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8432BF BOUNDARYLINE FENCING & GATES 271

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1013 DOCUMENT CONTROL

1 DOCUMENT CONTROL

Document Control

1.1 PREPARED BY

Company:	Foley Group Architecture Ltd.
Street Address:	30 Southwark St
City:	Christchurch
Telephone:	03 3775 666
Email:	info@foleygroup.co.nz

1.2 DOCUMENT DETAILS

Project Name:	Solstice QT
Project Number:	3796
Client:	Neo Anderson Limited Partnership

1.3 REVISION CONTROL

Issue:	a
Revision:	Building Consent
Date of Issue:	03/11/2026

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1220 PROJECT

1 GENERAL

This general section describes the project including:

- A description of the work
- Design construction safety
- Principal's Health & Safety matters
- Site description, features and restrictions
- Design parameters for design by contractor
- Archaeological discovery

1.1 READ ALL SECTIONS TOGETHER

Read all general sections together with all other sections.

1.2 DESCRIPTION OF THE WORK

The project includes the supply and installation of all work associated for this development including all internal finishes and fixtures, soft and hard external landscaping, fencing, grassing, and associated site-works. Refer to proposed site plan in the architectural drawing set.

1.3 RESTRICTED BUILDING WORK

This project includes Restricted Building Work.

Design Construction Safety

1.4 DESIGN CONSTRUCTION SAFETY

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

1.5 DESIGN CONSTRUCTION SAFETY MATTERS

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

ITEM	COMMENT
Site access	Steep road access, contractor to manage site access requirements to suit
~	~

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

1.6 DESIGN CONSTRUCTION SAFETY REPORT

Refer to the separate project design construction safety report ~.

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

Principal's Health & Safety Matters

1.7 PRINCIPAL'S KNOWN SITE HAZARDS

Site hazards known to the principal are:

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Confirm with principal

1.8 PRINCIPAL'S SITE HEALTH AND SAFETY PLAN

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

Site

1.9 SITE

As shown on proposed site plan.

1.10 LEGAL DESCRIPTION

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

1.11 EXISTING SERVICES

The following are the network utility services:

Electrical:	Refer electrical eng docs
Communications:	Refer electrical eng docs
Water:	Refer civil eng docs
Stormwater:	Refer civil eng docs
Foul water:	Refer civil eng docs

The services are also shown on the drawings.

1.12 SITE FEATURES

refer to drawings for site features.

Site environment - Durability

1.13 EXPOSURE ZONE

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

The site zone is: B, as shown on drawings.

Site environment - Wind

1.14 WIND DESIGN PARAMETERS - NON SPECIFIC DESIGN

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

Building wind zone High, as shown on drawings (refer to NZS 3604, table 5.4)

Site environment - Seismic

1.15 EARTHQUAKE ZONE - NON SPECIFIC DESIGN

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

The earthquake zone is: 3, as shown on drawings.

Archaeological discovery

1.16 REPORT FINDING ANY ANTIQUITIES AND ITEMS OF VALUE

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

Pre-1900, items or evidence of human activity on the site, come under the Heritage New Zealand Pouhere Taonga Act 2014. If such items or evidence is discovered work must stop immediately and the Contract Administrator must be notified immediately. The site may be classified as an Archaeological Site under the Act, and the Contract Administrator or Owner must contact the Heritage New Zealand for authority to proceed.

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



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1222 PROJECT PERSONNEL

1 GENERAL

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

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

Principal

1.1 PRINCIPAL

Name:	Neo Anderson Limited Partnership
Street:	19 Shotover Street, Queenstown
Telephone:	021333265
Represented by:	Greg Wensley
Email:	greg@wintermiles.nz

Contractor

1.2 COMPANY

Name:	Amalgamated Builders Limited
Street:	146 Otepuni Avenue Newfield Invercargill 9812
Telephone:	~
Represented by:	~
Mobile:	~
Email:	~

1.3 CONTRACT MANAGER

Person:	TBC
Mobile:	~
Telephone:	~
Email:	~

1.4 SITE FOREMAN

Person:	~
Mobile:	~
Telephone:	~
Email:	~

Consultants

1.5 CONTRACT ADMINISTRATOR

Practice:	~
Postal:	~
Street:	~
Telephone:	~
Represented by:	~
Mobile:	~
Email:	~

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1.6 INDEPENDENT CERTIFIER

Practice:	~
Postal:	~
Street:	~
Telephone:	~
Represented by:	~
Mobile:	~
Email:	~

1.7 ARCHITECT

Practice:	Foley Group Architecture Ltd.
Postal:	PO Box 22166
Street:	30 Southwark St, Christchurch 8011
Telephone:	03 3775 666
Email:	info@foleygroup.co.nz

1.8 STRUCTURAL ENGINEER

Practice:	Structural Design Lab Ltd.
Street:	Level 1, 119 Wrights Road, Addington, Christchurch
Represented by:	Hamish Mackinven
Mobile:	027 260 4088
Email:	hamish@structuraldesignlab.co.nz

1.9 FIRE ENGINEER

Practice:	Powell Fenwick
Street:	383 Colombo Street, Sydenham, Christchurch
Telephone:	03 366 1777
Represented by:	David James - Director
Mobile:	027 489 8652
Email:	davidj@pfc.co.nz

1.10 CIVIL ENGINEER

Practice:	Double Cone Ltd.
Street:	*99 Arrowtown-lake Hayes Road, Rd 1, Queenstown*
Represented by:	Richard Paenell
Mobile:	027 250 1102
Email:	Richard@doublecone.nz

Territorial Authority

1.11 BUILDING CONSENT AUTHORITY

Name:	QLDC



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1231 CONTRACT

1 GENERAL

This GENERAL section refers to contract related matters.

1.1 NOMINATED SUBCONTRACTORS

The following parts of the work are to be carried out by:

Nominated subcontractor	For
~	~
~	~

1.2 SEPARATE CONTRACTORS

The Principal is engaging the following separate contractors to concurrently carry out work not included in the main contract.

Separate contractor	For
~	~
~	~

1.3 EXCEPTIONS TO CONTRACTORS OBLIGATION TO SUPPLY

The Principal is supplying the following for inclusion in the contract works:

~

1.4 PRIME COST SUMS

The following prime cost sums are included in the contract for the supply of materials by the contractor or a nominated subcontractor for incorporation into the contract works. The sums include for the net supply price including delivery to the site plus a reasonable allowance for the contractor's expense and profit/margins.

Amount	For the supply only of
~	~
~	~

1.5 PROVISIONAL SUMS

The following provisional sums are included in the contract for work to be carried out by the contractor or a nominated subcontractor. The sums include for the cost of the work plus a reasonable allowance for the contractor's expense and profit/margins.

Amount	For
~	~
~	~

1.6 PROVISIONAL ITEMS

The following provisional items are included in the contract for individual elements of work with nominal quantities.

Quantity	Element
~	~
~	~

1.7 OTHER

Description ~



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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:

1235S1	Schedule of Shop Drawings
1237S1	Schedule of Warranties
1238S1	Schedule of As Built Documentation
1239S1	Schedule of Operation & Maintenance Info
1270S1	Schedule of Samples & Prototypes
1270S2	Schedule of Spares & Maintenance Products
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: TBC
Revisions: TBC

2.2 DOCUMENT RECEIPT - HARD COPIES

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

2.3 DOCUMENT RECEIPT - ELECTRONIC DOCUMENTS

Electronic documents issued for construction shall be obtained from a file hosting service

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1235 SHOP DRAWINGS

1 GENERAL

This general section relates to common requirements for the preparation, submission and review of shop drawings referred to in this specification and in separate specifications/documents relating to this project. Detailed requirements for shop drawings for particular parts of the work are included in the specific work section.

1.1 SCHEDULE SECTION

Refer to 1235S1 SCHEDULE OF SHOP DRAWINGS for work sections contained in this specification that have requirements for shop drawings.

1.2 SHOP DRAWING FORMAT

Prepare shop drawings at appropriate scales to enable good legibility. Unless otherwise specified in a work section, submit shop drawings in the format as listed in SELECTIONS.

1.3 PROGRAMME FOR SHOP DRAWINGS

Allow time in the programme for the preparation, coordination and review of shop drawings. Allow also for such resubmission and further review as may be required prior to fabrication. No extension of time will be allowed for resubmission and further review.

1.4 COMMUNICATION WITH SHOP DRAWING DETAILER

Agree and arrange for such direct contact as is appropriate between detailer, consultant and others whose input may be required in the preparation of the shop drawings. Such direct communication does not relieve the contractor of the need to carry out their own coordination and check of shop drawings.

1.5 CONTRACTOR COORDINATION OF SHOP DRAWINGS

Before submitting the shop drawings for review, carry out coordination to ensure that allowance has been made for all other parts of the work that relate to the work detailed in the shop drawings.

1.6 COORDINATION WITH SITE MEASURE

The contractor is solely responsible for coordination of shop drawing dimensions with site measurements. The reviewer's dimensional review is limited to visual/aesthetic matters only

1.7 SHOP DRAWING REVIEW

Submit shop drawings to the named reviewers for review, in due time to ensure conformance with the contract programme.

- Where no time is stated in a specific section allow 10 working days for review by the reviewer. Where a large number of drawings are involved more time will be necessary.
- Where no person is named as the reviewer, submit the shop drawings to the contract administrator.

Shop drawing review indicates only that the shop drawing interpretation of the design concept has been reviewed without the need for further modification, other than the corrections indicated by the reviewer.
The reviewer may advise that:

- The shop drawings have been reviewed and work may proceed; or
- The shop drawings have been reviewed and work may proceed subject to notes, annotations or comments provided; or
- The shop drawings have been reviewed and work may proceed subject to notes, annotations or comments provided. Resubmitted revised shop drawings shall be provided for the record, or
- Work may not proceed. Revise and resubmit shop drawings

1.8 RESPONSIBILITY

Review of shop drawings does not relieve the contractor of responsibility for the correctness of the shop drawings, site dimensions, the overall design, coordination and performance, or for ensuring the work is carried out in compliance with the contract documents. It 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. Review cannot be construed as authorising departures from the contract documents.

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1.9 RESUBMISSION OF SHOP DRAWINGS

Reviewed drawings which are required to be resubmitted to correct comments or notations indicating where the shop drawings are at variance with the contract documents, are to be modified and resubmitted to the reviewer for re-review. Allow 5 working days for re-review by the reviewer.

1.10 WORK MAY PROCEED

Before proceeding with any fabrication, installation or erection, advice must be obtained from the named reviewers that work may proceed. Where no named reviewer has been nominated advice must be obtained from the contract administrator.

1.11 BIM MODEL

BIM (Building Information Model) is being used for the construction of the works. Refer to SELECTIONS for details of the BIM model and the information required to be included.

2 SELECTIONS

2.1 SHOP DRAWING FORMAT

Submit the shop drawings in the following format

	Format/Size
Hardcopy	-
Electronic copy	PDF
CAD file	DWG or as required

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1235S1 SCHEDULE OF SHOP DRAWINGS

1 GENERAL

This schedule section identifies work sections in the specification that have requirements for the preparation, submission and review of shop drawings.

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- 1235 SHOP DRAWINGS
- Identified Work Sections

Shop drawings

1.2 SHOP DRAWINGS

Refer to the following sections:

5231 Interior Doors & Windows

1.3 SHOP DRAWINGS - ADDITIONAL ITEMS

Refer to separate documentation for shop drawing requirements not contained within this specification.

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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 - REQUIRED BY CONTRACT

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

1.8 WARRANTIES - SUBMISSION NZIA SCC CONTRACT

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

1.9 WARRANTIES - SUBMISSION NZS 3902 CONTRACT

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

1.10 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.

1.11 GUARANTEES - SUBMISSION NZS 3915 CONTRACT

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

1.12 WARRANTIES/GUARANTEES - SUBMISSION NZS 3916 CONTRACT

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

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2 SELECTIONS

Project warranties / guarantees

Guarantees - Contractor - Master Build Services Ltd

2.1 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.

2.2 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.

Guarantee - Contractor - New Zealand Certified Builders Association

2.3 HALO 10-YEAR RESIDENTIAL GUARANTEE

Complete the Halo 10-year residential guarantee insurance application process and pay the premium. Instruct the owner to return the Completion Certificate to Halo Guarantees Limited on practical completion.

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.

- 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
4131AL	Allco Volclay Tanking
4161T	Kingspan Thermakraft Underlays, Foils, DPC, DPM, & Tapes
4171HR	James Hardie® Rigid Air Barriers
4231HI	James Hardie External Fire & Acoustic Wall Systems
4231HO	James Hardie® Oblique™ Weatherboard Cladding
4231HS	James Hardie® Stria™ Cladding
4239JH	James Hardie® Soffits
4311D	Dimond Profiled Metal Roofing
4381VB	Viking Buzon Deck Support System
4422VE	Viking Enviroclad Membrane
4521	Aluminium Windows & Doors
4611	Glazing Exterior
4612	Glazing Interior
4711P	Pink® Batts® Thermal Insulation
4855JG	Juralco Glass Balustrade Systems
5171RI	RCS Integra Lightweight Concrete Intertenancy System
5316RC	Rondo Direct-Fix Ceilings - Residential
5511	Joinery & Cabinetry Fixtures
6221A	ARDEX Floor Tiling Solutions
6700D	Dulux Painting General
6813WF	Woodland PhoneStar Acoustic Board - Floors
7123	Hot & Cold Water System
7150	Sanitary Fixtures, Tapware & Accessories.
7382RF	Ryanfire Fire Stopping Systems
7411D	Dimond Rainwater Spouting Systems
7553	Underfloor Heating Mat System
7612	Residential Extract Systems
7673	Split Unit Heat Pump Systems
7702	Electrical Standard
8432BF	Boundaryline Fencing & Gates

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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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

There are no work section requirements.

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:

4231HI	James Hardie External Fire & Acoustic Wall Systems
4231HO	James Hardie® Oblique™ Weatherboard Cladding
4231HS	James Hardie® Stria™ Cladding
4239JH	James Hardie® Soffits
4311D	Dimond Profiled Metal Roofing
4555	Garage Doors
4855JG	Juralco Glass Balustrade Systems
6221A	ARDEX Floor Tiling Solutions
7123	Hot & Cold Water System
7150	Sanitary Fixtures, Tapware & Accessories.
7411D	Dimond Rainwater Spouting Systems
7612	Residential Extract Systems
7673	Split Unit Heat Pump Systems
8432BF	Boundaryline Fencing & Gates

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:

7673	Split Unit Heat Pump 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

TBA

Site preparation

1.5 SITE ACCESS

Confirm with principal

1.6 WORKING AREA

Whole 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).

Temporary construction

1.8 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.

1.9 TEMPORARY SITE FENCING

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

1.10 SITE - SAFETY SIGNAGE

Provide hazard board and other safety signage as required.

1.11 SITE - PROJECT SIGN

Obtain approval to, provide and erect a timber framed sign board (Core Flute up to 1.2m x 2.4m or similar). Sign to be, fully painted with vinyl lettering or fully printed, and displaying:

- Title of contract
- Principal's name



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

First aid

1.12 FIRST AID EQUIPMENT

Provide first aid equipment.



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1247 TRAFFIC CONTROL

1 GENERAL

This general section relates to temporary on and off site traffic control including:

- Access and egress
- Traffic control and signage
- Deliveries
- Parking
- Vehicle wash down

Access and egress

1.1 TRAFFIC MANAGEMENT PLAN

Refer to the building and resource consents for territorial authority requirements relating to the provision of a traffic management plan. Submit the plan to the contract administrator.

1.2 TRAFFIC SAFETY

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

1.3 PROTECT EXISTING VEHICLE CROSSING

Provide protection to existing vehicle crossing for use by construction traffic for the duration of the contract. Comply with territorial authority requirements for the construction of temporary protection to the crossing. Ensure the protection is capable of supporting the heaviest loads to be delivered to the site. Maintain to an acceptable standard until it is no longer required for construction traffic. Replace the crossing if the temporary protection has not properly protected the existing crossing.

1.4 PROTECT NEW VEHICLE CROSSING

Provide protection to the new vehicle crossing for use by construction traffic for the duration of the contract. Comply with territorial authority requirements for the construction of temporary protection to the crossing. Ensure the protection is capable of supporting the heaviest loads to be delivered to the site. Maintain to an acceptable standard until it is no longer required for construction traffic. Replace the crossing if the temporary protection has not properly protected the existing crossing.

1.5 CONSTRUCT TEMPORARY HARD STANDING

Construct temporary hard standing for use by construction traffic for the duration of the contract. Refer to SELECTIONS.

Traffic control and signage

1.6 TRAFFIC CONTROL - WORK IN THE ROADWAY

Where temporary works are required to be carried out in the roadway, obtain all required consents and comply with the road network authorities traffic management requirements.

1.7 CONES AND BARRIERS

Provide marker cones and barriers to demark restricted and dangerous areas and for other site safety reasons as required.

Deliveries

1.8 GOODS DELIVERY AREA

Refer to SELECTIONS for goods delivery area. Delivery vehicles that are not able to use the designated delivery area must queue in the designated off site waiting area.

Parking

1.9 PARKING

Refer to SELECTIONS for on site parking areas and parking restrictions.

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Completion

1.10 REMOVE TEMPORARY PROTECTION

When no longer required remove temporary protection. Clean and leave in the condition prior to the contract works commencing. Replace surfaces where the protection has not provided the required protection.

1.11 REMOVE TEMPORARY HARD STANDING

When no longer required remove temporary hard standing and make good as required.

2 SELECTIONS

2.1 SITE ACCESS

Via steel road, allow to co-ordinate with road upgrades as part of Resource Consent requirements
Refer drawing: Refer civil eng docs

2.2 SITE EGRESS

Refer drawing: civils eng & architects drawings

2.3 TIME FOR ACCESS AND EGRESS

Site access and egress is allowed between the following times.
Times: Inside normal working period, refer QLDC requirements

2.4 LIMITATION ON ACCESS AND EGRESS

Site access and egress is not allowed between the following times.
Times: Outside normal working period, refer QLDC requirements

2.5 TEMPORARY HARD STANDING

Refer drawing: Refer site management plan

2.6 GOODS DELIVERY AREA

Designated delivery area: Contractor to confirm on site
Off site waiting area: Contractor to confirm on site

2.7 PARKING

On site parking is limited to the following areas.
Location: On site parking, contractor to coordinate

2.8 PARKING RESTRICTIONS

Parking is not allowed in the following areas.
Location: Roadway is narrow, parking not permitted where public access & FENZ access will be affected during the course of construction

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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 TEMPORARY ROADS

Provide as necessary all temporary roads, tracks, crossings and hard standing required for the efficient execution of the works and maintain to approval. Manage traffic safety on-site and related traffic off-site, to WorkSafe. Managing Work Site Traffic - Good Practice Guidelines.

1.5 CONSULTANTS TEMPORARY SITE OFFICE

Provide temporary accommodation and facilities for site meetings and for use by consultants while on site.

1.6 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

1.7 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

1.8 SITE HOARDINGS

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

Construct hoardings with continuous cladding of:

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

1.9 LIGHTING

Provide temporary lighting as necessary to protect the public and others, for the proper execution of the works and to meet the requirements of territorial or other authority.

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1.10 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.

1.11 PROVIDE CONCRETE WASHWATER RUN OFF PROTECTION

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

Control run off from:

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

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

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

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

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

Spilt or surplus material:

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

Pump washwater away from drains, waterways and adjoining property.

1.12 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

1.13 SCAFFOLDING

Provide scaffolding for the efficient execution of the works.

Comply with:



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- 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

1.14 WATER

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

1.15 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.

1.16 TELEPHONE

Provide on-site temporary telephone facilities.

1.17 COMPUTER FACILITIES

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

1.18 PRINTER

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

1.19 IMAGING

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

Care and protection - Site

1.20 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.

1.21 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.

1.22 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.

1.23 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.

1.24 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.

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Care and protection - Project

1.25 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.

1.26 SPECIAL PROTECTION GENERAL

Refer to individual work sections for any special protection requirements.

1.27 SPECIAL PROTECTION PROJECT

-

Care and protection - miscellaneous

1.28 CONSTRUCTION KEYING AND SECURITY

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

1.29 TEMPORARY STORAGE

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

Rubbish removal

1.30 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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1270 CONSTRUCTION

1 GENERAL

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

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

1.1 SCHEDULE SECTION

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

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

Quality control and assurance

1.2 QUALITY ASSURANCE

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

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

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

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

1.3 PROVIDE QUALITY PLAN

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

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

1.4 REVIEW OF QUALITY PLAN

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

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

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

1.5 COMMENCEMENT OF WORK

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

1.6 NOTICE

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

1.7 NOTIFIABLE WORK

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

Noise and nuisance

1.8 LIMIT CONSTRUCTION NOISE

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

1.9 ACCEPTABLE NOISE LEVELS

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

1.10 PROVIDE INFORMATION TO NEIGHBOURS

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

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

1.11 ADDITIONAL NOISE CONSTRAINTS

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

Refer to Resource Consent conditions for any additional constraints.

1.12 ROADWAY AND FOOTPATH

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

1.13 VEHICLE CROSSING

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

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1.14 TRAFFIC SAFETY

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

1.15 DIRT AND DROPPINGS

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

1.16 DAMAGE AND NUISANCE

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

1.17 SMOKE FREE REQUIREMENTS

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

1.18 RESTRICTIONS

Do not:

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

Set-out and tolerances

1.19 SURVEY INFORMATION

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

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

1.20 DATUM

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

1.21 SET-OUT

Set out the work to conform with the drawings.

1.22 SET-OUT BY LICENSED CADASTRAL SURVEYOR

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

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

1.23 CONFIRM HEIGHT IN RELATION TO BOUNDARY

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

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

1.24 USE OF SET-OUT INSTRUMENTS

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



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1.25 CHECK DIMENSIONS

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

1.26 TOLERANCES

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

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

Refer to work sections for tolerance requirements for finishes.

Execution

1.27 EXAMINE PREVIOUS WORK

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

1.28 REPORT DEFECTIVE PREVIOUS WORK

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

1.29 EXECUTION GENERALLY

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

1.30 EXECUTION - NO DETAIL IS PROVIDED

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

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

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

1.31 EXECUTION - ACCEPTABLE SOLUTION IS REFERRED TO

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

1.32 MINIMISE DELAYS DUE TO WEATHER

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

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Defective or damaged work

1.33 DEFECTIVE OR DAMAGED WORK

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

Hot work - fire safety

1.34 HOT WORK

Generally, to NZS 4781 Code of Practice for Safety in Welding and Cutting, includes but not limited to: Welding; flame cutting; disc cutting; grinding; bitumen blowers; blow lamps; brazing; burning off; soldering; use of hot air guns.

Note - where the standard refers to the use of asbestos, alternative fire-resistant materials are to be used.

1.35 COMBUSTIBLE MATERIAL

Manage fire risk to adjacent combustible materials by isolating hot work at a safe distance away, or store combustible materials away from fire hazards. Additional precautions may be necessary if combustible material cannot be separated from hot work, refer to NZS 4781, 6.1.4.

1.36 HOT WORK PERMIT

A hot work permit, issued by the main contractor, is required when it is not possible to isolate hot work from adjacent fire hazards. Refer to example in NZS 4781, Appendix A.

1.37 FIRE SYSTEMS

Fire systems should remain operational where possible while welding or cutting work is performed. Where required, shield fire systems to NZS 4781 clause 6.4.

1.38 DURING SUSPENDED WORK

Maintain a fire watch at least 30-minutes after hot works are suspended e.g. during lunch breaks or overnight, to NZS 4781, clause 6.2.7.

For hot works in confined spaces, prevent potential ignition of flammable gases, to NZS 4781 clause 6.5.

Qualifications

1.39 QUALIFICATIONS GENERALLY

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

1.40 QUALIFICATIONS WORKERS – RESTRICTED BUILDING WORK

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

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

1.41 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

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

1.42 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

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

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1.43 QUALIFICATIONS WORKERS – INDUSTRY QUALIFICATION REQUIREMENTS

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

1.44 QUALIFICATIONS – PRODUCER STATEMENTS

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

1.45 REPLACEMENT OF PERSON

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

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

Products

1.46 NEW PRODUCTS

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

1.47 COMPATIBILITY OF PRODUCTS

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

1.48 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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

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

Refer to individual work sections for any special requirements.

1.49 SUBSTRATE CONDITIONS

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

1.50 INSTALLING PRODUCTS

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

1.51 COMPLY WITH STANDARDS

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

1.52 CONDITION OF PRODUCTS

To be in perfect condition when incorporated into the work.

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1.53 INCOMPATIBLE PRODUCTS

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

Samples

1.54 SAMPLES FOR REVIEW

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

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

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

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

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

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

Refer to SAMPLES clauses in work sections for further detail.

1.55 CONTROL SAMPLES

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

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

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

1.56 OTHER SAMPLE REQUIREMENTS

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

Prototypes

1.57 PROTOTYPES - TESTING

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



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

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

1.58 PROTOTYPES - REVIEW

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

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

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

1.59 PROTOTYPES - GENERAL

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

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

Spares & maintenance products

1.60 SPARES & MAINTENANCE PRODUCTS

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

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

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

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

Cleaning during the works

1.61 PERIODIC SITE CLEANING

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

1.62 TRADE CLEANING

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

1.63 SPECIAL SITE CLEANING

TBA

Remove protection

1.64 REMOVE PROTECTION

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

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

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

Refer to individual work sections for any special removal requirements.

Completion

1.65 SPECIAL REQUIREMENTS

Refer to individual work sections for any special completion requirements.

1.66 LEAVE WORK

Leave work to the standard required for the following procedures.

1.67 COMPLETION - TESTS & CERTIFICATION

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

1.68 REMOVE CONSTRUCTION WASTE

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

1.69 COMPLETE ALL SERVICES

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

1.70 CLEANING BY CONTRACTOR

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

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

1.71 CLEANING BY COMMERCIAL CLEANER

In addition to cleaning carried out by the contractor, use a commercial cleaning company to clean the whole of the interior of the building, including all appliances, equipment, fittings, surfaces and finishes to leave it without any blemish. Cleaning to include:

- Clean and wash down all external surfaces to remove dirt, debris and marking.
- Clean all interior surfaces including cabinetwork, joinery, sanitary and hardware items.
- Clean all floor finishes.
- Clean and polish all glass, both sides. Take particular care when removing paint or cementitious materials to not damage the glass. Do not use metal scrappers that may damage the glass.

Commissioning

1.72 SPECIAL REQUIREMENTS

Refer to individual work sections for any special commissioning requirements.

1.73 MOVING PARTS

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

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1.74 COMMISSIONING - TESTS & CERTIFICATION

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

1.75 INSTRUCTION AND DEMONSTRATION

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

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

1.76 SECURITY AT COMPLETION

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

Practical completion submission

1.77 ADDITIONAL PRACTICAL COMPLETION INFORMATION

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

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

1.78 ADDITIONAL PRACTICAL COMPLETION REQUIREMENTS

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

Defects period submissions

1.79 DEFECTS REMEDIATION - SUBMISSIONS

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

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

Completion submissions

1.80 FINAL COMPLETION - SUBMISSIONS

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

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

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1270S1 SCHEDULE OF SAMPLES & PROTOTYPES

1 GENERAL

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

- The submission of samples
- The submission of prototypes for review
- The provision and testing of prototypes

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- 1270 CONSTRUCTION
- Identified Work Sections

Samples

1.2 SAMPLES

There are no work section requirements.

1.3 SAMPLES - ADDITIONAL ITEMS

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

Prototypes

1.4 PROTOTYPES - REVIEW

Refer to the following sections:

4821 Flashings

1.5 PROTOTYPES - TESTING

There are no work section requirements.

1.6 PROTOTYPES - ADDITIONAL ITEMS

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



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1270S2 SCHEDULE OF SPARES & MAINTENANCE PRODUCTS

1 GENERAL

This schedule section identifies work sections in the specification that have requirements for spares and maintenance products.

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- 1270 CONSTRUCTION
- Identified Work Sections

Spares & maintenance products

1.2 SPARES & MAINTENANCE PRODUCTS

There are no work section requirements.

1.3 SPARES & MAINTENANCE PRODUCTS - ADDITIONAL ITEMS

Refer to separate documentation for sample requirements not contained within this specification & confirm with principal.



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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

There are no work section requirements.

Slip resistance - surfaces requiring testing

1.6 SLIP RESISTANCE - SURFACES REQUIRING TESTING

There are no work section requirements.

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.

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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 **Refer to Fire Eng Spec for type to fire egress stairs - Ecoglo nosing strips**	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

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°
0.488	1 in 15	4.0°
0.499	1 in 13	4.5°
0.504	1 in 12	4.76°

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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.
- Refer to Fire Eng Spec for nosing strips to external fire egress stairs - Ecoglo type required

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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 SLABX200

Expol SlabX200, a 200kPa rated EPS under slab insulation sheets to AS 1366.3 and AS/NZS 4859.1. Available in 2400mm x 1200mm and in a range of thicknesses. Refer to SELECTIONS.

2.2 EXPOL THERMASLAB VH GRADE

Expol ThermaSlab VH grade EPS under slab insulation sheets to AS 1366.3 and AS/NZS 4859.1 for high load applications. Available in a range of sizes and thicknesses. Refer to SELECTIONS.

2.3 EXPOL THERMASLAB H GRADE

Expol ThermaSlab H grade EPS sheets to AS 1366.3 and AS/NZS 4859.1. Available in a range of sizes and thicknesses. Refer to SELECTIONS.

2.4 EXPOL-X

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

2.5 EXPOL PLATINUM BOARD

Expol Platinum Board, EPS with added graphite for high performance thermal insulation. Manufactured to AS 1366.3. Available in a range of sizes and thicknesses. Refer to SELECTIONS.

Materials - slab edge insulation

2.6 EXPOL THERMASLAB EDGE

Expol ThermaSlab XPS slab edge insulation board. Available uncoated or pre-coated with a water based waterproof resin coating. Refer to SELECTIONS.

Components

2.7 EXPOL STYRO-FIX ADHESIVE

Expol single component polyurethane based, moisture curing, fast setting construction adhesive.

2.8 EXPOL PATCH KIT

Expol water based waterproof resin coating. Available in 4 litre pails.

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 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

Installation - concrete slab edge

3.8 INSTALL SLAB EGDE INSULATION

Fix slab edge insulation boards with Expol Styrofix adhesive at an application rate of 1 tube per board. Apply a bead of adhesive to the back of the board in a wave pattern between the top and bottom edges, allowing for small gaps at the bottom of every valley for trapped moisture to escape. Frequency of the wave to be a minimum of 125mm apart along the full length of the board.

Place insulation board against the concrete slab edge and apply firm even pressure. Remove insulation board from the concrete slab edge and allow the adhesive to tack. Place insulation board back on the concrete slab edge, support and brace until the adhesive cures.

Install remaining edge insulation boards around the full perimeter of the concrete slab edge. Cut holes in the boards where necessary with a sharp knife to accommodate any services. Fill and patch insulation board joints with Expol patch kit.

Completion

3.9 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.

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Materials - under slab insulation

4.1 EXPOL THERMASLAB H GRADE

Location:	Refer to drawings
Brand:	Expol Thermaslab H Grade
Size:	2400mm x 1200mm / 4800mm x 1200mm
Thickness:	60mm
Compressive resistance at 10%:	146kPa
R value:	1.67



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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 3821 TIMBER FRAMING for timber framing.
Refer to structural engineer's drawings.

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

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
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.**

1.4 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 ENGINEERED WOOD

LVL members to AS/NZS 4357.0, to required sizes and lengths and the manufacturer design properties.

Treatment to NZS 3640 and AS/NZS 1604.1.

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2.4 TIMBER TRUSSES

To FTMA CoP. Moisture content 16% at supply.

2.5 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.

2.6 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.

2.7 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

2.8 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.

2.9 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.

2.10 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.

2.11 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.

2.12 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.

2.13 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).

2.14 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 SUB-FLOOR

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

3.7 FRAMING FLOORS

Framed and fastened to NZS 3604, section 7, **Floors**.

3.8 FRAMING WALLS

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

3.9 FRAMING ROOFS

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

3.10 FRAMING CEILINGS

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

3.11 INSTALLING WALL UNDERLAYS

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.12 FIT 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.).

3.13 DPC TO LOSP TREATED TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

3.14 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

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4 SELECTIONS

4.1 CERTIFIED SUSTAINABLE TIMBER

Product: Selected decking
Certification type: FSC
PEFC

4.2 EXTERIOR DECKING

Location:	Type/Species	Treatment	Finish:
Refer to drawings. All external decks, install to top, exposed sides and underside.	Garapa **OR similar approved.** **Confirm with Principal before ordering.**	H3.2 CCA	Selected wood stain

Note all CCA to be preservative code 01 or 02

4.3 DECKING SCREWS

Location	Type	Size:	Material
Decking	SPAX Decking Screws **OR similar approved.**	To suit application	Stainless Steel

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3821 TIMBER FRAMING

1 GENERAL

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

1.1 RELATED WORK

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

Refer to Structural Engineer's documentation.

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®
COC	Chain of Custody
PEFC	Programme for the Endorsement of Forest Certification

The following definitions apply specifically to this section:

SG Structural grade to NZS 3604, 1.3 Definitions

Documents

1.3 DOCUMENTS

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

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 2904	Damp-proof courses and flashings
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 3631	New Zealand timber grading rules
NZS 3640	Chemical preservation of round and sawn timber
WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry.
BRANZ BU 673	Cavity battens

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

1.4 DIMENSIONS

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

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

2 PRODUCTS

Materials

2.1 TIMBER FRAMING, TREATED

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

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2.2 APPEARANCE TIMBERS

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

2.3 STRAPPING

Treated to NZBC B2/AS1, NZS 3602, table 1 and to NZS 3640, clause 6.3.1.

Species:	Radiata pine
Grade:	SG6
Size:	70mm x 45mm, 45mm x 45mm or 45mm x 19mm

2.4 EXTERIOR CAVITY WALL BATTENS - TIMBER - NON-STRUCTURAL

To NZBC E2/AS1. H3.1 Radiata pine battens, 20mm thick, 45mm minimum width, and height to match timber framing studs. To NZS 3602, table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance.

2.5 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

Components

2.6 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.

2.7 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.

2.8 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.

2.9 THREADED RODS

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

2.10 TIMBER CONNECTORS AND FIXINGS

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

2.11 BRACING STRAPS

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

2.12 POWDER ACTUATED FASTENERS

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

2.13 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).

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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.

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

Moisture content:	
At erection	24% EMC maximum
At enclosure	20% EMC maximum
At lining	16% EMC maximum

3.4 PROTECT TIMBER

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

Installation/application

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Timber framing tolerances shall be in accordance with NZS 3604 Table 2.1 Timber framing tolerances.

3.6 SEPARATION

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

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

3.7 EXECUTION

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

3.8 SET-OUT

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

3.9 SET TIMBERS

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

3.10 TIMBER CUTTING

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

3.11 STRAIGHTENING STUDS

Cutting for straightening to comply with NZS 3604, 8.5.3, Straightening studs.

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3.12 TIMBER PLATES AND FURRING

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

3.13 HOLES AND NOTCHES

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

3.14 EXPOSED TIMBER CONNECTORS AND FIXINGS

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

3.15 POWDER-ACTUATED FASTENING TOOLS

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

3.16 ADDITIONAL FRAMING

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

3.17 FORM NAILED JOINTS

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

3.18 FORM BOLTED JOINTS

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

3.19 FIT CONNECTORS AND FIXINGS

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

3.20 FIT CAVITY BATTENS

Fit and fix 20mm cavity battens over wall underlay or rigid air barrier. Temporary fix battens before being permanently fixed into the framing with the cladding fixings, to the requirements of the manufacturer or to NZBC E2/AS1 and BRANZ BU 673. Make allowances for cladding control joints where required. Fit and fix related flashings. Fit and fix cavity closers to base of walls, open horizontal (or raking) junctions and over openings (windows, meters etc). Use cavity spacers set to 5° fall where fixing is required between cavity battens.

3.21 FIT BRACING

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

3.22 DPC TO LOSP TREATED TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.23 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section

Completion

3.24 COMPLETION MATTERS

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

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4 SELECTIONS

4.1 SUB-FLOOR FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Bearers:	Radiata pine	SG8	H1.2
Ground floor joists:	Radiata pine	SG8	H1.2

4.2 FLOOR FRAMING - RADIATA PINE

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

4.3 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

4.4 ROOF FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Rafters:	Radiata pine	SG8	H1.2
Trusses:	Refer truss manufacturer docs	Refer truss manufacturer docs	H1.2
Purlins:	Radiata pine	SG8	H1.2
Valley boards:	Radiata pine	Merch	H1.2
Sarking:	Radiata pine	Merch	H1.2
Skillion roof framing:	Radiata pine	SG8	H1.2
Enclosed flat roof framing:	Radiata pine	SG8	H1.2

4.5 INTERIOR WALL FRAMING - RADIATA PINE

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

4.6 CEILING FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Ceiling joists:	Radiata pine	SG8	H1.2
Timber ceiling battens:	Radiata pine	SG8	H1.2

4.7 EXTERIOR EXPOSED TIMBER

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

Note: All CCA preservative code 01 or 02

4.8 CAVITY BATTENS



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Cavity battens	Species	Grade	Treatment
Timber - Structural	Radiata pine	Merch	H3.2
Timber - Non Structural	Radiata pine	Merch	H3.1
Proprietary - non structural:	Refer to cladding manufacturer		
Cavity closer:	Refer to cladding manufacturer		

4.9 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

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4131AL ALLCO VOLCLAY® TANKING

1 GENERAL

This section relates to the application of Allco Waterproofing Solutions Limited Volclay® bentonite based tanking systems.
It includes:

- Sodium bentonite waterproofing membranes
- Components and accessories to complete installation

1.1 RELATED WORK

Refer to 2242 BACKFILLING for back filling after installation of the tanking system.

Refer to 7441 GROUNDWATER DRAINAGE for subsoil drainage to basement walls.

Documents

1.2 DOCUMENTS

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

ASTM D 5993	Standard Test Method for Measuring Mass per Unit Area of Geosynthetic Clay Liners
EN 14196	Geosynthetics - Test methods for measuring mass per unit area of clay geosynthetic barriers
CodeMark™ CMNZ70182 ver1	Volclay® Waterproofing System

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Detailed Drawings for this specification include:

97149 - A-A-01 - ALLSHEET DETAILS
103941 - A-A-01A - ALLSHEET - PILE
123653 - V-F-04 - FOUNDATION - PILE
125113 - V-F-05D - HEEL - FLUSH FOOTING AND WALL - MASONRY WALL
123644 - V-F-07 - FOOTING - ALLSHEET OPTION SWELTITE TO DPM
127266 - V-P-01 - PENETRATIONS - WALL - CORED
123655 - V-P-03 - PENETRATIONS - SLAB
123563 - V-P-06 - PENETRATIONS - DRAIN COIL
123636 - V-S-04 - SLAB - SWELTITE-VOLTEX LAP-DPM
123569 - V-S-04B - SLAB - VOLTEX TO SWELTITE LAP
123634 - V-T-03 - TERMINATION - F.G.L
123597 - V-W-01 - WALL - TYPICAL WALL APPLICATION
123678 - V-W-03 - WALL - MASONRY WALL - CONTROL JOINT
126972 - V-W-03A - CORNERS - MASONRY WALL

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

Allco	Volclay Backfill and Protection
Allco	Allsheet DPM Technical Data Sheet
Allco	Substrate Checklist
Allco Volclay®	Swelltite® Technical Data Sheet
Allco Volclay®	Voltex® Technical Data Sheet
Cetco® Volclay®	Waterstop-RX® Technical Data Sheet
Cetco® Volclay®	Cetseal Sealant/Adhesive Technical Data Sheet
Cetco® Volclay®	Aquadrain® 15X Technical Data Sheet
Cetco® Volclay®	Technical Drawings
Allco Volclay®	Tanking Details and Install Guide V3, July 2024
BRANZ Appraisal 507	[2024] - Volclay® Waterproofing System

Manufacturer/supplier contact details;

Company:	Allco Waterproofing Solutions Limited

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Web: www.allco.co.nz
Email: tech@allco.co.nz
Telephone: 09 448 1185

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide warranty for:

20 years: Product Warranty

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

An Allco System Warranty is available on request. Refer to www.allco.co.nz/warranty-technical-support for Allco System Warranty request forms, terms and conditions.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Allco Waterproofing Solutions Limited system, or associated components and products.

1.6 QUALIFICATIONS

Applicators to be experienced in the application of bentonite based tanking membranes and approved by Allco Waterproofing Solutions Limited If requested provide evidence of experience prior to commencing work.

1.7 PRE-INSTALLATION REVIEW

Convene a pre-installation meeting if required by Allco Waterproofing Solutions Ltd to establish procedures to maintain required working conditions and to co-ordinate this work with related and adjacent work. Verify final waterproofing and waterstop details comply with Allco Waterproofing Solutions Limited current installation requirements and recommendations. Refer to the Pre-installation check list.

Meeting attendees to include:

- Contractor
- Waterproofing installer
- Mechanical contractor where work extensively penetrates the waterproofing
- Project manager (optional)
- Allco Waterproofing Solutions Limited

1.8 INSTALLATION REPORT

Allco approved applicators are required to complete an installation report via an approved digital platform. Provide reports and digital photographs documenting each installation. Allco Waterproofing Solutions Limited may also carry out inspections to monitor waterproofing material installation compliance with the project contract documents, manufacturer's published literature and site-specific details. Refer to the Site Observation form. Inspections shall include, but not be limited to, substrate examination, beginning of waterproofing installation, periodic intervals and final inspection prior to concrete or backfill placement against the waterproofing.

The above information may also be recorded by an Allco representative in the onsite Allco Volclay – Technical Support Manual. This manual must remain onsite until completion of the section of works, it will then be removed, copied and made available for distribution on request.

1.9 ALLCO TECHNICAL SUPPORT

Contact Allco Waterproofing Solutions Ltd if technical support is required.

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Compliance information

1.10 COMPLIANCE - CODEMARK CERTIFICATE

The Volclay® tanking system meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ70182.

1.11 COMPLIANCE - BRANZ APPRAISAL

The Volclay® tanking system has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 507.

Performance

1.12 PRESSURE RATING

Volclay® has been BRANZ Appraised for use as an external tanking membrane subject to pressures up to 2 bar (20 metres). Refer to SELECTIONS for the designated water pressure head.

1.13 VAPOUR FLOW RESISTANCE

The membrane system to have a vapour flow resistance of not less than 90 MN s/g.

2 PRODUCTS

Materials

2.1 VOLTEX WATERPROOFING MEMBRANE

Cetco® Volclay® Voltex® sheet membrane manufactured from two geotextile membranes, one woven (dark grey) and one non-woven (white), needle punched together encapsulating 4.8kg/m² minimum of granular sodium bentonite to EN 14196. Supplied in 1.1m wide x 5m long and 1.6m wide x 40m long rolls. Refer to SELECTIONS.

