~

4 SELECTIONS

Kitchen extract systems

4.1 KITCHEN EXTRACT SYSTEM - DUCTED TO ROOFING

Location:	**Kitchen island**
Manufacturer:	**as per sanitary schedule - PLEASE ENSURE INSTALLATING AS PER MANUFACTUERERS SPECIFICATIONS** **least two bends required in ducting** **The blower to be 4-6m away from the rangehood (maximum 12m duct)**

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Bathroom and laundry extract systems

4.2 CEILING MOUNTED FAN, DUCTED TO EXTERIOR WALL / SOFFIT

Location:	**bathrooms and laundries. refer to electrical plans for route and locations.**
Manufacturer:	**Ventech**
Product/model:	**Frameless Magnetic grille VSQ250M**
Grille type/size:	**250mmx 250mm**
Cladding:	**Vertical shiplap weatherboards to soffits and vertical alum. cladding** ***** if ventilation system is inslatalled this may be obsolete.**

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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

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 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

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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
NZS 4514	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:	~

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.

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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 CONFIRM SELECTIONS

Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.

1.11 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.

1.12 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

1.13 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 1.0mm², 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: 1.5mm² on 10 amp MCBs
Lighting circuits:	Commercial: 1.5mm² on 16 amp MCBs
Power circuits:	2.5mm² on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
	2.5mm² on 16 amp MCBs for domestic insulated construction, or filled cavity
	2.5mm² on 20 amp MCBs for unenclosed or unfilled cavity construction
	2.5mm² on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Hot water cylinder circuits:	Single phase: 2.5mm² on 20 amp MCBs
Range/oven/hob circuits:	Single phase: 6mm² 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 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.

2.4 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.

2.5 SURGE PROTECTION

Protection for the homes appliances with IEC 61643 Class ll surge protection devices fitted to the switchboard. For variable electronic equipment fit IEC 61643 Class lll surge protection to switched socket outlets.

2.6 WALL BOXES

Standard grid size or equivalent to be manufactured from plastic or metal, with 2 or more gang size to be metal with steel inserts for accessory securing screws. Screw fixed.

2.7 SWITCH UNITS

Single pole switches to be 16 amp minimum rated, double pole or intermediate to be 16 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units.
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.

2.8 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.

2.9 CEILING ROSES

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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.

2.10 HOT WATER SYSTEM SWITCH

One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

2.11 BATTEN HOLDERS

Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.

2.12 FIRE & SMOKE ALARM SYSYEM

Refer to SELECTIONS.

2.13 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.

2.14 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.

2.15 EXHAUST FANS

Ceiling, wall or duct mounted exhaust fans for ventilation to NZBC G4/AS1, and compliant with AS/NZS 60335.1.

2.16 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.

2.17 DOOR BELL SYSTEM

Complete with transformer for mounting on distribution board. Refer to SELECTIONS.

2.18 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.

2.19 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

2.20 CONTROL PANEL

Control panel system with a minimum of one installer code, one master code, 6 zones minimum and 6 user codes. The installer to select codes to suit installation.

2.21 DETECTORS

There are two main types of detectors:

- Standard passive infrared sensors: Install in stable environments with no wind flow and no direct bright sunlight.

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- Passive infrared/ microwave sensors: Install in area where environmental stability is an issue.

2.22 AUDIBLE DEVICES

Internal sirens can be either a 12V Piezo Siren or a Horn speaker with a sound pressure level of no less than 95dB.

External siren can be either a stainless steel design or have hardened plastic casing. Both designs to be fully weatherproof but not limited to IP66 Rating. The siren box to contain a strobe diffuser in either blue or red. The siren shall contain a horn speaker, 12v speaker or an electronic siren. The external siren box to have both a cover and rear wall tamper mechanism.

2.23 CABLING

Security alarm wiring to NZS/AS 1125 for cables.

Security alarm wiring to be multi stranded and not single stranded, minimum 0.5mm².

2.24 PERIPHERALS

Fit anti-tamper devices to detectors, control panels and equipment housings, programmed to give a tamper indication when the system is unset and a tamper alarm when the system is set.

Standard keypad manufactured of moulded hardened plastic with either a LED or LCD screen, to match the style of the wiring accessories in diameter, colour and aesthetics.

2.25 COMMUNICATIONS

Digital dialler to be built into the PCB of all control panels, with the options for both monitoring and remote dial in windows based software. Digital dialler to comply with all the industry standard communication formats including contact I.D and SIA, and NZ Telepermit certification.

Remote software able to upload / download programming changes and or history events and change status of the security alarm with the ability to be turned off if required.

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 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.

3.4 CIRCUIT PROTECTION

Install MCBs at distribution board to AS/NZS 3000 to protect each final sub circuit.

3.5 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

3.6 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.

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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

3.7 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.

3.8 ARC FAULT DETECTION DEVICE (AFDD)

To AS/NZS 3000 clause 2.9, AFDD on all final sub-circuits not exceeding 20A.

3.9 EARTH LEAKAGE PROTECTION

Install RCD protection to AS/NZS 3000.

3.10 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 ll protection at the switchboard, protect the device by a dedicated MCB.

3.11 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.

3.12 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.

3.13 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.

3.14 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.

3.15 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.

3.16 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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3.17 WALL BOXES

Mount flush in cavity construction size to fit products selected. Fix vertically mounted wall boxes to studs. Screw fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

3.18 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.

3.19 ISOLATING SWITCHES

Locate isolating switches in positions as confirmed by the owner, when not specifically shown on the drawings.

3.20 LIGHT FITTINGS

Install light fittings in locations and at heights specified and confirmed by the owner, in accordance with the fitting manufacturer requirements.

3.21 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.