2.2 SWELLTITE COMPOSITE WATERPROOFING MEMBRANE

Cetco® Volclay® Swelltite® 2mm thick composite sheet membrane of sodium bentonite compound integrally bonded to geomembrane liner on one face and a water soluble film on the other face. Supplied 1m wide x 10.4m long.

Water stop products

2.3 WATERSTOP-RX 101T

31mm x 12mm x 6m rolls of trapezoidal flexible strip of bentonite and butyl rubber compound with a reinforcing poly scrim for use in concrete construction joints.

2.4 WATERSTOP-RX 102

19mm x 9mm x 10m rolls of half circle flexible strip of bentonite and butyl rubber compound for use in concrete construction joints.

Adhesive

2.5 CETCO® VOLCLAY CETSEAL

CETSEAL, a multipurpose, single component polyether moisture cure sealant/adhesive with a low VOC, 100% solids, non-shrinking and with a high UV resistance. Used as a grade termination sealant, membrane lap sealant and waterstop adhesive to secure all Volclay® Waterstop-RX products to concrete, metal and PVC horizontal and vertical surfaces.

Accessories

2.6 CETCO® VOLCLAY BENTOSEAL®

Trowel grade sodium bentonite compound used as a detailing mastic around penetrations, corner transitions and grade terminations.

2.7 CETCO® VOLCLAY CETCOAT®

Cement based crystalline waterproofing system.

2.8 CETCO® VOLCLAY WATERSTOPPAGE®

Granular Volclay® sodium bentonite.

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2.9 ALLCO SEAMTAPE®

Butyl rubber sealant tape 80mm wide x 20m roll .

2.10 ALLCO CLOTH TAPE

Polyethylene coated rayon fabric cloth tape with rubber resin adhesive.

2.11 ALLCO TERMINATION BAR

35mm wide x 2.0mm thick extruded aluminium bar fixed tight to the membrane at 300mm centres. Fasteners to suit project substrate.

2.12 SUB-SURFACE DRAINAGE COMPOSITE

Aquadrain drainage composite by CETCO® to manufacturer's recommendations.

2.13 ALLSHEET DPM

Allco Allsheet DPM 300 and 500 micron recycled polyethylene damp proof membrane used in conjunction with Volclay® membranes. Refer to SELECTIONS.

2.14 ALLCO TERMINATION BAR

35mm wide x 2.0mm thick extruded aluminium profiled bar.

Protection sheet

2.15 CETCO® AQUADRAIN 15X DRAINAGE COMPOSITE

Aquadrain® 15X, a drainage composite, two-part pre-fabricated sheet drain consisting of a three dimensional polypropylene formed dimple core covered with a non-woven polypropylene filter fabric on one side. Polypropylene core resists chemical attack and degradation in soil.

2.16 PROTECTION BOARD

4mm Allco Allguard Board.

3 EXECUTION

Conditions

3.1 COMPLY

Comply with Allco Waterproofing Solutions Limited requirements and instructions. Unless otherwise detailed, install in accordance with Volclay® waterproofing details.

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 DE-WATERING

Maintain water level at not less than 300mm below the level of the base concrete during the progress of the entire tanking work. Run pumps continuously when required. Refer to Allco if unsure of requirements.

3.5 CHECK SUBSTRATE

Approved Allco applicator to verify that the substrate is smooth and without sharp deflections or pockets to achieve work of the required standard. Complete any remedial work identified before commencing any work.

3.6 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.

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Application - general

3.7 INSTALLATION

Install Volclay tanking system in accordance with Allco Volclay Tanking Details and Install Guide. Where required, request specific details prior to proceeding with installation.

3.8 SEALANT/ADHESIVE - WALL / MEMBRANE JUNCTIONS

Apply Cetseal sealant/adhesive as a grade termination sealant, membrane lap sealant and waterstop adhesive to secure Volclay® Waterstop-RX products to concrete, metal and PVC horizontal and vertical surfaces, all in accordance with Allco Waterproofing Solutions Limited requirements and instructions.

3.9 COVER EXPANSION JOINTS

Cover expansion joint material placed during substrate preparation. Trowel 3mm thick, 150mm wide layer of Bentoseal® centred over expansion joint. Install 300mm wide strip of Voltex® centred over the expansion joint, then install the main course of Voltex®.

Application - under slab installation

3.10 INSTALL VOLTEX MEMBRANE

Place Voltex® directly on properly prepared substrate compacted to a minimum of 85% Proctor density (25 - 30 kPa) with dark grey woven geotextile side up facing installer with adjoining edges overlapped a minimum of 100mm. Stagger sheet end seams a minimum of 300mm. Mechanically fasten or staple Voltex® as required to prevent movement from construction operations or concrete placement. When the slab is poured in sections, extend Voltex® a minimum of 300mm beyond the slab edge to enable proper overlapping.

3.11 INSTALL ALLCO ALLSHEET DPM

Lay Allco Allsheet DPM under concrete floor substrate over sand blinding, in a single layer to provide a damp proof vapour barrier. Overlap panels a minimum of 150mm when joining films using Allco Cloth tape.

3.12 INSTALL VOLTEX MEMBRANE OVER UNDERSLAB INSULATION

Install Voltex® membrane over monolithic layer of insulation to have full bond to concrete slab.

3.13 INSTALL AROUND LIFT, ESCALATOR AND SERVICE PITS

Install Voltex® under all footings, elevator pits and grade beams when hydrostatic conditions exists or are anticipated per the historical high ground water elevation reported in the project's geotechnical documents.

Application to concrete masonry unit block walls - Swelltite

3.14 FORM FILLET BEADS

Pour 18mm thick, continuous Waterstoppage® fillet at all inside wall corner transitions. Trowel Bentoseal® form-tie pocket/patches and any slightly irregular honeycomb areas.

3.15 INSTALL SWELLTITE MEMBRANE TO BASE OF WALL

Start at the base of the wall and install Swelltite® sheet horizontally, dampen the backing with a spray bottle of water, place dark side membrane against the wall. Attach Swelltite ® using washer-headed mechanical fasteners centred 600mm around the sheet edge. Overlap all adjacent sheet edges a minimum 50mm. Stagger all vertical overlap seams a minimum of 300mm. Refer to details in Volclay® Architectural Specifications and Drawings for heel type foot, and flush footing.

For hydrostatic conditions, refer to Allco Waterproofing Solutions Ltd for specific detailing.

3.16 INSTALL SWELLTITE MEMBRANE TO REMAINDER OF WALL

Install Swelltite® either vertically or horizontally. Continue up wall to finish grade elevation, staggering sheet roll ends of adjacent courses a minimum 300mm. Tape all 50mm laps with Allco seam tape and terminate at grade with Allco termination bar fixed at 300mm centres to Allco typical termination details.

3.17 TRIM AROUND PENETRATIONS

Cut Swelltite® to fit snugly around penetrations. Detail around all penetrations with 18mm cant/fillet of Bentoseal® 6mm thick over substrate a minimum radius of 40mm and onto penetration.

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3.18 TERMINATION AT GRADE

Refer to Allco typical termination details.

3.19 INSPECT BEFORE BACKFILLING

Inspect finished Swelltite® installation and repair any damaged material prior to placement of protection board and backfill. Ensure Swelltite® and protection board is not displaced during backfilling or soil compaction. Do not leave exposed. Backfill within 1-2 days or when precipitation is imminent.

3.20 TERMINATION AT GRADE

Refer to Allco Waterproofing solutions Ltd for specific detailing of termination bars to suit alternative wall types, sealed with an approved sealant.

Protection

3.21 PROTECT ALL MEMBRANE SURFACES

Protect entire exposed surface of membrane from damage with Allco Allguard protection board prior to backfilling.

3.22 INSTALL DRAINAGE COMPOSITE

Install Aquadrain® 15X drainage composite in accordance with Allco Waterproofing Solutions Limited requirements & instructions and Allco Backfill and Protection document. Install first course at the base of the structure. Cut as required to fit around penetrations and other details. Ensure open core edges and penetrations are sealed with filter fabric flap.

Extend Aquadrain® 15X to 150mm below finished grade line. Wrap excess filter fabric flap behind the core edge at the top of the wall to prevent soil intrusion. Backfill with compacted soil directly against the filter fabric.

At boundary retaining walls place Aquadrain® 15X with the filter fabric side facing outward against the retaining wall. Install drain composite as above. Place waterproofing and pour structural concrete directly against the drain core.

Do not install Aquadrain 15X if hydrostatic conditions are present. Consult with Allco Waterproofing solutions Ltd if unsure.

3.23 INSTALL PROTECTION BOARDS

Neatly scribe and fit sheets of Allco AllGuard Board, spot fixing them with adhesive and taped over joints.

Backfilling

3.24 GENERAL

This section should be read in conjunction with current Allco Volclay Backfill and Protection document. Installation of the backfill material is the responsibility of the contractor. Refer to Allco Waterproofing Solutions Ltd or approved applicator for further guidance or clarification on backfilling.

3.25 MONITOR BACKFILLING

When backfilling to Volclay tanking membranes, there must be no voids in the backfill, regardless of the type of material being used for backfill. The top 500mm must be compacted with a walk behind vibratory compactor or some other mechanical soil compaction device to the extent that foot traffic on the lift does not leave indentations greater than 12mm. Ensure that the compactor does not touch the waterproofing membrane.

Refer Allco Volclay Backfill and Protection document for available options for backfill and protection to Allco Volclay Membranes.

For hydrostatic conditions (contact Allco Waterproofing Solutions if unsure) special requirements are:

- Protect membrane with 4mm Allco AllGuard Board or 6mm fibre cement board only (Aquadrain® 15X is not suitable for use in hydrostatic conditions)
- Backfill with a good compactable aggregate such as GAP40 with fines

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- Compact backfill at maximum 300mm lifts
- Allco WP and approved applicators are not responsible for installation of the backfill material.

Completion & Commissioning

3.26 COMPLETION MATTERS

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

4 SELECTIONS

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

Performance

4.1 PRESSURE RATING

Designated water pressure head: refer to geotech report

Tanking

4.2 SWELLTITE COMPOSITE WATERPROOFING MEMBRANE

Location:	To masonry block wall
Supplier:	Allco Waterproofing Solutions Limited
Brand:	Cetco® Volclay® Swelltite®
Dimensions:	1m wide x 10.4m long rolls

4.3 VOLTEX GEOTEXTILE WATERPROOFING MEMBRANE

Location:	To slab and footings in high risk zones (block a, b, c, d)- Refer to architectural drawings
Supplier:	Allco Waterproofing Solutions Limited
Brand:	Cetco® Volclay® Voltex®
Dimensions:	1m wide x 10.4m long rolls

4.4 WATERSTOP-RX DH

Location:	To cold pour joints
Supplier:	Allco Waterproofing Solutions Limited
Brand/type:	Cetco® Volclay®
Dimensions:	101DH - 25mm x 20mm x 5m rolls (rectangular profile), 102DH - 19mm x 9mm x 6m rolls (half circle profile)

Protection sheets

4.5 PROTECTION BOARD

Location:	As required - Refer to Backfill and protection documention
Manufacturer:	Allco Waterproofing Solutions Limited
Brand/type:	Allco AllGuard
Thickness:	4.0mm (2300mm x 1140mm sheet)

Accessories

4.6 ALLSHEET DPM

Location:	To slab and footings in low risk zones - block e) - refer to architectural drawings
Supplier:	Allco Waterproofing Solutions Limited
Brand:	Allco Allsheet DPM
Dimensions:	0.5mm thick x 4m wide x 25m long rolls (500 micron), 0.3mm thick x 4m wide x 25m long rolls (300 micron)

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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

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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 COVERTEK 407

Thermakraft Covertek 407 roof and wall underlay and Covertek 407 Early Close Wall Application meet the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ30028.

Compliance information - BRANZ appraised

1.8 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

1.9 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

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.

Synthetic underlays - fire retardant

2.2 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, 2550mm and 2740mm width. Suitable for use as an Early Close Wall Application providing up to 120 days temporary weather protection. Suitable for use as temporary weather protection for up to 30 days on roofs. Refer to SELECTIONS.

Components - secure strapping/netting

2.3 THERMAKRAFT STUD STRAP

25mm wide, flexible woven and coated polythene strap, colour black. Refer to SELECTIONS.

Fixings

2.4 FIXINGS - TO TIMBER

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

2.5 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.



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Installation - secure netting/strapping

3.6 INSTALL SECURE STRAPPING

Place straps on underlay, draw taut and fix to framing to the Installation Guide.

Installation - roof underlay

3.7 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.

3.8 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.

Completion

3.9 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.
Substitutions are not permitted to the following, unless stated otherwise.

DPC

4.1 DPC - THERMAKRAFT SUPERCOURSE 500

Location:	between timber to steel or timber to concrete as a separation layer.
Manufacturer:	Thermakraft
Brand:	Supercourse 500
Type:	Damp proof course

Synthetic underlays - fire retardant

4.2 ROOF & WALL UNDERLAY - THERMAKRAFT COVERTEK 407

Location:	roof underlay, refer to drawings.
Manufacturer:	Thermakraft
Brand:	Covertek 407
Type:	Synthetic roof and wall underlay
Fixings:	suitable for high wind zone to timber: Galvanized 20mm large head clouts.
Maximum UV exposure:	Roofs - 30 days

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Components for securing underlays

4.3 SECURE STRAPPING - THERMAKRAFT STUD STRAP

Manufacturer:	Thermakraft
Brand:	Stud Strap
Type:	Secure strapping
Width:	25mm
Fixings:	To timber: min. 8mm staples

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4171HR JAMES HARDIE® RIGID AIR BARRIERS

1 GENERAL

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

- RAB™ Board - 6mm and 9mm

1.1 RELATED WORK

Refer to James Hardie Cladding Systems contained in this specifications.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FRR	Fire resistance rating
SED	Specific engineering design

Documents

1.3 DOCUMENTS

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

NZBC C/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
AS/NZS 1170.2:2011	Structural design actions - Wind actions
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
AS/NZS 3837	Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter

CodeMark™ Certificate CMNZ30130 RevB HomeRAB™ Pre-Cladding and RAB™ Board by James Hardie®

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual by James Hardie® (March 2026)
Bracing Design Manual by James Hardie®
Fire and Acoustic Design Manual by James Hardie, May 2025
BRANZ Appraisal 611(2026) - James Hardie® HomeRAB™ Pre-Cladding and RAB™ Board
BRANZ Appraisal 846 (2024) - SUPER-STICK Flexible Flashing Tape
BRANZ Appraisal 1285 (2025) - James Hardie Fire And Acoustic Wall Systems - Amended 16 June 2026

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

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For HomeRAB™ Pre-Cladding and RAB™ Board (refer to James Hardie® product warranty)

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15 years:	For accessories supplied by James Hardie® (refer to James Hardie® product warranty)
From:	Date of purchase

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

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

1.7 SAFE WORKING

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

1.8 NO SUBSTITUTIONS

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

Performance - Wind

1.9 PERFORMANCE, WIND

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

Performance - Bracing

1.10 BRACING REQUIREMENTS

Provide the HomeRAB™ PreCladding/RAB™ Board bracing system. Refer to Bracing Design Manual for selection.

Performance - Fire

1.11 FIRE RATING REQUIREMENTS

Provide the RAB™ Board fire rated system. Refer to SELECTIONS for system/FRR.

1.12 EXTERNAL FIRE SPREAD - CLADDING MATERIALS

James Hardie® HomeRAB™ PreCladding and RAB™ Board tested to AS/NZS 3837 and to specific requirements of C/AS1 or C/AS2 achieving Type A classification (peak heat release rate ≤ 100 kW/m², total heat release rate ≤ 25 MJ/m²).

Performance - Acoustic

1.13 ACOUSTIC REQUIREMENTS

Refer to James Hardie Acoustic Systems for details.

2 PRODUCTS

Materials

2.1 RAB BOARD

Hardie™ RAB™ Board, 6mm or 9mm thick, manufactured from treated cellulose fibre, Portland cement, sand and water, cured by high pressure autoclaving manufactured to AS/NZS 2908.2, face and edge sealed.

Components

2.2 FASTENER TYPE

Fasteners to minimum durability requirements of the NZBC. Refer to NZS 3604, section 4 Durability, for requirements for fixing's material to be used in relation to the exposure conditions.

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Refer to NZBC E2/AS1, Table C.1.1.1A: Material selection, and NZBC E2/AS1, Table C.1.1.1B: Compatibility of materials in contact, for selection of suitable fixing materials and their compatibility with other materials.

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

2.3 GALVANIZED NAILS

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

2.4 STAINLESS STEEL NAILS

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

2.5 HORIZONTAL FLASHING - RAB™ BOARD

RAB™ uPVC Horizontal Flashing for horizontal joints.

Accessories

2.6 SEALING TAPE - VERTICAL JOINTS/CORNER JOINTS

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

2.7 FLASHING TAPE / WINDOW FLASHING TAPE

SUPER-STICK Building Tape®, 3M™ All Weather Flashing Tape 8067 or Thermaflash High Adhesion Window Flashing Tape.

2.8 BRACING ELEMENT HOLD DOWN - CONCRETE FLOOR

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

2.9 BRACING ELEMENT HOLD DOWN - TIMBER FLOOR

Ramset bracing anchor kit Wood or GIB Handibrac® with 12 x 150mm galvanized coach screw to suit brace type.

2.10 FIRE RATED SYSTEMS - RAB BOARD

For Post Fire Stability use Pryda Brace Anchor or GIB Handibrac® with M12 x 150mm Ramset® Anka screw to each side of every stud for length of fire rated wall, or as specific engineering design.

3 EXECUTION

Conditions

3.1 STORAGE

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

3.2 HANDLING

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

3.4 FRAMING - RAB™ BOARD

Provide framing plumb, level, in true alignment and in accordance with NZS 3604 or SED requirements. Stud and nog spacing must not exceed James Hardie® requirements. Moisture content of timber framing must not exceed the requirements specified by NZS 3602 to minimise shrinkage and movement after sheets are fixed.

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Application - particular installations

3.5 BRACING SYSTEM RAB™ BOARD

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

3.6 FIRE RATED SYSTEMS RAB™ BOARD

Fix sheets in accordance with the Fire and Acoustic Design Manual by James Hardie® .

Application - generally

3.7 PENETRATIONS AND FLASHINGS

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

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

3.8 CUT EDGES

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

Install Rigid Air Barriers

3.9 SHEET LAYOUT

Refer to the HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual by James Hardie® for sheet layouts to suit general installations.

3.10 VERTICAL JOINTS

Join sheets to the HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual by James Hardie®.

3.11 HORIZONTAL JOINTS

Join sheets to the HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual by James Hardie®.

3.12 EXTERNAL AND INTERNAL CORNERS

Form in accordance with the HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual by James Hardie®, using a 75mm minimum wide sealing tape.

3.13 FIXING SHEETS

Fix in accordance with the HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual by James Hardie® with the sealed face towards the external cladding and unsealed face towards the framing. Fix sheets to suit installation requirements for general fixing, bracing and fire rating requirements. Refer to SELECTIONS for fixing type. Use hand-driven nailing for fixing bracing sheets.

3.14 PENETRATIONS

Form in accordance with the HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual by James Hardie®.

3.15 OPENINGS

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



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3.16 FLASHINGS AND JUNCTIONS

Form in accordance with the HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual by James Hardie®. Install flashing tape over any flashings and at all junctions with other materials or building elements.

3.17 AT SOFFITS

Form in accordance with the HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual by James Hardie®.

3.18 BASE CLEARANCES

Form in accordance with the HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual by James Hardie®. Lining is required to extend below the bottom plate / floor joist by 15mm minimum to form a drip edge and must finish a minimum 100mm clear of finished ground. Where base of sheets are cut to suit site requirements seal the bottom edge with primer.

Completion

3.19 ROUTINE CLEANING

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

3.20 REPLACE

Replace all damaged or marked elements.

3.21 LEAVE

Leave work to the standard required for following procedures.

3.22 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

4.1 RAB™ BOARD - RIGID AIR BARRIER 6MM

Brand/type:	Hardie™ RAB™ Board
Sheet thickness:	6mm
Primer:	Dulux® 1 Step or Resene Quick Dry to exposed cut edges.

4.2 RAB™ BOARD - FIRE RATED SYSTEM

- Refer to fire and acoustic plans and fire report by the fire engineer for further information on systems.
- Refer to Fire and Acoustic Design Manual by James Hardie®.

4.3 RAB™ BOARD - BRACING SYSTEMS

- Refer to structural engineers documentation for bracing requirements.
- Refer to Bracing Design Manual by James Hardie® if RAB used for bracing.

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4231HI JAMES HARDIE EXTERNAL FIRE & ACOUSTIC WALL SYSTEMS

1 GENERAL

This section relates to the supply and installation of

- **James Hardie** two way, external/internal, fire and acoustic rated load bearing wall systems for timber and steel framed buildings.
- **James Hardie** two way fire rated parapet and wing walls.

Each system includes;

- framing
- cladding
- lining
- insulation
- underlay
- associated components and accessories necessary to complete the system

1.1 RELATED WORK

Refer to related James Hardie cladding section.

Refer to related framing section.
Refer to related insulation section.
Refer to 5171G GIB® PLASTERBOARD FIRE & SOUND LININGS for fire rated and acoustic linings.

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
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:

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
AS 1530.2	Methods for fire tests on building materials, components and structures - Part 2: Test for flammability of materials
AS/NZS 1170.2:2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Part 5: Earthquake actions - New Zealand
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Fire and Acoustic Design Manual by James Hardie, May 2025
Bracing Design Manual by James Hardie
GIB® Fire Rated Systems



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BRANZ Appraisal 1285 (2025) - James Hardie Fire And Acoustic Wall Systems - Amended 16 June 2026

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

1.5 WARRANTY - MANUFACTURER/SUPPLIER OR SYSTEM

Provide a material manufacturer/supplier warranty:

15 years:	For James Hardie products
15 years:	For accessories supplied by James Hardie (refer to James Hardie product warranty)
10 years	For all GIB® products and systems installation (refer to Winstone Wallboards product warranty)

- Provide warranty on the manufacturer's standard form/s.
- Commence the warranty from the date of purchase.

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 SAFE WORKING

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

1.8 NO SUBSTITUTIONS

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

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Provide relevant James Hardie maintenance requirements at completion of the work. Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the information.

Performance

1.10 FIRE RATING REQUIREMENTS

Provide the James Hardie fire rated system. Refer to SELECTIONS for system FRR details.

1.11 SOUND INSULATION REQUIREMENTS

Refer to SELECTIONS for system details and required STC ratings.

1.12 SURFACE FIRE PROPERTIES - UNFINISHED BOARD

James Hardie internal unfinished linings have been tested/assessed by BRANZ and they have a ‘Group Number 1-S’. This classification only applies to James Hardie fibre cement lining products without paint or wet finish.

1.13 BRACING REQUIREMENTS

Refer to Bracing Design Manual by James Hardie for bracing requirements combined with the fire and acoustic systems.

Compliance information

1.14 COMPLIANCE - BRANZ APPRAISAL

James Hardie External Fire & Acoustic Wall Systems have been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of BRANZ Appraisal 1285.

Quality control and assurance

1.15 INSPECTIONS

Hold Points: Work may not proceed until the work in question has been inspected.

Inspections: Per QLDC inspection requirements.

2 PRODUCTS

Materials - general

2.1 TIMBER FRAMING

Refer to appropriate timber framing section.

2.2 FLEXIBLE UNDERLAY

Flexible underlay that complies with NZBC E2/AS1, Table C.2.1.1 Properties of roof underlays and wall underlays, with a flammability index not exceeding 5 when tested to AS 1530.2. Refer to the appropriate separate section(s).

2.3 RIGID AIR BARRIER

Refer to section 4171HR JAMES HARDIE RIGID AIR BARRIERS for RAB™ Board.

2.4 INSULATION - GLASS WOOL

Refer to the appropriate separate insulation section(s). Glass wool insulation minimum R2.2 and density 12-18 kg/m3

2.5 INSULATION - HARDIE™ MINERAL INSULATION

Hardie™ Mineral insulation, 90mm thick, R 2.74m²K/W, density 80kg/m3.

2.6 TIMBER CAVITY BATTENS

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

2.7 HARDIE™ HORIZONTAL TIMBER CAVITY BATTENS

Radiata pine battens as packers, minimum 45mm wide x 20mm thick with bevelled edge and purpose cut rebates for drainage and ventilation, H3.1 treated to NZS 3602, Table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance.

2.8 HARDIE™ CLD™ STRUCTURAL CAVITY BATTENS

Hardie™ CLD™ Structural Cavity battens, 70mm wide x 19mm thick and 2450mm long, fully sealed on all faces. Manufactured from treated cellulose fibre, Portland cement, sand and water. Cured by high pressure autoclaving and manufactured to AS/NZS 2908.2.

Components - cladding/lining

2.9 JAMES HARDIE FIBRE CEMENT CLADDING

Refer to SELECTIONS for type. Refer to relevant James Hardie cladding section.

2.10 NON JAMES HARDIE CLADDING

Refer to SELECTIONS and relevant cladding section.

2.11 JAMES HARDIE LINING - VILLABOARD™

Refer to 5111H JAMES HARDIE FIBRE CEMENT SHEET LININGS for Villaboard™ Lining. Refer to SELECTIONS for thickness.

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2.12 GIB® PLASTERBOARD LINING

GIB Fyreline®, fire resistant plasterboard to AS/NZS 2588. Refer to 5171G GIB® PLASTERBOARD FIRE & SOUND LININGS for GIB Fyreline®. Refer to SELECTIONS for thickness.

2.13 FIXINGS - JAMES HARDIE CLADDING/LINING

Refer to Fire and Acoustic Design Manual by James Hardie system description, James Hardie product technical specification/installation manuals for its fixings.

2.14 POST FIRE STABILITY - ANCHOR

Pryda® Brace Anchor or GIB Handibrac® with Ramset Ankascrew M12 x 150mm for concrete and M12 x 150mm Coach screw for timber. Gib Quiet Tie for intertenancy walls.

2.15 FASTENER TYPE

Fasteners to minimum durability requirements of the NZBC. Refer to NZS 3604, section 4, **Durability**, for requirements for fixing's material to be used in relation to the exposure conditions.

Refer to NZBC E2/AS1, Table C.1.1.1A: Material selection, for fixing material, and NZBC E2/AS1, Table C.1.1.1B: Compatibility of materials in contact, for selection of suitable fixing materials and their compatibility with other materials.

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

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

Accessories

2.16 COATINGS AND FINISHES

Refer to relevant James Hardie technical literature for the cladding system selected.

2.17 FIRE RESISTANT COLLAR

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.

3.4 FRAMING - GENERAL

Ensure framing sizes and set-out suit the selected fire and acoustic rated wall system, plumb, level and in true alignment.

Moisture content of timber framing: % to comply with NZS 3602

3.5 TIMBER FRAMING - NZS 3604

Refer to appropriate TIMBER FRAMING section. Timber framing to NZS 3604 and selected James Hardie fire and acoustic system requirements.

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3.6 TIMBER FRAMING - SPECIFIC ENGINEERING DESIGN

Refer to appropriate TIMBER FRAMING section. Timber framing to specific engineering design (SED) to AS/NZS 1170.2, NZS 1170.5 and NZS 3603 and to selected James Hardie fire and acoustic system requirements.

Application - general

3.7 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.8 BOUNDARY WALL - POST FIRE STABILITY

Ensure timber bottom plate and studs are fixed using Pryda® Brace Anchors or GIB Handibrac® on each side of the stud to James Hardie installation instructions.

3.9 SERVICE PENETRATIONS

Co-ordinate installation of fire collars and fire sealants with penetrations through fire rated walls in accordance with the technical information from the fire sleeve/collar supplier and James Hardie requirements.

3.10 HARDIE™ MINERAL INSULATION

Fit pre-cut Hardie™ Mineral Insulation tightly in framing cavities to achieve a tight friction fit. If cutting is required ensure that insulation is tightly fitted in each direction.

3.11 GLASS WOOL INSULATION

Refer to related insulation section.

3.12 FLEXIBLE UNDERLAY

Refer to the appropriate separate section(s).

3.13 RIGID AIR BARRIER

RAB™ Board fixed to all framing with fixings at 150mm centres maximum and joints taped as per James Hardie HomeRAB™ Pre-Cladding and RAB™ Board Installation Manual.

3.14 CAVITY CONSTRUCTION

Install to James Hardie cavity construction installation instructions for the specified cladding material. Cavity must not open into the roof space or subfloor space. Refer to Fire & Acoustic Design Manual by James Hardie construction details.

3.15 CONTROL JOINTS

Horizontal control joints in claddings to be provided at all floor joist levels to the relevant James Hardie product technical specification. Vertical control joints must be installed to James Hardie product technical literature.

3.16 CONTROL OF EXTERNAL FIRE SPREAD

Ensure flashings and continuous horizontal cavity battens are installed to James Hardie product technical literature, to prevent fire spread within the cavity.

3.17 JAMES HARDIE FIBRE CEMENT CLADDING/LINING LAYOUT AND FIXINGS - GENERAL

Refer to Fire and Acoustic Design Manual by James Hardie and Cladding technical specification for system fixing requirements.

3.18 NON JAMES HARDIE CLADDING LAYOUT AND FIXINGS - GENERAL

Refer to related CLADDING section.

3.19 GIB FYRELINE® LINING

Select GIB Fyreline® thickness in accordance with James Hardie fire rated system specification. Install the GIB Fyreline® products as per Winstone wall board technical literature.

3.20 STRUCTURAL STEEL MEMBERS IN FIRE RATED WALL

Independently fire rate structural steel members inside the fire rated wall cavity. Refer to appropriate STEELWORK FIRE RATED COATINGS section for intumescent paints.

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Completion & Commissioning

3.21 COMPLETION MATTERS

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

3.22 COMPLETION - TESTS & CERTIFICATION

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

4 SELECTIONS

For further details on selections go to www.jameshardie.co.nz
Substitutions are not permitted to the following.

External timber framed fire & acoustic rated wall system

4.1 JAMES HARDIE FRR 60/60/60 SYSTEM - EXTERNAL TIMBER FRAMED WALL

Location:	refer to fire and acoustic plans.
Brand:	James Hardie Fire & Acoustic system
System number:	JHETGO60h
FRR:	60/60/60
STC:	44

Refer to fire and acoustic plans for further information on specified James Hardie fire & acoustic rated system.

4.2 JAMES HARDIE FRR 60/60/60 SYSTEM - EXTERNAL TIMBER FRAMED WALL

Location:	refer to fire and acoustic plans.
Brand:	James Hardie Fire & Acoustic system
System number:	JHETGO60v
FRR:	60/60/60
STC:	44

Refer to fire and acoustic plans for further information on specified James Hardie fire & acoustic rated system.

4.3 JAMES HARDIE FRR 60/60/60 SYSTEM - EXTERNAL TIMBER FRAMED WALL

Location:	refer to fire and acoustic plans.
Brand:	James Hardie Fire & Acoustic system
System number:	JHETGS60v
FRR:	60/60/60
STC:	43

Refer to fire and acoustic plans for further information on specified James Hardie fire & acoustic rated system.

Timber framed parapet & wing wall fire rated wall system

4.4 JAMES HARDIE PARAPET & WING WALL FRR 60/60/60 - TIMBER FRAMED WALL OVER 10M OR EH WIND ZONE

Location:	refer to fire and acoustic plans.
Brand:	James Hardie Fire rated system
System number:	JHETSS60v
FRR:	60/60/60
Cladding:	Stria™ Cladding vertical, each side
Cavity batten:	Hardie™ Horizontal Timber Cavity Batten, each side
Underlay:	6 RAB™ Board, each side
Framing size:	Refer Strucuctural Engineer's Drawings. Minimum 90mm x 45mm studs at 600mm maximum centres, nogs/dwangs spaced at 800mm maximum
Insulation:	To suit, external parapet/wing walls

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4231HO JAMES HARDIE® OBLIQUE™ WEATHERBOARD CLADDING

1 GENERAL

This section relates to the supply and fixing of Oblique™ Weatherboard cladding.

1.1 RELATED WORK

Refer to 4171HR JAMES HARDIE® RIGID AIR BARRIERS for James Hardie® RAB™ Board for pre-cladding.
Refer to 4231HI JAMES HARDIE EXTERNAL FIRE & ACOUSTIC WALL SYSTEMS for James Hardie Fire Rated System requirements.
Refer to painting section(s) for the protective coating required to meet the NZBC durability requirements.

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

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
AS/NZS 1170.2:2011	Structural design actions - Wind loads
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
CodeMark™ CMNZ30147 - ver C	Oblique™ Weatherboard by James Hardie® Cavity Cladding System

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Oblique™ Weatherboard Horizontal Installation Technical Specification (March 2026)
Oblique™ Weatherboard Vertical Installation Technical Specification (March 2026)
Oblique™ Weatherboard Vertical Installation to Hardie™ 40mm Structural Horizontal Cavity Batten Technical Specification (March 2026)
Fire and Acoustic Design Manual by James Hardie, May 2026
James Hardie® Installation Checklist
BRANZ Appraisal 1231 (2022) - Oblique™ Weatherboard (Horizontal) Cavity Cladding - amended 31 March 2026
BRANZ Appraisal 1232 (2022) - Oblique™ Weatherboard (Vertical) Cavity Cladding - amended 31 March 2026
BRANZ Appraisal 1285 (2025) - James Hardie Fire And Acoustic Wall Systems - amended 16 June 2026

Manufacturer/supplier contact details

Company:	James Hardie New Zealand Limited
Web:	www.jameshardie.co.nz
Email:	info@jameshardie.co.nz
Telephone:	0800 808 868

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

25 years	For Oblique™ Weatherboard products (refer to James Hardie® product warranty)
15 years	For accessories supplied by James Hardie® (refer to James Hardie® product warranty)

- 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 (check with the manufacturer/supplier).

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.

1.8 SAFE WORKING

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

1.9 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:
Oblique™ Weatherboard Care and Maintenance guide.

Provide this information prior to practical completion.

1.10 OBLIQUE™ WEATHERBOARD INSTALLATION CHECKLIST

Installer to complete, sign and provide a James Hardie® Installation Checklist.

Compliance information

1.11 CODEMARK CERTIFICATE

James Hardie® Oblique™ Weatherboard meets the requirements of the NZBC when used within the Conditions and Limitations of its Certificate of conformity CMNZ30147.

Performance - wind

1.12 PERFORMANCE, WIND

The design wind zones are to NZS 3604, up to and including Extra High Wind Zone. James Hardie® Technical Specifications are suitable for these conditions.

Performance - fire

1.13 EXTERNAL FIRE SPREAD - CLADDING MATERIALS

James Hardie® Oblique™ Weatherboard cladding tested to AS/NZS 3837 and to specific requirements of C/AS1 or C/AS2 achieving Type A classification (peak heat release rate ≤ 100 kW/m², total heat release rate ≤ 25 MJ/m²).

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2 PRODUCTS

Materials

2.1 OBLIQUE™ WEATHERBOARDS

Oblique™ Weatherboards, rusticated profile, 14mm thick, available in 200mm or 300mm widths and 3000mm or 4200mm lengths, pre-primed, manufactured to AS/NZS 2908.2 from a reduced density cellulose fibre cement formulation and cured by high pressure autoclaving. Tested to the requirements of NZBC E2/VM1 for weathertightness and complying with the NZBC.

2.2 RIGID AIR BARRIERS

Refer to section 4171HR JAMES HARDIE® RIGID AIR BARRIERS.

2.3 TIMBER CAVITY BATTENS

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

2.4 HARDIE™ 20MM HORIZONTAL TIMBER CAVITY BATTENS

Radiata pine castellated cavity battens minimum 45mm wide x 20mm thick with bevelled edge H3.1 treated to NZS 3602. Refer to SELECTIONS.

2.5 20MM VENT STRIP/VERMIN-PROOFING

Perforated uPVC, with upstands.

2.6 HARDIE™ 14MM VERTICAL FLASHING STOP ALUMINIUM

Hardie™ aluminium flashing extrusion with channel used behind cladding at vertical joints to provide a negative detail.

2.7 HARDIE™ 14MM ALUMINIUM JAMB FLASHING

Aluminium moulding used beside window opening to end butt the Oblique™ Weatherboard.

2.8 HARDIE™ 14MM ALUMINIUM TRIMLINE JOINT FLASHING

Aluminium flashing extrusion used behind cladding joints.

2.9 TRIMLINE JOINTERS

Aluminium jointers to joint Oblique™ Trimline Joint Flashings at flashing ends, external corners and internal corners.

2.10 HARDIE™ 14MM ALUMINIUM INTERNAL CORNER

Anodised aluminium extrusion to create internal corners.

2.11 WEATHERBOARD INTERNAL "W" CORNER

Anodised aluminium extrusion to flash behind cladding at internal corners.

2.12 HARDIE™ 14MM ALUMINIUM EXTERNAL BOX CORNER

Anodised aluminium extrusion to flash behind cladding at external corners.

2.13 HARDIE™ AXENT™ TRIM

19mm thick pre-primed fibre cement trim.

2.14 FASTENER TYPE

Fasteners to minimum durability requirements of the NZBC. Refer to NZS 3604, section 4, Durability, for requirements for fixing's material to be used in relation to the exposure conditions.

Refer to NZBC E2/AS1, Table C.1.1.1A: Material selection, and NZBC E2/AS1, Table C.1.1.1B: Compatibility of materials in contact, for selection of suitable fixing materials and their compatibility with other materials.

Zone	Fixings Material
Zone D, Zone E / Microclimates (incl. Geothermal)	Grade 316 Stainless
Zone B, Zone C	Hot-dipped galvanized

Check against SED requirements for microclimate conditions. For fastener type refer to following clause(s).

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2.15 CAVITY BATTEN NAILS

40 x 2.8mm Hardie™ Flex nails for fixing timber cavity battens and aluminium flashings.

2.16 HOT DIPPED GALVANIZED NAILS

Hot-dipped galvanized, 75 x 3.06mm D head or 75 x 3.15mm RounDrive ring shank nails for fixing Oblique™ Weatherboards over battens over rigid air barrier.

2.17 FLEXIBLE SEALANT

Bostik® Seal N Flex-1™ or Sikaflex® AT Facade or Sikaflex® MS sealants.

2.18 PRIMER

Refer to SELECTIONS.

2.19 EXTERIOR GRADE FILLER

CRC® ADOS® Builders Fill, two part filler to fill over nail holes.

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.

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

Application - particular installations

3.4 FIRE RESISTANCE RATING

Refer to project drawings for FRR system construction details and Fire and Acoustic Design Manual by James Hardie® for further information.

Application - generally

3.5 INSTALL CAVITY BATTENS - OBLIQUE™ HORIZONTAL WEATHERBOARDS

Install 20mm minimum thick cavity battens to NZBC E2/AS1, 9.0 Wall claddings, where required. Fix vertical cavity battens to wall framing studs. The battens are fixed by the cladding fixings which will penetrate the wall framing studs under the wall underlay. Seal the top of the cavity and install cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). Do not use horizontal cavity battens. Use cavity spacers where fixing is required between cavity battens.

3.6 INSTALL CAVITY BATTENS - OBLIQUE™ VERTICAL WEATHERBOARDS

Install 20mm thick Hardie™ Horizontal Cavity Battens. Fix horizontal cavity battens to wall framing nogs, fix vertically to studs at corners and openings. The battens are fixed by the cladding fixings which will penetrate the wall framing nogs and studs under the wall underlay. Seal the top of the cavity and install cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc).

3.7 PENETRATIONS AND FLASHINGS

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

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- Wall underlay appropriately incorporated with penetration and junction flashings.
- Materials lapped in a way that water tracks down to the exterior face of the wall underlay.
- Wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations.
- Required holes in cladding accurately formed and cut to James Hardie® requirements, ensure (if required) services penetration grommets/sleeves/seals/tapes are in place prior to cladding installation.
- Claddings neatly finished off to all sides of openings
- Installation of flashings (those required to be installed prior to installation of penetrating elements).

3.8 INSTALL OBLIQUE™ WEATHERBOARDS - HORIZONTAL INSTALLATION

Cut weatherboards to required lengths for vertical jointing. Prime site cut ends that are exposed prior to installation. Fit vertical jointers, internal and external corners and fix weatherboards as per Oblique™ Weatherboard Horizontal technical specifications.

3.9 INSTALL OBLIQUE™ WEATHERBOARDS - VERTICAL INSTALLATION

Cut weatherboards to required lengths. Prime site cut ends that are exposed prior to installation. Fit joint flashing, internal corners and external corners and fix weatherboards as per Oblique™ Weatherboard Vertical technical specifications.

Completion & Commissioning

3.10 COMPLETION MATTERS

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

4 SELECTIONS

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

4.1 JAMES HARDIE® OBLIQUE™ WEATHERBOARDS

Location:	refer to drawings.
Type/Brand:	Oblique™ Weatherboards
Thickness:	14mm
Width:	200mm
Construction:	Cavity fix
Fixing:	Refer to items under 2.0 PRODUCTS, suitable for exposure zone B.

4.2 TIMBER CAVITY BATTEN - FOR HORIZONTAL INSTALLATION

Timber species:	Radiata pine
Treatment:	H3.1
Thickness:	18mm

4.3 HARDIE™ 20MM HORIZONTAL CAVITY BATTEN - FOR VERTICAL INSTALLATION

Supplier:	James Hardie®
Timber species:	Radiata pine
Treatment:	H3.1
Thickness:	20mm

4.4 HARDIE™ EXTERNAL, INTERNAL CORNERS AND TRIMS

Refer to drawings for type required.

4.5 PRIMER

Type:	Dulux 1 Step, Acraprime 501/1, Resene Quick Dry or similar product. Select to ensure primer is compatible with paint system.

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Finishing

4.6 PAINTING

Refer to painting section(s) for details.

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4231HS JAMES HARDIE® STRIA™ CLADDING

1 GENERAL

This section relates to the supply and installation of James Hardie Stria™ Cladding on a drained cavity.

1.1 RELATED WORK

Refer to 4171HR JAMES HARDIE RIGID AIR BARRIERS for James Hardie HomeRAB Pre-Cladding and RAB Board for pre-cladding.

Refer to 4231HI JAMES HARDIE EXTERNAL FIRE & ACOUSTIC WALL SYSTEMS for James Hardie Fire Rated System requirements.

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:

CLD	Ceramic Low Density
EH	Extra High
RAB	Rigid air barrier
uPVC	Unplasticised Polyvinyl Chloride

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 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
AS/NZS 1170.2:2011	Structural design actions - Wind actions
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standards
NZS 3604	Timber-framed buildings
AS/NZS 3837	Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter
NASH Standard Part 2:May 2019	Light Steel Framed Buildings
CodeMark CMNZ30109 - Version F	Stria Smooth and Stria Fine texture Claddings by James Hardie

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

James Hardie Stria Cladding Fine Texture Vertical Installation Technical Specification April 2026
James Hardie Stria Cladding Fine Texture Horizontal Installation Technical Specification April 2026
James Hardie Stria Cladding Smooth Vertical Installation Technical Specification April 2026
James Hardie Stria Cladding Smooth Horizontal Installation Technical Specification April 2026
James Hardie Stria Cladding Smooth Vertical Installation to Hardie 40mm Structural Horizontal Cavity Batten Technical Specification April 2026
BRANZ Appraisal 1224 (2022) - Amended 1 April 2026 - Stria Cladding Horizontal
BRANZ Appraisal 1225 (2022) - Amended 1 April 2026 - Stria Cladding Vertical
James Hardie Stria Cladding Product Warranty - August 2024

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Manufacturer/supplier contact details
Company: James Hardie New Zealand Limited
Web: www.jameshardie.co.nz
Email: info@jameshardie.co.nz
Telephone: 0800 808 868

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

25 years: For James Hardie Stria Cladding

- 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 of the material.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

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 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:

Stria Cladding Care Maintenance Guide 2025

Provide this information prior to practical completion.

Compliance information

1.9 COMPLIANCE - CODEMARK CERTIFICATE

James Hardie Stria Cladding systems meet the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity - CMNZ30109

Performance - Fire

1.10 EXTERNAL FIRE SPREAD - CLADDING EXEMPT FROM TESTING

To NZBC C/AS1, 5.3 External cladding systems, or NZBC C/AS2, 5.5 External cladding systems, where external walls are located at a distance greater than or equal to 1.0m from a relevant boundary and a building height less than 10m.

1.11 EXTERNAL FIRE SPREAD - CLADDING MATERIALS

James Hardie Stria Cladding has tested to AS/NZS 3837 and to specific requirements of BPS, 8.4.1 Cladding materials, achieving:
Type A classification (peak heat release rate ≤ 100 kW/m², total heat release rate ≤ 25 MJ/m²).

2 PRODUCTS

Materials

2.1 STRIA CLADDING

Low density cellulose fibre cement, autoclaved panel to AS/NZS 2908.2. Finished to 14mm thick, 325mm or 405mm wide and 3000 or 4200mm long, manufactured from treated cellulose fibre, Portland cement, sand and water with proprietary additives. Cured by high pressure autoclaving and factory sealed both faces and all edges. Refer to SELECTIONS

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Components

2.2 FLEXIBLE WALL UNDERLAY
For flexible wall underlays refer to the appropriate separate sections.

2.3 HARDIE 20MM HORIZONTAL TIMBER CAVITY BATTENS
Radiata pine castellated cavity battens minimum 45mm wide x 20mm thick with beveled edge H3.1 treated to NZS 3602. Refer to SELECTIONS.

2.4 VENT STRIP / CAVITY CLOSER
Perforated uPVC, 18mm wide with 75mm upstand available in 3000mm lengths. Refer to SELECTIONS.

2.5 HARDIE 14MM TRIMLINE JOINT FLASHING
Aluminium flashing extrusion, 14mm wide and available in 3000mm lengths.

2.6 HARDIE 14MM INTERNAL CORNER FLASHING
Anodised aluminium extrusion, 14mm wide and available in 3000mm lengths.

2.7 HARDIE 14MM EXTERNAL BOX CORNER
Anodised aluminium extrusion, 14mm wide and available in 3000mm and 4000mm lengths.

2.8 HARDIE 9MM EXTERNAL BOX CORNER
Anodised aluminium extrusion, 9mm wide and available in a range of lengths.

2.9 TRIMLINE HORIZONTAL JOINTER
Anodised aluminium extrusion, 14mm wide x 100mm long.

2.10 TRIMLINE EXTERNAL CORNER JOINTER
Anodised aluminium extrusion, 14mm wide.

2.11 TRIMLINE INTERNAL CORNER JOINTER
Anodised aluminium extrusion, 14mm wide.

2.12 HARDIE AXENT TRIM
Pre-primed fibre cement trim, 19mm thick, 3000mm long. Available in a range of widths. Refer to SELECTIONS.

2.13 FASTENER TYPE
Refer to SELECTIONS.

Accessories

2.14 ADOS CRC BUILDERS FILL
Two part polyester composite exterior grade fill.

2.15 PRIMER
Refer to SELECTIONS.

2.16 SEALANT
Refer to SELECTIONS.

2.17 PAINT
Refer to separate painting section(s).

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.

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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 substrate: 18% maximum moisture content

Installation

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install James Hardie Stria Cladding in accordance with James Hardie Stria Cladding Installation Technical Specifications April 2026.

Installation - fire rated walls

3.6 INSTALL FIRE RATED WALLS

Refer to 4231HI JAMES HARDIE EXTERNAL FIRE & ACOUSTIC WALL SYSTEMS for James Hardie external fire and acoustic rated wall systems.

Installation - general

3.7 INSTALL CAVITY CLOSURE/VENT STRIP

Install cavity at base of walls, on horizontal (or raking) open junctions and over openings (windows, meter boards, etc).

3.8 INSTALL HARDIE 20MM HORIZONTAL TIMBER CAVITY BATTENS

Fix Hardie cavity battens horizontally and vertically over wall underlay/rigid air barrier to wall framing and vertically at corners and openings. Tack in place with Hardie Flex nails. Seal the top of the cavity with flexible sealant. Use cavity spacers where fixing is required between cavity battens. Do not use battens in lengths less than 300mm.

3.9 PENETRATIONS AND FLASHINGS

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

- Wall underlay appropriately incorporated with penetration and junction flashings.
- Materials lapped in a way that water tracks down to the exterior face of the wall underlay.
- Wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- Required holes in cladding accurately formed and cut to James Hardie® requirements, ensure (if required) services penetration grommets/sleeves/seals/tapes are in place prior to cladding installation.
- Claddings neatly finished off to all sides of openings
- Installation of flashings (those required to be installed prior to installation of penetrating elements).

3.10 INSTALL FLASHINGS

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

3.11 INSTALL JOINTING SYSTEMS

Install vertical, horizontal, internal and external corner jointers.

3.12 CUT STRIA CLADDING

Cut cladding to required lengths. Prime site cut ends prior to installation.

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3.13 FIX STRIA CLADDING SMOOTH - 405mm WIDE PANELS VERTICALLY

Nail fix into castellated cavity battens at 800mm centres vertically at minimum 90mm and maximum 110mm from edge of Stria panel. Finish D-head nails 2mm below panel surface and fill with builders fill. Finish RounDrive nails flush with panel surface. Refer to SELECTIONS.

Wind Zone/Pressure	Number of fixing across Stria Panel width
up to & including VH	2 nails
Extra High	3 nails evenly spaced
SED up to 3.2kPa	4 nails evenly spaced

3.14 INSTALL HARDIE AXENT TRIM

Pre-drill holes and nail fix Hardie Axent Trim over Stria Cladding. Apply continuous bead of adhesive sealant between trim profiles. Fill nail heads with builders fill.

Completion & Commissioning

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

Materials

4.1 STRIA CLADDING SMOOTH - INSTALLED VERTICALLY TO TIMBER CAVITY BATTEN

Location:	refer to drawings
Brand:	Hardie Stria Cladding
Type:	Smooth
Size:	405mm wide
Orientation:	Vertical
Fastener type:	suitable for fixing over rigid air barrier.
Cavity Batten:	Hardie 20mm Horizontal Timber Cavity Batten
Batten fastener:	40mm x 2.8mm Hardie Flex nail
Cavity Closer:	uPVC Vent Strip 14mm x 3000mm long
Cavity Closer fastener:	40 x 2.8mm Hardie Flex nail

Components

4.2 EXTERNAL CORNER FLASHING

Location:	refer to drawings for external corner detail.
Manufacturer:	James Hardie New Zealand Ltd
Brand/type:	Hardie 14mm External Box Corner
Fastener type:	40 x 2.8mm Hardie Flex nail

Accessories

4.3 PRIMER

Brand/type:	Dulux 1 Step Prep or Resene Quick Dry or similar, ensure primer is compatible with paint system.

4.4 ADHESIVE SEALANT

Brand/type:	Sika Sikaflex 11FC or similar approved.

4.5 FLEXIBLE SEALANT

Brand/type:	Sika Sikaflex MS or similar approved.

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4239JH JAMES HARDIE® SOFFITS

1 GENERAL

This section relates to the supply and fixing of James Hardie® soffit and eave linings.
It includes:

- James Hardie® Villaboard™ Soffit Lining

Documents

1.1 ABBREVIATIONS AND DEFINITIONS

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

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 1170.2:2011	Structural design actions - Wind actions
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3604	Timber-framed buildings

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Eaves and Soffits Installation Manual by James Hardie® (Feb 2025)
Fire and Acoustic Design Manual by James Hardie, May 2025
James Hardie® Eclipsa™ Eaves Lining Product Technical Statement
James Hardie® Hardie™ Groove Lining Product Technical Statement
James Hardie® Villaboard™ Lining Product Technical Statement
James Hardie® Eaves and Soffit Care and Maintenance
BRANZ Appraisal 1285 (2025) - James Hardie Fire And Acoustic Wall Systems - Amended 16 June 2026

Manufacturer/supplier contact details

Company:	James Hardie New Zealand Limited
Web:	www.jameshardie.co.nz
Email:	info@jameshardie.co.nz
Telephone:	0800 808 868

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For lining product and accessories

- 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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

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1.6 NO SUBSTITUTIONS

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

1.7 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:

James Hardie® Eaves and Soffit Care and Maintenance

Performance

1.8 PERFORMANCE - UP TO AND INCLUDING VERY HIGH WIND ZONE

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

2 PRODUCTS

Materials

2.1 VILLABOARD™ SOFFIT LINING

James Hardie® Villaboard™ Soffit Lining, 6mm and 9mm thick cellulose fibre reinforced cement sheet. Manufactured to AS/NZS 2908.2 from Portland cement, ground sand, cellulose fibre and water.

Components

2.2 FASTENER TYPE

Fasteners to minimum durability requirements of the NZBC. Refer to NZBC E2/AS1, Table C.1.1.1A: Material selection, for fixing material, and NZBC E2/AS1, Table C.1.1.1B: Compatibility of materials in contact, for selection of suitable fixing materials and their compatibility with other materials.

Exposure	Fixing	Fixing Material	Zone
Sheltered	Nail	Hot-dip galvanized steel	B
Sheltered	Nail	Stainless steel	B, C, D, E
Sheltered	Screw	Stainless steel	B, C, D, E

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

Components - Villaboard™ Soffit Lining

2.3 POLYPROPYLENE TAPE

Polypropylene tape, 30mm minimum width.

2.4 CONTROL JOINT

Refer to SELECTIONS.

2.5 HARDIE™ DRIVE SCREW

Hardie™ Drive Screw, 316 stainless steel, 30mm x 7g

2.6 VILLADRIVE SCREW

Villadrive Screw, 30mm x 6g, Class 3

2.7 FIBREZIP® SCREW

FibreZip® Screw, self drilling rib head screw, Class 3

2.8 HARDIE™ FLEX NAILS

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

2.9 BASE COMPOUND

Hardie™ Base Coat for flush finishing over recessed screw heads.

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Components - General

2.10 FLEXIBLE JOINT 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.

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 timber framing: 18% maximum

Installation/application

3.4 STANDARDS AND TOLERANCES
Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 FIRE RESISTANCE RATING
Install fire rated soffit as part of a James Hardie® FRR exterior system. Refer to project drawings for FRR system construction details and Fire and Acoustic Design Manual by James Hardie® for further information.

Application - general

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

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

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

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

3.10 INSTALL VILLABOARD™ SOFFIT LINING
Install in accordance with James Hardie® installation manual requirements. Refer to SELECTIONS for fixing and jointing methods.

3.11 BUTT JOINT
Paint sheet edges prior to installation.

3.12 CONTROL JOINT
Install control joint to James Hardie® installation manual requirements.

3.13 FASTENER - SIZE AND LAYOUT
Fix sheets to framing using fasteners as nominated in SELECTIONS. Fix to James Hardie® installation manual requirements.

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3.14 SEALANTS

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

3.15 FINISHING OVER DRIVEN FASTENERS

Fill over driven fasteners with Hardie™ Base Coat to the required level of finish.

3.16 PAINTING

Refer to painting section/s for protective coating system.

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

Materials

4.1 VILLABOARD™ SOFFIT LINING - SQUARE EDGE

Location:	to soffits as shown on drawings.
Brand/type:	James Hardie® Villaboard™ Soffit Lining
Edge:	Square edge
Thickness/size:	6mm
Joint:	Butt joint - with 30mm polypropylene or flashing tape, 1mm gap between sheets.
Fixing method:	Screw and adhesive
Fixing Type:	Hardie™ Drive Screw, 316 stainless steel, 30mm x 7g, or similar approved to suit durability zone
Adhesive:	Sikaflex-11FC by Sika or Seal N Flex-1 by Bostik
Level of Finish:	4

Painting

4.2 PAINTING

Refer to painting section/s for details.



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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.

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Dimond Roofing and Cladding Systems Manual (January 2021)
Dimond Roofing Profile BPIR
Dimond Roofing UniCote® LUX Brochure
UniCote® LUX Data Sheet
AWTA Product Testing Reports for UniCote® Lux

Manufacturer/supplier contact details:

Company:	Fletcher Steel Ltd
Trading as:	Dimond Roofing
Web:	www.dimond.co.nz
Email:	roofspec@dimond.co.nz
Telephone:	0800 346 663 (0800 DIMOND)

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:.

18 years:	for failure of coating adhesion
50 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.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 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 specified system, 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 following maintenance information contained in the Dimond Roofing & Cladding Systems Manual - Routine Maintenance, as electronic PDF format.

Provide this information prior to practical completion.

Compliance information

1.10 COMPLIANCE - PROPOSED ALTERNATIVE SOLUTION

Dimond various metal roofing profiles, are presented as an alternative solution for:

Clause:	E2-External moisture
Performance:	E2.3.1 Roofs must shed precipitated moisture. In location subject to snow, roofs must also shed melted snow. E2.3.2 Roofs and exterior walls must prevent the penetration of water that could cause undue dampness, damage to building elements, or both.

Profiles:

Trapezoidal profile:	Dimond DP955, Solar Rib, Steelspan 900 & Topspan
Clip fixed, trough:	Dimondek 630

Proposed alternative solution is supported by:

- In-service history
- NZMRM CoP
- Dimond standard details and installation guidelines

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Performance - General

1.11 DRINKING WATER

Roofing for collecting potable water to NZBC G12/AS1.

Quality control and assurance

1.12 INSPECTIONS

Hold Point: Council inspections	Work may not proceed until the work in question has been inspected.

2 PRODUCTS

Materials

2.1 STEEL - TYPE AM COATING (ALUMINIUM/ZINC/MAGNESIUM ALLOY), PREPAINTED

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 and into steel to penetrate by minimum 3 threads. Screw fasteners to be head stamped identifying the manufacturer and class. 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 BOOT FLASHINGS

Generally to NZBC E2/AS1, 8.4.12 Roof penetrations

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

2.7 WIRE NETTING AND SAFETY MESH

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.8 UNDERLAY AND REFLECTIVE FOIL

Refer to 4161 UNDERLAYS, FOIL AND DPC

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2.9 SEALANT

Neutral curing MS sealant or polymer sealant as required by the roofing manufacturer and used as directed.

2.10 CLOSURE STRIPS

Non-bituminous compressible, profiled foam strips to fit the sheet profile.

2.11 LAP SEALING TAPE

Closed cell self adhesive nitrile tape.

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.

Inspect the roof framing and supporting structure to ensure that it is complete and fully braced ready for roofing and free from any misalignments or protrusions that could damage the roofing. Provide a fall for roof drainage minimum as required by selected profile.

Ensure moisture content is:

Timber framing:	18% maximum (16% or preferably less for under transverse flashings)

Transverse flashings can be temporarily tacked in place and final fixing done when moisture content is acceptable.

3.4 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.

3.5 INSTALLATION DAMAGE

Take care to avoid damaging pre-finished roofing both during and after fixing. Wear only soft-soled shoes on the finished surface.

Installation/application

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 INSTALLATION GENERALLY

Install Dimond profile metal roofing in accordance with Dimond Roofing requirements and NZMRM CoP and to form a complete water tight roofing system, including all flashings, cappings and penetrations.

3.8 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.

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3.9 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.

3.10 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.

3.11 THERMAL MOVEMENT

For sheet lengths more than 18 metres, make provision for thermal expansion where required

3.12 FIXING GENERALLY

Install and fix in accordance with NZBC E2/AS1, the NZMRM CoP and the Dimond Roofing required fixing patterns and details to suit project wind loadings stated in the general section 1220 PROJECT or in accordance with specific design in accordance with project engineer's requirement.

Use only screws and clips as required by Dimond Roofing. Paint colour matched fixings and accessories before installation.

When a load spreading washer is required, pre-drill a 10mm oversized hole to accommodate the EPDM washer.

3.13 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.

3.14 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

3.15 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.

3.16 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.

3.17 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 & Commissioning

3.18 REMOVE PROTECTIVE FILM

If Dimond profiled metal roofing is supplied with protective film, remove film from underlaps whilst laying and remove film entirely upon completion prior to UV making it difficult to remove.

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

Roofing

4.1 DIMOND ROOFING - VEEDEK ROOFING

Location:	as roofing shown on drawings.
Profile:	Veedek
BMT/material:	0.55mm BMT Steel
Coating system:	Colorcote® Magnaflow
Colour:	TBA
Protective film:	provides temporary protection from scratching
Effective cover:	755mm
Profile height:	28mm
Purlin material:	timber and ventilation battens allowed for.
Fixing Note:	Longer fastenings will be required for roof build-ups such as for cavity battens installed over purlins. Fixing length must be long enough to pass into framing by 30mm for timber purlins & 3 threads for steel purlins. Fixing lengths to suit additional ventilation battens.
Fixing pattern:	Refer to Dimond Roofing Veedek literature for details

Accessories

4.2 FLASHINGS - GENERALLY

BMT/material:	0.55mm BMT
Profile:	refer to drawings for flashing profile and requirements.
Coating system:	To match roofing
Paint colour:	To match roofing

4.3 FLASHINGS - INACCESSIBLE

Material/thickness:	0.55mm BMT

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4337E ECOPLY® ROOFING & DECKING

1 GENERAL

This section relates to the supply and installation of Carter Holt Harvey Plywood Ltd Ecoply® plywood sheets as roofing and decking substrates.

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:

CCA	Copper chrome arsenate
PF	Phenol formaldehyde

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 10m in height
AS/NZS 1604.3:2012	Preservative-treated wood-based products - Plywood
AS/NZS 2269.0	Plywood - Structural - Specifications

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Ecoply® Specification and Installation Guide (September 2025)
Ecoply® Structural Plywood used in Roofs Product Technical Statement and Building Product Information Sheet

Manufacturer/supplier contact details

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

Requirements

1.4 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 NO SUBSTITUTIONS

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

2 PRODUCTS

Materials

2.1 ECOPLY® STRUCTURAL SQUARE EDGE PLYWOOD

Square edge, synthetic phenolic (PF) resin Type A bonded timber veneer plywood sheets manufactured to AS/NZS 2269.0, H3.2 CCA treated to AS/NZS 1604.3:2012. Stress grade F8/F5. Available in appearance grades CD and DD. Sheets 1200mm wide, 2400mm and 2700mm long, and available in range of thicknesses. Refer to SELECTIONS.

Components

2.2 SCREWS

Hot dipped galvanized or stainless steel countersunk screws. Refer to SELECTIONS.

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2.3 ADHESIVE

Refer to SELECTIONS.

2.4 TIMBER PRESERVATIVE TREATMENT

Soudal Metalex Concentrated Timber Preservative treatment, in clear or green colour. 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.

Timber substrate: 18% maximum moisture content

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install in accordance with Ecoply® Specification and Installation Guide.

3.6 TREAT CUT EDGES

Brush timber preservative onto cut edges and penetration cut outs.

3.7 APPLY ADHESIVE

Apply a bead or daubs of adhesive to framing. When fastening sheets over adhesive, work from the middle of the sheet outwards to develop glueline pressure.

3.8 LAY PLYWOOD SHEETS - SQUARE EDGE

Lay sheets continuous over at least two spans in a staggered layout with face-grain of sheet at right-angles to support and with sheets in square, true alignment and plane. Provide 3mm expansion gap between all sheet edges. Fully support all sheet edges.

3.9 FIX PLYWOOD SHEETS

Fix sheets to framing to the Ecoply fixing pattern. Maintain clearances to sheet edges to Ecoply requirements. Finish fastener heads flush with the panel surface.

3.10 UNDER MEMBRANE ROOFING

To NZBC E2/AS1, 8.5 Membrane roofs and decks. Fix plywood sheet oriented with C grade face up, and falls as shown on the drawings. Provide a 5mm radius chamfer to external edges where the membrane is to be wrapped over. Screw and adhesive fix sheets with stainless steel screws working from the middle of the sheet outwards to develop glueline pressure. Fix internal corner fillets.

Completion

3.11 COMPLETION MATTERS

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

4 SELECTIONS

For further details on selections go to www.chhply.co.nz

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

4.1 ECOPLY® STRUCTURAL SQUARE EDGE PLYWOOD - MEMBRANE ROOF

Location:	to substrate below membrane decks/ roof. Refer to drawings.
Manufacturer/supplier:	Carter Holt Harvey Plywood Ltd.
Brand:	Ecoply® Structural Square Edge plywood
Stress grade:	F8/F5
Appearance grade:	CD
Sheet thickness/ID code:	19mm
Timber treatment:	H3.2 CCA

4.2 SCREWS - MEMBRANE ROOF

Type:	10Gx50mm countersunk self-tapping screw
Finish:	Stainless steel

4.3 TIMBER PRESERVATIVE TREATMENT

Brand/type:	Soudal Metalex Concentrated Timber Preservative
Colour:	Clear



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4381VB VIKING BUZON DECK SUPPORT SYSTEM

1 GENERAL

This section relates to the supply and installation of Viking Roofspec Ltd. proprietary Buzon height adjustable support systems for floating decks and paved patios.

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:

EPDM	Ethylene propylene diene monomer
PP	Polypropylene
UV	Ultraviolet

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS.

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Viking Buzon Pedestal System Data Sheet
Viking Buzon Standard Details
Viking Buzon Accessory Guide
Viking Silca System Installed on Buzon Pedestal Technical Data Sheet

Manufacturer/supplier contact details

Company:	Viking Roofspec Ltd.
Web:	www.vikingroofspec.co.nz
Email:	info@vikingroofspec.co.nz
Telephone:	0800 729 799

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years	For Buzon Support Systems and componentry
20 years	For Silca Silgrate System and componentry in residential applications
10 years	For Silca Silgrate System and componentry in commercial applications

- 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:

1 year	For workmanship

- 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 NO SUBSTITUTIONS

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

2 PRODUCTS

Materials

2.1 BUZON PEDESTALS

UV resistant high-density copolymer polypropylene supporting pedestals. Available in a range of fixed height and adjustable height pedestals with locking keys. Adjustable pedestals available with and without an integrated slope corrector. Refer to SELECTIONS.

2.2 BUZON UPADS

200mm x 200mm recycled rubber supporting pads. Available in a range of thicknesses. Refer to SELECTIONS.

Components

2.3 COUPLERS

UV resistant high-density copolymer polypropylene couplers with locking keys. Available in a range of heights. Refer to SELECTIONS.

2.4 UPAD GROUND PADS

200mm x 200mm x 3mm thick recycled rubber supporting pads with a centre hole to fit componentry.

2.5 SLOPE CORRECTOR

UV resistant high-density copolymer polypropylene slope correctors. Available in a range of top and bottom of pedestal slope correction. Refer to SELECTIONS.

2.6 UTAB FLAT

4.5mm thick x 17mm high UV resistant high-density copolymer polypropylene tile spacing tabs.

2.7 TILE SPACER TABS

17mm high polypropylene tile spacing tabs. Available in a range of thicknesses. Refer to SELECTIONS.

2.8 RUBBER EQUALISER

Reinforced EPDM pad. Available in 1mm and 2mm thickness. Refer to SELECTIONS.

2.9 UWALL PROTECTOR - PP

UV resistant high-density copolymer polypropylene perimeter spacer with 4.5mm. Refer to SELECTIONS.

2.10 UWALL PROTECTOR - ALUMINIUM

Aluminium perimeter spacer with 12mm spacer depth. Refer to SELECTIONS.

2.11 TERRACE FINISHER

Stainless steel edge finishing kit.

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.



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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 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 INSTALLATION GENERALLY

Install the deck support system in accordance with Viking Roofspec Ltd. installation instructions.

Installation - Buzon Pedestal Support System for tiling and paving systems

3.6 INSTALL BUZON PEDESTAL SYSTEM FOR TILES/PAVERS

Establish the centreline of the tiled deck. Working from the centreline, mark out the position where the tiles will intersect. Place the Buzon Pedestals on the substrate at the marked tile intersections, starting from the corner with the lowest threshold. Adjust pedestal height to adjust for slope. Screw fit couplers to pedestal base and secure position with locking keys where additional height is required.

3.7 FIT SLOPE CORRECTOR

Fit Slope Corrector to pedestal. Adjust to appropriate slope.

3.8 FIT TILE SPACER TABS

Fit the tile spacer tabs to the pedestal top.

3.9 INSTALL UWALL PROTECTOR

Place the UWall Protector over the Tile Tabs along deck edge to create a perimeter gap.

3.10 INSTALL TERRACE FINISHER

Fit the Terrace Finisher to the pedestals along exposed deck edges for fixing vertical tiles.

3.11 FIT RUBBER EQUALISER

Cut rubber equalizers into small pieces and place them between Tile Tabs and tile corners to adjust support height and set level. Lay a final full equalizer pad over the top.

3.12 LAY TILES

Sit tile on the pedestal support, butt to the Tile Tabs spacer tabs. Large format tiles (i.e. greater than 600mm x 600mm) require an additional support under the centre of tile by removing the tile spacer tabs.

Installation - Buzon UPad Support System for tiling and paving systems

3.13 INSTALL BUZON UPAD SUPPORT SYSTEM FOR TILES/PAVERS

Establish the centreline of the tiled deck. Working from the centreline, mark out the position where the tiles will intersect. Lay Buzon UPads on the substrate at 45° to the fall of the deck at the marked tile intersections, starting from the corner with the lowest threshold. Use UPad Ground Pads over Buzon UPads to adjust for slope.

3.14 FIT UTAB FLAT

Insert UTab Flat tile spacer tabs into the UPad Ground Pads.

3.15 FIT UWALL PROTECTOR

Fit the UWall Protector over the UTab Flat tile spacer tabs along deck edge to create a perimeter gap.

3.16 FIT RUBBER EQUALISER

Cut rubber equalizers into small pieces and place them between Tile Tabs and tile corners to adjust support height and set level. Lay a final full equalizer pad over the top.

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3.17 LAY TILES

Sit tile on the Buzon UPads support, butt to the UTab Flat tile spacer tabs. Large format tiles (i.e. greater than 600mm x 600mm) require an additional Buzon UPads under the centre of tile.

3.18 INSTALL CLEAN OUT MANHOLES / HATCHES

Install removable screw-fixed access panels.

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

4.1 VIKING BUZON PEDESTAL SUPPORT SYSTEM - TILES/PAVERS

Location:	as tile support over membrane deck, refer to drawings.
Supplier:	Viking Roofspec Ltd
Type:	Buzon Pedestal Support System
Application:	Note that spa support is required, setout of pedestal supports to suit selected spa weight & to be confirmed by manufacturer before proceeding

4.2 VIKING BUZON UPAD SUPPORT SYSTEM - TILES/PAVERS

/ Supplier:	Viking Roofspec Ltd
Type:	Buzon UPad Support System
Support pads:	UPad3
Ground pads:	UPad Ground Pads
Rubber equalisers:	E10000 (1mm thick shim) / E20000 (2mm thick shim) to suit application
Tile spacer:	UTab Flat
Wall spacer:	UWALL12 - Aluminium Protector (12mm gap at tile perimeter)

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4422VE VIKING ENVIROCLAD MEMBRANE

1 GENERAL

This section relates to **Viking Enviroclad** (Sure-Weld TPO) membrane, suitable for industrial, commercial and residential roofing and decking applications.

It includes:

- Enviroclad applied as a single layer membrane
- all required components and accessories to complete installation

1.1 RELATED WORK

Refer to 4337E ECOPLY® ROOFING & DECKING for plywood substrate.
Refer to Refer to 4381VB VIKING BUZON DECK SUPPORT SYSTEM for pedestal floating deck system.

Refer to relevant leak detection section for electronic leak detection.

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

CCA	Copper, chrome and arsenate
MCA	Micronized copper azole
TPO	Thermoplastic polyolefin
WMAI	Waterproofing Membrane Association Inc

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 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 1859.1	Reconstituted wood based panels - Specifications - Particle board
AS/NZS 2269.0	Plywood - Structural - Part 0: Specifications
CodeMark™ CMNZ30058 verH	Viking Enviroclad Roofing and Deck Membrane System
CodeMark™ CMNZ70176 ver0	Viking Enviroclad "Sure-Weld TPO" Waterproofing membrane

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Viking Plywood Substrate Checklist - Enviroclad
Viking Plywood Substrate Checklist - Dec-K-ing
Viking Strandsarking Substrate Checklist - Enviroclad
Viking Concrete Substrate Checklist - Enviroclad
Viking Enviroclad Standard Details
Viking Enviroclad Applicator Handbook

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Viking Enviroclad Product Technical Statement
Viking PDS – RhinoBond Mechanical Fastening to Enviroclad TPO
Viking Rhinobond Standard Details
Viking PDS EJOBAR TPO 2G Mounting Bar
Viking PDS Enviroclad Walkway Roll
Viking PDS Cav-Grip III, Low VOC Low Temperature Adhesive
Viking PDS Enviroclad TPO pourable sealer pockets and pourable sealer
Viking PDS Viking Surface Sealer
Viking PDS AFS Low Profile Barge Flashing System
Viking Technical Note Flood Testing
Viking Technical Note Venting
BRANZ Appraisal 656 (2020) - Enviroclad Roofing Membrane - Amended 16 April 2025
BRANZ Appraisal 713 (2018) - Viking WarmRoof / WarmSpan System - Amended 16 April 2025
BRANZ Appraisal 946 (2022) - Strandsarking® for Low Slope Membrane Roofs

Manufacturer/supplier contact details;

Company:	Viking Roofspec Ltd
Web:	www.vikingroofspec.co.nz
Email:	info@vikingroofspec.co.nz
Telephone:	0800 729 799

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years:	For Viking Enviroclad Membrane

- Provide this warranty on the Viking Enviroclad Membrane Product Warranty standard form.
- Commence the warranty from the date of completion of fixing.

Refer to the section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

10 years:	For Enviroclad membrane when installed by Viking Approved Applicator with Viking Licensed Installer Stage 1 minimum

- Provide this warranty in the Certificate of Workmanship form in support of a Viking Roofspec Product Warranty.
- Commence the warranty from the date of completion of fixing.

Refer to the section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Installation of the membrane to be carried out by Viking Licensed Installers holding a minimum Viking Stage 1 Licence. Installation of substrates must be completed by suitably qualified persons in accordance with instructions given in Manufacturers Technical Literature and BRANZ Appraisal 656 - Enviroclad Roofing Membrane.

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Viking membrane waterproofing materials, or associated products, components or accessories, unless agreed by Viking Roofspec.

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Compliance information

1.9 COMPLIANCE - CODEMARK CERTIFICATE

Enviroclad (Sure-Weld TPO) meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate:

- CodeMark™ CMNZ30058 Viking Enviroclad Roofing and Deck Membrane System
- CodeMark™ CMNZ70176 Viking Enviroclad "Sure-Weld TPO" Waterproofing Membrane

1.10 COMPLIANCE - BRANZ APPRAISAL

Enviroclad (Sure-Weld TPO) has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 656 (2020) - Enviroclad Roofing Membrane.

Performance

1.11 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed Viking Enviroclad system, including all penetrations through the roof and junctions with walls and parapets. All penetrations to comply with Viking Roofspec recommendations and standard details.

2 PRODUCTS

Materials

2.1 ENVIROCLAD (SURE-WELD TPO) WATERPROOFING MEMBRANE

Polyester reinforced thermoplastic polyolefin (TPO) membrane. Refer to SELECTIONS for size and colour options.

Components

2.2 ADHESIVE

Sureweld Bonding Adhesive - proprietary solvent based contact adhesive.

2.3 ADHESIVE, LOW TEMPERATURES /LOW VOC

Viking Cav-Grip III – proprietary low VOC, low temperature solvent based contact adhesive.

2.4 ENVIROCLAD CUT EDGE SEALANT (CLEAR)

Proprietary sealant for sealing cut edges.

2.5 WATER CUT-OFF MASTIC

Mastic Sealant for use at compression terminations, drains and beneath metal edging.

2.6 ENVIROCLAD UNIVERSAL SEALANT

UV stable sealant for use in exposed terminations in contact with Enviroclad Membrane (e.g. chase sealing). Available in colour white only.

2.7 ENVIROCLAD WEATHERED MEMBRANE CLEANER

Proprietary membrane cleaner. For use to clean membrane or TPO accessories prior to welding of laps or detail. Use with HP Splice Wipes.

2.8 HP SPLICE WIPES

Proprietary wipes for use with Enviroclad Weathered Membrane Cleaner to properly clean and prepare membrane and accessories prior to welding.

2.9 ENVIROCLAD OUTSIDE AND INSIDE CORNERS

Proprietary non-reinforced moulded TPO flashings to be welded as internal and external corners.

2.10 ENVIROCLAD NON-REINFORCED MEMBRANE

Proprietary non-reinforced TPO membrane or detailing. Available in grey and white in 300mm x 15.2m and other colours in 610mm wide x lineal metre.

2.11 ENVIROCLAD T-JOINT COVERS

Proprietary unreinforced TPO disks.

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2.12 ENVIROCLAD PIPE SEAL

Proprietary non-reinforced moulded TPO flashings for sealing pipe penetrations. Sized for 19mm – 205mm diameter round penetrations. Suitable for maximum sustained temperature of 70°C.

2.13 ENVIROCLAD SPLIT PIPE BOOT

Proprietary split pipe boot for sealing in-situ round penetrations 80mm or 100mm. Suitable for maximum sustained temperature of 70°C. Colour: Grey

2.14 ENVIROCLAD TPO POURABLE SEALER POCKETS

Proprietary non-reinforced moulded TPO surrounds for encasing odd shaped or multiple pipe penetrations of maximum size 100mm x 250mm.

2.15 ENVIROCLAD WHITE ONE-PART POURABLE SEALER

Proprietary white pourable sealer for filling of Enviroclad TPO pourable sealer pocket or manufactured surrounds. Suitable for sustained service temperature of --29°C to 90°C. Use with WeatherBOND Multipurpose Primer.

2.16 PRIMER

WeatherBOND Primer SEC034 for priming all surfaces receiving Enviroclad White One-Part Pourable Sealer and for use with laptape.

2.17 LAPTAPE

Laptape SMT076V use for under-flashings or drip edge detail when required. Use with WeatherBOND Multipurpose Primer.

Accessories

2.18 ENVIROCLAD WALKWAY ROLLS

Proprietary non-slip TPO walkway mat with edges trimmed in safety yellow, 870mm wide, sold cut to length. Install in maximum 3m sections. Available in white STP700 or grey STP710.

2.19 ENVIROCLAD SCUPPER OUTLETS

TPO scuppers. 100mm x 65mm, 100mm x 100mm or 200mm x 80mm outlets.

2.20 ENVIROCLAD SCUPPER OVERFLOW

TPO scupper overflow. 200mm x 80mm overflow outlets.

2.21 SUMPS WITH TPO WELDABLE FLANGES

TPO Weldable Sumps with outlet and overflow diameters sized at 100mm/150mm or 150mm/200mm.

2.22 LEAF AND GRAVEL GRATES

Viking Gravel/Leaf Grates.

2.23 CLAMP RING ROOF DRAINS OR OVERFLOWS

80mm, 100mm or 150mm clamp sealed drains and overflows.

2.24 OVERFLOW SOFFIT TRIM

Accessory to trim overflow downpipe protruding through soffit lining, to suit 65mm, 80mm or 100mm diameter overflow pipes.

2.25 OVERFLOW HAT

Accessory to SDM049 & SDM065 Overflow. Clips into the SS grate to stop rain entering and falling through the overflow. Does not inhibit watershed of flooding above the overflow.

2.26 TPO COATED ALUMINIUM

Aluminium sheet, grey TPO coated to use for weldable flashings. Available in 3m x 1.2m

2.27 ENVIROCLAD WELDABLE RIB

TPO extruded rib profile available in 7 colours. 3m long x 53mm wide at the base x 31mm high.

2.28 AFS LOW PROFILE BARGE FLASHING

1.6mm Aluminium, 2-piece barge flashing IMT700 & IMT701 base with proprietary internal and external corners.

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2.29 DRIP EDGE PROFILE

2mm Aluminium drip edge profile 66mm high x 50mm wide x 3m long, as recommended by WMAI. Secure membrane to drip edge with fastening bar.

2.30 FASTENING BAR

Fastening bar profiles 25mm x 2.4m long in anodised aluminium, SDF110 or mill finish SDF110C.

2.31 PRESSURE BAR

2mm Aluminium pressure bar 65mm x 2.4m long.

2.32 TERMINATION FLASHING

2mm Aluminium Termination Flashing 140mm x 2.4m long with proprietary internal and external corners.

2.33 EJOT MOUNTING BAR

Grey TPO weldable plinth bar - 100mm wide at weldable flanges, 30mm wide at top x 40mm high x 3m long.

2.34 ACOUSTIC MOUNTING BLOCK

Mounting Block for use with lightweight air conditioning units. Available in 250mm or 400mm long x 130mm wide x 50mm high.

2.35 VIKING PROTECTION MAT

Viking Protection Mat, 4m wide, may be loose laid under plywood or similar for temporary protection of construction traffic after completed membrane installation. To be removed at project completion and may be reused if still in good condition.

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 Enviroclad membrane in rolls undamaged and include for site handling facilities where required. Store rolls horizontally only. Provide dry storage for all products. Stack off the ground on a level surface and with accessories.

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.

Confirm the moisture content of substrates:

Concrete:	Relative humidity of 75% maximum
Plywood / timber substrate:	Moisture Content of 20% maximum

3.4 WEATHER

Lay Enviroclad membrane in fair weather, with ambient air temperature no less than 7°C when using Viking Sure-Weld adhesive. Cooler climates may require use of Viking Gav-Grip III adhesive or RhinoBond mechanical fixing, refer to Product Data Sheet for suitable temperature range for installation.

3.5 EQUIPMENT

Equipment to be used:

- Suitable welding equipment
- Hand rollers for welding
- Seam probe

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- 35kg + roller for use with adhesive applied membrane
- Magnetic heat sink poles for Rhinobond
- Rhinobond Induction welder

Application - General / preparation

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 GENERALLY

All work and materials to comply with current Viking Enviroclad technical literature and standard details.

3.8 PRELIMINARY WORK

Ensure that preliminary work, including formation of falls, flashing rebates, grooves, ducts, provision of battens and fixing of vents and outlets to levels, is complete and properly constructed to enable the system to work as intended. The substrate to be smooth, clean, dry and stable.

3.9 ACCEPTANCE OF SUBSTRATE

Confirm that the substrate, including sumps, outlets, overflows and projections, will ensure work of the required standard. Ensure substrate falls comply with the consented plans and details, including positive watershed to drainage outlets or external spouting to avoid ponding.

- Ensure concrete roofs/deck to a minimum fall of 1:60 (1°) to CodeMark™ CMNZ30058
- Ensure other substrate roofs to a minimum fall of 1:30 (2°) to NZBC E2/AS1, paragraph 8.5.1.2a
- Ensure other substrate decks to a minimum of 1:40 (1.5°) to NZBC E2/AS1, paragraph 8.5.1.2b.
- Ensure gutters to a minimum fall of 1:100 (0.5°) to NZBC E2/AS1, paragraph 8.5.1.2c

3.10 PLYWOOD SUBSTRATE

Ensure installation to requirements of current Viking Roofspec Plywood Substrate Checklist - Enviroclad.

Plywood to be;
- a minimum of 17mm thick and complying with AS/NZS 2269.0
- minimum CD structural grade with the sanded C side upwards
- H3.2 treated (CCA or MCA) to AS/NZS 1604.1, and kiln dried afterwards.

Lay plywood with staggered joints (brick bond) with all edges of the sheets fully supported. Do not use tongue and groove plywood.
Leave a 3mm gap between all sheets. Fix with 10 gauge x 50mm stainless steel countersunk screws. Fix at 50mm from the corners, 150mm centres on edges and 200mm centres on all intermediate supports. No triangular fillets are to be used at upstand transitions. Chamfer all external edges with a minimum radius of 5mm where the membrane is to be wrapped over.

Plywood and the timber substructure to have a maximum moisture content of 20% when the membrane is installed.

3.11 INSTALL DRAINAGE ACCESSORIES

Install all selected proprietary clamped drains, scuppers, overflows and sumps in accordance with the manufacturer's installation requirements.

3.12 INSTALL DRIP EDGE / FASTENING BAR

Install selected drip edge angle to the underside of plywood or rebate into concrete substrate to form drip edge at external spouting and secure membrane to drip edge with fastening bar in accordance with the manufacturer's installation requirements.

Application - laying

3.13 GENERAL

Install to current application standards as detailed in Viking Roofspec Technical literature and Viking Enviroclad Applicators Handbook.

3.14 SUBSTRATE PREPARATION

Substrate to be clean and dry before application of the waterproofing membrane.

3.15 POSITION AND RELAX

Membrane to be unrolled onto the prepared substrate and allowed to relax for at least 20 minutes prior to installation. Position membrane over acceptable substrate and fold membrane back to expose half of the underside.

3.16 LAP JOINTS

Install adjoining Enviroclad membrane sheets in the same manner, overlapping edges 50mm to provide a minimum 40mm hot air weld.

3.17 APPLY ADHESIVE - SUREWELD

Apply SureWeld Bonding Adhesive, to the exposed underside of the membrane and to the corresponding substrate, using a plastic core medium nap paint roller at a coverage rate of 2m² per litre (includes coverage on both membrane and substrate).

3.18 APPLY ADHESIVE – CAV-GRIP III

Apply Cav-GRIP III, spray applied bonding adhesive, to the exposed underside of the membrane and to the corresponding substrate, at a coverage rate of 90m² per cylinder (includes coverage on both membrane and substrate).