3.22 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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3.23 LIGHT FITTINGS TO INSULATION

Type of fitting	Minimum insulation clearance	Comments
Recessed, marked NON-IC, or unmarked	100mm (increase if over 100W)	To NZS 4246. 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 NZS 4246. Do not cover the fittings.
Recessed, IC, IC-F, or IC-4.	Abut & cover fittings.	To NZS 4246. Ensure insulation complies.
Recessed, marked Do-Not-Cover	Manufacturer clearances	To NZS 4246. Do not cover the fittings.
Independent control gear	Place on top of insulation & 50mm from fittings	To NZS 4246. 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 NZS 4246. Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings.
Surface fittings & exposed insulation	200mm	To NZS 4246. 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.

3.24 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 AS/NZS 3000:2018
Marked NON-IC, or unmarked, >100W	200mm, vertical & horizontal	To AS/NZS 3000:2007
CA 80, CA 90 or CA 135	100mm, vertical & horizontal	To AS/NZS 3000:2018
IC, IC-F or IC-4	100mm, horizontal NA, vertical	To AS/NZS 3000:2018 To be NA vertical, fitting must be covered by insulation. If not covered use 100mm clearance.
Marked Do-Not-Cover	100mm, vertical & horizontal	To AS/NZS 3000:2018. 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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3.25 INBUILT RECESSED HOT APPLIANCES TO INSULATION

Appliance	Minimum insulation clearance	Comments
Electrical heaters	Manufacturer clearances	To NZS 4246.
Electrical heaters	100mm	Manufacturer clearances not known. To NZS 4246. Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.
Heat producing appliances & equipment	Manufacturer clearances	To NZS 4246.
Heat producing appliances & equipment	50mm	Manufacturer clearances not known. To NZS 4246. 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

3.26 EXTRACTS, VENTS & ROOF UNDERLAY TO INSULATION

Appliance	Minimum insulation clearance	Comments
Ducted fan motors	50mm	To NZS 4246. Includes ducted rangehoods, extractors etc. Applies to the motor unit and electrical enclosures (not the ducts).
Ducted fan ducts	Abut	To NZS 4246. Excludes motor unit and electrical enclosures.
Unducted fan motors usually discharging to ceiling space	200mm	To NZS 4246. 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 NZS 4246. Maintain clearance from underside of roofing or flexible roofing underlay, to prevent wicking.

3.27 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.

3.28 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.

3.29 BATHROOM ELECTRICAL FIXTURES

Install all electrical fixtures. Connect the following bathroom and toilet electrical items:

- Heated towel rails: Install to manufacturers requirements and installed in accordance with AS/NZS 3000
- Mirror demisters: Locate centrally above the wash hand basin(s). Connect wiring to room lighting unless specified otherwise.
- Exhaust fans: Install exhaust fans to manufacturer requirements. Installed in accordance with AS/NZS 3000 and NZBC G4/AS1.

3.30 OUTDOOR/EXTERIOR SERVICES

Install all wiring systems in accordance with AS/NZS 3000 and in accordance with the manufacturer recommendations:

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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.

3.31 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

3.32 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.

3.33 SEAL ALL PENETRATIONS

Seal all penetrations, including in and around conduits and sleeves, in accordance with manufacturer instructions. For fire and/or acoustic rated elements, maintain the rating with the seal systems.

Completion & Commissioning

3.34 COMPLETION MATTERS

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

3.35 COMPLETION - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

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3.36 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

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4 SELECTIONS

Materials

4.1 DISTRIBUTION BOARD

Location:	X2 Flush boards witchboards (main house and flat) - refer to enletrical plans for location
Brand / type:	tbc

4.2 FIRE & SMOKE ALARM SYSTEM

Refer to appropriate fire and smoke alarm section:

12 series drawings. smoke almars to be interconnected.

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4.3 DOOR LOCK SECURITY SYSTEM

Location	Brand / type	type
W01, D01, CONFIRM POSSIBLE LOCK TO FLAT AND LEVEL 2 EXTERNAL DOOR	**E-Lok model TBC by owner model is to include remote locking and unlocking via smartphone app, with Wi-Fi connectivity and all required accessories.**	**tbc refer electrical plan for location**

Outlets - fittings

4.4 INTERIOR SWITCHES AND SWITCHED SOCKET UNITS

Item	Brand / type
Switch / socket outlets:	**Hager, Finesse TBC**
Coverplate colour:	**matt black**
Switch module colour:	**matt black**

NOTE: make sure hold down dimmers are included to all dimmers

Item	Brand / type
Toggle switch:	**Hager, Finesse**

Item - RCD	Brand / type
Socket outlet:	**Hager, Finesse**

4.5 INTERIOR LIGHT FITTINGS

Type	**refer 12 series plans and Schedule of light fittings**

4.6 EXTERIOR SWITCHES AND SWITCHED SOCKET UNITS

Item	Brand / type
Weatherproof socket outlets:	**tbc by contractor**

4.7 EXTERIOR LIGHT FITTINGS

Type	**refer 12 series plans and Schedule of light fittings**

4.8 HEATED TOWEL RAILS

Location	Brand / type
Type	**refer 70 series plans and Schedule of plumbing fittings**

4.9 MIRROR DE-MISTERS

Location	Size	Wattage
Type	**refer 70 series plans**	

4.10 BATHROOM FANS AND HEATERS

Location	Brand / type
Bathroom / ensuite-Extract:	**refer 70 series plans and Schedule of plumbing fittings**

4.11 ELECTRICAL APPLIANCES

Item	Brand / type
Type	**refer 60 series plans and Schedule of plumbing fittings Escea LE1250 E-fire please allow power supply as per installation manual**

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