3.19 INSTALL MEMBRANE SHEETS - ENVIROCLAD ADHESIVE FIXED

Allow adhesive to flash off until tacky without transfer to a dry finger. Lay the glued Enviroclad membrane onto the glued substrate. Brush down the bonded section of Enviroclad membrane immediately with a soft bristle broom. Fold back the unglued half of the sheet and repeat procedure. Roll membrane to field area with 35kg roller to ensure full contact of adhesive.

3.20 MEMBRANE CLEANER

Ensure that all membrane, including accessories, to be welded is cleaned using Weathered Membrane Cleaner. Wipe the surface where the Enviroclad membrane cleaner has been applied with a clean, dry HP Splice Wipe to remove residue prior to welding.

For Enviroclad Seam Shield, exclusively, membrane cleaning of the factory laps is not required.

3.21 HOT AIR WELD

Hot air weld the adjoining Enviroclad membrane sheets (minimum width of weld is 40mm).

3.22 INSPECT

Inspect and test joints all welds using a seam probe. Repair all breaches immediately while clean. Seal all cut reinforced membrane edges using Cut Edge Sealer, or penny roll the cut membrane edge using the correct welding technique.

3.23 PENETRATIONS AND JUNCTIONS

Form and finish upstands, downturns, penetrations, outlets and vents to conform to current Viking Roofspec Standard Details. Confirm installation of all required flashings and terminations, to leave membrane watertight upon project completion.

3.24 VENTING – ROOF CAVITIES

Provide adequate ventilation to NZBC E2/AS1, paragraph 8.5.1.4. For substrate venting, Viking Roofspec recommends 1 vent per 50m² area for substrate. For Cavity ventilation cavity ventilation, check that the cavity is cross ventilated allowing air movement across the entire cavity to reach vent locations. Refer to drawings for vent placement details.

Finishing

3.25 INSTALL ENVIROCLAD WALKWAY ROLLS

Install Enviroclad Walkway Rolls in ambient temperatures no less than 16°C (to prevent wrinkles forming), in accordance with manufacturer's requirements. Unroll walkway roll and allow to relax prior to installation. Cut into maximum 3m lengths and position Enviroclad Walkway Rolls with a minimum 25mm gap between adjacent pieces to allow for water drainage. Do not install over any field sheet laps. Cut the walkway so a 100mm minimum gap is created over any field splices. Since the attachment of the walkway is permanent, this will allow access to the field seams.

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Clean Enviroclad Walkway roll and Enviroclad membrane with Weathered Membrane cleaner. The centre of the walkway may be adhered with Cav-Grip III or Sureweld adhesive to secure in position. Weld all four sides of Enviroclad Walkway Rolls to main membrane. Refer to Viking PDS Enviroclad Walkway Roll for proper use and application.

3.26 PROTECTION CONSTRUCTION TRAFFIC

Protect completed areas of roof. Keep foot traffic to a minimum after laying the membrane. Lay protection / access boards as required for material storage, foot traffic or later works and remove when no longer required. Provide soft protection such as Viking Membrane Protection mat under hard protection access boards such as 17mm plywood.

3.27 ACCEPTANCE

Inspect the completed work. Protect and maintain roofing until completion of the contract works.

3.28 SUBSEQUENT WORK

Make good any damage and repair to Viking Roofspec specifications.

Completion

3.29 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.

4.1 VIKING ENVIROCLAD MEMBRANE – ADHESIVE FIXED

Location:	roof deck, refer to drawings
Substrate:	plywood
Membrane:	Viking Enviroclad
Thickness:	1.52mm
Colour:	Grey
Finish:	smooth
Adhesive:	Viking Sureweld or Viking Cav-Grip III spray applied (for low temperatures and low VOC)

4.2 ACCESSORIES

Location:	refer to drawings for accessories required.

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4521 ALUMINIUM WINDOWS AND DOORS

1 GENERAL

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

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

1.1 RELATED WORK

Refer to glazing sections for glass types

1.2 ABBREVIATIONS AND TERMS

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

Documents

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 provisions for timber-framed buildings up to 10 m in height
NZBC F4/AS1	Safety from falling
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 1170.2:2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1580.108.1	Methods of test for paints and related materials - Determination of dry film thickness on metallic substrates - Non destructive methods
AS/NZS 1734	Aluminium and aluminium alloys - flat sheets, coiled sheet and plate
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
NZS 3604	Timber-framed buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
BS EN 673	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
AAMA 2603	Voluntary specification, performance requirements, and test procedures for pigmented organic coatings on aluminium extrusions and panels (with coil coating appendix)
AAMA 2604	Voluntary specification, performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels.
AAMA 2605	Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminium extrusions and panels.

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BS 3900	Methods of tests for paints, Part C5: Determination of film thickness
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
BRANZ BU 636	Protecting Glass From Damage

Window & Glass Association NZ (WGANZ) documents:

Window Installation Guide	Guide to Window Installation as described in E2/AS1
PQAS	Powder Coating Quality Assurance System
SFA 3503-03	Anodic Oxide coatings on wrought aluminium for external architectural application (2005)

US Federal Specification:

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

1.4 MANUFACTURER'S DOCUMENTS

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

TBA

Copies of the above literature are available from ~

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

Warranties

1.5 WARRANTY - MANUFACTURER / SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years: For fabrication

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

1.6 WARRANTY - INSTALLER / APPLICATOR

Provide an installer/applicator warranty:

2 years: For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS

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

1.8 COMPLIANCE

Windows and doors to be manufactured and installed to NZBC E2/AS1.

1.9 CERTIFICATION

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



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Performance

1.10 PERFORMANCE - WINDOWS AND DOORS

To NZS 4211, including:

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

Refer to SELECTIONS.

1.11 PERFORMANCE - STRUCTURAL/WEATHER-TIGHTNESS

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

1.12 THERMAL PERFORMANCE - WINDOWS & GLAZED DOORS, HOUSING ONLY

Thermal performance of windows & doors to NZBC H1/AS1. The construction R-Value of windows & doors determined by Appendix D, Table D1.1.1: Construction R-values (R window) of selected generic windows and doors. Refer to SELECTIONS for construction R-values.

1.13 THERMAL PERFORMANCE - WINDOWS & DOORS

Thermal performance of windows & doors to NZBC H1/AS1 or NZBC H1/AS2 & NZBC H1/VM1 or NZBC H1/VM2. The construction R-value of windows & doors determined in accordance with NZBC H1/VM1 or NZBC H1/VM2, Appendix D, D1 Vertical windows and doors:

- Thermal transmittance of window & doors in accordance with ISO 10077-1.
- Thermal transmittance of framing in accordance with ISO 10077-2.
- Thermal transmittance of glazing using BS EN 673.

Refer to SELECTIONS for construction R-values.

Performance - Wind (design by contractor)

1.14 WIND - NON SPECIFIC DESIGN

Design the installation to the wind zone parameters of NZS 3604, table 5.4.

Refer to SELECTIONS for wind zone.

Finishes

1.15 CERTIFY COATINGS - POWDER COATING

Certify on request, compliance with this specification and support with control and sampling records. Test for film thickness to BS 3900, part C5, method No. 4, using method (b) or to AS/NZS 1580.108.1 for certifying thickness and method (a) where any dispute arises as to the thickness provided.

The coating should be applied by an applicator who can certify that the coating has been applied in accordance with the specification.

2 PRODUCTS

Materials

2.1 WINDOWS

Refer to SELECTIONS for type and finish.

2.2 DOORS

Refer to SELECTIONS for type and finish.

2.3 ALUMINIUM EXTRUSIONS

Alloy designation to comply with AS/NZS 1866. Branded and extruded for anodising or powder coating.

2.4 ALUMINIUM SHEET AND STRIP

Complying with AS/NZS 1734 of suitable thickness. Rolled for anodising or powder coating.

Alloy designation: 5251 - H16 or 5005 - H16



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2.5 STAINLESS STEEL SHEET AND STRIP

Type: 316 austenitic steel
Finish grade: 2B (satin lustre)

2.6 GLASS

Refer to the glazing section for glass types and installation.

2.7 REVEALS - TIMBER PAINTED

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

2.8 FLASHINGS GENERALLY

To NZBC E2/AS1, 9.1.9 Windows and doors. Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

Components - for cavity systems

2.9 STANDARD CAVITY CLOSER

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

2.10 SUPPORT BAR

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

Components

2.11 GLAZING GASKETS

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

2.12 HARDWARE AND FURNITURE

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

2.13 SAFETY STAYS

Stainless steel non releasable restrictors to limit window opening to NZBC F4/AS1, Section 2.0, **Opening windows**.

Sealants

2.14 STRUCTURAL SEALANT

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

2.15 WEATHERING / INSTALLATION SEALANT

Building sealant used in accordance with manufacturer's instructions for weather sealing aluminium frames to the cladding, complying with US Federal Specification TT-S-001543A, or a one-part polyurethane moisture curing, elastic joint sealant of medium modulus (± 25% movement) to US Federal Specification TT-S-00230C.

2.16 FOAM TAPE

Foam tape to NZBC E2/AS1, paragraph 9.1.9.9.

Finishes

2.17 POWDER COATED ALUMINIUM - EXTRA-DURABLE POLYESTER

Polyester powder organic coating in accordance with WGANZ PQAS, AS 3715, and AAMA 2603

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3 EXECUTION

Conditions - generally

3.1 DO NOT DELIVER

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

3.2 UNLOAD WINDOW JOINERY

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

3.3 AVOID DISTORTION

Avoid distortion of elements during transit, storage and handling.

3.4 PREVENT DAMAGE

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

3.5 PROPRIETARY ELEMENTS

Fix in accordance with the window manufacturer's requirements.

3.6 PROTECTIVE COVERINGS

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

3.7 ADDITIONAL PROTECTION

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

Conditions - fixings and fastenings

3.8 SUPPLY OF FIXINGS

Use only fixings and fastenings recommended by the manufacturer of the component being fixed and to comply with the ULS wind pressure stated in SELECTIONS. Ensure fixings and fastenings exposed to the weather are of aluminium, or Type 316 stainless steel or if not exposed to the weather may they be hot-dip galvanized steel with a coating weight of 610 g/m² complying with AS/NZS 4680.

3.9 INSTALLATION FIXING

To NZBC E2/AS1, paragraph 9.1.9.10. Fix windows/doors through reveal to frame with a pair of 75 x 3.15mm minimum galvanised jolt head nails or a pair of 8 gauge x 65mm minimum stainless steel screws. Fix at a maximum of 450 centres along all reveals and a maximum of 150mm from reveal ends. Ensure fixings do not penetrate metal flashings.

Install packers between reveals and framing at fixing points, except at the head.

Assembly

3.10 FABRICATION

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

3.11 TIMBER / PVC REVEALS

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

3.12 HARDWARE GENERALLY

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

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3.13 SAFETY STAYS

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

Installation - windows and doors

3.14 CORROSION PROTECTION

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

3.15 CONFIRM PREPARATION OF EXTERIOR WALL OPENINGS

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

Required preparatory work includes the following:

- wall underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames to NZBC E2/AS1, 9.1.4 Wall underlays to wall openings.
- Full height 20mm jamb battens to NZBC E2/AS1, Figure 9.1.9.4: General window and door opening for direct fixed (direct fix only)
- claddings neatly finished off to all sides of openings
- installation of flashings (those which are required to be installed prior to frames).

3.16 INSTALLATION

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

3.17 INSTALLATION CAVITY CONSTRUCTION

Install to WGANZ Window Installation Guide details and drawings including WGANZ sill support bars.

For thresholds with support bars fixed through membranes, pre-fill support bar screw holes with silicone sealant to NZBC E2/AS1, Figure 8.5.6.1D: Junctions with walls for membrane.

3.18 INSTALL FLASHINGS

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

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

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

3.19 COMPLETE AIR SEAL

To NZBC E2/AS1, 9.1.5 Air seals. Form an air-tight seal by means of a proprietary expanding foam or sealants used with backing rods, applied between the window / door reveal and structural framing to a depth of 10 - 20mm, to provide a continuous air tight seal to the perimeter of the window or door.

3.20 FIX HARDWARE

Fix all sash and door hardware and furniture as scheduled.

Application - jointing and sealing

3.21 SEAL FRAMES ON SITE

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

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3.22 PREPARE JOINTS

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

3.23 BACK UP

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

3.24 SEALANT FINISH

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

Completion - cleaning

3.25 REMOVE TRADE DEBRIS

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

3.26 TRADE CLEAN

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

Completion

3.27 PROTECTIVE COVERINGS

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

3.28 SAFETY

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

3.29 IN SITU TOUCH-UP TO POWDER COATED ALUMINIUM

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

3.30 REMOVE

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

3.31 REPLACE

Replace damaged, cracked or marked elements.

4 SELECTIONS

Performance

4.1 THERMAL PERFORMANCE - VERTICAL WINDOWS & DOORS

Window /Door Number:	Construction R-value:
Refer to manufacturer's schedules	Refer to manufacturer

4.2 AIR INFILTRATION

For NZS 4211, table 3 **Air infiltration**.

Non-air conditioned zones: Refer to manufacturer's documentation

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Air conditioned zones: Refer to manufacturer's documentation

Performance - Wind (design by contractor)

4.3 WIND - NON SPECIFIC DESIGN

Building wind zone High (refer to NZS 3604, table 5.4)

Window and door system

4.4 ALUMINIUM WINDOWS

Manufacturer: TBA
Type / location: Refer to drawings / door & window schedule

4.5 ALUMINIUM DOORS

Manufacturer: TBA
Type / location: Refer to drawings / door & window schedule

4.6 TIMBER REVEALS

Timber species: Radiata pine
Grade / Treatment: clears / H3.1
Thickness: Refer to drawings
Reveals: Grooved for wall linings
Finish: Painted

4.7 FLASHINGS

Material/type: Refer to drawings
Pattern: Formed to suit details provided

4.8 HARDWARE

	Brand/style	**Material/finish**
Sash fasteners:	TBA	TBA
Door furniture:	TBA	TBA

4.9 WEATHERING SEALANT

Brand/type: MS sealant (high performance multi-purpose modified silicone sealant to manufacturer's specifications). 1-part polyurethane moisture curing, elastic joint sealant
Colour: TBA

Finishes - Powder Coating

4.10 POWDER COATED ALUMINIUM - EXTRA-DURABLE POLYESTER

Type: Polyester organic powder coating - **confirm with manufacturer**
System integrity: Minimum 10-years film integrity; 10-years colour integrity
Thickness: Average of 90 microns with a minimum of 50 microns
Colour: TBA
Finish: TBA

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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.

Documents

1.1 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.

1.2 MANUFACTURER'S DOCUMENTS

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

TBA

Copies of the above literature are available from ~

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

Requirements

1.3 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

1.4 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.

1.5 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.

1.6 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

TBA

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.



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4 SELECTIONS

4.1 GARAGE DOOR - SECTIONAL OVERHEAD DOOR

Location:	Refer to drawings
Brand:	TBA
Type:	TBA
Face panels:	Sectional, metal faced
Finish:	TBA
Colour:	TBA
Model number:	TBA

4.2 GARAGE DOOR FITTINGS AND HARDWARE

Lock and handle:	TBA

4.3 GARAGE DOOR CONTROLLERS

Brand:	TBA
Model number:	TBA
Number of remotes:	Confirm with principal
Location of internal control buttons:	Refer to electrical eng drawings
Number of internal control buttons:	To suit
Accessories:	TBA

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4611 GLAZING EXTERIOR

1 GENERAL

This section relates to the supply and fixing of glass products for external joinery in complex residential and commercial buildings, including:

- window and doors

1.1 RELATED WORK

Refer to 4521 ALUMINIUM WINDOWS & DOORS for aluminium door & window joinery.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

PVB	Polyvinyl Butyral
CIP	Cast in place

Documents

1.3 DOCUMENTS

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

NZBC F4/AS1	Safety from falling
NZBC F9/AS1	Means of restricting access to residential pools
NZBC H1/AS1	Energy efficiency 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 1170.2: 2011	Structural design actions - Wind actions
NZS 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4223.1	Glazing in buildings - Glass selection and glazing
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
NZS 4223.Supp1	Glazing in buildings - Supplement 1 to NZS 4223.1:2008 and NZS 4223.4:2008
AS/NZS 2208	Safety glazing materials in buildings
AS/NZS 4666	Insulating glass units
BRANZ BU 636	Protecting Glass From Damage
BPS	Building Product Specifications

1.4 MANUFACTURER DOCUMENTS

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

TBA

Copies of the above literature are available at:

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

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

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

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

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

Requirements

Performance

1.6 THERMAL STRESS ANALYSIS

For non heat treated glass obtain a thermal stress analysis for spandrel panels, tinted, reflective and other solar control vision glass including IGU's for review before placing final order.

1.7 THERMAL PERFORMANCE - EXTERNAL GLAZING

Provide external glazing to comply with H1 Energy efficiency requirements of NZBC H1/AS1 or H1/AS2 and NZBC H1/VM1 or H1/VM2.

Refer to RELATED WORK sections for Construction R-values for complete windows / glazed doors / curtain walls and/or skylights including glazing.

2 PRODUCTS

Materials

2.1 CLEAR FLOAT GLASS

Clear ordinary annealed transparent float glass for general window glazing. Thickness to NZS 4223.1 and NZS 4223. Supp 1.

2.2 TEXTURED, PATTERNED OR OBSCURE GLASS

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

2.3 WIRED GLASS

With 13mm square welded, treated steel wire mesh in the centre.

2.4 LAMINATED GLASS

Grade A Safety Glass to AS/NZS 2208 with PVB or CIP resin interlayer.

2.5 TOUGHENED GLASS

Grade A Safety Glass to AS/NZS 2208.

Heat soaked toughened glass to NZS 4223.1, Appendix E required for critical areas.
Refer to SELECTIONS.

2.6 HEAT STRENGTHENED GLASS

Heat treated glass for spandrel, curtain wall and other special applications.

Heat soaked heat strengthened glass to NZS 4223.1, Appendix E required for critical areas.
Refer to SELECTIONS.

2.7 TINTED FLOAT GLASS

Body tinted float glass.

2.8 REFLECTIVE AND COATED FLOAT GLASS

Either coated float glass incorporating both solar and thermal insulation properties; or coated float glass with only the thermal insulation properties.

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2.9 INSULATING GLASS UNITS (IGU'S)

To AS/NZS 4666, NZS 4223.2 and the IGU Manufacturers Association (IGUMA) requirements.

Marking to NZS 4223.2 as modified by NZBC B2/AS1, 3.4.3 Insulating glass units.
Refer to SELECTIONS for specified surfaces of the IGU.
Surface numbering order for glass panes in an IGU are #1, #2, #3, and #4 as follows:
- Surface #1 - outer face of exterior pane
- Surface #2 - cavity face of the exterior pane
- Surface #3 - cavity face of the interior pane
- Surface #4 - outer face of the interior pane

Components, general

2.10 JOINTING, PUTTY AND SEALING MATERIALS

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

Components, aluminium glazing

2.11 GLAZING TAPE AND GASKETS

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

2.12 SETTING BLOCKS

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

3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

To NZS 4223.1, NZS 4223.2, NZS 4223.3, as modified by BPS paragraph 4.4.1.4 and NZS 4223.4. All external glazing to be wind and watertight on completion.

3.2 DELIVERY

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

3.3 GLASS CONDITION

All glass to have undamaged edges and surfaces.

3.4 GLASS THICKNESS

If not specifically stated in the glazing schedule determine the minimum thickness of glass for each sheet as required by NZS 4223.1, NZS 4223.3, NZS 4223.4, and NZS 4223.4 Supp 1. For windows tested to NZS 4211, ensure glass meets the requirements of the window testing.

Determine the final glass thickness based on whether wind loading or human impact considerations govern.

3.5 REBATE DIMENSIONS

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

Conditions - human impact safety requirements

3.6 SAFETY GLAZING, GENERAL REQUIREMENTS

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

3.7 SAFETY GLAZING MATERIAL

Use only safety glazing materials defined in NZS 4223.3, as modified by BPS paragraph 4.4.1.4, that also comply with the relevant requirements of AS/NZS 2208. Ensure material is permanently marked and if cut by the distributor or installer mark each piece to NZS 4223.3, 2.8 Identification.

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3.8 CONTAINMENT

Edge cover to comply with NZS 4223.1, Section 4 Glazing, table 5. Otherwise to NZS 4223.3, 2.3 Edge cover.

Assembly

3.9 WORKING OF GLASS

All working of glass as required in NZS 4223.1.

3.10 EDGE WORK AND BEVELLING

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

3.11 SURFACE TREATMENT

Refer to SELECTIONS/drawings for finish.

3.12 SURFACE CUTTING

Refer to SELECTIONS/drawings for finish.

Application aluminium

3.13 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.

3.14 INSTALL SAFETY GLASS

To NZS 4223.3.

Application uPVC

3.15 INSTALL GLASS TO UPVC 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.

3.16 INSTALL SAFETY GLASS

To NZS 4223.3.

Finishing

3.17 SAFETY

Indicate the presence of transparent glass for the remainder of the construction period, with whiting, tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface.

Completion

3.18 TRADE CLEAN

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

3.19 REPLACE

Replace damaged, cracked or marked glass.

3.20 LEAVE

Leave work to the standard required by following procedures.

3.21 REMOVE

Remove debris, unused materials and elements from the site.

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4 SELECTIONS

Performance - wind

4.1 WIND ZONE - NON-SPECIFIC DESIGN
Building wind zone: ~ (as determined from NZS 3604, NZS 4223)

Glass by type

4.2 CLEAR FLOAT GLASS
Location: ~
Brand/type: ~
Thickness: ~

4.3 EXTRA CLEAR FLOAT GLASS
Location: ~
Brand/type: ~
Thickness: 3mm to 19mm

4.4 TINTED FLOAT GLASS
Location: ~
Brand/type: ~
Tint: ~
Thickness: ~mm

4.5 HIGH PERFORMANCE TINTED FLOAT GLASS
Location: ~
Brand/type: ~
Tint: ~
Thickness: ~mm

4.6 TEXTURED, PATTERNED OR OBSCURE GLASS
Location: ~
Brand/pattern: ~
Pattern: ~
Thickness: ~mm

4.7 PVB LAMINATED GLASS
Location: ~
Brand/type: ~PVB
Colour: ~
Interlayer: 0.38mm Standard
Thickness: ~ mm nominal overall

4.8 HEAT STRENGTHENED GLASS
Location: ~
Brand/type: ~
Thickness: ~mm

4.9 TOUGHENED GLASS
Location: ~
Brand/type: ~
Thickness: ~mm

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4.10 HIGH PERFORMANCE THERMAL AND SOLAR GLASS

Location: ~
Brand/type: ~
Thickness: ~mm
Coated surface: ~
Colour: ~

4.11 INSULATING GLASS UNITS (IGU'S)

Location: ~
Brand/type: GlassTech (Double glazing)
Outer glass type: ~
Coated surface: ~

Outer glass: ~mm
Spacer width: ~mm
Space gas: air

Inner glass type: ~
Coated surface: ~
Inner glass: ~ mm

4.12 LOW EMISSIVITY (LOW E) COATED GLASS

Location: ~
Brand/type: ~
Coating: Low E
Thickness: ~mm
Colour: ~

4.13 LOW EMISSIVITY (LOW E) COATED LAMINATED GLASS

Location: ~
Brand/type: ~
Coating: Low E
Interlayer: PVB Laminate
Thickness: ~mm
Colour: ~

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4612 GLAZING INTERIOR

1 GENERAL

This section relates to the supply and fixing of glass products for interior spaces including:

- frameless shower and bath screens
- splashbacks / wall linings
- mirrors and mirror frames

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:

PVB	Polyvinyl Butyral
CIP	Cast in place

Documents

1.2 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
AS/NZS 2208	Safety glazing materials in buildings
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.3	Glazing in buildings - Human impact safety requirements
BRANZ BU 636	Protecting Glass From Damage
BPS	Building Product Specifications

1.3 MANUFACTURER'S DOCUMENTS

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

TBA

Copies of the above literature are available at

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

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

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

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

2 PRODUCTS

Materials

2.1 CLEAR FLOAT GLASS

Clear ordinary annealed transparent float glass for general window glazing. Thickness as required by NZS 4223.1 and NZS 4223.3.

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2.2 LAMINATED GLASS
Grade A Safety Glass to AS/NZS 2208 with PVB or CIP resin interlayer.

2.3 TOUGHENED GLASS
Grade A Safety Glass to AS/NZS 2208.

Materials, mirrors

2.4 MIRROR GLASS
Clear annealed mirror float glass, including silver, activation, passivation and two protective coats.

2.5 SAFETY MIRROR GLASS
4mm, 5mm and 6mm annealed float glass mirror vinyl back safety glazing material to AS/NZS 2208.

Materials, shower and bath screens

2.6 GLASS SHOWER AND GLASS SCREENS
Proprietary shower/bath screens, formed to shape before toughening, complete with matching hardware.

Components, general

2.7 JOINTING, PUTTY AND SEALING MATERIALS
Ensure jointing, putty and sealing materials are compatible with glass substrates. Confirm compatibility with laminated glass and coatings.

Components, wall mounted glass (mirrors and splashbacks)

2.8 MIRROR DE-MISTER
Refer to appropriate electrical section(s) for type.

3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS
To NZS 4223.1 and NZS 4223.3 as modified by BPS paragraph 4.4.1.4.

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

3.3 GLASS CONDITION
All glass to have undamaged edges and surfaces.

3.4 GLASS THICKNESS
If not specifically stated in the glazing schedule determine the minimum thickness of glass for each sheet as required by NZS 4223.1 and NZS 4223.3.

Determine the final glass thickness based on whether wind loading or human impact considerations govern.

3.5 REBATE DIMENSIONS
Provide rebates for glazing to the widths and depths necessary for each situation including minimum glass edge cover to NZS 4223.1, Section 4 Glazing.

Conditions - human impact safety requirements

3.6 SAFETY GLAZING, GENERAL REQUIREMENTS
Glazing of doors, side panels, low level and window seat glazing, bathrooms, stairwell landings and similar locations, to NZS 4223.3 for thickness and maximum areas of safety glass.

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3.7 SAFETY GLAZING MATERIAL

Use only safety glazing materials defined in NZS 4223.3 as modified by BPS paragraph 4.4.1.4, that also comply with the relevant requirements of AS/NZS 2208. Ensure material is permanently marked and if cut by the distributor or installer mark each piece to NZS 4223.3, 2.8 Identification.

3.8 CONTAINMENT

Edge cover to comply with NZS 4223.1, Section 4 Glazing, table 5. Otherwise to NZS 4223.3, 2.3 Edge cover.

Assembly

3.9 WORKING OF GLASS

All working of glass as required in NZS 4223.1.

3.10 EDGE WORK AND BEVELLING

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

3.11 SURFACE TREATMENT

Refer to SELECTIONS/drawings for finish.

3.12 SURFACE CUTTING

Refer to SELECTIONS/drawings for finish.

Application - wall mounted glass (mirrors and splashbacks)

3.13 WALL MOUNTED GLASS, SCREW FIXED

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

3.14 WALL MOUNTED GLASS, ADHESIVE FIXED

For mirrors and splashbacks, fix with adhesive mirror-mastic and double-sided adhesive tape. Adhesive area 0.2 m2 per 1 m2 of glass to NZS 4223.3.

Application miscellaneous

3.15 INSTALL GLASS SHOWER AND BATH SCREENS

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

Finishing

3.16 SAFETY

Indicate the presence of transparent glass for the remainder of the construction period, with whiting, tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface.

Completion

3.17 TRADE CLEAN

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

3.18 REPLACE

Replace damaged, cracked or marked glass.

3.19 LEAVE

Leave work to the standard required by following procedures.

3.20 REMOVE

Remove debris, unused materials and elements from the site.

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4 SELECTIONS

Glass by type

Mirrors

4.1 MIRROR

Location:	Refer to drawings
Brand/type:	TBA
Dimensions:	Refer to drawings
Thickness:	To suit
Fixing method:	Adhesive fixed

Glass screens and doors

4.2 GLASS SHOWER SCREENS AND DOORS

Location:	Refer to drawings
Brand/type:	Safety Glass
Glass name:	TBA
Thickness:	To suit application
Hardware:	TBA
Accessories:	TBA

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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 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

1.11 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.

2.2 PINK® BATTS® BIB

Bio-soluble fibrous glass wool roll 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

2.3 WIRE NETTING

Refer to 4161 UNDERLAYS, FOIL AND DPC for wire netting used to support the insulation.

2.4 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, 4.5.3.2. 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® 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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3.14 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.

3.15 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.

3.16 INSTALL PINK® BATTS® SKILLION ROOF INSULATION

Friction fit insulation slabs between framing. Install to the midpoint of the top plate. Maintain a 25mm gap clearance between the insulation slabs and roof underlay.

3.17 INSTALL PINK® SUPERBATTS® SKILLION ROOF INSULATION - SINGLE LAYER INSTALLATION

Friction fit insulation slabs between framing. Install to the midpoint of the top plate. Maintain a 25mm gap clearance between the insulation slabs and roof underlay.

3.18 INSTALL PINK® SUPERBATTS® SKILLION ROOF INSULATION - DOUBLE LAYER INSTALLATION

Friction fit upper layer of insulation slabs between framing. Install to the midpoint of the top plate. From underneath, friction fit the lower layer slabs between the ceiling battens. Maintain a 25mm gap clearance between the insulation slabs and roof underlay.

3.19 INSTALL PINK® BATTS® BIB

Friction fit BIB between framing and fully supported on wired netting or safety mesh. Maintain a 25mm gap clearance between the insulation slabs and roof underlay.

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

Materials

4.1 PINK® BATTS® TIMBER WALL INSULATION

Location:	to exterior walls
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® Ultra Wall
R-value:	R3.2
Nominal stabilised thickness:	140mm

4.2 PINK® BATTS® CEILING INSULATION - TRUSS ROOF

Location:	To truss roof sections.
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® Superbatts® Ceiling R5.0 with R2.7 perimeter insulation
Nominal stabilised thickness:	225mm + 100mm

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4.3 PINK® BATTS® SKILLION ROOF INSULATION

Location: to skillion roof sections.
Supplier: Comfortech Building Performance Solutions®
Brand/Type: Pink® Batts® R4.5, 165mm thick.

Note:

- membrane roof 1/T6 units = 230mm skillion roof with 165mm skillion below internal TPO gutter)
- membrane roof 2/ T1.1 units = 115mm skillion roof with 60mm XPS below internal TPO gutter
- membrane roof 3/T1 units = 90mm skillion roof insulation

4.4 PINK® BATTS® - TO TIMBER STRAPPING

Location: To strapped walls over block walls.
Supplier: Comfortech Building Performance Solutions®
Brand/Type: Pink® Batts® 50mm
R-value: R1.2



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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.

Documents

1.1 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

1.2 QUALIFICATIONS

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

1.3 VERIFY DIMENSIONS

Verify dimensions against site measurements prior to fabrication.

Standards of performance

1.4 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 C.1.1.1 and NZBC E2/AS1, Table C.1.1.1A: Material selection.

1.5 COMPATIBILITY REQUIREMENTS

Each flashing material shall be selected in accordance with NZBC E2/AS1, Table C.1.1.1A: Material selection, 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 C.1.1.1B: Compatibility of materials in contact, and Table C.1.1.1C: Compatibility of materials subject to run-off.

1.6 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 Flashings. 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 Flashings, 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 Flashings, 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 4.5.1.1: General dimensions of metal flashings and other flashings as listed, 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 - GENERAL

Type	Material and finish/colour
General roof flashings:	Colorcote/ Colorsteel 0.55mm BMT to match colour of roof.
Window/doors:	0.7mm Powdercoated aluminium to match joinery colour.
Cladding junctions:	Refer to cladding systems specified and drawings.

4.2 FLASHINGS - PANELS

Type	Material and finish/colour
Location:	Feature panel above raking window head - refer to Drawings for locations
Feature panel:	0.9mm Powdercoated aluminium to match joinery colour.

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4855JG JURALCO GLASS BALUSTRADE SYSTEMS

1 GENERAL

This section relates to the fabrication, supply and installation of Juralco's range of frameless glass balustrade systems.

It includes:

- Balustrade glazing
- Balustrade mounting system
- Associated components to complete the installation

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:

PFC	Parallel flange channel
SS	Stainless steel

Documents

1.2 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
NZBC F2/AS1	Hazardous Building Materials
NZBC F4/AS1	Safety from falling
NZBC F9/AS1	Means of restricting access to residential pools
AS/NZS 2208	Safety glazing materials in buildings
NZS 4223.3	Glazing in buildings - Human impact safety requirements

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Juralco's Technical Manuals:

- Juralco Edgetec Mini Post Balustrade and Pool Fencing System - Issue 10-24 v1
- Juralco Edgetec Infinity Balustrade System - Issue 3-22 v1
- Juralco Edgetec JH Clamp Balustrade System - Issue 12-23 v1
- Juralco Edgetec Single Disc Anchor Balustrade System - Issue 5-24 v2
- Juralco Edgetec Double Disc Anchor Balustrade System - Issue 7-24 v1
- Juralco Edgetec Matador® Mini Post Balustrade System - Issue 9-23 v1
- Juralco Edgetec PosiGlaze Balustrade System - Issue 11-23 v1
- Juralco Edgetec MegaGrip Balustrade System - Issue 7-24v1
- Juralco Interlinking Rail Systems - Issue 1-24 v1
- Juralco's BPIR documentation for Edgetec Balustrade Systems

Manufacturer/supplier contact details

Company:	Juralco Aluminium Building Products Ltd
Web:	www.juralco.co.nz
Email:	specify@juralco.co.nz
Telephone:	09 478 8018

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years:	For Juralco Edgetec frameless glass balustrade systems

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Powder coat warranty as offered by the powder coat system supplier.

- 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:

1 year: For installation of Juralco balustrade system

- 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 WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Workers to be approved by manufacturer / supplier. If requested provide evidence of qualification / experience prior to commencing work. Refer to 1270 CONSTRUCTION for additional 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.

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the powder coating care, glass care, stainless steel care and maintenance information as electronic PDF format documents.

Provide this information prior to practical completion.

Compliance information

1.10 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.

Performance - Wind

1.11 DESIGN PARAMETERS WIND

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

Quality control and assurance

1.12 INSPECTIONS

Coordinate with COMPLETION - TESTS & CERTIFICATION and/or COMMISSIONING - TESTS & CERTIFICATION.

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2 PRODUCTS

Balustrade system

2.1 JURALCO EDGETEC GLASS BALUSTRADE SYSTEM

To NZBC B1/VM1, NZBC B2/AS1, NZBC F2/AS1, NZBC F4/AS1, NZBC F9/AS1, NZS 4223.3. Juralco Edgetec Glass Balustrade System comprises frameless glazing secured by proprietary mounting clamps/anchors. Completed with top rails, handrails, stiffener brackets where required or selected. Refer to SELECTIONS.

Balustrade mounting

2.2 JURALCO EDGETEC INFINITY CLAMP

Infinity clamps, supplied as kit, comprising 6060 T5 grade aluminium extrusion clamps, aluminium extrusion gaskets, rubber gaskets and packers, aluminium extrusion bottom channel where required for top fixing and fasteners required for the clamp assembly. Clamps are completed with powder coated 6060 T5 grade aluminium extrusion cover panel, cover panel end plates and glass bulb seal strips. Refer to SELECTIONS.

Balustrade glazing

2.3 TOUGHENED GLASS

Toughened Grade A Safety glass to AS/NZS 2208.

Components

2.4 ALUMINIUM INTERLINKING TOP RAIL

Interlinking top rail manufactured from powder coated 6060 T5 grade aluminium extrusion, available in 38mm rectangular and 50mm round profile. Components to complete installation, such as end caps, end plate brackets, infill clips, joiners, connectors, gaskets and seals available. Refer to SELECTIONS.

2.5 PVC TAPE / SPACER

General purpose PVC tape made from flexible polyvinyl chloride (PVC) adhesive coated film or similar material spacer for separating powder coated aluminium components from steel and concrete surfaces and interlinking rail fixing brackets from the building structure.

2.6 CONSTRUCTION SEALANT

Bostik Rhodorsil V60 one component neutral cure, high modulus, clear silicone construction sealant.

2.7 SCREW ADHESIVE

Sika Supergrip no shrinkage, waterproof, transparent polyurethane paste construction adhesive for bonding coachscrews / lagscrews.

2.8 THREADLOCK ADHESIVE

Acrylic one compound adhesive for securing threaded fasteners from loosening due to shock and vibration.

2.9 FIXINGS

Refer to SELECTIONS. Stainless steel fixings to be of type 316.

Finishes

2.10 FINISHES

Dulux polyester powder coating for aluminium, satin or polished finish for stainless steel. Refer to SELECTIONS.

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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 GLAZING SUPPLY

Organise for the supply of glazing by nominated glazing supplier. Refer to SELECTIONS.

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 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 DRILL FIXING HOLES

Mark out clamp/anchor and fixing locations and drill fixing holes to diameter and depth required by Juralco's Technical Manuals for the specified fastener type.

3.7 INSTALL PVC TAPE / SPACER

Install general purpose PVC tape or similar material spacer to manufacturer's instructions between clamps/anchors and steel or concrete surfaces.

3.8 APPLY SEALANT/ADHESIVE

Apply sealant/adhesive where required by Juralco's Technical Manuals, apply to the sealant/adhesive manufacturer's instructions.

3.9 INSTALL CLAMPS/ANCHORS

Assemble and install clamps/anchors to Juralco's Technical Manuals. Install plumb, level and true to line and face.

3.10 INSTALL GLASS

Install glass panels to Juralco's Technical Manuals plumb, level and true to line. Ensure secure fit of glass panels to clamps/anchors.

3.11 INSTALL INTERLINKING RAILS

Assemble and install interlinking rails to Juralco's Technical Manuals. Attach interlinking rail ends to building structure using end wall plates and to posts using post end brackets.

Completion

3.12 COMPLETION MATTERS

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

4 SELECTIONS

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

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4.1 GLAZING SUPPLIER

Company:	TBA
Contact:	TBA
Email:	TBA
Telephone:	TBA
Installation:	TBA

Juralco Edgetec Infinity balustrade system

4.2 JURALCO EDGETEC INFINITY BALUSTRADE

Location:	refer to drawings.
Supplier:	Juralco Aluminium Building Products Ltd
Brand/type:	Juralco Balustrade System
System:	Edgetec Infinity with top rail
Glass type:	12mm toughened glass.
Glass strength:	Minimum 100Mpa
Glass edges:	Polished
Clamp kit:	Face Fix Infinity clamp kit, refer to drawings for details.
Seal:	Glass bulb seal (JET/IB/CVRBLB250)
Cover finish:	Dulux Duratec® powder coat finish, colour: tbc.

4.3 INFINITY CLAMP FIXINGS - TIMBER

Structure:	Timber - refer to drawings.
Fixing method:	Face fix
Fastener:	M12 SS bolt
Washer:	24mm∅ x 2.5mm SS (head) 50mm square x 3mm SS (thread)
Nut:	M12 SS

Components

4.4 JURALCO ALUMINIUM INTERLINKING TOP RAIL

Supplier:	Juralco Aluminium Building Products Ltd
Brand/type:	Juralco Interlinking Top Rail
Top rail:	38mm rectangular (JET/220/5.8)
Finish/colour:	Dulux Duratec® powder coat finish, colour: tbc.

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5113G GIB® PLASTERBOARD LININGS

1 GENERAL

This section relates to the supply, fixing and jointing of GIB® plasterboard linings and accessories to timber and steel framed walls and ceilings to form:

- standard systems
- superior finish quality systems
- bracing systems
- wet area systems

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

AWCINZ	Association of Wall and Ceiling Industries New Zealand

Documents

1.2 DOCUMENTS

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

NZBC C/AS2	Protection from fire 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
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)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 2: Smoke production rate (dynamic measurement)
BRANZ Technical Paper P21	BRANZ Technical Paper P21: A wall bracing test and evaluation procedure (2010)

1.3 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® Wet Area Systems (February 2021)
GIB® Curveline Specification and Installation Manual for Curved Walls and Ceilings
GIB Toughline® Aqua (July 2018)
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)
GIBFix® Framing System (August 2016)
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
BRANZ Appraisal 427 (2021) GIB® Wet Area Systems
BRANZ Appraisal 928 (2021) GIB EzyBrace® Systems

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Manufacturer/supplier contact details
Company: Winstone Wallboards
Web: www.gib.co.nz
Telephone: 0800 100 442

Requirements

1.4 NO SUBSTITUTIONS

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

1.5 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 INSPECTIONS AND ACCEPTANCE

Allow for inspection of the finished plasterboard surface:

- before applying sealer and
- before applying finish coatings or decorative papers,

so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

1.7 FIRE RATING REQUIREMENTS

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

1.8 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

1.9 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.

1.10 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.

1.11 COMPLIANCE - BRANZ APPRAISAL 427

GIB® Wet Area Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 427.

1.12 COMPLIANCE - BRANZ APPRAISAL 928

GIB EzyBrace® Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 928.

Performance

1.13 BRACING REQUIREMENTS

Braced wall systems to NZS 3604 when tested to BRANZ Technical Paper P21, using:

- GIB Ezybrace® Systems and/or GIB Ezybrace® Bracing Design Software
- GIB Ezybrace® Bracing Supplement Document
- GIB Ezybrace® for Steel Frame Housing (NASH) Software (to NASH Residential and Low-Rise Steel Framing Part 1 2010 Design Criteria)

Refer to drawings for location and type.

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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 Fyreline® fire resistant plasterboard
GIB Braceline® & GIB® Noiseline® dual purpose wall bracing & noise control plasterboard
GIB Aqualine® wet area plasterboard

Components

2.2 CEILING BATTENS

GIB® Rondo® metal ceiling battens, batten joiners and perimeter channel.

2.3 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.

2.4 TAPE ON TRIMS AND EDGES

GIB® Goldline™ tape-on trims

GIB® UltraFlex® high impact corner mould
GIB® Levelline® Tape on Trim

2.5 METAL ANGLE TRIMS

GIB® galvanized steel slim angle trims.

2.6 CONTROL JOINTS

GIB® Rondo® P35 control joints.

GIB® Goldline™ tape-on trims
GIB® plastic W-profile control joints.

Accessories

2.7 ADHESIVE

Timber frame and/or steel frame:

GIBFix® One ultra low VOC water based wallboard adhesive
GIBFix® All-Bond solvent based wallboard adhesive

2.8 JOINTING COMPOUND

Bedding compound:	GIB Tradeset®, GIB Lite Blue®, GIB MaxSet®, GIB ProMix® All Purpose, GIB Plus 4®
Finishing compound:	GIB ProMix® All Purpose, GIB® Trade Finish®, GIB® Trade Finish® Lite, GIB ProMix® Lite, GIB® U-Mix, GIB Plus 4®, GIB Trade Finish® Multi
Cove:	GIB-Cove® Bond

2.9 JOINTING TAPE

GIB® jointing tape.

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2.10 FIRE/ACOUSTIC SEALANT

GIB Fire Soundseal® ultra low VOC, mulit use acoustic sealant that resists passage of smoke and fire.

2.11 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 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 X-Block® Radiation Shielding Systems 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)

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

3.5 PRE-INSTALLATION REQUIREMENTS - STEEL 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 X-Block® Radiation Shielding Systems requirement. Refer to GIB® Site Guide.

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.



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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 requirements.

3.9 LINING WALLS AND CEILINGS GENERALLY

Form to GIB® Site Guide. 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, 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.

3.11 FORM FIRE RATED SYSTEMS

Form to GIB® Fire Rated Systems requirements.

3.12 FORM NOISE CONTROL SYSTEMS

Form to GIB® Noise Control Systems requirements.

3.13 FORM WET AREA SYSTEMS

Form to GIB Aqualine® Wet Area Systems requirements.

3.14 FORM BRACING SYSTEMS

Form bracing systems to:

- GIB Ezybrace® Systems.

3.15 FORM CONTROL JOINTS

Form control joints to GIB® Site Guide requirements.

3.16 INSTALL TAPE-ON TRIMS

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

Finishing

3.17 FINISHING GENERALLY

To GIB® Site Guide and AS/NZS 2589.

Completion & Commissioning

3.18 COMPLETION MATTERS

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

4 SELECTIONS

Plasterboard

4.1 GIB® STANDARD SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
refer to drawings	GIB® Standard plasterboard	10mm	4

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4.2 GIB® WATER RESISTANT SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
refer to drawings	GIB Aqualine® plasterboard	10mm	4

4.3 GIB® STANDARD SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
refer to drawings	GIB® Standard plasterboard	13mm	4

4.4 GIB® WATER RESISTANT SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
refer to drawings	GIB Aqualine® plasterboard	13mm	4

4.5 GIB® FIRE RATED SYSTEMS

Refer to 5171G GIB® PLASTERBOARD FIRE & SOUND LININGS.

4.6 GIB® BRACING SYSTEMS

Refer to:

- GIB Ezybrace® Systems

For bracing element location refer to structural engineers documentation.

Accessories

4.7 GIB® RONDO® CEILING BATTENS

Location: to fix ceilings to timber substrate, refer to drawings.
Brand/type: GIB® Rondo® Ceiling battens
Batten type: 35mm rondo battens.

4.8 GIB® TAPE ON EDGE OR CORNER TRIMS

Brand/type: refer to manufacturer's technical information for the range of trims and edgings available.

4.9 GIB® EDGE PROFILES

Brand/type: refer to manufacturer's technical information for the range of trims and edgings available.

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5151 INTERNAL TRIM

1 GENERAL

This section relates to simple lengths of trim fixed on site as of isolated internal members, with simple end joints.
It includes:

- timber
- MDF
- metal
- plastic

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:

FSC	Forest Stewardship Council
PEFC	Programme for the Endorsement of Forest Certification

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 for buildings other than risk group SH
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

2 PRODUCTS

Materials

2.1 TIMBER TRIM

To NZS 3610 and to profiles detailed on the drawings. Timber species, grade and treatment to NZS 3602.

2.2 MDF TRIM

Refer to SELECTIONS for type.

2.3 PROPRIETARY TRIM

Refer to SELECTIONS for type.

Components

2.4 NAILS

Bright steel to dimension requirements of NZS 3604. Use galvanized where prone to dampness.

2.5 BRADS

Bright steel of a length three times the thickness of the member being fixed. Use cadmium plated where prone to dampness.

2.6 SCREWS, STEEL

Bright steel of a length to penetrate the substrate up to the shank. Use stainless steel in wet areas.

2.7 SCREWS, CHROME PLATED

Chrome plated of a length to penetrate the substrate up to the shank.

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3 EXECUTION

Conditions

3.1 GENERALLY

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

3.2 STORAGE

Take delivery of trims undamaged and unmarked and store on site under cover, away from moisture, heat and direct sunlight in adequately ventilated area and clear of areas where work is in progress, to ensure materials are of the required standard when fixed in place.

3.3 ACCLIMATISE MATERIALS

Remove materials from packaging, separate and allow to acclimatise in the proposed installation area for 48 hours minimum prior to installation.

3.4 ENSURE

Ensure that the substrate to trims will allow work of the required standard. If it does not, do not proceed until the substrate has been remedied.

Application - Generally

3.5 INSTALL TIMBER TRIM

Use full lengths. Fit with scribed internal joints, mitred external joints and, mitred and returned at stop ends. Fix plumb, level and true to line and face using nails or brads to suit. Leave secure and with no movement possible.

3.6 INSTALL PROPRIETARY TRIM

Use full lengths. Scribe joint and fix securely, plumb, level and true to line and face to the trim manufacturer's requirements.

Application - MDF trim

3.7 NAIL FIX

Use full lengths. Fit with scribed internal joints, mitred external joints and returned on itself at stop ends. Fix plumb, level and true to line and face using 40mm or 50mm brads to suit, ensuring fixing to a minimum depth of 25mm into framing timber. Leave secure and with no movement possible. Punch brads and fill with stopping compound to maintain the smooth surface.

3.8 ADHESIVE FIX

Use full lengths. Fit with scribed internal joints, mitred external joints and returned on itself at stop ends. Fix plumb, level and true to line and face using wallboard adhesive.

3.9 SCREW FIX

Use full lengths. Fit with scribed internal joints, mitred external joints and returned on itself at stop ends. Predrill pilot holes equal to shaft diameter, a minimum 25mm from ends and curves. Fix plumb, level and true to line and face using trim manufacturer's required fasteners or particleboard screws. Leave secure and with no movement possible.

Finishing

3.10 PUNCH

Punch all nail heads below the face of trim ready to receive stopping, as specified under painting preparation.

3.11 COUNTERSINK

Countersink screw heads not less than 2mm below the faces of trim to be painted. Stop and finish off flush with the face, as specified under painting preparation.

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3.12 PELLETING

Countersink screw head 6mm below the faces of trim which is to be clear finished. Glue in grain-matched pellets not less than 6mm thick and cut from matching timber. Finish off flush with the face.

Completion

3.13 LEAVE

Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following procedures.

3.14 PROTECTION

Protect the completed work and make good before any surface finish is applied.

3.15 REPLACE

Replace damaged or marked elements.

3.16 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 INTERNAL TRIMS - GENERALLY

Contractor to supply and install all internal (and external) timber trims, skirting boards, architraves, planted door stops, reveals, liners as shown on the drawings not directly exposed to external weathering and indicated below.

4.2 TIMBER TRIMS - WINDOW REVEAL LINERS

Location/ Type:	All external door and window reveals
Species/ grade:	H3.1 19mm Pinus Radiata finger jointed, grooved for linings.
Finish:	Paint finish.

4.3 TIMBER TRIMS - JAMB LINERS

Location/ Type:	All internal doors
Species/ grade:	H1.2 25mm clears dressed on 4 sides, finger jointed radiata pine pre-primed.
Finish:	Paint finish.

4.4 TIMBER TRIMS - SKIRTINGS

Species/ grade:	H1.2 60x18mm square profile pine clears
Finish:	Paint finish.

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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

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

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.

Performance

1.12 SURFACE FIRE PROPERTIES - UNFINISHED BOARD

All GIB® unfinished plasterboard sheet materials achieve a Group Classification of, Group 1-S to NZBC C/AS2, Table 4.12.1.1: Maximum permitted Group Number for internal surface finishes, following testing in accordance with ISO 5660.1 and ISO 5660.2.

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.



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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.

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 GIB QUIET TIE

GIB® Quiet Tie® is designed to provide a structural connection between frames of double stud, GIB Noise Control Systems.

2.7 CONTROL JOINTS

GIB® Rondo® P35 control joints.

GIB® Goldline™ tape-on trims.

2.8 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.

2.9 METAL ANGLE TRIMS

GIB® galvanized steel slim angle trims.

Accessories

2.10 ADHESIVE

Timber frame and/or steel frame:

GIBFix® One ultra low VOC water based wallboard adhesive.
GIBFix® All-Bond solvent based wallboard adhesive.

2.11 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

2.12 JOINTING TAPE

GIB® Paper Joint Tape

GIB® RocTape®

2.13 ACOUSTIC/FIRE SEALANT

GIB Fire Soundseal™ low VOC highly flexible multi use acoustic sealant.

2.14 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.

3.2 ROUTINE MATTERS

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



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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.



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3.13 FORM STEEL BEAM ENCLOSURES
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.

Fire rated wall systems

4.1 GIB® FIRE RATED WALL SYSTEMS

Location:	refer to fire and acoustic plans for further information.
Finish level:	4

Fire rated floor/ceiling systems

4.2 GIB® FIRE RATED FLOOR/CEILING SYSTEMS, TIMBER JOISTS

Location:	refer to fire and acoustic plans for further information.
Finish level:	4

Fire rated protection of columns & beams

4.3 GIB® FIRE RATED PROTECTION COLUMNS & BEAMS - TIMBER STRAPPING

System:	refer to drawings.
Strapping:	To suit application: - Timber - min 35mm nominal thickness OR - Gib Rondo 35mm

Accessories

4.4 GIB® RONDO® CEILING BATTENS

Brand/type:	GIB® Rondo® Ceiling battens
Batten type:	Gib Rondo 35mm

4.5 GIB® TAPE ON EDGE AND CORNER TRIMS

Brand/type:	Refer to manufacturer's technical information for the range of trims and edgings available.

4.6 GIB® EDGE PROFILES

Brand/type:	Refer to manufacturer's technical information for the range of trims and edgings available.

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5171RI RCS INTEGRA LIGHTWEIGHT CONCRETE INTERTENANCY SYSTEM

1 GENERAL

This section relates to the supply and installation of Resene Construction Systems INTEGRA Central Barrier Intertenancy System.

It includes:

- Integra Aerated Autoclaved Concrete (AAC) panels
- Adhesive plaster
- Aluminium brackets
- Components and accessories to complete the installation

1.1 RELATED WORK

Refer to Fire Engineer's documentation

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:

AAC	Autoclaved aerated concrete
FRR	Fire Resistance Rating
STC	Sound transmission class
Rw	Sound Reduction Index

Documents

1.3 DOCUMENTS

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

AS 1530.4	Methods for fire tests on building materials, components and structure - Fire-resistance tests for elements of construction
ISO 10140-2:2010	Acoustics - Laboratory measurement of sound insulation of building elements - Measurement of airborne sound insulation

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

BRANZ Appraisal 1064 (2025) - Integra Central Barrier Intertenancy System
Integra Central Barrier Intertenancy System Technical Manual, Version 3 - February 2025
Integra Lightweight Concrete Intertenancy System, Timber Frame drawing register 34.00.00, 6 June 2025
Integra Lightweight Concrete Intertenancy System, Steel Frame drawing register 33.00.00, 21 May 2025
Resene Construction Systems Trade Spec™
Resene Construction Systems Project Guide

Manufacturer/supplier contact details

Company:	Resene Construction Systems
Web:	www.reseneconstruction.co.nz
Email:	help@reseneconstruction.co.nz
Telephone:	0800 50 70 40

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	For INTEGRA Central Barrier Intertenancy System components supplied by Resene Construction Systems

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- Provide this warranty on the Resene Construction Systems standard form (if unavailable, 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 NO SUBSTITUTIONS

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

1.8 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.

1.9 INSPECTIONS

Type:	Hold Point, as required by QLDC
Requirement:	As required by QLDC
Notify:	Contract administrator
Notification:	2 working days prior to work/item being carried out.

Permit representatives of Resene Construction Systems to inspect the work in progress and to take samples of their products from site if requested.

1.10 FIELD TEST - ACOUSTIC SYSTEMS

Carry out field testing to NZBC G6/VM1 requirements, to verify specified performance of noise control systems is met.

Location/description:	TBA
Acoustic System:	TBA
Test:	TBA
Reporting requirements:	TBA

Field test results to be within 5dB of the performance requirements. If noise control systems do not meet the required values, rectify elements and re-test.

Compliance Information

1.11 COMPLIANCE - BRANZ APPRAISAL

The INTEGRA Central Barrier Intertenancy System has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 1064.

Performance

1.12 SOUND RATING

The INTEGRA Central Barrier Intertenancy System has been tested to ISO 10140-2. Refer to SELECTIONS.

1.13 FIRE RATING

The INTEGRA Central Barrier Intertenancy System has been tested to AS 1530.4 and achieve FRR of 120/120/120.

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2 PRODUCTS

Materials

2.1 INTEGRA AAC 50MM PANEL
50mm thick fibre-reinforced aerated concrete, 2200mm x 600mm panel.

2.2 PLASTERBOARD
Refer to relevant plasterboard section.

2.3 TIMBER FRAMING
Refer to relevant timber framing section.

Components

2.4 FIXINGS - TIMBER FRAMING
Resene Construction Systems 12g x 45mm and 75mm Galvanised screws with EPDM washer.

2.5 INTERTENANCY BRACKETS
Aluminium brackets, 50mm wide x 3mm thick with 75mm x 50mm legs and a sound & heat resistant dampener.

2.6 PSL AAC ADHESIVE
Plaster used for bonding AAC panels together, patching panels, and securing the panel to a concrete foundation. Supplied in 20kg bags.

2.7 FIRE RESISTANT MINERAL WOOL PACKING
Resene Construction Systems FireWool™, fire resistant mineral wool.

2.8 INSULATION
Refer to relevant insulation section.

Accessories

2.9 ANTI-CORROSION COATING
Resene Galvo-Prime; brush-applied waterborne galvanised iron primer or Zinc-rich spray primer; solvent borne spray application.

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: 18% maximum moisture content

Installation - Generally

3.4 STANDARDS AND TOLERANCES
Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY
Install in accordance with Integra Central Barrier Intertenancy System Technical Manual.

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3.6 SERVICES

Conceal services within the timber framed section of the wall system, subject to the following constraints:

- A minimum of 10mm clearance to be maintained between any penetrations and the central barrier
- Penetrations to be no larger than 65mm diameter or 90mm x 50mm through the plasterboard lining
- No more than two penetrations per 600mm bay of framing to be made.

3.7 CUT PANELS

Cut panels using a circular saw with diamond tipped blade. Prime any exposed reinforcing steel using Resene Galvo-Prime, in accordance with manufacturer's instructions.

3.8 SETOUT INTEGRA PANELS

Setout INTEGRA panels prior to commencing installation. With panels oriented horizontally, setout in stacker bond or stretcher bond pattern.

Installation

3.9 FIT INTERTENANCY BRACKETS TO TIMBER WALL FRAMING

Following erection of framing to first side of the intertenancy wall install 2 Intertenancy Brackets per INTEGRA panel. Commencing from one end of the wall, position and screw fix first row of Intertenancy Brackets to every second stud using 12g x 45mm Galvanised screws with EPDM washer, brackets 300mm from finished floor level with face of bracket dampener set off the framing to the required cavity depth. Continue with subsequent rows of brackets at 600mm vertical centres.

3.10 INSTALL INTEGRA PANELS

With panel oriented horizontally, apply AAC adhesive to underside of first panel using a spatula or broadknife. Lift and position panel against Intertenancy Brackets plumb and true to line. Drill 2mm - 3mm pilot hole through INTEGRA panel at each bracket and screw fix through panel into bracket with 12g x 75mm Galvanised screw with EPDM washer. Continue with next panels in the first row and subsequent rows above, applying AAC adhesive to underside and side faces of each adjoining panel and screw fixing to Intertenancy Brackets. Finish top row of panels as close to top plate as possible.

3.11 FIT INTERTENANCY BRACKETS TO SECOND SIDE WALL FRAMING

Following erection of second side of wall framing to enclose the INTEGRA panels, setout and fix Intertenancy Brackets staggered from brackets on the opposing side.

3.12 FIT FIREWOOL

Fill voids between INTEGRA panels and roofing underlay/sheathing with FireWool.

3.13 FIT WALL INSULATION

Refer to relevant insulation section.

3.14 INSTALL PLASTERBOARD WALL LININGS

Refer to relevant plasterboard section.

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.

Acoustic test.

4 SELECTIONS

For further details on selections go to www.reseneconstruction.co.nz.
Substitutions are not permitted to the following Resene Construction Systemsmaterials or components, unless stated otherwise.

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RCS INTEGRA Central Barrier Intertenancy System - Timber framing

4.1 RCS INTEGRA CENTRAL BARRIER INTERTENANCY SYSTEM - INTA120a

Location:	to IT walls, refer to drawings.
Type/brand:	Resene Construction Systems INTEGRA Central Barrier Intertenancy System
System:	INTA120a
FFR:	120/120/120
STC:	64
Rw:	62
Cavity depth:	20mm
Framing:	Timber
Lining:	Refer to fire and acoustic plans for lining requirements.
Insulation:	R1.8 minimum and 75mm thick minimum

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5231 INTERIOR DOORS & WINDOWS

1 GENERAL

This section relates to the supply and installation of interior:

- doors
- windows
- doors and frames
- doorsets

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:

FSC	Forest Stewardship Council
PEFC	Programme for the Endorsement of Forest Certification

Documents

1.2 DOCUMENTS

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

AS/NZS 1170.1	Structural design actions - Permanent, imposed and other actions
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3610	Specification for profiles of mouldings and joinery
NZS 4223.3	Glazing in buildings - Human impact safety requirements

Window & Glass Association NZ (WGANZ) documents:

PQAS	Powder Coating Quality Assurance System
SFA 3503-03	Anodic Oxide coatings on wrought aluminium for external architectural application (2005)

Requirements

1.3 SHOP DRAWINGS

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

Submit shop drawings for review to principal and architect. 10 working days (at least) before fabrication is planned to commence.

Complete shop drawing review before commencing fabrication.

Performance - doorsets

1.4 PERFORMANCE REQUIREMENTS

Refer to 5241 FIRE AND ACOUSTIC INTERIOR DOORS AND WINDOWS for fire and acoustic performance details.

2 PRODUCTS

Materials - door and window frames general

2.1 TIMBER DOORS AND WINDOWS

To NZS 3602. Moisture content 10-14%. To NZS 3610.

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Materials - doors general

2.2 TIMBER
To NZS 3602. Moisture content 10-14%. To NZS 3610. Solid or hollow core.

Materials - doorsets

2.3 STANDARD DOORSETS, SIDE HUNG DOOR
Frames to profile as detailed and dimensioned, fitted with solid or hollow core door.
Refer to SELECTIONS.

2.4 STANDARD DOORSETS, SLIDING
Frames to profile as detailed and dimensioned, fitted with solid or hollow core door.
Refer to SELECTIONS.

Components

2.5 WINDOW AND DOOR FURNITURE
Refer to 5521 HARDWARE for type and finish.

2.6 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.

2.7 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.

2.8 DOOR HINGES
Size and gauge to carry door size and weight. 3 hinges per door.

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

2.9 INTERIOR SLIDING DOOR GEAR
To suit door size and weight and as detailed.

2.10 DOOR SKIN (FACINGS)
Doors skins as detailed and dimensioned.

Finish

2.11 TIMBER - PAINT FINISH
Factory applied coating system.

2.12 TIMBER - CLEAR FINISH
Factory applied coating system.

2.13 TIMBER - LACQUER FINISH
Factory applied coating system.

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, stairs).

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3.2 DO NOT DELIVER

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

3.3 HANDLE

Handle, unload and store elements without distortion and avoiding pre-finished surfaces rubbing together, and contact with mud, moisture and other damaging materials.

3.4 PROTECT

Protect all elements against damage to arrises and glazing beads. Store frames and doors flat and away from moisture or direct sunlight.

3.5 FABRICATE DOORSETS

Fabricate doorsets and windows in the factory with doors hung, provision for furniture made, finishes applied and fully operable.

3.6 FABRICATE DOORS

Fabricate doors in the factory, with provision for door furniture.

3.7 CHECK ALL OPENINGS

To NZS 3604.Check all openings on site for size and standard of execution before installing window or door frames. Installation tolerances of windows subject to earthquake design to comply with AS/NZS 1170.1.

Assembly

3.8 FABRICATION GENERALLY

Manufacture and fabricate frames and doors as detailed. Install hinges and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

Application - generally

3.9 FIXING FRAMES

Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion and with all opening sashes fully and easily operating. Fit architraves.

3.10 DISTORTION

Do not distort frames when wedging or other packing, or when tightening fixings. If necessary adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

3.11 FIXINGS

Fix frames so that nail heads are covered by applied stops and beads. Punch all nail heads below timber surfaces which will be visible in completed work. Ensure that at least one frame fixing is adjacent to each hanging point.

Application - doorsets

3.12 PROPRIETARY ELEMENTS

Fix in accordance with the door manufacturer's requirements.

3.13 INSTALLATION GENERALLY

Wedge frames into opening and fix through into the wall framing. Locate all wedges and fixing at hinge positions and opposite, with one fixing in the vicinity of the lock. Fixings concealed behind planted stops.

Hang doors on hinges, sliding or bi-fold gear as specified and to operate freely. Fit all hardware and door furniture.

3.14 TIMBER STUD WALLS - TIMBER FRAMES

Wedge into opening and nail through into the studs. All wedges and fixing to be at hinge positions and opposite, with one fixing in the vicinity of the lock.



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3.15 BOTTOM CLEARANCE

Provide for specified floor coverings plus 5mm clearance at any point of swing. When floor covering is not specified, allow 25mm total.

For ventilated and/or air conditioned spaces allow 20mm clearance above finished floor coverings for supply/return air.

3.16 REMOVE DOORS

Remove doors from the frames if necessary to protect them, or for re-finishing, store safely and near completion refit them, all without any damage.

3.17 INSTALL PANELS

Prime rebates and beads, install sealant backing strips or silicone. Install dry beading to outside of panels as selected. Do not mitre corners of beads.

3.18 INSTALL FURNITURE

Install latches, locks and door furniture as scheduled.

3.19 CHECK

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

Application - windows

Completion

3.20 PROTECTION

Protect all finishes against damage from adjacent and following work.

3.21 REPLACE

Replace damaged, cracked or marked elements.

3.22 TRADE CLEAN

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

3.23 LEAVE

Leave work to the standard required for following procedures.

3.24 REMOVE

Remove safety indicators and protective coverings, and wipe down all doorsets thoroughly to leave them perfectly clean. Remove all debris, unused materials and elements from the site.

4 SELECTIONS

Doors and Door Hardware

4.1 DOOR & DOOR FRAMES

Location: Refer to drawings for door schedule.

4.2 FIRE & ACOUSTIC RATED DOORS

Location: Refer to drawings for door schedule

4.3 DOOR HARDWARE

tbc - principal supplied schedule.



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5316RC RONDO DIRECT-FIX CEILINGS - RESIDENTIAL

1 GENERAL

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

- Concealed direct-fix ceiling systems for residential type buildings, to meet acoustic, fire-rated, wind loading and seismic design applications, and strong enough to support layer(s) of sheet ceiling linings e.g. plasterboard, fibre cement sheet.

This section includes:

- Rondo KEY-LOCK® Direct Fix Ceiling System
- Panther® Access Panels

1.1 RELATED WORK

Refer to 5113 PLASTERBOARD LININGS for ceiling lining.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

AWCINZ	Association of Wall and Ceiling Industries of New Zealand Inc

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 B1/VM1	Structural design of buildings
NZBC B2/AS1	Durability provisions for building elements
NZBC C/AS2	Protection from fire for buildings other than risk group SH
AS/NZS 1170.0	Structural design actions - General principles
AS/NZS 1170.1	Structural design actions - Part 1: Permanent, imposed and other actions
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 2785	Suspended ceilings - Design and Installation
NZS 4219	Seismic performance of engineering systems in buildings
NZS 4541	Automatic fire sprinkler systems
AS 1397	Continuous hot-dipped metallic coated steel sheet and strip - Coating 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:
Rondo KEY-LOCK® design manual
Rondo KEY-LOCK® installation guide
Rondo KEY-LOCK® online Seismic Wizard

Rondo SCREWFIX® design manual
Rondo SCREWFIX® installation guide
Rondo SCREWFIX® online Seismic Wizard
Rondo XPRESS® design manual
Rondo XPRESS® installation guide
Rondo XPRESS® online Seismic Wizard
Rondo PANTHER® access panel design manual
Rondo PANTHER® access panel installation guide
Certificate of Licence for New Zealand Made trademark - Licence No. 806965

Manufacturer/supplier contact details

Company:	**Rondo Building Services Pty Ltd**
Web:	www.rondo.co.nz
Email:	steve.hardy@rondo.co.nz
Telephone:	09 636 5110

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	For Rondo branded products against defects in materials under normal use.
15 years	In addition, Rondo warrants that the Rondo KEY-LOCK® direct-fix, Rondo SCREWFIX DF®, Rondo XPRESS® systems will remain structurally sound.

- 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 workmanship

- 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.
Installers are to be members of the AWCINZ. Provide evidence of experience, listing completed projects of similar size and complexity.

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
- Internal Rondo engineered design - Refer to SELECTIONS
- Producer Statement (PS1) - Design from supplier independent engineer
- Producer Statement (PS3) - Construction from the applicator / installer.
- Producer Statement (PS4) - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.10 LOADING CODE REQUIREMENT

To AS/NZS 2785, comply with the requirements of: AS/NZS 1170.0, AS/NZS 1170.1, AS/NZS 1170.2, NZS 1170.5, NZBC B1/VM1, as appropriate.

1.11 CERTIFICATION

Provide:

- Certificates and other evidence that the system complies with the standards of performance

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specified.
- Producer Statements

1.12 ENVIRONMENTAL REQUIREMENTS

To NZBC B2/AS1, Durability.
Refer to SELECTIONS

1.13 FIRE GROUP NUMBERS

The Group Number Classification to NZBC C/AS2, Table 4.12.1.1: Maximum permitted Group Number for internal surface finishes, has been determined in accordance with BPS, 8.5.1 Group Numbers, following testing and data reduction to ISO 5660.1.

Refer to SELECTIONS

1.14 FIRE RATING REQUIREMENT

Design the ceiling system so that together with the floor and ceiling lining system, it is to BPS, 8.2 Fire resistance, and BPS, 8.2.1 Fire resistance ratings. Refer to SELECTIONS

Quality control and assurance

1.15 INSPECTIONS

Hold point: QLDC inspections	Work may not proceed until the work in question has been inspected.

2 PRODUCTS

2.1 RONDO KEY-LOCK® DIRECT-FIX CEILING SYSTEM

KEY-LOCK® direct fix system designed to AS/NZS 2785, and Rondo KEY-LOCK® design manual. Primary (Top Cross Rail), secondary components (Furring Channel), furring channels, battens, and snap in sections all hot-dipped (Z275) galvanized steel to AS 1397, manufactured from G2 BlueScope base metal.
Provide diagonal bracing for lateral stability where required. Perimeter trim, expansion joints and seismic joints etc. to AS/NZS 2785.
Refer to SELECTIONS.

Components

2.2 RONDO DIRECT-FIX BRACKETS

Rondo Direct-Fix Brackets manufactured from G2 BlueScope Steel, hot-dipped galvanized (Z275), to AS 1397.
Refer to SELECTIONS

2.3 RONDO PRIMARY AND SECONDARY SUPPORT MEMBERS

Rondo primary and secondary support members manufactured from G2 BlueScope Steel, hot-dipped galvanized (Z275) to AS 1397.

Refer to SELECTIONS

2.4 SECTION JOINERS

Rondo section joiners manufactured from G2 BlueScope Steel, hot-dipped galvanized (Z275) to AS 1397.
Refer to SELECTIONS

2.5 EXPANSION JOINTS

Flexible backing strip by others, and EXANGLE Plaster Stopping Bead, to Rondo XPRESS® technical brochure

2.6 CONTROL JOINTS

to Rondo XPRESS® technical brochure

2.7 RONDO WALL TRIM

Rondo wall trim sections manufactured from G2 BlueScope Steel, hot-dipped galvanized (Z275) to AS 1397.

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Accessories

2.8 ACCESS PANEL

PANTHER® range of access panels.
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 SUBSTRATE

Ensure substrate is plumb, level and in true alignment. Do not start erection if the substrate will not allow work of the required standard.

Complete any remedial work found necessary before framing erection.

3.4 CO-ORDINATE SERVICES

Co-ordinate and co-operate with electrical and mechanical work to avoid conflict between suspension members and luminaires, diffusers, pipework and ducting. Confirm the provision of extra hangers and fixings.

Ensure co-operation with work in and above the ceiling, including the marking of specific major access points to above-ceiling services. Colour coded markings to follow the standards laid down by mechanical and electrical services.
Services and other attachments, attached to or supported by the ceiling grid system to AS/NZS 2785, ensure that:

- items over 7.5kg and items under 7.5kg, but falling greater than 3m, require a tether to AS/NZS 2785, anchored to structure.
- items attached to the ceiling grid must be under 10kg mass, items over 10kg cannot be attached to the grid and must be independently supported.
- unless designed otherwise, the ceiling system total load of services and other attachments must not exceed 3kg/m².
- light fittings installed to AS/NZS 2785 and NZS 4219.
- Ceiling system clearances to structure and services etc. that are not attached to the ceiling system to NZS 4219, and/or NZS 4541 for sprinklers.

3.5 SITE CONDITIONS

To AS/NZS 2785: Appendix C2, Site Conditions and time of installation; Appendix C4, Inspection.

Installation generally

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 INSTALLATION - GENERAL

Install the system to AS/NZS 2785, and Rondo Professional Design Manual and Rondo Building Services Pty Ltd requirements.

Fix, erect and fit to finish rigid, plumb, square and true to line and face.

3.8 SETTING OUT

Set out the framing work true to line and square before starting erection.

3.9 ISOLATE

Isolate dissimilar metals with neoprene sheeting, or tape.

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3.10 ACCESSIBILITY

Provide access hatches where required to the ceiling system to enable servicing, maintenance, and removal of any part can be carried out without damage to the ceiling system or lining.

3.11 PENETRATIONS

To AS/NZS 2785 and NZS 4219 generally, with sprinkler systems to NZS 4219 and/or NZS 4541. Accommodate recessed light fittings, and services that are fixed to or pass through the ceiling system. Provide independent support for these as necessary.

3.12 BULKHEADS

Form bulkheads to manufacturer requirements. Diagonally brace at regular intervals to provide lateral stability.

3.13 PROTECT EXISTING WORK

Protect adjacent existing work from damage during the installation.

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.rondo.co.nz
Substitutions are not permitted.

Performance

4.1 FIRE RATING REQUIREMENT

FRR (minimum)	System	Location
60/60/60	GIB GBDFA 60b	Refer to drawings, fire & acoustic plans

Rondo KEY-LOCK® System - direct-Fix

4.2 RONDO KEY-LOCK® DIRECT-FIX CEILING SYSTEM

Location:	Refer to drawings
Type/Brand:	KEY-LOCK® Direct-Fix Ceiling System
Furring Channels (FC):	-
Perimeter Trims:	To suit application - Contact Rondo Building Services Pty Ltd.
Fasteners direct fix:	To suit substrate and component selection, Contact Rondo Building Services Pty Ltd.
Ceiling height:	Refer to drawings
Fire rating:	Refer to drawings, fire & acoustic plans

Components

4.3 PLASTERBOARD SHEET LINING

refer to 5113 PLASTERBOARD LININGS section



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Accessories

4.4 ACCESS PANEL

Location:	Refer to drawings - Confirm on site before installing
Brand:	PANTHER®
Panel Type:	Slimline Metal Face Door
Part number:	MFAP60SB, or to suit application
Edge detail:	Set bead
Panel Finish/colour:	To match ceiling
Size:	600mm x 600mm
Fire Rating:	To suit location
Sound Rating:	To suit location
Hardware/Security:	-

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5433E ECOPLY® FLOORING

1 GENERAL

This section relates to the supply and installation of Carter Holt Harvey Plywood Ltd Ecoply® plywood sheets for floors.

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:

CCA	Copper chrome arsenate
PF	Phenol formaldehyde

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 1604.3:2012	Preservative-treated wood-based products - Part 3: Plywood
AS/NZS 2269.0	Plywood - structural - specifications
BPS	Building Product Specifications

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Ecoply® Specification and Installation Guide (September 2025)
Ecoply® Flooring Product Technical Statement and Building Product Information Sheet

Manufacturer/supplier contact details

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

Requirements

1.4 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 NO SUBSTITUTIONS

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

Performance

2 PRODUCTS

Materials

2.1 ECOPLY® STRUCTURAL SQUARE EDGE PLYWOOD

Square edge, synthetic phenolic (PF) resin Type A bonded timber veneer plywood sheets, manufactured to AS/NZS 2269.0, untreated and H3.2 CCA treated to AS/NZS 1604.3:2012. Stress grade F8/F5. Appearance grade CD. Sheets 1200mm wide, 2400mm and 2700mm long, and available in range of thicknesses. Refer to SELECTIONS.

Components

2.2 SCREWS

Hot dipped galvanized or stainless steel counter-sunk screws. Refer to SELECTIONS.

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2.3 ADHESIVE

Refer to SELECTIONS.

2.4 TIMBER PRESERVATIVE TREATMENT

Soudal Metalex Concentrated Timber Preservative treatment, in clear or green colour. 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.

Timber substrate: 18% maximum moisture content

Application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install in accordance with Ecoply® Specification and Installation Guide.

3.6 TREAT CUT EDGES

Brush timber preservative onto cut edges and penetration cut outs.

3.7 APPLY ADHESIVE

Apply a bead or daubs of adhesive to framing. When fastening sheets over adhesive, work from the middle of the sheet outwards to develop glueline pressure.

3.8 LAY PLYWOOD SHEETS - SQUARE EDGE

Lay sheets continuous over at least two spans in a staggered layout with face-grain of sheet at right-angles to support and with sheets in square, true alignment and plane. Provide 3mm expansion gap between all sheet edges and a 5mm expansion gap at the perimeter of the floor. Fully support all sheet edges.

3.9 FIX PLYWOOD SHEETS

Fix sheets to framing to the Ecoply fixing pattern. Maintain clearances to sheet edges to Ecoply requirements. Finish fastener heads flush with the panel surface.

Completion & Commissioning

3.10 COMPLETION MATTERS

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

4 SELECTIONS

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



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Materials

4.1 ECOPLY® STRUCTURAL SQUARE EDGE PLYWOOD

Location:	to midlfoor flooring, refer to drawings.
Manufacturer/supplier:	Carter Holt Harvey Plywood Ltd
Brand:	Ecoply® Structural Square plywood
Stress grade:	F8
Appearance grade:	CD
Sheet thickness/ID code:	19mm/19-30-7
Timber treatment:	H3.2

4.2 ECOPLY® STRUCTURAL SQUARE EDGE PLYWOOD - GARAGES

Location:	over garages
Manufacturer/supplier:	Carter Holt Harvey Plywood Ltd
Brand:	Ecoply® Structural Square plywood
Stress grade:	F8
Appearance grade:	CD
Sheet thickness/ID code:	25mm/25-30-9
Timber treatment:	H3.2

4.3 ECOPLY® STRUCTURAL SQUARE EDGE PLYWOOD - WET AREA

Location:	midfloor bathrooms, refer to drawings.
Manufacturer/supplier:	Carter Holt Harvey Plywood Ltd
Brand:	Ecoply® Structural Square plywood
Stress grade:	F8
Appearance grade:	CD
Timber treatment:	H3.2 CCA

Components

4.4 SCREWS

Type:	10Gx45mm countersunk screw for 19mm, 10Gx50mm countersunk screw for 25mm
Finish:	Stainless steel

4.5 SCREWS - WET AREA

Type:	10Gx45mm countersunk screw
Finish:	Stainless steel

4.6 TIMBER PRESERVATIVE TREATMENT

Brand/type:	Soudal Metalex Concentrated Timber Preservative
Colour:	Clear

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5511 JOINERY & CABINETRY FIXTURES

1 GENERAL

This section relates to custom joinery fittings and cabinetwork, purpose made in a factory and fitted on site.

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:

FSC	Forest Stewardship Council
PEFC	Programme for the Endorsement of Forest Certification

Documents

1.2 DOCUMENTS REFERRED TO

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

AS/NZS 1859.1	Reconstituted wood based panels - Specifications - Particleboard
AS/NZS 1859.2	Reconstituted wood based panels - Specifications - Dry processed fibreboard
AS/NZS 1859.3	Reconstituted wood based panels - Specifications - decorative overlaid wood panels
AS/NZS 4386.1	Domestic kitchen assemblies - Kitchen units
AS/NZS 4386.2	Domestic kitchen assemblies - Installation

1.3 MANUFACTURER'S DOCUMENTS

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

TBA

Copies of the above literature are available from ~

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

1.4 WARRANTY - MANUFACTUER/SUPPLIER

Provide a material manufacturer/supplier warranty:

7 years	For wood veneer over MDF / plywood substrate
10 years	Solid polymer, printed laminate or melamine veneer over MDF / particleboard subs

- 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 installed/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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2 PRODUCTS

Materials

2.1 TIMBER BOARDS AND FRAMES

Boards and frames carefully sawn to minimise the inherent warping, twisting and bowing of the selected species and to give a finish suitable for clear finishing.

2.2 PARTICLEBOARD

Urea-formaldehyde resin bonded medium density particleboard to AS/NZS 1859.1.

2.3 MEDIUM DENSITY FIBRE BOARD

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2.

2.4 MEDIUM DENSITY FIBRE BOARD - MELAMINE VENEER

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 and AS/NZS 1859.3 veneered both sides with melamine sheet.

Components

2.5 BENCHTOPS

As detailed on the drawings and as required for specified fittings and appliances.

2.6 CARCASE CONNECTORS

One-piece steel, straight deep-cut thread, fibre board screws with press fit plastic trim cap.

2.7 CARCASE FASTENERS

Knock down type centric sphere zinc alloy connectors with connecting bolts, sleeves and dowels, to suit each particular fastening location.

2.8 BUTT HINGES

Butt, broad butt, flush butt or overlay steel or brass, to suit the location, or as detailed.

2.9 CONCEALED HINGES

All-metal zinc alloy with automatic spring and screw-fixed. Door stops of plastic foam with self adhesive backs, or plastic buttons clear or coloured to match unit.

2.10 GLASS DOOR HINGES

All-metal zinc alloy body and metal/plastic glass cup, with automatic spring, screw-fixed and with matching door pulls.

2.11 FLAP HINGES

All-metal, flush-fitted and screw-fixed with no gap when the flap is down.

2.12 FLAP STAY

All-metal, slide/folding and screw fixed.

2.13 DRAWER RUNNERS

Under mounted type, precision running ball-mounted full extension, bright steel finish system.

Accessories

2.14 ADHESIVES

As approved by the manufacturer for the timber product or pre-finished timber product joint being used.

Finishes

2.15 LIGHT DUTY COATING SYSTEM

Single pack, clear or pigmented nitro-cellulose or pre-catalysed lacquer.

2.16 MEDIUM DUTY COATING SYSTEM

Two pack, clear or pigmented acid catalysed coating.



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2.17 HEAVY DUTY COATING SYSTEM

Two pack, clear or pigmented polyurethane coating.

3 EXECUTION

Conditions

3.1 JOINERY FIXTURES GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs). Take responsibility for the completed joinery fixtures including fittings included within fixtures and the on site installation.

3.2 DOMESTIC KITCHEN ASSEMBLIES

Unless otherwise specified / detailed, domestic kitchens to be constructed to AS/NZS 4386.1 and installed to AS/NZS 4386.2

3.3 SITE MEASURE

Site check and confirm dimensions after wall linings have been fixed. Verify positions of electric power outlets, wiring to light fittings included in joinery fixtures, water supplies and waste pipe locations.

3.4 SHRINKAGE

Arrange jointing and fixing so that shrinkage in any part and direction does not impair the strength or appearance of the finished work or damage the adjoining work.

3.5 TOLERANCES

Provide reasonable tolerances at connections between the joinery fittings and the building fabric so that any irregularities are adequately compensated for in the site fixing.

3.6 NATURAL FINISH TIMBER

Select timber for match or uniformity or symmetry of colour or grain of adjacent pieces. Finish to same standard on all faces.

3.7 PRE-FINISH MELAMINE VENEER

Select and match all adjacent pieces. Clash exposed edges of wood grains with solid matching timber strips and with selected PVC strips to other patterns.

Conditions - site

3.8 TRANSIT

Load, transport and unload fittings without distortion or damage and keep covered to protect from the weather.

3.9 DELIVERY

Deliver fittings to the site only when floor, wall and ceiling surfaces are in place and the fittings can be immediately placed in their final location.

Assembly

3.10 MACHINING

Carry out machining within the practices required for the particular timber, wood product or pre-finished wood product being used. Machine drill holes, cut recesses and form joints ready for assembly to the componentry manufacturer's requirements. Ensure work is accurate, square and true to line.

3.11 MAKE CUT OUTS FOR APPLIANCES AND FITTINGS

Obtain fitting templates from the appliances and other fittings to be installed within joinery fixtures and bench tops. Ensure appliances and fittings can be installed with the required tolerances and clearances. Where bench tops are being provided under other work sections, provide templates and confirm dimensions to others.

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3.12 ASSEMBLY

Carry out gluing, dowelling, and other operations necessary for the proper assembly of the fittings as detailed with fixings concealed unless detailed otherwise. Scribe fit adjustable shelves with 4 shelf pins to each and with force fit pin holes at 50mm maximum centres in solid cheeks. Construct drawers and using groove mounting runners, fit them with 3mm clearance into drawer space. Hang doors on concealed hinges with 115 degree openings except where detailed for 170 degrees.

3.13 GLUE JOINTS

Use glue joints where provision for shrinkage is not required. Cross-tongue or otherwise reinforce. Surfaces in contact to have an even sawn or planed finish and be free of contamination. Mix, apply and set to the glue manufacturer's requirements with adequate pressure applied to ensure intimate contact that will be maintained while the glue sets.

3.14 CONNECTOR JOINTS

Locate and drive connectors to the board manufacturer's requirements. Fit plastic trim cap where detailed. Conceal or hide from sight other connector heads.

3.15 FASTENER JOINTS

Locate and drive connecting bolts to the board manufacturer's requirements. Form joint and fit and rotate centric sphere connector to finish it rigid and tightly fitting over the whole length of the joint.

Application

3.16 FIXING ON SITE

- Scribe fit and conceal fix rigidly in place square, level, plumb and true to line and face as detailed and to the required standard.
- Assemble fittings on-site if brought in sections.
- Fit counter and bench tops and upstands.
- Complete with moveable parts in place and freely moving in their proper range.

Finishing

3.17 COATING SYSTEM - PREPARATION

- Fill timber defects with proprietary wood filler. (e.g. cracks, holes, etc)
- Sand timber to a smooth even finish using 180 grit paper.
- Remove all sanding dust using air guns and tack rags.
- Ensure substrate is free from dust, grease, dirt and other contaminants.
- Ensure moisture content of the timber is less than 15% immediately before commencing coating operations.

3.18 COATING SYSTEM - APPLICATION

To coating manufacturer's requirements.

3.19 PROTECT

Protect finished surfaces from damage, particularly benchtops.

Completion

3.20 REPLACE

Replace damaged or marked elements.

3.21 LEAVE

Leave work complete, clean and without blemish and to the standard required by following procedures.

3.22 REMOVE

Remove debris, unused materials and elements from the site.



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4 SELECTIONS

4.1 CABINETRY TYPE & SELECTIONS

Refer to drawings and client supplied finishes schedule.

4.2 DRAWER HARDWARE, CUTLERY & HINGES

Refer to drawings and client supplied finishes schedule.

4.3 WASTE BIN - KITCHEN JOINERY

Refer to drawings and client supplied finishes schedule.

4.4 BENCHTOP

Refer to drawings and client supplied finishes schedule.

4.5 SPLASHBACK

Refer to drawings and client supplied finishes schedule.

4.6 LIGHTING - KITCHEN JOINERY

Refer to drawings and client supplied finishes schedule.

4.7 OTHER - KITCHEN JOINERY

Note: Provide silicone dots to all cabinet doors

4.8 OTHER JOINERY ITEMS

- Refer to drawings for all other joinery items for wardrobes, bathrooms and any other joinery items.
- Refer to client supplied schedule for all other joinery selections not noted in the drawings.



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5521 HARDWARE

1 GENERAL

This section covers the supply and installation of door and window hardware and furniture.

Documents

1.1 DOCUMENTS
Refer to the general section 1233 REFERENCED DOCUMENTS.

Requirements

1.2 SUPPLIER
A specialist in the supply of hardware, employing an experienced architectural hardware representative available to assist during the course of the hardware installation.

1.3 SUBMIT A SUPPLIER'S SCHEDULE
Hardware schedule to be provided by the Principal.

2 PRODUCTS

2.1 DOOR HARDWARE
Refer to SELECTIONS for product selection.

2.2 WINDOW HARDWARE
Refer to SELECTIONS for product selection.

2.3 CABINET WORK HARDWARE
Refer to SELECTIONS for product selection.

Components

2.4 FIXINGS
Provide matching fixings, including screws, clips, bolts and brackets for hardware supplied.

3 EXECUTION

Conditions

3.1 RETAIN
Retain hardware in the manufacturer's original packaging. Ensure that units are complete with fixings and installation instructions. Label each unit separately with its hardware number and door/window number to match the submitted and approved schedule.

3.2 PACKAGE
Package required hardware units in clear plastic and label each package with its hardware and door/window number and location to match the drawings and the submitted and approved schedule. Place packages in cartons selected for "level", "location", and/or "sector" and label the packages and the cartons similarly.

3.3 STORE
Store hardware packages in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.

Installation

3.4 INSPECTION
Before starting the hardware installation, check frames, doors, sashes and adjacent finishes are ready for the proper installation of the hardware.

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3.5 LOCATE

Locate hardware units at heights and/or locations shown on the drawings, or as required to comply with relevant Codes and Standards. Before proceeding, confirm any dimension not shown or known.

3.6 CUTTING AND FITTING

Carry out cutting and fitting of the substrate necessary for installing any hardware unit before painting or finishing of that surface. Remove hardware when required for painting, placing it in the packaging or carton originally supplied and returning it to the secure store until ready for re-installation.

3.7 INSTALL HARDWARE

Install each hardware unit in accordance with the hardware manufacturer's requirements using templates and tools supplied or recommended by them. Set units level, plumb and true to line and required location, with all moving parts and actions freely and easily operating. Do not make any modifications to supplied units.

Completion

3.8 ADJUST

Adjust and check each operating hardware unit for correct and smooth functioning. Replace those units that cannot be adjusted if they do not function correctly. Clean units and adjoining surfaces upon completing their installation. Only use lubricant if and when recommended by the hardware manufacturer/supplier.

3.9 REPLACE

Replace damaged or marked elements.

3.10 LEAVE

Leave work with parts fully and freely working and to the standard required by following procedures.

3.11 REMOVE

Remove debris, unused materials and elements from the site.

3.12 PROTECT

Protect hardware units from damage or marking.

3.13 FINAL ADJUSTMENT

Where hardware is installed more than a month prior to project completion, return and make a final check and adjustment of hardware units to ensure they are operating correctly, fitted properly and are undamaged.

4 SELECTIONS

4.1 DOOR HARDWARE

TBA - to be supplied by principal.

4.2 CABINET WORK HARDWARE

TBA - to be supplied by principal.



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6221A ARDEX FLOOR TILING SOLUTIONS

1 GENERAL

This section relates to the supply and installation of ARDEX New Zealand internal and external floor tiling systems.

It includes:

- Levelling screeds
- Primers
- Waterproofing systems
- Adhesives
- Sealants
- Grouts

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:

CFC	Compressed fibre cement
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:

NZBC D1/AS1	Access routes
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC E3/AS1	Internal moisture
NZBC G3/AS1	Food preparation and prevention of contamination
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
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
Codemark™ CMNZ70189 ver0	Ardex WPM 715 and WPM 1000

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

ARDEX Tiling and Substrate Preparation Systems (October 2023)
ARDEX Product Technical Data Sheets
ARDEX Technical Tiling Systems Bulletins
ARDEX Product Building Product Information Sheets
ARDEX Tiling General Care information sheet
BRANZ Appraisal 472 (2022) - ARDEX Undertile Internal Liquid Waterproofing Membranes - Amended 24 May 2024
BRANZ Appraisal 473 (2022) - ARDEX Undertile External Liquid Waterproofing Membranes - Amended 24 May 2024
BRANZ Appraisal 727 (2023) - ARDEX Undertile Sheet Membrane (WPM 750 and WPM 1000)
BRANZ Appraisal 925 (2024) - ARDEX WPM 1000 External Deck Membrane

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Manufacturer/supplier contact details
Company: ARDEX New Zealand Ltd
Web: www.ardex.co.nz
Email: info@ardexnz.com
Telephone: 0800 227339

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

Contact ARDEX New Zealand for project specific warranty periods for the selected products and/or systems.

- 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:

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 WORKERS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Waterproofing applicators to be trained by ARDEX New Zealand. Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any 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 following general operation and maintenance information as electronic PDF format documents:

- ARDEX Tiling General Care

Provide this information prior to practical completion.

Compliance information

1.10 COMPLIANCE - BRANZ APPRAISAL 472

ARDEX Undertile Internal Liquid Waterproofing Membrane has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 472.

1.11 COMPLIANCE - BRANZ APPRAISAL 727

ARDEX Undertile Sheet Membrane (WPM 750 and WPM 1000) has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 727.

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Performance - fire

1.12 SURFACE FIRE PERFORMANCE - FLOORS
Tiles composed entirely of ceramic are non-combustible.

Performance - Slip resistance

1.13 SLIP RESISTANCE - SURFACES EXEMPT FROM TESTING
Walking surfaces comply with NZBC D1/AS1, Table 2 for slip resistance requirements and are exempt from testing.

2 PRODUCTS

Materials - levelling screeds

2.1 ARDEX LQ 92
Cement-based, polymer modified, self-smoothing levelling compound.

2.2 ARDEX K 60
Two part, self-levelling latex compound.

2.3 ARDEX K 301
Cement-based levelling compound.

2.4 ARDEX A 46
Rapid setting and drying, slump free cement-based mortar.

2.5 ARDEX K 65
One part, fibre reinforced, polymer modified levelling compound.

2.6 ARDEX K 900 BF
Cement-based levelling compound.

2.7 ARDEX A 38 SCREED
Rapid-set, cement screed for use with ARDEX Gravel Mix and Engineered Sand aggregate.

2.8 ARDEX A 48 SCREED
Premixed, rapid-set, cement and aggregate screed.

Materials - substrate preparation

2.9 ARDEX MULTIPRIME
One part, water-based primer for porous substrates.

2.10 ARDEX P 9
One part, water-based primer for non-porous substrates.

2.11 ARDEX P 51
One part water-based, primer, pre-coat, and bonding agent for porous substrates.

2.12 ARDEX WPM 300 MOISTURE BARRIER
Two-component, water-based, epoxy polyamide membrane/barrier hydrostatic pressure resistant coating.

Materials - waterproofing

2.13 ARDEX WPM 002
Two component, fibre reinforced, acrylic polymer, liquid waterproofing membrane.

2.14 ARDEX WPM 155 RAPID
One component, polyurethane-acrylic, fast drying, liquid waterproofing membrane.

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Materials - adhesives

2.15 ARDEX X 17

Flexible, polymer modified, cement-based adhesive, formulated with non-slumping mastic type properties. Classified C2TES1 to ISO 13007.1.

2.16 ARDEX X 18

Flexible, polymer fortified, fibre reinforced, cement-based adhesive, formulated with non-slumping mastic type properties. Classified C2TES1 to ISO 13007.1

2.17 ARDEX X 32

Flexible, polymer fortified, cement-based adhesive, formulated with non-slumping mastic type properties. Suitable for moisture sensitive stone. Classified C2TES1 to ISO 13007.1.

2.18 ARDEX X 56

Highly-flexible and fast setting polymer modified adhesive. Classified C1ES2 to ISO 13007.1.

2.19 ARDEX X 77

Fibre reinforced, polymer modified adhesive. Classified C2FTES1 to ISO 13007.1.

2.20 ARDEX OPTIMA

Highly-flexible, two part adhesive with high initial grab qualities. Classified C2TS2 to ISO 13007.1.

Materials - grouts

2.21 ARDEX FG 8

Fine sanded, cement-based standard grout for joints 1mm to 8mm wide. Classified CG2W to ISO 13007.3.

2.22 ARDEX FS-DD

Non-sanded, cement-based grout for joints 1mm to 4mm wide. Classified CG1 to ISO 13007.3.

2.23 ARDEX EG 15

Three part stain and chemical resistant epoxy grout for joints 1.5mm to 15mm wide. Classified RG to ISO 13007.3.

Materials - additives

2.24 ARDEX ABALASTIC

Liquid polymer additive for use with cement-based adhesive to improve adhesion, water resistance and flexibility.

2.25 ARDEX GROUT BOOSTER

Water-based, synthetic polymer grout additive for use with cement-based grouts to improve adhesion strength, flexibility and abrasion resistance.

Undertile heating

2.26 UNDERTILE HEATING

Refer to appropriate underfloor heating section for electric heating systems under tiles.

Components

2.27 ARDEX ST TAPE

Uncured, self-adhesive butyl tape, fleece lined one side.

2.28 ARDEX CA 750 CONTACT ADHESIVE

Water-based contact adhesive.

2.29 TRIMS

Tile trim, edge strips, floor finish divider strips and weather bars. Available in aluminium, brass and stainless steel. Refer to SELECTIONS.

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2.30 MOVEMENT JOINT - SEALANT

One part, flexible acetic or neutral cure silicone sealant. Refer to SELECTIONS.

2.31 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
Moisture content plywood:	18% maximum
Moisture content particleboard:	16% maximum

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, ARDEX New Zealand Ltd instructions, and to WMAI CoP recommendations. Surfaces to be clean, sound and free of dust, oil, grease, curing compounds or release agents.

3.6 APPLY LEVELLING SCREED

Mix levelling screed to ARDEX instructions. Trowel onto prepared substrate to required thickness and fall, where required:

1:40 minimum	deck acting as a roof to NZBC E2/AS1
1:40 minimum	accessible showers to NZBC G1/AS1
1:50 minimum	shower bases to NZBC E3/AS1
1:50 minimum	shower bases for people with disabilities to NZS 4121
1:50 minimum	food processing areas (e.g. commercial kitchens) to G3/AS1
1:50 maximum	cross fall for outdoor accessways in public areas to NZS 4121

3.7 FLOORING UNDERLAY

Lay and fix flooring underlay to the manufacturer's instructions. Fill gaps between sheets and corners with a neutral cure silicone sealant.

3.8 ARDEX DS 70 ACOUSTIC UNDERLAY

Temporarily fasten ARDEX PERIMETER ISOLATION STRIP along base of wall to entire perimeter of floor with masking tape. Lay ARDEX DS 70 over primed substrate, perpendicular to the subsequent installation of finished floor covering. Butted edges of adjacent underlay. Working in rows lengthwise, fold back half of the underlay width and trowel on ARDEX AF 180 MS flooring adhesive. Unfold the underlay and press into adhesive. Fill gaps between underlay and between wall and underlay with ARDEX ST.

Trim ARDEX PERIMETER ISOLATION STRIP flush with the finished floor covering when installed.

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3.9 APPLY ARDEX WPM 300 MOISTURE BARRIER

Spray fine mist of water over substrate. Spread barrier evenly over entire substrate with a stiff nylon broom. Apply second coat with a long nap roller.

3.10 APPLY PRIMER

Sponge, brush or roll primer liberally over entire substrate.

3.11 APPLY ARDEX LIQUID WPM

Reinforce corners and penetrations with ARDEX ST TAPE. Mix waterproofing components to ARDEX instructions. Brush or roll on liquid waterproofing membrane over prepared substrate. Apply two coats to achieve required minimum total dry film thickness to ARDEX product technical data sheet.

3.12 APPLY ARDEX SHEET WPM

Lay sheet membrane allowing for 50mm overlap with adjacent sheet. Working in rows lengthwise, fold back half of the width of the membrane sheet. Brush ARDEX contact adhesive to substrate and underside of membrane, avoiding the 50mm overlap. Unfold the membrane and press onto the substrate. Heat weld the 50mm overlapped membranes together.

3.13 INSTALL UNDERTILE HEATING

Refer to appropriate underfloor heating section for electric heating system under tiles.

3.14 SETTING OUT

Confirm tile layout and bond pattern. Cut tiles to tile manufacturer's recommendations. Lay tiles level, maintaining falls to drainage where required (e.g. floor wastes). Provide joint widths to the tile manufacturer's recommendations.

3.15 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 walls, columns, nibs, hobs 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 joints at not less than 4.5 metres spacing in both directions for internal floors. Provide joints at not less than 3.5 metres spacing in both directions for external floors. Provide joints over existing joints in the substrate.

3.16 ADHESIVE APPLICATION GENERAL

For general floor tiling, use a 10mm x 10mm x 10mm notched trowel.

For large format tiles, use a 12mm x 12mm x 12mm notched trowel.
For mosaics, use a 4.5mm x 4.5mm x 4.5mm notched trowel.
Remove a tile periodically during installation to check for correct adhesive coverage. Do not fix tiles over skinned adhesive.

3.17 APPLY ADHESIVE

Mix adhesive to ARDEX instructions. Spread adhesive over prepared surface with a notched trowel to ARDEX recommended bed thickness.

3.18 INSTALL TRIM

Press trim into wet adhesive.

3.19 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 surplus adhesive from tile surfaces before adhesive sets.

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3.20 APPLY GROUT

Mix grout to ARDEX instructions. Work grout into joints with a rubber trowel. Allow the grout to firm up in the joint before wiping tile surface with a damp, dense sponge.

3.21 INSTALL MOVEMENT JOINT BACKING ROD

Place PEF backing rod into movement gaps. Apply a continuous bead of silicone sealant over PEF backing rod.

Completion & Commissioning

3.22 COMPLETION MATTERS

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

4 SELECTIONS

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

4.1 TILES

Location:	refer to drawings.
Type:	TBA

ARDEX Tiled Internal Floors

4.2 ARDEX INTERNAL TILING SYSTEM OVER CONCRETE FLOOR

Location:	refer to drawings.
Substrate:	Concrete
Levelling:	ARDEX A 48 Screed as required.
Adhesive:	ARDEX X 17 or similar approved.
Grout:	ARDEX FG 8 or similar approved.

4.3 ARDEX INTERNAL TILING SYSTEM OVER CONCRETE FLOOR - WET AREA

Location:	refer to drawings.
Substrate:	Concrete
Levelling:	ARDEX A 48 Screed
WPM:	ARDEX WPM 002
Adhesive:	ARDEX X 17 or similar approved.
Grout:	ARDEX FG 8 or similar approved.

4.4 ARDEX INTERNAL TILING OVER TIMBER SHEET FLOORING

Location:	refer to drawings.
Substrate:	plywood
Levelling:	ARDEX K 60 or similar approved.
Primer:	ARDEX P 9
Adhesive:	ARDEX X56 or similar approved.
Grout:	ARDEX FG 8 or similar approved.

4.5 ARDEX INTERNAL TILING SYSTEM OVER TIMBER SHEET FLOORING - WET AREA

Location:	refer to drawings.
Substrate:	Plywood
Levelling:	ARDEX K60 or similar approved.
Primer:	ARDEX P 9
WPM:	ARDEX WPM 002
Adhesive:	ARDEX X56 or similar approved.
Grout:	ARDEX FG 8 with ARDEX Grout Booster or similar approved.

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6700D DULUX PAINTING GENERAL

1 GENERAL

This section relates to the general matters related to painting work using **Dulux** paint.

1.1 RELATED WORK

Refer to 6711D DULUX PAINTING EXTERIOR for exterior paint systems.

Refer to 6721D DULUX PAINTING INTERIOR for interior paint systems.
Refer to 6711DE DULUX ENVIRONMENTAL PAINTING EXTERIOR for environmental exterior paint systems.
Refer to 6721DE DULUX ENVIRONMENTAL PAINTING INTERIOR for environmental interior paint systems.
Refer to 6744D DULUX PROTECTIVE COATINGS for protective coating systems.

1.2 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

APAS	Australian Paint Approval Scheme
MPNZA	Master Painters New Zealand Association Inc.
VOC	Volatile organic compound

Documents

1.3 DOCUMENTS

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

AS/NZS 2311	Guide to the painting of buildings
AS/NZS 5131	Structural steelwork - Fabrication and erection
AS/NZS ISO 9001	Quality management systems - Requirements
BPS	Building Product Specifications
WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry
WorkSafe	Guidelines for the management of lead-based paint
MPNZA	Health and Safety Programme

Health and Safety at Work Act 2015

1.4 MANUFACTURER'S DOCUMENTS

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

Dulux DuSpec specification sheets and product data sheets

Copies of relevant literature are available from **Dulux**

Web:	www.dulux.co.nz/specifier or www.duspec.co.nz
Email:	specifier@dulux.co.nz
Telephone:	0800 800 424
Facsimile:	0800 801 424

Warranties

1.5 WARRANTY

Warrant this work under normal environmental and use conditions against failure of materials and execution.

Product warranty: Products must be applied in accordance with application and preparation procedures according to **DuluxDuSpec** Specifications and Product Data Sheets. Contact a **Dulux** Trade Representative for project specific warranties.

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

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Requirements

1.6 NO SUBSTITUTIONS

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

If in the applicator's own expertise and judgement an amendment to this specification is required, or where a substrate preparation or required painting system is not covered in this specification, this shall be brought to the attention of the contract administrator and any amendment agreed before work proceeds any further.

1.7 QUALIFICATIONS

Painters to be experienced competent workers, familiar with Dulux products and the required application techniques specified and may be a member of the Master Painters New Zealand Association Inc. or hold a recognised painter/decorator qualification.

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 Dulux Accredited Painter programme, which recognises painters in the industry who demonstrate high levels of workmanship and pride themselves on their professionalism, customer service and reliability.
Refer to https://www.dulux.co.nz/services/find-a-painter-nz for a list of Dulux Accredited Painters in the local area.

1.8 HEALTH AND SAFETY

Refer to 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 required in the MPNZA Health and Safety Programme. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put in place procedures for dealing with emergencies.

Refer to WorkSafe: Guidelines for the management of lead-based paint for the required procedures and precautions when:

- treating/removing lead-based paint
- burning off paint
- sanding off paint
- using solvent based paint removers.

1.9 PRIOR TO WORK COMMENCING

Before any work commences painters should verify with architect or specifying authority, that their paint matches a previously supplied standard card or panel. Differently coloured paints will vary in price, opacity and durability. **Dulux** normally only specify two coats of colour but with certain colours such as bold, brights and some corporate colours, three coats may be needed.

1.10 SAFETY DATA SHEETS

Refer to **Dulux** for the safety data sheets for every applicable product and comply with the safety procedures listed. Keep sheets on the site. Refer to www.dulux.co.nz/specifier.

Performance

1.11 DULUX INSPECTION

Permit representatives of **Dulux** to inspect the work in progress and take samples of their products from site if requested.

1.12 INSPECTION OF THE WORK

Inspection of the whole of the work at each of the stages set out in SELECTIONS may be made. Agree a programme that will facilitate such inspection, including notification when each part and stage of the work is ready for inspection.



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2 PRODUCTS

Materials

2.1 PAINT TYPES

Use the manufacturer's complete system and only the product specified.

2.2 MATERIALS GENERALLY

Use only **Dulux** product which are guaranteed for their consistency and performance under AS/NZS ISO 9001 and APAS approval, prepared, mixed and applied as directed in the **Dulux** DuSpec specification sheets, specification manuals and product data sheets.

2.3 THINNERS/ADDITIVES

Use only if and when expressly directed by **Dulux** for their particular product in a particular application.

Accessories

2.4 FILLERS

For recommendations on; fillers, stopping, paint strippers, cleaning agents, etching solutions, mould inhibitors, rust inhibitors, knotting and other commodities used for the surface preparation, refer to the manufacturer of the specified preparation system.

2.5 GYPSUM FILLER - INTERIOR

Finishing compound to match the plasterboard stopping system and finishing grade gypsum plaster to match the fibrous plaster system. For interior surfaces such as paper faced plasterboard use **Dulux** Professional Ultra 5 Surface Prep & Finish as an aid to achieving a Level 5 finish.

3 EXECUTION

Conditions

3.1 EXECUTION

To conform to manufacturer's requirements and those methods, practices and techniques contained in AS/NZS 2311 and WorkSafe: Guidelines for the provision of facilities and general safety in the construction industry.

3.2 PREPARE

Prepare surfaces to **Dulux** requirements.

3.3 COATED SURFACES

Ensure that substrate surfaces are able to achieve the specified finish.

3.4 PRE-PRIMED SURFACES

Sand down any breakdown or damage of the primer to a sound surface and immediately re-prime.

3.5 BRUSH DOWN

Brush down surfaces immediately before application, to remove dust, dirt and loose material.

3.6 COMPATIBILITY

Check that materials are as required by the paint manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other. Use paint from the same manufacturer for each paint system. If not compatible, obtain instructions before proceeding.

3.7 TREATED SURFACES

Where surfaces have been treated with preservatives or fire retardants, check with the treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance. If they are not compatible, obtain instructions before proceeding.

3.8 BACK PAINTING

Co-ordinate with cladding and/or lining installer as to who will do the work and timing.

Exterior



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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 2x coats or 1x 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 2x coats or 1x 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.

3.9 ANCILLARY SURFACES

The coatings listed in schedules and elsewhere are of necessity simplified. Coat ancillary exposed surfaces to match similar or adjacent materials or areas, except where a fair-faced natural finish is required or items are completely prefinished. In cases of doubt obtain instructions before proceeding.

3.10 LEAD-BASED PAINT, ASBESTOS

Handle cautiously lead-based paint and asbestos, if present, as required in the MPNZA Health and Safety Programme and WorkSafe: Guidelines for the management of lead-based paint.

3.11 HARDWARE

Do not paint hinges or hardware that cannot be removed. If items can be removed, carefully remove hardware, fixtures and fittings before commencing work. Set aside where they cannot be damaged or misplaced and replace on completion.

3.12 PROTECTION

Use dropsheets, coverings and masking necessary to protect adjoining fixtures, fittings and spaces from paint drops, spots, spray and damage.

Preparation

3.13 PREPARATION

Refer to the **DuSpec** specification sheets for detailed substrate preparation notes relating to SELECTIONS contained in:

- 6711D DULUX PAINTING EXTERIOR,
- 6721D DULUX PAINTING INTERIOR,
- 6711DE DULUX ENVIRONMENTAL PAINTING EXTERIOR,
- 6721DE DULUX ENVIRONMENTAL PAINTING INTERIOR, and
- www.duspec.co.nz.

Application - before applying final coatings

3.14 OFF-SITE WORK

Carry out off-site preparation and coating under cover, in a suitable environment and with adequate lighting. Store items both before and after coating in a clean, dry area, protected from the weather and mechanical damage, properly stacked and spaced to permit air circulation and to prevent sticking of surfaces.

3.15 PRIMING JOINERY

Before priming preservative treated timber ensure that any cut surfaces have been retreated. Liberally coat end grain, allow to soak in and then recoat. Ensure LOSP treated joinery has dried sufficiently to lose odour.

3.16 CONCEALED JOINERY SURFACES

Apply off-site coatings to all surfaces including those which will be concealed when incorporated into the building.

3.17 CONCEALED METAL SURFACES

Apply primer to suit the coating system to all metal surfaces which will be concealed when incorporated into the building.

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3.18 DOORS

Prime or seal and paint all six faces of doors before hanging.

3.19 PUTTY FRONTING

According to the putty manufacturer's instructions allow putty to set, then prime with an appropriate Dulux primer, either **Dulux** 1 Step Acrylic Primer Sealer & Undercoat, or **Dulux** 1 Step Oil Based Primer, Sealer & Undercoat. Fully protect the putty by completing the **Dulux** coating system as soon as it is sufficiently firm.

Application - generally

3.20 PAINTING GENERALLY

Comply with the **Dulux** DuSpec specification sheets, product data sheets and the additional requirements of this work section.

3.21 MIXING

Thoroughly mix paints. Lift any settled pigment and ensure the paint is homogenous.

3.22 ENVIRONMENT

Paint exterior surfaces only in favourable weather conditions:

- warm dry days without frost or heavy dews
- avoid painting in direct sunlight any surfaces that absorb heat excessively
- as far as possible apply paint in the temperature range 15°C to 25°C
- do not paint if temperatures fall outside the range of 10°C and 35°C unless paints with the necessary temperature tolerance have been specified
- do not apply solvent borne paint if moisture is present on the surface

3.23 SEQUENCE OF OPERATIONS

Painting work to generally the following sequence:

- Back-painting and pre-installation painting, then post-installation exposed-face painting
- Complete surface preparation before commencing painting
- Apply primers, sealers, stains, undercoats, paints and clear coatings in the sequences laid down by **Dulux**
- Allow the full drying times between coats laid down by **Dulux**
- Do not expose primers, sealers and undercoats beyond a few days before applying the next coat
- Finish broad areas before painting trim
- Ensure batch numbers of tins are matched for whole areas
- Internally paint ceilings before walls and walls before joinery, trim and other items.

3.24 PAINT APPLICATIONS

Select brush, roller, or pad and apply paint to the requirements of **Dulux** and to obtain a smooth even coating of correct thickness, uniform gloss and colour.

3.25 DRYING TIME

Before handling or applying the next coat of paint, give each coat the full drying time as required by the paint manufacturer. Ensure that surfaces are dry and that condensation does not occur before the paint reaches surface-dry condition.

3.26 LIGHTLY SAND

Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. Remove dust immediately before applying the next coat.

3.27 DEFECTIVE WORK

Correct defective work immediately and re-coat as required, following precisely the **Dulux** paint system specified.

3.28 EACH COAT

Each coat of paint and the completed paint system to have the following qualities and properties:

- uniform finish, colour, texture, sheen and hiding power
- the specified number of coats applied
- no blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, brush marks, ladder marks and blistering

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- proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application

Note that some colours may require more than two top coats and/or the use of a tinted undercoat. This is particularly relevant when using bright or high chromatic coloured paints (e.g. colours derived off True Red, Bold Yellow, Orange, and Extra Bright base) or when painting over existing dark colours.

Completion

3.29 CLEAN

Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at completion of the building works. Clean glass inside and out to a shining finish.

3.30 CLEAN EQUIPMENT

Use **DuluxEnviroWash** system for the cleaning of water-based paint and plasters from brushes, rollers, plastering or spray equipment to separate the solids from the water component for safe disposal. Phone 0800 800 424 for information regarding this system.

3.31 LEAVE

Leave the whole of this work uniform in gloss and colour, of correct thickness, free from painting defects, clean and unmarked and to the standard required by following procedures.

3.32 REMOVE

Remove dropsheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.

3.33 REPLACE HARDWARE

Replace hardware without damage to it or the adjoining surface. Leave properly fitted and in working order.

4 SELECTIONS

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

4.1 SELECTIONS

Refer to 6711D DULUX PAINTING EXTERIOR and 6721D DULUX PAINTING INTERIOR for selections.

Refer to 6711DE DULUX ENVIRONMENTAL PAINTING EXTERIOR and 6721DE DULUX ENVIRONMENTAL PAINTING INTERIOR for selections.



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6711D DULUX PAINTING EXTERIOR

1 GENERAL

This section relates to the surface preparation and painting of new and existing exterior substrates using **Dulux** exterior paint systems.

1.1 RELATED WORK

Refer to 6700D DULUX PAINTING GENERAL for general matters related to painting work.

2 PRODUCTS

2.1 PRODUCTS

Refer to 6700D DULUX PAINTING GENERAL for product clauses.

3 EXECUTION

3.1 EXECUTION

Refer to 6700D DULUX PAINTING GENERAL for execution clauses.

4 SELECTIONS

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

Refer to DULUX DuSpec+ for up-to-date VOC levels as these are subject to change.

4.1 BACK PAINTING SCHEDULE

Paint 2 coats (including any pre-prime) to match exposed face coating.

Cladding type	Extent of back painting
All	To cladding manufacturer's requirements

Fibre cement sheet substrates - new cladding

4.2 EXTERIOR OBLIQUE™ WEATHERBOARD NEW - PAINT

Gloss level:	Low Sheen
Coating type:	Water-based
System:	DuSpec+ NZDU03758
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer Undercoat @ 14 m²/L
2nd coat:	DULUX Weathershield @ 16 m²/L
3rd coat:	DULUX Weathershield @ 16 m²/L

4.3 EXTERIOR VILLABOARD™ SOFFIT NEW - PAINT

Gloss level:	Low Sheen
Coating type:	Water-based
System:	DuSpec+ NZDU03758
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer Undercoat @ 14 m²/L
2nd coat:	DULUX Weathershield @ 16 m²/L
3rd coat:	DULUX Weathershield @ 16 m²/L

Timber substrates - new cladding

4.4 EXTERIOR TIMBER FASCIA BOARDS NEW - PAINT

Gloss level:	Low Sheen
Coating type:	Water-based
System:	DuSpec+ NZDU03765
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer Undercoat @ 14m²/L
2nd coat:	DULUX Weathershield @ 16 m²/L
3rd coat:	DULUX Weathershield @ 16 m²/L

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Timber substrates - new trim, doors, frames, etc

4.5 EXTERIOR TIMBER NEW - TRIM, DOORS AND FRAMES - WATER-BASED ENAMEL

Gloss level:	Semi Gloss
Coating type:	Water-based enamel
System:	DuSpec+ NZDU01192
1st coat::	DULUX 1 Step Prep Acrylic Primer Sealer Undercoat @ 14 m²/L
2nd coat:	DULUX Aquanamel @ 16 m²/L
3rd coat:	DULUX Aquanamel @ 16 m²/L

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6721D DULUX PAINTING INTERIOR

1 GENERAL

This section relates to the surface preparation and painting of new and existing interior substrates using **Dulux** interior paint systems.

1.1 RELATED WORK

Refer to 6700D DULUX PAINTING GENERAL for general matters related to painting work.

2 PRODUCTS

2.1 PRODUCTS

Refer to 6700D DULUX PAINTING GENERAL for product clauses.

3 EXECUTION

3.1 EXECUTION

Refer to 6700 PAINTING GENERAL for execution clauses.

4 SELECTIONS

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

Refer to DULUX DuSpec+ for up-to-date VOC levels as these are subject to change.

4.1 BACK PAINTING SCHEDULE

Paint 2 coats (including any pre-prime) usually to match exposed face coating. If there is no coating use water resistant clear finish sealer.

Lining type	Extent of back painting
All	To lining manufacturer's requirements

Paperfaced plasterboard substrates - new ceilings

4.2 INTERIOR PAPERFACED PLASTERBOARD NEW - CEILINGS - PAINT

Gloss level:	Flat
Coating type:	Water-based
System:	DuSpec+ NZPR00175
Fire rating:	Group Number 1-S, Report Number 5054, BPS, Table 8.5.2.1: Material Group Numbers for some substrate and coating combinations.
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer & Undercoat @ 14 m²/L
2nd coat:	DULUX Professional Ceiling Flat @ 12.8 m²/L
3rd coat:	DULUX Professional Ceiling Flat @ 12.8 m²/L

4.3 INTERIOR PAPERFACED PLASTERBOARD NEW - CEILINGS - WET AREAS - PAINT

Gloss level:	Low Sheen
Coating type:	Water-based
System:	DuSpec+ NZDU00834
Fire rating:	Group Number 1-S, Report Number 5054, BPS, Table 8.5.2.1: Material Group Numbers for some substrate and coating combinations.
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer & Undercoat @ 14 m²/L
2nd coat:	DULUX Wash & Wear Plus Kitchen & Bathroom @ 16 m²/L
3rd coat:	DULUX Wash & Wear Plus Kitchen & Bathroom @ 16 m²/L

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Paperfaced plasterboard substrates - new walls

4.4 INTERIOR PAPERFACED PLASTERBOARD NEW - WALLS - PAINT

Gloss level:	Low Sheen
Coating type:	Water-based
System:	DuSpec+ NZDU03737
Fire rating:	Group Number 1-S, Report Number 5054, BPS, Table 8.5.2.1: Material Group Numbers for some substrate and coating combinations.
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer & Undercoat @ 14 m²/L
2nd coat:	DULUX Wash & Wear 101 @ 16 m²/L
3rd coat:	DULUX Wash & Wear 101 @ 16 m²/L

4.5 INTERIOR PAPERFACED PLASTERBOARD NEW - WALLS - WET AREAS - PAINT

Gloss level:	Low Sheen
Coating type:	Water-based
System:	DuSpec+ NZDU00834
Fire rating:	Group Number 1-S, Report Number 5054, BPS, Table 8.5.2.1: Material Group Numbers for some substrate and coating combinations.
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer & Undercoat @ 14 m²/L
2nd coat:	DULUX Wash & Wear Plus Kitchen & Bathroom @ 16 m²/L
3rd coat:	DULUX Wash & Wear Plus Kitchen & Bathroom @ 16 m²/L

Timber substrates - new trim, doors, frames, etc - paint

4.6 INTERIOR TIMBER NEW TRIM, DOORS AND FRAMES - WATER-BASED PAINT

Gloss level:	Semi-Gloss
Coating type:	Water-based enamel
System:	DuSpec+ NZDU01045
Fire rating:	Group Number 3, Report Number 5095, BPS, Table 8.5.2.1: Material Group Numbers for some substrate and coating combinations.
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer & Undercoat @ 14 m²/L
2nd coat:	DULUX Aquanamel @ 16 m²/L
3rd coat:	DULUX Aquanamel @ 16 m²/L

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6813WF WOODLAND PHONESTAR ACOUSTIC BOARD - FLOORS

1 GENERAL

This section relates to the supply and installation of Woodland Lifestyle Ltd, PhoneStar acoustic underlay board for interior floor applications.

It includes:

- Acoustic board
- Decoupling fleece
- Decoupling plate
- Associated components and accessories

1.1 RELATED WORK

Refer to 6192 FLOORING SUBSTRATE PREPARATION for flooring substrate preparation.
Refer to relevant flooring section(s) for floor coverings.

Refer to Acoustic Engineer's drawings.

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:

CM	Calcium Carbide Method
RH	Relative Humidity
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:

NZS AS 1884	Floor coverings - Resilient sheet and tiles - Installation practices

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Woodland Lifestyle Acoustic Systems Guide
Woodland Lifestyle PhoneStar Sound Proofing Board Brochure
Woodland Lifestyle PhoneStar Tri Data Sheets
Woodland Lifestyle PhoneStar Tri Design Guide
Woodland Lifestyle PhoneStar Tri Flooring Details
Woodland Lifestyle PhoneStar Tri Installation Guide
Woodland Lifestyle PhoneStar Tri Specification Guide
Marshall Day PhoneStar Tri Airbourne & Impact Sound Opinion

Manufacturer/supplier contact details

Company:	Woodland Lifestyle Ltd
Web:	www.woodlandlifestyle.co.nz
Email:	hello@woodlandlifestyle.co.nz
Telephone:	09 308 7948

Warranties

1.5 WARRANTY

Provide warranty for:

15 years	For PhoneStar acoustic underlay

- 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 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.

Quality control and assurance

1.9 INSPECTIONS

TBA	TBA

2 PRODUCTS

Materials

2.1 PHONESTAR ACOUSTIC BOARD

Acoustic boards made from quartz sand-filled corrugated cardboard, with a compressive strength of 5kN/m². Refer to SELECTIONS.

2.2 WOLF DECOUPLING FLEECE

1.4mm thick polyester fleece, 270 g/m², supplied in 1m wide rolls, 50m in length.

2.3 WOLF DECOUPLING PLATE

4mm thick polyester fibre decoupling plate, available in sheets 1000mm x 600mm.

Components

2.4 WOLF ISOLATION STRIP

Self-adhesive closed-cell polyethylene isolation strip 8mm thick, 100mm wide, available in 50m long rolls.

2.5 ARDEX AF 180 ADHESIVE

Ardex AF 180 MS solvent-free polymer heavy duty adhesive.

2.6 WOLF TAPE

50mm wide self-adhesive acoustic sealing tape.

2.7 PRIMER

Ardex PU 30 polyurethane primer and green slab sealer.

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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. Substrate to be level, smooth, clean, dry, and free of contaminants such as oil, grease, dust, or loose material.

Substrate material:	Moisture content % maximum
Timber	10%
Cement (no UFH)	75% RH / 2.5% CM
Cement (with UFH)	60% RH / 1.5% CM
Anhydrite screed (no UFH)	50% RH / 0.5% CM
Anhydrite screed (with UFH)	40% RH / 0.3% CM

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 ACCLIMATISE MATERIALS

Allow materials to acclimatise in the proposed installation area for 24 hours minimum prior to installation.

3.6 INSTALLATION GENERALLY

To NZS AS 1884 and Woodland Lifestyle Ltd installation guides.

Substrate preparation

3.7 PRIME SUBSTRATE

Prime concrete substrate evenly using a roller or brush to apply two coats of Ardex PU 30 primer, allow to dry between coats.

Installation

3.8 INSTALL PERIMETER INSULATION STRIP

Apply self-adhesive edge insulation strips continuously to perimeter of floor surface, vertically oriented to extend above the final floor covering. Trim after installation of finished flooring.

3.9 INSTALL DECOUPLING FLEECE

Cut the decoupling fleece to length and lay it over the substrate, starting from one corner of the room. Butt edges together, aligning them against the perimeter insulation strip.

3.10 LOOSE LAY ACOUSTIC BOARD ONTO SUBSTRATE

Measure and cut boards to size with appropriate tools. Tape cut edges, overlapping corners by 20mm. Lay boards with the labelled side facing up in a stretcher bond pattern, starting in a corner of the room.

3.11 LOOSE LAY PHONESTAR ACOUSTIC BOARD TO DECOUPLING FLEECE

Measure and cut boards to size with appropriate tools. Tape cut edges, overlapping corners by 20mm. Lay boards perpendicular to the decoupling fleece with the labelled side facing up in a stretcher bond pattern, starting in a corner of the room with a minimum of 100mm offset between decoupling fleece joints.

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3.12 ADHESIVE FIX PHONESTAR ACOUSTIC BOARD DIRECT TO SUBSTRATE

Install PhoneStar boards directly to the substrate, apply adhesive to the non-labelled board side, along perimeter and across the surface in 100mm intervals. Press boards firmly into the adhesive, with a 4mm gap at floor to wall junctions.

3.13 INSTALL DECOUPLING PLATE

Apply adhesive using a notched trowel to workable area of PhoneStar board. Install the decoupling plate onto adhesive and push down firmly. Arrange in stretcher bond pattern with a minimum 100mm offset between joints of previous layer. Allow 24 hours drying time.

3.14 PENETRATIONS

Penetrations in PhoneStar sound insulation board are to be fully sealed in accordance with manufacturer's instructions.

Completion & Commissioning

3.15 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements.

3.16 COMPLETION - TESTS & CERTIFICATION

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

4 SELECTIONS

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

Materials

4.1 SINGLE LAYER PHONESTAR ACOUSTIC BOARD - ADHESIVE FIXED

Location:	Refer to drawings
Supplier:	Woodland Lifestyle Ltd.
Primer	To suit application
Fleece:	Decoupling fleece
Acoustic board:	PhoneStar Tri, 1200mm x 800mm x 15mm thick, weight: 18kg/m²
Acoustic board fixing:	Adhesive fixed using Ardex AF 180 MS adhesive
Decoupling plate:	Decoupling plate, where required for waterproofing
Decoupling plate adhesive:	Ardex AF 180 MS adhesive, where required for waterproofing

Note: Where waterproofing is required, co-ordinate with specific waterproofing section. Refer to drawings for locations

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7123 HOT & COLD WATER SYSTEM

1 GENERAL

This section relates to piped potable water supply systems from the network utility supply authority water main to designated points and appliances, the installation of hot water heating appliances, distributing piped hot water to other appliances, and the installation of valves.

Refer to hydraulic engineers specifications for all hot and cold water system requirements and specifications.

1.1 RELATED WORK

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures and tapware selections.

Documents

1.2 DOCUMENTS

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

NZBC G4/AS1	Ventilation of buildings
NZBC G11/AS1	Gas as an energy source
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
AS 1432	Copper tubes for plumbing, gas fittings and drainage applications
AS/NZS 1477	PVC pipes and fittings for pressure applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 2033	Installation of polyethylene pipe systems
AS 2345	Dezincification resistance of copper alloys
AS/NZS 2492	Cross Linked Polyethylene (PE-X) pipe for pressure applications
AS/NZS 2537.1	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) General
AS/NZS 2537.2	Mechanical joining fittings for use with crosslinked Polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations - Crosslinked Polyethylene (PE-X) - Fittings
AS/NZS 2537.3	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) fitness for purpose of system
AS/NZS 2537.4	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) Guidance for the assessment of conformity
AS/NZS 2642.1	Polybutylene pipe systems - Polybutylene (PB) pipe extrusion compounds
AS/NZS 2642.2	Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications
AS/NZS 2642.3	Polybutylene pipe fittings - Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications
AS/NZS 2845.1	Water supply - Backflow prevention devices - Materials, design and performance requirements
AS 2845.3	Water supply - Backflow prevention devices - Field testing and maintenance
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3500.1	Plumbing and drainage - Water services

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AS/NZS 3500.4	Plumbing and drainage - Heated water services
NZS 3501	Specification for copper tubes for water, gas and sanitation
AS 3688	Water supply and gas systems - metallic fittings and end connectors
AS/NZS 3879	Solvent cements and priming fluids for PVC (PVC-U and PVC-M and ABS and ASA pipes and fittings
AS 4032.2	Water supply - Valves for the control of heated water supply temperatures - Tempering valves and end-of-line temperature actuated devices
AS/NZS 4129	Fittings for polyethylene (PE) pipes for pressure applications.
AS/NZS 4130	Polyethylene (PE) pipes for pressure applications
NZS 4305	Energy efficiency domestic type hot water systems
NZS 4602	Low pressure copper thermal storage electric water heaters
NZS 4606.1	Storage water heaters. General requirements
NZS 4606.2	Storage water heaters. Specific requirements for water heaters with single shells.
NZS 4606.3	Storage water heaters. Specific requirements for water heaters with composite shells.
NZS 4607	Installation of thermal storage electric water heaters: valve vented Systems
NZS 4617	Tempering (3-port mixing) valves
AS 4809	Copper pipe and fittings. Installation and commissioning
AS 5200 part 053	Plumbing and drainage products, Stainless steel pipes and tubes for pressure applications.
AS/NZS 5601.1	Gas installations - general installations
AS/NZS 60335.2.35	Household and similar electrical appliances. Safety - Pat 2.35 Particular requirements for instantaneous water heaters

Gas (Safety and Measurement) Regulations 2010

Plumbers, Gasfitters and Drainlayers Act 2006

NZ Backflow Testing Standard:	NZ Backflow Testing Standard 2019, Field testing of backflow prevention devices and verification of air gaps

Warranties

1.3 WARRANTY

Provide warranty for:

2 years:	For the supply and installation of the plumbing system and fixtures

- Provide the warranty in the standard form in the general section 1237WA WARRANTY AGREEMENT.
- Commence the warranty from the date of practical completion of the contract works.

Requirements

1.4 QUALIFICATIONS

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

1.5 PIPEWORK LAYOUTS

refer to hydraulic engineers documentation.

1.6 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

1.7 HOT WATER TEMPERATURES

To NZBC G12/AS1, 6.14

Storage water heaters to store water at not less than 60ºC.

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

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

- 45ºC - for early child hood centres, schools, elderly facilities, hospitals, psychiatric or disabled institutions.
- 50ºC - for personal hygiene fixtures in all other buildings.

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

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

This clause excludes boiling units.

1.8 QUALITY CONTROL SYSTEM - LEAD FREE

If requested, by the contract administrator or consenting authority, provide test reports from IANZ or equivalent accredited testing facility confirming products that contain copper alloy and are used in contact with potable water for human consumption are lead free.

Performance

1.9 TESTING - TO AS/NZS 3500

Test to AS/NZS 3500.1 as modified by NZBC G12/AS3, Section 17, Testing and commissioning, for cold water.

- Test reticulation system to a pressure of 1500 kpa for period not less than 30 minutes, to AS/NZS 3500.1, 17.3.1 Hydrostatic test. Test storage tanks to AS/NZS 3500.1, 17.3.2 Storage tanks (except rain water tanks).

and
AS/NZS 3500.4 as modified by NZBC G12/AS3, Section 9, Testing and commissioning, for hot water.

- Test reticulation system (excluding tanks, water heaters, and some fixtures, valves etc) to a pressure of 1500 kpa for period not less than 30 minutes, to AS/NZS 3500.4, 9.3 Testing. Test complete system (including valves, pumps, water heaters etc) under normal working conditions for a minimum of 48 hours, then check visually, to AS/NZS 3500.4, 9.3 Testing.

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Slowly fill service pipes with water to exclude air. Test and ensure there is no measurable loss of pressure for the minimum period. Slowly fill distribution pipes with water to exclude air. Ensure that with draw-off taps closed the system must remain water-tight.

1.10 GAS CERTIFICATE OF COMPLIANCE

Provide a Certificate of Compliance (CoC) as required by the Gas (Safety and Measurement) Regulations 2010 to the owner, and when required provide a copy to the energy supplier before connection.

1.11 GAS SAFETY CERTIFICATION

Provide a Gas Safety Certificate (GSC) as required by the Gas (Safety and Measurement) Regulations 2010 and provide a copy to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.

1.12 GAS APPLIANCE COMPLIANCE

Supplier to provide a Supplier Declaration of Compliance (SDoC) in accordance with the requirements of the Gas (Safety and Measurement) Regulations 2010.

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2 PRODUCTS

Materials

2.1 COPPER PIPE

To NZBC G12/AS1, 2 Materials. Copper pipe to NZS 3501, AS 1432 (type A, B & C) and AS 3688 for fittings

2.2 PVC-U PIPE

To NZBC G12/AS1, 2 Materials. PVC-U pipes and fittings to AS/NZS 1477 and PVC-U solvent cements and primers to AS/NZS 3879. Protect from sunlight. For cold water applications only.

2.3 POLYBUTYLENE PIPE

To NZBC G12/AS1, 2 Materials. Polybutylene tubing to AS/NZS 2642.1, AS/NZS 2642.2 and AS/NZS 2642.3 complete with fittings and accessories brand-matched. Protect from sunlight.

2.4 POLYETHYLENE PIPE

To NZBC G12/AS1, 2 Materials. Polyethylene pipes to AS/NZS 4130 and fittings to AS/NZS 4129. Except for solid black PE, protect from sunlight. For cold water applications only.

2.5 CROSS LINKED POLYETHYLENE PIPE

To NZBC G12/AS1, 2 Materials. Cross Linked Polyethylene Pipe to AS/NZS 2492 and fittings to AS/NZS 2537.1, AS/NZS 2537.2, AS/NZS 2537.3 and AS/NZS 2537.4. Except for solid black PE-X, protect from sunlight.

2.6 DE-ZINCIFICATION RESISTANT WATER SUPPLY SYSTEM COMPONENTS

All copper alloy components to comply with G12/AS1 clause 2.2.3 and AS 2345.

2.7 WATER METER

To the requirements of the network utility operator.

2.8 VALVES

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

2.9 BACKFLOW PREVENTION DEVICES

Provide backflow prevention devices to AS/NZS 2845.1 where it is possible for water or contaminants to backflow into the potable water supply. Refer to NZBC G12/ AS1 3.4 Backflow protection, 3.5 Containment Backflow protection, table 2, Selection of Backflow Protection and table 2A Containment Backflow Protection.

2.10 TEMPERING VALVE

Tempering valve to NZS 4617 or AS 4032.2 to NZBC G12/AS1.

2.11 HEADER TANKS

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

Materials - Hot water heating appliances

2.12 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

To NZS 4305, NZS 4606.1, NZS 4606.2 and NZS 4606.3,electric storage cylinder, insulated and complete with required fittings.

2.13 ELECTRIC HOT WATER CYLINDER, LOW PRESSURE

To NZS 4305, and NZS 4602, copper thermal storage cylinder insulated and complete with pressure reducing valve and required fittings.

2.14 ELECTRIC HOT WATER CYLINDER, UNDER-SINK, LOW PRESSURE

To NZS 4305, and NZS 4602, copper thermal storage cylinder insulated and complete with required fittings.

2.15 ELECTRIC HOT WATER HEATER, INSTANTANEOUS TYPE

Instantaneous flow unit complete with required fittings to AS/NZS 60335.2.35.

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2.16 ELECTRIC BOILING CYLINDER, WALL MOUNTED

To NZS 4305, wall-mounted boiling water heater in pre-finished cabinet, complete with tap draw off.

2.17 GAS HOT WATER HEATER, STORAGE TYPE

Insulated cylinder to NZS 4305 and Gas (Safety and Measurement) Regulations with an integral gas burner and flue.

2.18 GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE

Continuous flow unit with an integral gas burner and flue to NZS 4305 and Gas (Safety and Measurement) Regulations.

2.19 HEAT PUMP WATER HEATER - INTEGRAL SYSTEM

Heat pump water heating system, with insulated storage cylinder and compressor/condenser /evaporator, complete with required fittings.

2.20 HEAT PUMP WATER HEATER - SPLIT SYSTEM

Heat pump water heating system, with insulated storage cylinder and separate compressor/condenser/evaporator, complete with required fittings. With flow and return pipe work for water between cylinder and heat pump. Insulated exposed flow and return pipe work.

Components

2.21 INSULATION

Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements and to NZS 4305 and AS/NZS 3500.4.

2.22 PROTECTIVE TAPE

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

Fire resistant accessories

2.23 FIRE STOPPING SYSTEMS

Refer to 7382 FIRE STOPPING SYSTEMS for fire stopping systems of pipe penetrations through fire walls and floors.



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3 EXECUTION

3.1 EXECUTION GENERALLY

Generally carry out the whole of this work and tests to NZBC G12/AS1 or AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3.

3.2 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress.

Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.

3.3 CORE HOLES AND SLEEVES

Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.

3.4 CONCEAL

Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

3.5 CORROSION

Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

3.6 THERMAL MOVEMENT

Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

3.7 PIPE SIZE

Flow rates to each outlet to be no less than those given in AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in NZBC G12/AS1, table 4, Tempering valve and nominal pipe diameters.

3.8 ELECTROLYTIC ACTION

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

3.9 EXCAVATE

Excavate for the water main to a firm, even trench base in straight runs. Allow to backfill.

Application - Jointing

3.10 JOINTING COPPER PIPE

Braze pipe, fit alloy compression fittings, crox type joints and seal ring compression joints to NZBC G12/AS1 and AS 4809.

3.11 JOINTING PVC-U PIPE

Solvent welded joints using spigots and sockets, flanged joints and seal ring compression joints to NZBC G12/AS1 and AS/NZS 2032.

3.12 JOINTING POLYBUTYLENE PIPE

Aluminium clamped, seal ring compression or push fit "O" ring seal jointing to pipe system manufacturer's requirements.

3.13 JOINTING POLYETHYLENE PIPE

Seal ring compression joints and electrofusion to NZBC G12/AS1 and AS/NZS 2033.

Application - Pipework installation

3.14 WATER SUPPLY CONNECTION

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



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3.15 POTABLE WATER SUPPLY PIPEWORK INSTALLATION

From connection point, run pipes complete with all fittings, support and fixing, joins and install to manufacturers specifications. Size the pipes and branches in straight runs to deliver the acceptable flow rate to AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures and size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Pipework support spacing to be firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with machine made 3 diameter bends, complete with necessary valves and fittings. Conceal pipework and pressure test before the wall linings are fixed.

3.16 HOT WATER PIPEWORK

Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 9 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, and preformed 3 diameter bends, complete with all necessary valves and fittings.

Lag all pipes with rigid insulation to the manufacturer's requirements and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1.

3.17 EQUIPOTENTIAL BONDING METALLIC WATER SUPPLY PIPES

Before enclosing, co-ordinate with electrician to provide for equipotential bonding to metallic water pipes and metallic sanitary fixtures as required by NZBC G12/AS1, 9.0 Equipotential bonding and/or AS/NZS 3000, 5.6 Equipotential bonding.

3.18 IN-LINE FILTER

Install an in-line filter immediately adjacent to the main isolating valve at the point of entry to the building, in an accessible position to allow for easy cleaning.

3.19 PENETRATIONS

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

Application - Hot water systems

3.20 HOT WATER CYLINDER INSTALLATION GENERALLY

Install hot water cylinders complete to the manufacturer's requirements and to NZBC G12/AS1, 6. 11, Water heater installation or NZS 4606 for Valve-vented systems.

3.21 SEISMIC RESTRAINTS - GAS WATER HEATING APPLIANCES

Gas appliances to be restrained to manufacturer's requirements, NZBC G11/AS1 and AS/NZS 5601.1.

3.22 SEISMIC RESTRAINTS - NON-GAS WATER HEATING APPLIANCES

Non-gas (electric, wet-back, solar etc) water heating appliances (storage water heaters) to be restrained to manufacturer's requirements and NZBC G12/AS1, 6.11, Water Heater Installation or AS/NZS 3500.4, 5.5.4 Seismic restraints.

3.23 INSTALLING HOT WATER PIPE INSULATION

Insulate all hot water pipes to NZS 4305, AS/NZS 3500.4, 8.2 Thermal Insulation, and to the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of steel studs.

3.24 INSTALL ELECTRIC HOT WATER CYLINDERS AND BOILING CYLINDERS

Install where shown complete with all the necessary fittings to the cylinder manufacturer's requirements and in accordance with NZBC G12/AS1: 6.11 or NZS 4607 for Valve-vented systems.

3.25 INSTALL LOW PRESSURE UNDER-SINK HOT WATER CYLINDER

Install hot water cylinders complete to the manufacturer's requirements and to NZBC G12/AS1, 6.11 Water heater installation. Connect to sink tap.



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3.26 INSTALL ELECTRIC HOT WATER HEATER, INSTANTANEOUS TYPE

To AS/NZS 3500.4.

Install the unit to the manufacturer's requirements, provide isolating valve on cold water feed.

3.27 INSTALL WALL-MOUNTED BOILING CYLINDER

Install to the cylinder manufacturer's stated requirements. Locate where shown.

3.28 INSTALL GAS HOT WATER HEATER, STORAGE TYPE

Install complete with the necessary fittings to the manufacturer's requirements and in accordance with NZBC G12/AS1, 6. 11 Water heater installation. Install flue in accordance with the manufacturer's details and requirements and, AS/NZS 5601.1 (for internal or external appliances) or NZBC G4/AS1 (internal appliances). Refer to section 7221 GAS APPLIANCES for installation of gas appliances.

3.29 INSTALL GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE

Install complete with the necessary fittings to the manufacturer's requirements and in accordance with NZBC G12/AS1, 6. 11, Water heater installation. Install flue in accordance with the manufacturer's details and requirements and, AS/NZS 5601.1 (for internal or external appliances) or NZBC G4/AS1 (internal appliances). Refer to section 7221 GAS APPLIANCES for installation of gas appliances.

3.30 INSTALL HEAT PUMP WATER HEATER - INTEGRAL SYSTEM

Install complete with the necessary fittings to the manufacturer's installation instructions.

3.31 INSTALL HEAT PUMP WATER HEATER - SPLIT SYSTEM

Install complete with the necessary fittings and pipe work, to the manufacturer's installation instructions.

3.32 INSTALL STORAGE HOT WATER CYLINDER OVERFLOW TRAY

Install drained overflow tray to storage hot water cylinder to NZBC G12/AS1.

3.33 INSTALL TEMPERING VALVE

Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install copper pipework for 1 metre minimum downstream of tempering valve prior to connection of non-metallic pipework.

Application - Fire resistant work

3.34 FIRE STOPPING SYSTEMS

Refer to 7382 FIRE STOPPING SYSTEMS for fire stopping devices for pipe penetrations through fire walls and floors.

Installation - valves

3.35 INSTALLING BELOW GROUND ISOLATING VALVE

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

3.36 INSTALLING APPLIANCE ISOLATING VALVES - CONCEALED

Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.

3.37 INSTALLING BACKFLOW PREVENTION DEVICE

Provide and install backflow prevention device as near as practicable to the potential source of contamination, and in an accessible position for maintenance and testing to AS 2845.3 or NZ Backflow Testing Standard.

Completion

3.38 LABEL

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



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3.39 CLEAN IN-LINE FILTER
Clean all in-line filters on completion of works.

3.40 REPLACE
Replace damaged or marked elements.

3.41 LEAVE
Leave work to the standard required by following procedures.

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

4 SELECTIONS

Hot water systems

4.1 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

- Refer to hydraulic engineers documentation for HWC spec. and type.
- Refer to hydraulic engineers documentation for all hot and cold water system specifications and requirements.

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7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES

1 GENERAL

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

1.1 RELATED WORK

Refer to 7123 HOT AND COLD WATER SYSTEM for hot water cylinders.

Refer to hydraulic engineer's documentation.

Documents

1.2 DOCUMENTS

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

NZBC E3/AS1	Internal moisture
NZBC G1/AS1	Personal hygiene
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
NZBC G13/AS1	Foul water
NZBC G13/AS3	Plumbing and drainage
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3500.1	Plumbing and drainage - water services
AS/NZS 3500.2	Plumbing and drainage - sanitary plumbing and drainage
AS/NZS 3500.4	Plumbing and drainage - Heated water services
NZS 4223.3	Glazing in buildings - Human impact safety requirements

Plumbers, Gasfitters and Drainlayers Act 2006

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

~ years	For sanitary fixtures tapware and accessories

- 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.

1.4 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

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

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1.6 QUALIFICATIONS WORKERS – INDUSTRY QUALIFICATION REQUIREMENTS

Workers or supervisors of work are required to be a Certifying Plumber under the Plumbers, Gasfitters and Drainlayers Act 2006. Refer to 1270 CONSTRUCTION for additional 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.

1.9 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

1.10 QUALITY CONTROL SYSTEM - LEAD FREE

If requested, by the contract administrator or consenting authority, provide test reports from IANZ or equivalent accredited testing facility confirming products that contain copper alloy and are used in contact with potable water for human consumption are lead free.

2 PRODUCTS

2.1 SANITARY FIXTURES

Refer to SELECTIONS for product selection.

2.2 TAPWARE

Refer to SELECTIONS for product selection.

2.3 SANITARY APPLIANCES

Refer to SELECTIONS for product selection.

2.4 SANITARY ACCESSORIES

Refer to SELECTIONS for product selection.

2.5 ELECTRICAL SANITARY ACCESSORIES

Refer to SELECTIONS for product selection.

3 EXECUTION

Conditions

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.

Ensure water supply and drainage pipework match the requirements of selected fixtures without force or distortion.

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.



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3.5 INSTALLATION REQUIREMENTS INCLUDING AS/NZS 3500.2

Install to NZBC G1/AS1, AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3, NZBC G12/AS1, NZBC E3/AS1, AS/NZS 3500.2, as modified by NZBC G13/AS3, and to the fixture manufacturer's installation requirements for each component.

3.6 INSTALLATION SANITARY FIXTURES

Carry out preparatory and assembly work, including connections to supply and drainage services and the application of all required slurries/bedding and sealants in sequence.

Fit the sanitary fixture in position, plumb, level, flush and rigid without stressing the attachment points of the component. Fixings to be corrosive resistant.

Seal between all sanitary fixtures and floors, wall linings, fixtures and the tops they are in, the tops and wall linings, to NZBC E3/AS1, 3.2. Fixtures include toilets, urinals, baths, basins, tubs, sinks. Tops include, vanities, bath surrounds, sink benches, etc, and their upstands. Form joint or seal between shower bases or urinals and impervious wall linings to NZBC E3/AS1, 3.3.

3.7 INSTALLING URINALS - WATERLESS

Ensure discharge will not go through metal pipework/drains. Install the cartridge in each unit, charge with fluid and test for proper operation.

3.8 INSTALLING SPA BATHS

Connect up interconnected discharge jets to supply, connect waste and overflow to drainage services. Fit electric motor and pump so as to prevent vibration and noise.

3.9 INSTALLING SHOWER OR BATH DOOR AND SCREEN

To NZS 4223.3 and to the product manufacturer's requirements. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating.

3.10 INSTALLATION TAPWARE

In accordance with the manufacturer's requirements. Maintain safe water temperatures to comply with NZBC G12/AS1, 6.14 Safe water temperatures.

3.11 SEAL SHOWER TAPWARE

Seal shower wall lining penetrations such as shower head, shower hose, mixer, taps etc to NZBC E3/AS1, Fig. 6.

3.12 SANITARY APPLIANCES

Install and provide all required connections to sanitary appliances in accordance with manufacturers requirements.

3.13 EARTHING OR EQUIPOTENTIAL BONDING METALLIC FIXTURES

Before enclosing, co-ordinate with electrician to provide for equipotential bonding to metallic water pipes and metallic sanitary fixtures using an earth bonding conductor to requirements of NZBC G12/AS1, 9.0 Equipotential bonding and/or AS/NZS 3000, 5.6 Equipotential bonding.

Application - sanitary accessories

3.14 INSTALLING ACCESSORIES

Fit specified fittings firmly in place, all plumb and level.

Locate at heights and/or locations shown on the drawings, or as required to comply with NZBC G1/AS1. For any dimension not shown or known, request direction before proceeding

3.15 CUTTING AND FITTING

Where cutting and fitting of the substrate is necessary for installing any unit, carry out this work before the painting or finishing of that surface. Remove any hardware when required for painting, placing it in the packaging or carton originally supplied and returning it to the secure store until ready for re-installation.

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3.16 INSTALLING UNITS

Install each unit in accordance with the proprietary fixture manufacturer's requirements, using the templates and tools supplied or recommended by them. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating. Do not make any modifications to supplied units.

Completion & Commissioning

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.

4.1 SANITARY FITTING SCHEDULE

Refer to client supplied schedule.

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7382RF RYANFIRE FIRE STOPPING SYSTEMS

1 GENERAL

This section relates to **Ryanfire Products Ltd** fire rated service penetration systems and control joint fire stopping systems.

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FRR	Fire resistance rating
STC	Sound transmission class

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 for buildings other than risk group SH
NZS/BS 476.21	Fire tests on buildings and structures - Method for determination of the fire resistance of loadbearing elements of construction
AS 1530.4:2005	Methods for fire tests on building materials, components and structures - Fire resistance test of elements of construction
AS 4072.1	Components for the protection of openings in fire-resistant separating elements - Service penetrations and control joints
EN 1363-1	Fire resistance tests - General requirements
EN 1364-4	Fire resistance tests for non-loadbearing elements, Curtain walling
ISO 10140-2	Acoustics - Laboratory measurement of sound insulation of building elements - Measurement of airborne sound insulation
EN 13501-1	Fire classification of construction products and building elements - Classification using test data from reaction to fire tests

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

System Drawings
Product Data Sheets
Material Safety Data Sheets

FAS190287, Report No 22766	Assessment report on Firefly Titan and Firefly Plus 60 barriers
BRANZ FAR 2701	Assessment report on Firefly Phoenix material curtain

CSIRO Movement/Seismic Joint Systems Assessment Number FCO-2896

Manufacturer/supplier contact details

Company:	Trafalgar Fire Limited
Trading as:	Ryanfire Products
Web:	www.ryanfire.co.nz
Email:	tristan@ryanfire.co.nz paul.ryan@ryanfire.co.nz
Telephone:	09 443 0362

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years:	For manufacture/supply of fire stopping systems

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- Provide this warranty on the Ryanfire Products 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.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer warranty:

5 years: For installation of fire stopping systems

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Installers to be Ryanfire certified trades people trained with materials and techniques specified. 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 MANUFACTURERS INFORMATION

Submit type test certificates for each combination of fire stopping system, application, type of service, and substrate and penetration orientation. Include drawings of tested details.

- Submit report to AS 4072.1 Appendix C.
- Submit evidence that systems specified without reference to brand conform to specified requirements.
- Submit copies of relevant manufacturers' instructions, for systems specified without reference to brand.
- Material Safety Data Sheets (MSDS): Submit MSDS for systems specified without references to brand.
- Give notice if substrate or penetrations or both are not suitable for fire stopping.

Compliance information

1.9 FIRE STOPPING SYSTEM COMPLIANCE

To NZBC C/AS2, 2.3 Fire resistance ratings, NZBC C/AS2, 4.3.2 Fire stopping, and NZBC C/AS2, 4.3 Firecell construction, for interior elements, and NZBC C/AS2, 5.5.3 Cavity barriers, for exterior wall cavities.

1.10 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer, and or supplier warranty
- Installer warranty
- Producer Statement - Construction from the installer
- Other information required by the BCA in the Building Consent Approval documents.

1.11 CERTIFICATION

Submit evidence of compliance, to the recommendations of AS 4072.1 Appendix B.

Submit a certification document for installed fire stopping penetration and control joints.

- Form: To figure B1 of AS 4072.1

Schedule: Submit a schedule of installed fire stopped penetrations and control joints.

- Form: To figure B2 of AS 4072.1

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Quality control and assurance

1.12 LABELLING AND IDENTIFICATION OF FIRE RATED SERVICES PENETRATIONS

All service penetrations to fire cells and fire separation systems are required to comply with all the designed fire integrity of the specified systems. Label all fire rated service penetrations to AS 4072.1.

Each fire stopping installation to have a permanently fixed tag or label with reference information containing the following information:

- Manufacturer name
- Name and address of installer
- Date of installation
- System installed
- FRR
- Location of penetration on site
- Sign off by certified installer

1.13 INSPECTIONS

Give sufficient notice so that inspections may be made of the following:

- Service penetrations completed and ready for fire stopping.
- Finish fire stopping, before being concealed.

2 PRODUCTS

Ventilated cavity barriers

2.1 RYANFIRE RYANMESH

Lightweight, graphite infused fibreglass mesh, charcoal grey in colour. FRR of up to 120 minutes, tested to AS 1530.4. Available in 1200mm length by 25mm or 50mm diameter. Refer to SELECTIONS.

Components

2.2 SYSTEM COMPONENTS AND FIXINGS

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.

3.4 GENERAL PREPARATION

Commence fire stopping after services have been installed through penetrations and properly spaced and supported, after sleeving where appropriate, and after removal of temporary lines, but before restricting access to the penetrations, including before dry lining.

Ensure apertures and openings are clean and free of debris, loose cement. Remove dust from all surfaces.

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Supply ventilation for non-aqueous solvent-cured materials. Apply fire stopping material to uniform density. Finish surfaces to a uniform and level condition. Maintain cable and pipe separation. Protect adjacent surfaces from damage arising through installation of fire stopping.

Allow for thermal movement for the pipes and ducts. Reinforce or support fire stopping materials with non-combustible materials when:

- The unsupported span of the fire stopping materials > 100mm.
- The fire stopping materials are non-rigid.

Provide fire stopping to large openings capable of supporting the same loads as the surrounding element or provide similar structural support around the opening.

Installation/application - general

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.6 INSTALLATION & APPLICATION - GENERAL

Install and apply products in accordance with manufacturer's technical literature. Where products form part of a system refer to and install in accordance with specific system drawings.

Installation – ventilated cavity barriers

3.7 INSTALL RYANFIRE RYANMESH

Cut Ryanfire Ryanmesh to suit length required, use a 16mm spade bit to create new fixing hole 75mm from cut end. Position and fix mesh through fixing holes as per manufacturer’s instruction. Butt join 2 lengths of mesh edge to edge together.

Completion & Commissioning

3.8 COMPLETION MATTERS

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

- Leave fire stopping system to the standard required for following trades.

4 SELECTIONS

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

Ventilated cavity barriers

4.1 RYANFIRE RYANMESH

Location:	as cavity barriers horizontally to fire separations and vertically where required.
Brand/type:	Ryanfire Ryanmesh
Length:	1200mm
Diameter:	25, 50mm
FRR:	-/60/60
Fixings:	To timber/steel frame: min. 12g x 55mm self-tapping screws, or To masonry/concrete: min. M6 x32mm expanding concrete anchors

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7411D DIMOND RAINWATER SPOUTING SYSTEMS

1 GENERAL

This section relates to Dimond rainwater disposal systems including spouting and downpipes, in metal.

1.1 RELATED WORK

Refer to 4311D DIMOND PROFILED METAL ROOFING for roofing

1.2 ABBREVIATIONS AND DEFINITIONS

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc

Documents

1.3 DOCUMENTS

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

NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Dimond, Roofing and Cladding Systems Design Manual, (web based Manual with dated update pages)

Manufacturer/supplier contact details

Company:	Fletcher Steel Ltd
Trading as:	Dimond Roofing
Web:	www.dimond.co.nz
Email:	roofspec@dimond.co.nz
Telephone:	0800 346 663 (0800 DIMOND)

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

Refer manufacturer	For perforation
Refer manufacturer	For coatings

- Provide the warranty in accordance with published supplier's guidance on materials, environments and building types.
- Commence the warranty from the date of installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

3 years:	For workmanship

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

Include a copy of the maintenance requirements with the warranty.
Refer to the general section 1237 WARRANTIES - INSTALLER/APPLICATOR for additional requirements.

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Requirements

1.7 NO SUBSTITUTIONS

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

1.8 QUALIFICATIONS

Installers to be experienced competent gutter installers, familiar with the **Dimond** materials and the techniques specified.

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Provide one copy of all relevant **Dimond** maintenance information on completion of the roofing work.

Performance

1.10 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

2.1 SPOUTING

Complete with matching brackets to suit the spouting and screws. Refer to SELECTIONS for type.

2.2 DOWNPIPES

Complete with stand-off brackets, galvanized screw fixed. Refer to SELECTIONS for type.

Components

2.3 DROPPERS

Steel or plastic droppers, sized to fit inside the downpipe.

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 fascia, 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 suitable to fix to standard.

3.3 THERMAL MOVEMENT

Make adequate provision in the fixing and jointing of the spouting for thermal movement in the length of the spouting. Provide an expansion joint in spouting over 12 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.

Check compatibility of metals used for rainwater goods, against the materials being used for roofing and flashings.



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Application - metal

3.5 INSTALL METAL SPOUTING

Establish minimum falls necessary (minimum 1:500) to outlets to prevent ponding and screw fix brackets true-to-line at 900mm centres maximum or 600mm centres maximum when using profile option Box 300. In areas where snow fall is possible and or high wind areas, the centres should be reduced to 450mm. Lap spouting joints in direction of flow, a minimum of 40mm to seal between and over the top of joint and seal with silicone sealant and fix with rivets. 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 **Dimond** details and NZMRM CoP recommendations.

3.6 INSTALL METAL DOWNPIPES

Form downpipes complete with cast zinc 115 degree angle bends as needed with all joints lapped and silicone sealed and fixed with 2-4mm diameter aluminium blind rivets. Galvanize screw fix with galvanized steel pipe clips to rigidly stand 40mm off the wall plumb and discharging into stormwater gully or inlet pipe. All installation to **Dimond** details and NZMRM CoP recommendations.

3.7 INSTALL RAINWATER HEADS

Install using suitable fixings where required to detail as shown on drawings. Ensure colour matched blind aluminium rivets are used when joining metal surfaces.

3.8 INSTALL OVERFLOWS

Install as close as practical to downpipe locations, at a height allowing water to discharge to the outside and not into the building.

Completion

3.9 REPLACE

Replace damaged or marked elements.

3.10 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.

3.11 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

4.1 DIMOND SPOUTING

Profile:	Dimond 150 halfround
Size:	6600mm² effective cross sectional area with 10mm freeboard.
Base material:	0.55mm BMT/ Steel.
Coating system:	Colorcote® Magnaflow, to match roofing.
Dimondcolour:	to match roofing.

4.2 DIMOND DOWNPIPES

Profile:	80mm cicular, refer to drawings.
BMT:	0.55mm / steel
Coating system:	Colorcote® Magnaflow to match roofing.
Dimondcolour:	to match roofing.

4.3 METAL RAINWATER HEADS

Brand/type:	refer to drawings for size and details.
Base material:	0.5mm BMT / Steel
Coating system:	Colorcote® Magnaflow to match roofing.
Dimond Colour:	to match roofing.

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7553 UNDERFLOOR HEATING MAT SYSTEM

1 GENERAL

This section relates to the supply and installation of electric underfloor heating mats and control systems for domestic commercial or industrial applications installed:

- on a thin adhesive bed on top of a concrete or timber floor
- under timber overlay floors
- under floor tiles

1.1 RELATED WORK

Refer to 6221A ARDEX FLOOR TILING SOLUTIONS for tiling & waterproofing.

1.2 ABBREVIATIONS AND DEFINITIONS

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
AS/NZS 60335.2.96	Household and similar electrical appliances - Safety - Particular requirements for flexible sheet heating elements for room heating

1.4 MANUFACTURER DOCUMENTS

The manufacturer documents relating to work in this section are:

TBA

Copies of the above literature are available from:

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

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide the manufacturer warranty.

10 years	For heating mat under tiles and timber overlay
5 years	For heating mat under carpet
2 years	For 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.

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1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Workers to be approved / accredited / registered / licensed / certified by manufacturer / supplier.

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 QUALIFICATIONS WORKERS – INDUSTRY QUALIFICATION REQUIREMENTS

Where workers or supervisors of work are required to be trained / licensed / certified or similar under applicable industry rules.

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.9 NO SUBSTITUTIONS

Substitutions are not permitted to any of the selected manufacturer UFH system, associated products, components or accessories.

1.10 COMPLY

Comply with NZBC G9/VM1, NZS 6110 Electrical installations - floor and ceiling heating systems, and AS/NZS 60335.2.96 Household and similar electrical appliances - Safety - Particular requirements for flexible sheet heating elements for room heating.

Quality control and assurance

1.11 INSPECTIONS

Hold Point: QLDC inspections. Work may not proceed until the work in question has been inspected.

2 PRODUCTS

Materials - heating mat

2.1 HEATING MAT

Heating cables consist of multi strand single insulated conductors, full earth screen and with a waterproof protective outer PVC insulation. Heating cables are attached onto an open weave mesh mat.

Materials - thermostat controls

2.2 SWITCHBOARD MOUNTED MANUAL ELECTRONIC THERMOSTAT

Switchboard mounted thermostat with remote sensor. Refer to SELECTIONS for option.

2.3 DIGITAL TIMER THERMOSTAT

Digital timer thermostat with three functions in one, floor sensing, room sensing, or a combination of the two.

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 the manufacturer's installation instructions.

3.4 CONFIRM LAYOUT

Before commencing work confirm the proposed location of heating mats and controls.



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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 - heating mat

3.7 PRELIMINARY WORK

The floor is to be cleaned and primed prior to the installation of the heating mat. All fixings such as door stops and floor mounted cabinetry to be clearly marked out on the floor.

3.8 INSTALL HEATING MAT

Install the heating mat to manufacturer's instructions ensuring as much of the floor area is covered in each of the zones shown on the plan / schedule.

3.9 COLD TAIL CONNECTIONS

Terminate all cold tails in a flush box mounted approximately 300 mm above F.F.L.

3.10 CONNECTION TO POWER SUPPLY

Connect from wall mounted flush box to power supply protected by an RCD. Refer to the appropriate electrical section for electrical connections of the heating mats.

3.11 TILING

After installation of the heating mat the floor tiler is to install tiles on a screed or tile directly over the mat using an approved adhesive. Refer to the tiling section for the supply and installation of the tiles.

Installation - thermostat controls

3.12 THERMOSTAT INSTALLATION

Install and connect all thermostat and controls as per the schedule and type listed in SELECTIONS.

3.13 INSTALL THERMOSTAT SENSORS

Install thermostat sensors for each zone as per the 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.

3.14 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.

3.15 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

3.16 COMPLETION MATTERS

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

3.17 COMPLETION - TESTS & CERTIFICATION

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



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4 SELECTIONS

4.1 DESIGN INFORMATION

Location:	Undertile heating - confirm all location with the Principal before proceeding
Substrate:	Refer to drawings
Underlay:	Refer to drawings
Floor covering:	Refer to drawings

Heating element

4.2 UNDERFLOOR HEATING MAT

Brand:	**TBA**
Type:	TBA
Wattage:	Confirm with electrical engineer

Thermostat control

4.3 UNDERFLOOR HEATING MAT THERMOSTATS

Brand:	**TBA**
Thermostat type:	TBA

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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

Refer to mechanical engineers documentation for all extract system requirements and specifications.

Documents

1.1 RELATED WORK

Refer to mechanical engineer's documentation.

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 E3/AS1	Internal moisture
NZBC G4/AS1	Ventilation of buildings
NZBC G9/VM1	Electricity

Electricity (Safety) Regulations 2010

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

check with the manufacturer/supplier for selected extracts / systems

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

check with the manufacturer/supplier For selected extracts / systems

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 CO-ORDINATE WORK

Co-ordinate all items with the main contractor, in particular cutting of penetrations and waterproofing. Exterior penetrations to NZBC E2/AS1 as consistent with the project requirements.

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 ELECTRICAL QUALIFICATION

Registered electrician to carry out work to Electricity (Safety) Regulations 2010.

1.8 NO SUBSTITUTIONS

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

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1.9 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:

Confirm with manufacturer

Provide this information prior to practical completion.

1.10 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

1.11 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

1.12 INSPECTIONS

Confirm with mechanical engineer.

2 PRODUCTS

Kitchen extract systems

2.1 KITCHEN RANGEHOOD EXTRACT - TO EXTERIOR WALL / SOFFIT

Mechanical rangehood extract system comprised of rangehood canopy, extract fan, filters, lighting, controls, metal ducting, solid duct wall sleeve, exterior grille and weatherproof cowl.

Refer to SELECTIONS for options.

2.2 KITCHEN POWERPACK EXTRACT SYSTEM - DUCTED TO ROOF

Mechanical extract system installed in overhead cabinetry comprised of powerpack componentry, extract fan, filter, lighting, controls, metal ducting, proprietary roof flashing and cowl.

Refer to SELECTIONS for options.

Bathroom and laundry extract systems

2.3 BATHROOM / LAUNDRY TWO-ROOM EXTRACT VENT

Mechanical venting system comprised of ceiling diffusers, metal ducting serving back to back rooms, a single motor unit housing mixed flow inline fan with two way switch, and proprietary vent cap and roof flashing.

Refer to SELECTIONS for options.

2.4 ROOF / CEILING MOUNTED FAN DUCTED TO ROOF

Mechanical venting system comprised of ceiling diffuser, extract fan, filter, controls, metal ducting, proprietary roof flashing and cowl.

Refer to SELECTIONS for options.

2.5 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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2.6 WALL MOUNTED FAN, DUCTED TO EXTERIOR WALL / SOFFIT

Mechanical fan ducted system comprised of wall fan, solid duct sleeve sloped to remove condensation, exterior weatherproof grille and flashing.

Refer to SELECTIONS for options.

2.7 THROUGH WALL FAN UNIT

Through wall fan unit with exterior weatherproof grille and flashing.

Refer to SELECTIONS for options.

2.8 LAUNDRY DRYER VENT, DUCTED TO EXTERIOR WALL

Laundry dryer vent comprised of, filter, metal ducting, exterior weatherproof grille and flashing.

Refer to SELECTIONS for options.

Component

2.9 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 RANGEHOOD

Install rangehood to NZBC G9/VM1 and manufacturer installation instructions. Connect unit with ducting to exit either through roof or exterior wall / soffit. Plug into electrical socket.

3.4 INSTALL KITCHEN POWERPACK EXTRACT SYSTEM

Install powerpack extract system to NZBC G9/VM1 and manufacturer installation instructions. Connect unit with ducting to exit either through roof or exterior wall / soffit. Plug into electrical socket.

3.5 INSTALL BATHROOM / TOILET / LAUNDRY EXTRACT FANS

Install exterior ducted fans to manufacturer requirements to NZBC G9/VM1 and NZBC G4/AS1. Duct through to roof or exterior wall / soffit. Plug into electrical socket.

3.6 INSTALL THROUGH WALL FAN UNIT

Install through wall fan unit to manufacturer requirements to NZBC G9/VM1 and NZBC G4/AS1. Plug into electrical socket.

Refer to SELECTIONS for options

3.7 INSTALL LAUNDRY DRYER VENT, DUCTED TO EXTERIOR WALL

Install exterior ducted fans to manufacturer requirements.

3.8 INSULATION CLEARANCE

Provide 50mm clearance between insulation and motor unit / electrical enclosure. Insulation can abut ducts.

3.9 ELECTRICAL INSTALLATION

Install switch and socket outlets to NZBC G9/VM1. Refer to electrical section(s) for requirements.

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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.

3.12 COMMISSIONING - TESTS & CERTIFICATION
Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

4 SELECTIONS

Kitchen extract systems

4.1 KITCHEN RANGEHOOD EXTRACT - TO EXTERIOR WALL / SOFFIT
Location: Refer to drawings & mechanical engineer's documentation.

4.2 KITCHEN POWERPACK EXTRACT SYSTEM - DUCTED TO ROOF
Location: Refer to drawings & mechanical engineer's documenation.

Bathroom and laundry extract systems

4.3 BATHROOM / LAUNDRY TWO-ROOM EXTRACT VENT
Location: Refer to drawings & mechanical engineer's documenation.

4.4 ROOF / CEILING MOUNTED FAN DUCTED TO ROOF
Location: Refer to drawings & mechanical engineer's documentation.

4.5 CEILING MOUNTED FAN, DUCTED TO EXTERIOR WALL / SOFFIT
Location: Refer to drawings & mechanical engineer's documentation.

4.6 WALL MOUNTED FAN, DUCTED TO EXTERIOR WALL / SOFFIT
Location: Refer to drawings & mechanical engineer's documentation.

4.7 LAUNDRY DRYER VENT, DUCTED TO EXTERIOR WALL
Location: Refer to drawings & mechanical engineer's documentation.

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7673 SPLIT UNIT HEAT PUMP SYSTEMS

1 GENERAL

This section relates to heat pump air conditioning systems.
Refer to mechanical engineers documentation for all heat pump requirements and specifications.

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

L10 :	Centile Level, sound level that is equalled or exceeded for 10% of the time.
HFC:	Hydro-fluorocarbon
mm Hg:	mm mercury - unit of pressure
NIWA	National Institute of Water and Atmospheric Research
ASHRAE	American Society of Heating and Air Conditioning Engineers
IRHACE	Institute of Refrigeration, Heating and Air Conditioning Engineers

Documents

1.2 RELATED WORK

Refer to mechanical engineer's documentation.

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 provisions for timber-framed buildings up to 10 m in height
NZBC G4/AS1	Ventilation of buildings
AS 1324.2	Air filters for use in general ventilation and air conditioning - methods of test
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 1571	Copper - seamless tubes for air conditioning and refrigeration
AS/NZS 2107	Acoustics - Recommended design sound levels and reverberation times for building interiors
AS/NZS 3666.1	Air handling and water systems of buildings - Microbial control - Design, installation and commissioning
AS/NZS 3823.1.1	Performance of electrical appliances - Airconditioners and heat pumps - Part 1.1: Non-ducted airconditioners and heat pumps - Testing and rating for performance
AS/NZS 3823.1.2	Performance of electrical appliances - Airconditioners and heat pumps - Part 1.2: Ducted airconditioners and air-to-air heat pumps - Testing and rating for performance
AS/NZS 3823.2	Performance of electrical appliances - Air conditioners and heat pumps - Energy labelling and minimum energy performance standard (MEPS) requirements
AS 4254.1	Ductwork for air handling systems in buildings - Flexible duct
NZS 4303	Ventilation for acceptable indoor air quality
AIRAH DA9, ASHRAE or Carrier	Manual calculation methods
ACADS-BSG Camel, Carrier E20	Electronic calculation methods

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Warranties

1.4 WARRANTY - INSTALLER/APPLICATOR

Installer's warranty for the system under normal environmental and use conditions against failure.

Check general section 1237 WARRANTIES for the date of commencement of warranties; which is normally practical completion of the contract. Refer to the chosen conditions of contract as it may also contain information on warranties/guarantees. — Execution warranty

Provide this warranty on the installer's standard form.

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Manufacturer's warranty for the system under normal environmental and use conditions against failure.

Check general section 1237 WARRANTIES for the date of commencement of warranties; which is normally practical completion of the contract. Refer to the chosen conditions of contract as it may also contain information on warranties/guarantees. — Warranty

Provide this warranty on the manufacturer's standard form.

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 DRAWINGS AND BROCHURES

Submit, on request for review drawings and brochures of units, grilles and any other elements that affect the interior finishes.

1.8 QUALIFICATIONS

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

Handling or recovering refrigerant to be carried out by the appropriate Approved Filler and/or Handler, with a test certificate under the HNSO Act.

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

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

All units, filters, controls, pumps, traps, drain trays, refrigerant

1.10 MAINTENANCE CONTRACT PROPOSAL

Provide a proposed contract for the ongoing servicing of the heat pump system. Refer to SELECTIONS.

2 PRODUCTS

Material

2.1 REVERSE CYCLE UNITS

Split system heat pumps shall meet the requirements of AS/NZS 3823.1.1 and AS/NZS 3823.1.2 with minimum energy performance standards (MEPS) in accordance with AS/NZS 3823.2.

Provide effective outdoor coil defrost facility that prevents room temperature dropping more than 2°C during defrost.

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2.2 CABINETS

Aluminium, powder coated steel or moulded acrylonitrile-butadiene-styrene (ABS) plastic with zinc - coated steel or stainless steel fasteners. Insulate and vapour seal cabinet and drain trays to prevent external condensation under all operating conditions.

2.3 DRAIN TRAYS

Aluminium, stainless steel or plastic to collect all moisture inside indoor and outdoor units.

2.4 FILTERS

Washable panel type.(85% of arrestance when tested to AS 1324.2, Test Dust No.4 or Class EU2 rated.

2.5 COILS

Copper tube with aluminium plate fins.

2.6 CONTROLS

Provide as a minimum the following functions:

- Temperature control for each zone located to accurately sense zone temperature.
- Fan speed selection for multi and variable speed fans.
- Day/night zone changeover if scheduled.
- Time switch for each system with (6 temperature programs per day, separate programs for each day of the week, manual set point over ride and 'Vacation' or 'Holiday' temperature set back.

2.7 REFRIGERATION PIPEWORK KIT

Split system manufacturer's standard pre-charged piping kit.

2.8 REFRIGERATION PIPEWORK CUSTOM

Copper tubing, de-oxidised seamless refrigeration quality, either half hard or soft drawn. Jointing shall be brazed or flared connections to equipment.

2.9 REFRIGERANT

Refrigerant HFC type with no phase out date, such as R410a or R407a, unless approved otherwise.

3 EXECUTION

Conditions

3.1 DELIVERY

Keep materials and equipment dry in transit. Take delivery of materials and equipment in an undamaged condition. Reject all damaged materials.

3.2 STORAGE

Store materials and accessories on a level, firm base, in dry conditions, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until installed.

3.3 CONFIRM LAYOUT

Before commencing work confirm the proposed location of pipes, ducts and controls.

3.4 CONCEALED PIPING

All refrigeration and condensate piping shall be concealed within the building structure unless stated otherwise.

3.5 CO-ORDINATE SERVICES

Co-ordinate and co-operate with other sub-trades to avoid any conflict with the installation of the system with other subcontractors work.

3.6 PROTECT SURFACES

Protect surfaces, equipment and finishes already in place from the possibility of damage during the installation process.

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Application

3.7 INSTALLATION PIPE WORK

Install general pipe work to AS/NZS 1571

Purge the system at all times with dry nitrogen when brazing or heating pipework.

Pipes to be installed to manufacturer's requirements, adequately supported, also arranged and sized to prevent excessive pressure drop and ensure correct circulation of refrigerant and oil.

All refrigeration pipework test to 1800 kPa.

Insulate all refrigerant and drain piping that may sweat with chemically blown closed cell elastomeric insulation. Suction lines are to be insulated over the entire length between connections to indoor and outdoor units. Protect insulation from sunlight and mechanical damage.
Insulation thickness: 13mm for pipes < DN 20, 19mm otherwise.

Provide trapped (DN 20 condensate drains to AS/NZS 3666.1 from each indoor coil and safety tray, to an approved drain point. Provide drains from each reverse cycle outdoor coil unless casing freely drains to a roof or other location where condensate will not cause damage or pond.

3.8 INSTALLATION UNIT

Provide clearance around outdoor units for condenser air flow and maintenance access, to manufacturer's requirements. Ensure discharge air does not short-circuit to condenser intake.

For equipment at ground level, ensure they are mounted on 100mm level concrete plinth or equivalent impervious material.
Provide internal or external flexible duct connections at indoor unit.

For vibration isolation of suspended units, provide (4 metal spring or rubber-in - shear isolation mountings with (25mm static deflection and 98% isolation efficiency. For floor mounted units, provide neoprene waffle pads. Bolt in place.

If leaks or condensation from equipment could cause nuisance or damage to the building or its contents provide a galvanized steel safety tray under the equipment.

3.9 INSTALLATION REFRIGERANT

The completed system including all pipework, to be evacuated to 0.2mm Hg or better with a vacuum pump and maintained at this pressure for 2 hours, then broken with refrigerant.

Completion

3.10 COMMISSIONING

Commission the systems to manufacturer's recommendations using instruments calibrated in the last 12 months. Submit signed commissioning check list on completion.

3.11 CLEANING

Clean filters, outdoor coils, grilles and diffusers.

Remove debris, unused materials and elements from the site. Clean soiled or marked work. Replace damaged, cracked or marked elements. Leave the whole of this work to the standard required by following procedures.

3.12 PROTECT

Protect new work from damage.

4 SELECTIONS

4.1 SPLIT UNIT HEAT PUMP MANUFACTURER / MODEL

Refer to mechanical engineers documentation for all heat pump requirements, selection and specifications.

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7702 ELECTRICAL STANDARD

1 GENERAL

This section relates to the wiring for complex/large residential and medium scale commercial/industrial installations, including:

- supply - national grid
- distribution & protection
- switches & sockets
- lighting circuits - residential
- light fittings
- exterior light fittings, switches, & sockets
- alarms - residential
- heating systems
- mechanical
- electrical automation system
- security system
- fire rated sealers and liners
- fire rated accessories

Refer to electrical engineers documentation for all electrical requirements and specifications.

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:

AFDD	Arc Fault Detection Device
COC	Certificate of Compliance
ELV	Extra Low Voltage
ESC	Electrical Safety Certificate
IP	International (ingress) Protection classification
MCB	Miniature Circuit Breaker
NUO	Network Utility Operator
PCB	Printed Circuit Board
PIR	Passive InfraRed
RCCB	Residential Current operated Circuit-Breakers with integral overcurrent protection for household and similar uses
RCD	Residual Current Device
SIA	Security Integration Architecture
TCF	Telecommunications Carriers' Forum
FFL	Finished Floor Level

Documents

1.2 RELATED WORK

Refer to electrical engineer's documentation.

1.3 DOCUMENTS

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

NZBC B1/VM1	Sructural design of buildings
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F6/AS1	Visibility in escape routes
NZBC F8/AS1	Signs
NZBC G4/AS1	Ventilation of buildings
NZBC G9/AS1	Electricity
AS/NZS 1125	Conductors in insulated electric cables and flexible cord

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AS/NZS 1768	Lightning protection
AS/NZS 2053	Conduits and fittings for electrical installations - series
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 2648.1	Underground marking tape - Non-detectable tape
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 3105	Approval and test specification - Electrical portable outlet devices
AS/NZS 3111	Approval and test specification - Miniature overcurrent circuit-breakers
AS/NZS 3112:2017	Approval and test specification - Plugs and socket-outlets
AS/NZS 3113	Approval and test specification - Ceiling roses
AS/NZS 3123	Approval and test specification - Plugs, socket-outlets and couplers for general industrial application
AS/NZS 3131	Approval and test specification - Plugs and socket-outlets for stationary appliances
AS/NZS 3199	Approval and test specification — Cord extension sets
NZS 3604	Timber framed buildings
NZS 4219	Seismic performance of engineering systems in buildings
NZS 4246	Energy efficiency - installing bulk thermal insulation in residential buildings
AS/NZS 5000.2	Electric cables - Polymeric insulated - for working voltages up to and including 450/750v
AS/NZS 60898	Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations - Series
AS/NZS 61386	Conduit systems for cable management - Series
AS/NZS 61439.1	Low-voltage switchgear and controlgear assemblies - Part 1: General rules.
AS/NZS 61439.3	Low-voltage switchgear and controlgear assemblies - Part 3: Distribution boards intended to be operated by ordinary persons (DBO).
IEC 60309	Plugs, socket-outlets and couplers for industrial purposes
IEC 61008.1	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - Part 1: General rules
IEC 61009.1	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules
IEC 61643	Low-voltage surge protective devices
IEC 62423	Type F and type B residual current operated circuit-breakers with and without integral overcurrent protection for household and similar uses
IEC 62606	General requirements for arc fault detection devices

Electricity (Safety) Regulations 2010

NZ Telecommunications Forum (TCF) Premises Wiring Guidelines

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Warranties

1.4 WARRANTY

Warrant the complete electrical installation under normal environmental and use conditions against failure of materials and execution.

1 year: Warranty period

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

Requirements

1.5 COMPLY

Comply with the Electricity (Safety) Regulations 2010, AS/NZS 3000, AS/NZS 3008.1.2, and TCF Premises Wiring Guidelines for listed and prescribed work and with the utility network operator requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.6 QUALIFICATIONS WORKER - LICENSED UNDER STATUTE

Electrical workers holding a current Practising Licence (with an appropriate Registration class) to carry out prescribed electrical work. An Electrical Worker who holds a Trainee Limited Certificate or a Limited Certificate to be supervised by a licensed electrical worker with an appropriate Registration class. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.7 QUALIFICATIONS WORKER - LICENSED UNDER STATUTE- SECURITY TECHNICIAN

Security technician holding a licence under the Private Security Personnel and Private Investigators Act 2010. Refer to 1270 CONSTRUCTION for additional 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 CONFIRM SELECTIONS

Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.

1.10 INSPECTIONS

Type:	~
Requirement:	~
Location:	~
Notify:	Contract administrator
	~
Notification:	2 working days prior to work/item being carried out.

Requirements - Compliance

1.11 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Producer Statement - Construction (PS3) from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents.

1.12 ELECTRICAL CERTIFICATE OF COMPLIANCE

At the completion of electrical work provide a Certificate of Compliance (CoC) to Electricity (Safety) Regulations 2010, regulation 65-67. Provide a copy to the Contract Administrator and NUO prior to connection and when required to the BCA for Code Compliance.

- 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 Electricity (Safety) Regulations 2010, regulation 70 High-risk prescribed electrical work to be inspected.

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1.13 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010, Reg 74A, to the Contract Administrator and when required the BCA. To be provided no later than 20 working days after connection and prior to Practical Completion.

1.14 COMPLIANCE SCHEDULES - SPECIFIED SYSTEMS

For specified systems, provide all requested information for completion of compliance schedules to the satisfaction of the building consent authority.

2 PRODUCTS

Supply, distribution, and protection

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 PROPRIETARY CABLE SUPPORT SYSTEMS

Proprietary galvanized steel or aluminium cable trays / cable ladder systems complete with all required supports, fixings, bends, risers, curves etc to support cables to AS/NZS 3000, 3.9.3 Support and fixing. Size 20% over width for designed cable loading including spaces between to avoid de-rating cables. Refer to SELECTIONS.

2.3 UNDERGROUND CONDUIT

For underground wiring, conduit to requirements of AS/NZS 3000, 3.11 Underground Wiring Systems, and AS/NZS 2053 series or AS/NZS 61386 series. Fittings and accessories brand matched to the conduit manufacturer requirements.

2.4 CONDUIT

To requirements of AS/NZS 3000, 3.10.2 Wiring enclosures and AS/NZS 2053 series or AS/NZS 61386 series. Fittings and accessories brand matched to the conduit manufacturer requirements.

2.5 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).

2.6 METER BOX

Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.

Refer to SELECTIONS



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2.7 SWITCHBOARDS - GENERAL

General arrangement, door access, and signage to comply with AS/NZS 3000, 2.10 Switchboards.

2.8 SWITCHBOARD - RESIDENTIAL

Distribution Boards (DBO), manufactured to AS/NZS 61439.3 and installed in accordance with AS/NZS 3000, 2.10 Switchboards. Complete with neutral and earth busbars, and insulated comb phase bar. Distribution Boards to have 20% spare capacity for future additions and alterations. Refer to SELECTIONS

2.9 SWITCHBOARD - NON-RESIDENTIAL

Switch Boards to AS/NZS 61439.1 and manufactured from heavy gauge steel with baked enamel finish in approved colour. Switchboards to have 20% spare capacity for future additions and alterations.

- Main switchboard: form 3
- Distribution boards: form 1

Fault rating graded to suit maximum prospective fault from network utility operator

- minimum 22kA, 1.0 seconds for main switchboards
- minimum 20kA, 0.1 seconds for distribution switchboards.

Complete, fully wired, factory tested of sizes to suit space allocated, designed to give easy access to and removal of component parts and constructed to contain equipment to the approval of the network utility operator and/or independently qualified person.

Design the installation for full discrimination between switchboards.

For emergency lighting provide test facilities to AS 2293.1.

Refer to SELECTIONS

2.10 EARTH ELECTRODE

To AS/NZS 3000, 5.3.6 Earth electrodes and Table 5.2 Acceptable Earth Electrodes. Installed as a vertical-type electrode to a minimum depth of 1.8m or a strip-type electrode buried in horizontal trench with not less than 0.5m cover and minimum horizontal length of 7.5m.

2.11 LIGHTING SUBCIRCUITS - RESIDENTIAL

Combination fan, light and heater unit, smoke alarms, exhaust and ceiling sweep fans, are included in residential lighting subcircuits with additional protection by RCD to AS/NZS 3000, clause 2.6.3.3.1.

2.12 CIRCUIT PROTECTION

General requirements including main switch to AS/NZS 3000, 2.3.3 Main Switches & 2.3.4 Additional Isolating Switches, including for outbuildings, subcircuits greater than 100A, alternative supply and some appliances.

Residual current protection, maximum sensitivity of 30mA, to AS/NZS 3000, 2.6 Additional Protection by Residual Current Devices, as modified by Electricity (Safety) Regulations 2010. RCD and RCCBs' to meet Type A to IEC 61009.1 / IEC 61008.1 or Type F or Type B RCD to IEC 62423.

Miniature Circuit Breakers (MCB) to AS/NZS 60898 series or AS/NZS 3111, 4.5kA domestic or 6kA for commercial.

2.13 DEGREES OF PROTECTION - DAMP CONDITIONS

For electrical equipment installed in classified zones (baths, showers, and other fixed water containers), provide a degree of protection to AS/NZS 3000, clause 6.2.4.1.

Zone 0	IPX7
Zones 1 and 2	IPX4
Zone 3	no specific degree of protection

Refer to AS/NZS 3000, Table 6.1 for requirement for selection and installation of electrical equipment.

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For other damp situations such pools, water features, saunas, refrigeration rooms and in areas used for sanitization or general hosing-down operations, refer to AS/NZS 3000, section 6 for required degree of protection.

Switches & sockets

2.14 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.

2.15 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.

2.16 SWITCH PANELS

To accommodate switches to separate circuits and phases and flush mounted within a metal wall box with selected colour powder coated flush plate 2.5mm thick. Switches individually secured within a mounting plate behind the flush plate. Engrave the flush plate to indicate the use of each switch. Permanently label circuit numbers on back of plate.

2.17 SWITCHED SOCKET-OUTLETS - GENERAL

To AS/NZS 3000, 4.4 Socket-Outlets, 10 amp minimum, 230 Volt a.c., flat 3 pin socket outlets fitted with safety shutters to AS/NZS 3112 clause 3.12 as modified by Electricity (Safety) Regulation. Socket-outlet manufactured, tested, and approved to AS/NZS 3112, and AS/NZS 3100. Single or multi-gang as detailed.

For mounting height and orientation, refer to SELECTIONS.

2.18 SWITCHED SOCKET-OUTLETS - INDUSTRIAL/NON-RESIDENTIAL

To AS/NZS 3000, 4.4 Socket-Outlets, socket outlets manufactured, tested, and approved to AS/NZS 3123, and AS/NZS 3100 or IEC 60309.

For mounting height and orientation, refer to SELECTIONS.

2.19 SWITCHED SOCKET-OUTLETS - STATIONARY APPLIANCES

To AS/NZS 3000, 4.4 Socket-Outlets, manufactured to AS/NZS 3100, safety and testing requirements to AS/NZS 3131.

For mounting height and orientation, refer to SELECTIONS.

2.20 SWITCHES AND SOCKET-OUTLETS - PERSONS WITH DISABILITIES

In addition to clause SWITCH UNITS and SWITCHED SOCKET OUTLETS, units shall comply with NZBC G9/AS1, clause 2.0.

2.21 HOT WATER SYSTEM SWITCH

To AS/NZS 3000, 4.8.2 Water heaters, with one way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

2.22 SWITCHES & SOCKETS - EXTERIOR

Exterior grade, 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. Refer to SELECTIONS.

Light fittings

2.23 LIGHT FITTINGS

To AS/NZS 3000, 4.5 Lighting Equipment and Accessories and if required, complete with lamps and, if required, transformer and control gear for dimming. Refer to SELECTIONS.

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2.24 CEILING ROSES

White plastic mounting base with screwed cover, manufactured to AS/NZS 3113. Terminal type. Suspended fittings to have sheathed round flexible cord to AS/NZS 3008.1.2. Refer to SELECTIONS.

2.25 BATTEN HOLDERS

Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.

2.26 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 SELECTIONS.

2.27 RECESSED LIGHT FITTINGS - NON-RESIDENTIAL

Non-residential recessed light fittings to AS/NZS 3000, 4.5.2.3.5:

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

Refer to SELECTIONS.

2.28 EMERGENCY LIGHT FITTINGS

Emergency escape lighting and exit signs for buildings to NZBC F6/AS1, NZBC F8/AS1 and AS 2293.3. Refer to SELECTIONS.

2.29 LIGHT FITTINGS - EXTERIOR

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

Refer to SELECTIONS.

Alarms

2.30 FIRE & SMOKE ALARM SYSTEM

Refer to SELECTIONS.

2.31 DOOR BELL SYSTEM - RESIDENTIAL

Complete with transformer for mounting on distribution board. Refer to SELECTIONS.

Electrical appliances

2.32 SPACE HEATERS

Fixed wired room heaters radiant or convector, and compliant with Electrical (Safety) Regulations 2010, Schedule 4, 1 Household & similar appliances. Flush or surface mount, fitted with safety cut-outs. Refer to SELECTIONS.

2.33 HEATED TOWEL RAILS

Fixed wired heated towel warmers, IPX4 splash-proof, compliant with Electrical (Safety) Regulations, Schedule 4, 1 Household & similar appliances. Refer to SELECTIONS. Refer to SELECTIONS.

2.34 HAND DRYERS

Fixed wired hand dryers, wall mounted, IPX4 splash-proof, compliant with Electrical (Safety) Regulations, Schedule 4, 1 Household & similar appliances. Refer to SELECTIONS.

2.35 SUPPLY AND EXHAUST FANS

Ceiling, wall or duct mounted supply/exhaust fans for ventilation to NZBC G4/AS1 and compliant with Electrical (Safety) Regulations 2010, Schedule 4, 1 Household & similar appliances. Refer to SELECTIONS.

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Electrical automation system

2.36 ELECTRICAL AUTOMATION SYSTEM

Electrical automation system designed to enable if required:

- Lighting - automated control and dimming timer control.
- Heating including heated towel rails and ventilation systems.
- Security - programmable to simulate lights and other devices to give appearance home is occupied - ability to interface with security system and smoke detectors to activate lights.
- Energy efficiency - automatically switch circuits off when not required or on during low tariff times.
- Appliances.
- Spa pools.
- Irrigation systems.

Refer to SELECTIONS.

Security system

2.37 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.

2.38 DETECTORS

There are two main types of detectors:

- Standard passive infrared sensors: Install in stable environments with no wind flow and no direct bright sunlight.
- Passive infrared/ microwave sensors: Install in area where environmental stability is an issue.

2.39 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.

2.40 CABLING

Security alarm wiring to AS/NZS 2201.1 for installation.

Security alarm wiring to AS/NZS 1125 for cables.
Security alarm wiring to be multi stranded and not single stranded, minimum 0.5mm².

2.41 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.

2.42 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.

Fire / acoustic accessories

2.43 FIRE / ACOUSTIC RATED SEALERS AND LINERS

Sealants, collars, wraps, expanding foam, mortars and liners, used to seal around pipe, conduit and sleeve penetrations through fire and acoustic walls and floors. Refer to SELECTIONS.

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2.44 WALL BOXES AND SWITCH UNITS - FIRE RATED

Proprietary intumescent pad for plastic electrical sockets installed in plasterboard lined fire rated partitions providing an acoustic barrier and fire protection. Refer to SELECTIONS for type.

Signage

2.45 WARNING SIGNAGE - RECESSED LUMINAIRES

To AS/NZS 3000, 4.5.2.3.2 Warning Signs.

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

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install electrical wiring and systems in accordance with Electricity (Safety) Regulations 2010, AS/NZS 3000 and other cited standards.

3.6 SEISMIC RESTRAINT

Seismically restrain electrical service equipment, including recessed light fittings, switchboards, cabinets, machinery and racks to NZBC B1/VM1, 4.3.1.1 and NZS 4219.

3.7 MAINS SUPPLY

Lay underground mains to the NUO requirements and AS/NZS 3000, 3.11 Underground Wiring Systems requirements. Excavate trench to ensure minimum depth of cover to AS/NZS 3000 Table 3.6 Under-Ground Wiring Systems - Minimum Depth of Cover, install cable and marker tape complying with AS/NZS 2648.1 and backfill. If required, provide permanent cable marker signs to indicate the point where a cable enters or leaves a structure.

3.8 METER BOX

Fit to meter box manufacturer and Electricity Retailer requirements. Recess into external wall in sheltered area and flash to weatherproof to NZBC E2/AS1, Figure 9.1.8.3B: General meterbox and similar penetrations. Arrange for meter installation and connection.

3.9 SWITCHBOARD

2.10 Switchboards Location and installation to AS/NZS 3000, 2.10 Switchboards and board manufacturer requirements. Recess into wall, surface or floor mount plumb and level. Ensure fire containment properties of the enclosure are maintained.

3.10 SWITCHBOARD - LABELLING

To AS/NZS 3000, 2.10.5 Equipment identification, 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.

3.11 CIRCUIT PROTECTION

Install MCBs at switchboard to AS/NZS 3000 to protect each final sub circuit.



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3.12 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

3.13 EQUIPOTENTIAL BONDING

Equipotential Bond extraneous conductive parts together and to the electrical installation earthing system to AS/NZS 3000, 5.6, and the Electricity (Safety) Regulations 2010 and the fitting manufacturer requirements.

If they form part of the building, this includes:

- Conductive water piping (including tap etc) and exposed related connected conductive surfaces (like metal sink benches or metal cladding etc). Not required where isolated by non-conductors (plastic pipe etc) from the mass of earth.
- Other conductive piping (not earthed by other means) and exposed related connected conductive surfaces.
- Concrete reinforcing - for floor or wall forming part of a room with a shower or bath, or the shell and surround of a swimming/spa pool.
- Built-in Swimming pool and spa pool - exposed conductive parts of electrical equipment, as well as exposed conductive, fixtures, fittings and pool structures within 1.25m of pool edge.

3.14 MAIN EARTH

Install main earthing conductor to AS/NZS 3000, 5.5.1 Main Earthing conductor. Provide a plastic toby box to contain and protect the earth electrode. Fix the connecting earth wiring closely and securely against wall surfaces.

3.15 EARTH LEAKAGE PROTECTION

Install RCD protection to AS/NZS 3000, 2.6 Additional Protection by Residual Current Devices, as modified by the Electricity (Safety) Regulations 2010.

3.16 RCD - RESIDENTIAL INSTALLATIONS

Install 30mA RCD protection at the switchboard for all final sub circuits to control outlets (except for fixed or stationary cooking equipment), lighting & directly connected handheld electrical equipment, to AS/NZS 3000, 2.6.3.3.1 Residential installations - New Zealand only.

3.17 RCD - DAMP SITUATIONS

Install 30-mA RCD protection as required to AS/NZS 3000, section 6 for damp situations, including in the following higher risk areas:

- Wet areas: bathrooms, laundries, kitchens.
- Near pools and water features.
- Where intended for use with cleaning equipment.

3.18 SET-OUT - OUTLETS & EQUIPMENT

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.

3.19 CABLE LADDERS & TRAYS

Install proprietary cable ladders / trays to manufacturer's requirements. Install cabling to AS/NZS 3000 3.9.7.5 Low voltage track systems.

3.20 CABLING

Install wiring systems to AS/NZS 3000, Section 3 Selection and Installation of Wiring Systems. All cabling to run concealed (or in cable ladders / trays) fix in position by suitable clips, saddles or clamps. Where possible, run cabling horizontally / vertically in straight line.

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Locate holes in timber framing for the passage of cables at the centre line of the member, ensuring structural strength in maintained to NZS 3604 requirements. In steel studs/ structural steel, ensure aperture is brushed and shaped to minimize abrasion of cable. Cables may be supported by suspended ceiling systems unless not permitted by suspended ceiling manufacturer. Install cable in conduits where required to pass through concrete or underground.

3.21 CABLING CIRCUITS

Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of, 8 light switch units or 8 amps, or 4 double or single switched socket-outlets, on any circuit. Minimum 2 lighting circuits per domestic floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits. Dedicated circuits for security systems, fire panels, data panels etc.

3.22 OUTDOOR/EXTERIOR SERVICES

Provide circuits and connections for exterior installations, including ELV 12/24 Volt path lighting and electronic irrigation systems, in accordance with AS/NZS 3000 and the fixture/fitting manufacturer's recommendations.

Where underground, ensure appropriate protection, such as thickness of sheathing, conduit, depth of cabling, and proximity to other services to AS/NZS 3000, 3.11 Underground Wiring Systems.

Use the appropriate rated fittings for power control and power supply. Weather protected switches and sockets to IP56 minimum. 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.

3.23 PROTECTION OF CABLING NEAR BUILDING SURFACES

Protect concealed wiring to AS/NZS 3000, 3.9.4 Protection against mechanical damage, where wiring is fixed in position by fastening or held in position by thermal insulation or passes through an opening in a structural member and they are located within 50mm form the surface of a wall, roof, ceiling or floor.

3.24 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.

3.25 SWITCHES AND SOCKET-OUTLETS

Fit all switch units and socket-outlets to the manufacturer requirements with heights and mounting directions as indicated in SELECTIONS.

3.26 SWITCHES AND SOCKET-OUTLETS - PERSON WITH DISABILITIES

Fit all switch units and socket-outlets to the manufacturer requirements with heights (& mounting direction) and location to NZBC G9/AS1 and SELECTIONS.

3.27 ISOLATING SWITCHES

Locate isolating switches in positions as confirmed by the Contract Administrator, when not specifically shown on the drawings.

Installation - lighting

3.28 LIGHT FITTINGS - GENERALLY

Install light fittings in locations and at heights as confirmed by the Contract Administrator, when not specifically shown on the drawings. Install to the luminaire manufacturer's requirements and to AS/NZS 3000, in correct orientation for light output, complete with lamps. Fix through linings to structure or framing, provide additional nogs, trim and packing if required. Ensure transformers/drivers and luminaires are adequately ventilated and clear of any building elements, to AS/NZS 3000.

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3.29 EXTRA-LOW VOLTAGE LIGHTING

Install extra-low voltage lighting to AS/NZS 3000, 7.5 Extra-Low Voltage Electrical Installations and fitting manufacturer's requirements. 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.

3.30 INSULATION CLEARANCES

Refer to relevant INSULATION section.

3.31 INSULATION CLEARANCES – RETROFIT RECESSED LUMINAIRES

For retrofitting or replacement recessed luminaires, check insulation clearances to NZS 4246 and AS/NZS 3000, 4.5.3.2 and, where allowed by these standards, to the light manufacturers stated insulation clearances.

3.32 EMERGENCY LIGHTING

Emergency escape lighting and exit signs for buildings to AS 2293.1 and NZBC F6/AS1. Fit emergency light fittings to manufacturer specifications. Refer to plans for position of fittings.

Installation - fixtures & equipment

3.33 CONNECTIONS TO ELECTRICAL EQUIPMENT

To AS/NZS 3000, Section 4.3 Connection of Electrical Equipment and to manufacturer's requirements. Connections between installation wiring and electrical equipment must be as close as practicable, and protected against mechanical damage or interference. Electrical accessories to AS/NZS 3105, AS/NZS 3122, or AS/NZS 3199 are not permitted for use connecting equipment wiring to installation wiring, where the location is not readily accessible.

3.34 ELECTRIC HOT WATER SYSTEM

Install to AS/NZS 3000, 4.8.2 Water heaters and to manufacturer's requirements 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 7123 HOT AND COLD WATER SYSTEMS section.

3.35 SPACE HEATERS

Install to AS/NZS 3000, 4.9 Room Heaters and to the heater manufacturer requirements. Fit neatly and without damage to surrounding finishes. Ensure control switches and thermostats are fitted to appliance, or otherwise connect to a control switch located adjacent to the heater and a remote thermostat. Isolation switch shall be provided adjacent to entrance of room or area the heating system is located or installed in switchboard.

3.36 ELECTRICAL HEATING CABLES

Install to AS/NZS 3000, 4.10 Electrical heating cables for floors and ceilings and trace heating applications, and to the heating cable manufacturer requirements.

Install a 30mA RCD to heating cables and refer to AS/NZS 3000, 4.10.5 for earthing requirements, for conductive cable covering or a metallic grid.

3.37 AIR CONDITIONING & HEAT PUMP SYSTEMS

Connect to electricity supply to manufacturer's requirements and to AS/NZS 3000, 4.19 Air Conditioning & Heat Pump Systems. Any system incorporating a compressor shall be provided with a lockable isolating switch installed adjacent to the unit.

3.38 COOKING APPLIANCES

Install cooking appliances to AS/NZS 3000, 4.7 Cooking appliances and manufacturer's requirements. Provide a switching device to all cooking appliances that have an open cooking surface such as a hob in a visible and accessible position within 2m of appliance, but not in prohibited location, refer to Figure 4.17.

3.39 ELECTRIC FIXTURES

Install all electrical fixtures and connect to AS/NZS 3000 and manufacturers requirements. If required, provide operating or isolating switches.

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3.40 GAS APPLIANCES / EQUIPMENT

Connect gas appliances to electricity supply in accordance with AS/NZS 3000, 4.18 Gas Appliances and Equipment as modified by Electricity (Safety) Regulations 2010, and the manufacturer recommendations. Refer to 7221 GAS APPLIANCE for supply and fitting.

3.41 EV CHARGING STATIONS

Connect EV charging station to electricity supply to manufacturer's requirements and to AS/NZS 3000, 7.9 Supplied for Electric Vehicles. Install a 30mA RCD Type B for Mode 3 EV car charger circuits for domestic applications and for all EV car charging circuits in other electrical installations. Refer to relevant 7765 ELECTRIC VEHICLE (EV) CHARGING STATIONS for supply and fittings of charging station.

3.42 ELECTRICAL AUTOMATION SYSTEM

Fit distribution cabinet in wall, cut-out to finish flush with the wall surface, or surface mounted. Configure installation to manufacturer instructions. Provide adequate user training and operating manual to the owner.

Security system

3.43 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.

Fire / acoustic

3.44 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.

3.45 PROVIDE CABLE SLEEVES

Provide PVC sleeves formed from pipe sections, unless fire and/or acoustic systems require sleeves for other building elements and/or different material for the sleeve.

3.46 INSTALL WALL BOXES AND SWITCH UNITS - FIRE RATED

Install proprietary fire rated wall boxes and switch units in accordance with manufacturer instructions.

Completion & Commissioning

3.47 WARNING SIGNS - RECESSED LUMINAIRES

Where recessed luminaires are installed in an accessible roof space, install warning sign to AS/NZS 3000 requirements.

3.48 COMPLETION MATTERS

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

3.49 COMPLETION - TESTS & CERTIFICATION

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

Testing:	To Electricity (Safety) Regulations 2010 and AS/NZS 3000, 8.3 testing
Certificate of Compliance:	To Electricity (Safety) Regulations 2010; Verification Records to AS/NZS 3000, clause 8.4 - to be available at or on main switchboard
Submit results to:	~

3.50 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

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4 SELECTIONS

Materials

4.1 METER BOX

Location:	Refer to electrical engineer's documentation
Brand / type:	Refer to electrical engineer's documentation
IP and IK rating:	Refer to electrical engineer's documentation

4.2 SWITCHBOARD

Location:	Refer to electrical engineer's documentation
Brand / type:	Refer to electrical engineer's documentation
Components:	Refer to electrical engineer's documentation

4.3 FIRE & SMOKE ALARM SYSTEM

Refer to appropriate fire and smoke alarm section:

Refer to fire engineer's specificaiton

4.4 ELECTRICAL AUTOMATION SYSTEM

Location:	Refer to electrical engineer's documentation
Brand / type:	Refer to electrical engineer's documentation

4.5 SECURITY SYSTEM

Location	Brand / type	Detector
Refer to electrical engineer's documentation	Refer to electrical engineer's documentation	Refer to electrical engineer's documentation

Electrical outlets, fittings & fixtures

4.6 SWITCHES & SOCKET-OUTLETS - INTERIOR

Item	Height to centre of unit	Orientation	Location
Switch	1000mm above FFL	vertical	Refer to drawings
Switch narrow	1000mm above FFL	vertical	Refer to drawings
Socket outlet	400mm above FFL	horizontal	Refer to drawings
Socket outlet	150mm above bench top	horizontal	Refer to drawings

Location:	Refer to drawings
Switch / socket outlet type:	~
Coverplate colour:	~
Switch module colour:	~

Item	Brand / type	Location:
Light dimmers:	~	~
Timer switch:	~	~
Push button switch:	~	~
Symbol switch:	~	~
PIR sensor switch:	~	~
Toggle switch:	~	~
Shaver outlet:	~	~
IP rated:	~	~

Item - RCD	Brand / type	Location:
Socket outlet:	~	~

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Shaver outlet:	~	~
Safety switch:	~	~

4.7 SWITCHES AND SOCKET-OUTLETS - EXTERIOR

Location: Refer to drawings
Height (centre of unit) ~
Type/Brand/IP Rating: ~ / IP~
Colour: ~

4.8 LIGHT FITTINGS - INTERIOR

Location: Refer to drawings
Type/Brand: ~
Controls: ~

4.9 LIGHT FITTINGS - EXTERIOR

Location: refer to drawings
Type/Brand/IP rating: ~ / IP~
Controls: ~

4.10 HEATING SYSTEM

Location: ~
Brand / type: ~

4.11 ELECTRICAL APPLIANCES

Item	Brand / type
~	~
~	~

4.12 MISCELLANEOUS ELECTRICAL ITEMS

Item	Brand / type
~	~
~	~

4.13 OWNER SUPPLY ITEMS

Item	Brand / type
~	~

Fire / acoustic accessories

4.14 FIRE / ACOUSTIC RATED SEALERS AND LINERS

Refer to appropriate fire stopping section for selections.

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8432BF BOUNDARYLINE FENCING & GATES

1 GENERAL

This section relates to the supply and installation of Boundaryline metal fencing and gates.

1.1 RELATED WORK

Refer to Structural Engineers documents for retaining wall design.

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:

CLT	Cross laminated timber

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	Structure
NZBC F4/AS1	Safety from falling
NZBC F9/AS1	Residential pool barriers

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Boundaryline The Fence Book - Brochure

Boundaryline Pool Fence Book - Brochure
Boundaryline Warranty and Maintenance
Boundaryline Install Guides
Boundaryline DuraPanel Adjustable Gates - Installation Guide
Boundaryline PicketPanel Adjustable Gates - Installation Guide
Boundaryline Acoustic Report SmartWall (13 May 2019)
Boundaryline DuraPanel PS1 25072061-06C (04/09/2025), expires 04/09/2026
Boundaryline DuraPanel Titan PS1 25072061-01B (04/09/2025), expires 04/09/2026
Boundaryline DuraPanel Delta 35 PS1 25072061-07C (04/09/2025), expires 04/09/2026
Boundaryline SentryPanel PS1 25072061-04C (04/09/2025), expires 04/09/2026
Boundaryline SmartWall PS1 25072061-02C (04/09/2025), expires 04/09/2026
Boundaryline SleekWall PS1 25072061-03D (21/11/2025), expires 04/09/2026
Boundaryline ColourPanel PS125072061-08C (04/09/2025), expires 04/09/2026
Boundaryline PicketPanel PS1 25072061-05B (04/09/2025), expires 04/09/2026

Manufacturer/supplier contact details

Company:	Boundaryline Ltd
Web:	www.boundaryline.co.nz
Email:	technical@boundaryline.co.nz
Telephone:	0800 003 006

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years	For DuraPanel (≥0.5km from ocean & ≥1.5m from salt water pools)

- 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

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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.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

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

Provide this information prior to practical completion.

1.9 INSPECTIONS

Type:	Notification point
Requirement:	As required for QLDC site inspections / structural engineer's inspections
Location:	On-site
Notify:	Contract administrator
Notification:	2 working days prior to work/item being carried out.

1.10 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

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

Compliance information

1.11 COMPLIANCE - PRODUCER STATEMENT DESIGN 25072061-06C

Producer Statement - PS1 Design 25072061-06C issued by Brevity Ltd dated 04/09/2025 states the structural and seismic design of Boundaryline DuraPanel has been carried out in accordance with NZBC B1/VM1, NZBC F4/AS1 and NZBC F9/AS1 for part only, as specified in the Schedule, of the proposed building work.

Subject to:

- Design to be in accordance with the structural report & installation details
- Site verification of the design assumptions
- All proprietary products meeting their performance specification requirements

Available PS1 covers Boundaryline DuraPanel Eco, Delta, Vecta, Polo and Axis.

2 PRODUCTS

Fence panels

2.1 DURAPANEL FENCE PANEL

Pre-fabricated powder coated 6063T5 aluminium fence panel with skinny hollow section horizontal rails and vertical bars with wide anti-climb gap. Available in a range of sizes and designs. Supplied with powder coated aluminium brackets including fixings. Refer to SELECTIONS.

Gate panels

2.2 DURAPANEL GATE PANEL

Powder coated 6063T5 aluminium gate panel with hollow section horizontal rails and widely spaced vertical bars. Available in a range of sizes and designs, pre-fabricated or pre-assembled (adjustable). Refer to SELECTIONS.

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Posts

2.3 POSTS

Boundaryline posts, available in powder coated 6063T5 aluminium, powder coated G350 steel and roll formed C-section Colorbond steel, in a range of sizes for in-ground, side-fix and top-fix application. Supplied with post caps. Refer to SELECTIONS.

Components

2.4 GATE HARDWARE & FURNITURE

Boudaryline gate hardware and furniture e.g. hinges, sockets, drop bolts, wheels, tracks, catches and the like. Supplied as required.

2.5 CONCRETE

Concrete to NZS 3104 for cast-in post footings, minimum compressive strength of 17.5 MPa.

2.6 POST FIXINGS

Post fixings for top-fix and side-fix application to concrete, masonry and timber structures. 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

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Installation in accordance with the Boundaryline Installation Guides and the project documentation.

3.6 SETOUT

Property boundaries are to be defined by legal survey pegs. Check location of underground services prior to digging. Measure out fence line using string line or laser level, and mark post centres. If the length of the fence line does not work out as multiples of the standard panel length, adjust the length of the last section, or the last few sections to suit and cut fence panels to fit. Any cut edges of steel or aluminium must be coated with zinc rich paint.

3.7 INSTALL POSTS - CAST IN-GROUND

Excavate post footings to the required diameter and depth. If required for fence style, screw posts together. Set posts in concrete, plumb and true to line. Fill the hole with concrete, sloping the top of the concrete to ensure water drains away from the post.

3.8 INSTALL POSTS - SIDE-FIX & TOP-FIX

Fix post in place using the required fixings.

3.9 INSTALL FENCE PANELS

For sloping or curved fencelines, panels are to be installed along with each post and braced until the concrete has set. For straight and level fencelines, install panels after posts are installed and concrete footings have set. Fit the panel in place ensuring it is level and fix to posts with supplied brackets and fixings.

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3.10 INSTALL GATES

Install gates straight and level using the supplied hardware, connectors and fixings. Leave work with all moving parts and actions to be operating freely and easily.

Completion & Commissioning

3.11 COMPLETION MATTERS

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

4 SELECTIONS

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

DuraPanel fence panels

4.1 BOUNDARYLINE FENCE PANEL - DURAPANEL AXIS

Location:	Refer to drawings - confirm all locations with Principal on site
Brand:	Boundaryline
Product:	Fence panel
Range:	DuraPanel Axis
Panel size:	2250mm long x 1200mm high
Rail size:	25x25mm
Bar size:	50x25mm
Gap:	95mm
Colour:	Black - confirm with Principal before proceeding

4.2 BOUNDARYLINE BIN STORE - DURAPANEL - AXIS 1200

Location:	Refer to drawings - confirm all locations with Principal on site
Brand:	Boundaryline
Material:	Aluminium
Product:	Bin store: free-standing
Range:	DuraPanel Axis
Panel height:	1200mm high
Panel length:	Refer manufacturer
Rail size:	25x25mm
Post size:	50x50mm
Picket size:	50x25mm verticals
Gap:	40mm
Powdercoat colour:	Black - confirm with Principal before proceeding

DuraPanel gate panels

4.3 BOUNDARYLINE GATE PANEL - DURAPANEL AXIS

Location:	Refer to drawings & in accordance with Fire Engineer's Specification
Brand:	Boundaryline
Product:	Gate panel
Range:	DuraPanel Axis
Type:	Pedestrian / Pre-fabricated
Panel height:	1200mm
Panel width:	950mm - confirm with Fire Engineer before proceeding
Rail size:	25x25mm
Stile size:	50x25mm
Bar size:	50x25mm
Operation:	Manual
Colour:	Black - confirm with Principal before proceeding

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Posts

4.4 BOUNDARYLINE STEEL HOLLOW SECTION POSTS

Location:	To suit application
Brand:	Boundaryline
Product:	Post
Type:	Steel hollow section
Size:	50x25mm - For fence: DuraPanel Axis
Application:	To suit application
Structure:	Masonry wall / timber decking / timber retaining wall / concrete slab/kerb
Fixings:	To suit application
Colour:	To match fencing

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