Queenstown House Lakeside Renovation

BUILDING CONSENT ISSUE - SEPT 2026

6 Lake Esplanade , Queenstown, New Zealand
Project Ref: 10266
Date: 25 September 2026



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

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1013 DOCUMENT CONTROL

1 DOCUMENT CONTROL

Document Control

1.1 PREPARED BY

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1.2 DOCUMENT DETAILS

Project Name:	Queenstown House Lakeside
Project Number:	10266
Client:	Southern Treasure Partnership Ltd

1.3 REVISION CONTROL

Issue:	BUILDING CONSENT ISSUE
Revision:	B
Amendment Details:	Updated NZBC & Technical Documents that have been revised since last issue
Issued to:	Paul Mabee
Date of Issue:	03.09.2026
Reviewed by:	WM
Approved by:	WM

1.4 REVISION CONTROL

Issue:	BUILDING CONSENT ISSUE (not submitted)
Revision:	A
Amendment Details:	
Issued to:	Paul Mabee
Date of Issue:	19.06.2024
Reviewed by:	WM
Approved by:	WM

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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

Renovation & extension to the penthouse apartment at Queenstown House Lakeside. Work includes extending the upper level - new external walls, roof and glazing. Minor extension to the penthouse lower floor (existing garage / entry area), - new external walls and glazing. Reconfiguration, recladding and reroofing to the penthouse mid floor. There are 2x bathroom renovations / reconfigurations. A renovation and extensions to the main ensuite and relocation and upgrade to the upper bathroom.

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.

Refer to Safety in Design report in Supporting Documents

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

Principal's Health & Safety Matters

1.6 PRINCIPAL'S KNOWN SITE HAZARDS

Site hazards known to the principal are:

Client to advise

Site

1.7 SITE

The site consists of: Penthouse Apartment at 6 Lake Esplanade
As shown on drawing: Location Plan (A0.01)

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1.8 LEGAL DESCRIPTION

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

1.9 EXISTING BUILDINGS

Existing buildings consist of: 1

Refer drawing(s): Demolition Plan (A1.01) for partial plan of affected works

1.10 SITE FEATURES

Refer to enclosed Site plan

Site environment - Durability

1.11 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

Site environment - Wind

1.12 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 Very High (refer to NZS 3604, table 5.4)

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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
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

Initial issue:	Digital
Revisions:	Digital

2.2 DOCUMENT RECEIPT - HARD COPIES

Hard copies of plans, specifications and other documents issued for construction can be issued on request.

2.3 DOCUMENT RECEIPT - ELECTRONIC DOCUMENTS

Electronic documents issued for construction shall be issued via file transfer.

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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.

2 SELECTIONS

2.1 SHOP DRAWING FORMAT

Submit the shop drawings in the following format

	Format/Size
Electronic copy	PDF
CAD file	DWG



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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:

4554 Skylights

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 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.

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.

Weathertightness and watertightness warranty

2.3 WEATHERTIGHTNESS AND WATERTIGHTNESS WARRANTY

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

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

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

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1237S1 SCHEDULE OF WARRANTIES

1 GENERAL

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

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

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

Warranties

1.2 WARRANTIES

Refer to the following sections:

4161PC	Pro Clima Wall and Roof Underlays, Tapes & Accessories
4161T	Kingspan Thermakraft Underlays, Foils, DPC, DPM, & Tapes
4231HI	James Hardie External Fire & Acoustic Wall Systems
4239JH	James Hardie® Soffits
4241M	Metalcraft Roofing Profiled Cladding
4311D	Dimond Profiled Metal Roofing
4421N	Nuraply 3PM Membrane Roofing & Decking
4554	Skylights
4610VR	Viridian Glass Residential Glazing
4711	Thermal Insulation
4711T	Terra Lana Natural Wool Insulation
4811S	Sika Sealants
5111H	James Hardie® Fibre Cement Sheet Linings
5231C	CS For Doors
5313KL	Rondo Systems - Plasterboard & Sheet Ceilings
6211MW	Mapei Wall Tiling
6221M	Mapei Floor Tiling Solutions
6221M	Mapei Tiling Solutions
6511	Carpeting
7123	Hot & Cold Water System
7411	Rainwater Spouting Systems
7421AI	Allproof Interior Floor Waste Systems
7451AL	Allproof Level Threshold Drainage Systems
7701	Electrical Basic
7817	Communications Cabling Residential

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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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 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:

- Location of isolating switches for electrical appliances including electric under floor heating.

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.
- Tile type and supplier details.
- Aluminium joinery system and finish.

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- 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.

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.

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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.

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
4239JH	James Hardie® Soffits
5231C	CS For Doors
7123	Hot & Cold Water System

Operation and maintenance manuals

1.3 OPERATION AND MAINTENANCE MANUALS

Refer to the following sections:

7421	Sanitary Systems

Maintenance contract proposals

1.4 MAINTENANCE CONTRACT PROPOSALS

There are no work section requirements.

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

Confirm locations of all on site services as indicated on site plan.

Site preparation

1.5 WORKING AREA

Generally contained to building platform and immediate area.

1.6 SITE AND SOIL SURVEYS

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

1.7 ALTERATIONS

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

Temporary construction

1.8 TEMPORARY BUILDINGS

No temporary buildings are required. Engage with building manager for designated areas for workers, material storage etc.

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. 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 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.

1.2 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.

Traffic control and signage

1.3 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.

1.4 CONES AND BARRIERS

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

Deliveries

1.5 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

1.6 PARKING

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

Completion

1.7 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.

1.8 REMOVE TEMPORARY HARD STANDING

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

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2 SELECTIONS

2.1 SITE ACCESS

Access to the site is limited. Discuss and agree site access with building manager.

2.2 SITE EGRESS

Egress from the site is limited. Discuss and agree site access with building manager.

2.3 TIME FOR ACCESS AND EGRESS

Site access and egress is allowed between the following times.

Times:	To be agreed with building manager. No restrictions outside of TA regulations.

2.4 GOODS DELIVERY AREA

Designated delivery area:	To be designated by Contractor and approved by building manager.

2.5 PARKING

On site parking is limited to the following areas.

Location:	To be designated by Contractor and approved by building manager.

2.6 PARKING RESTRICTIONS

Parking is not allowed in the following areas.

Location:	To be designated by Contractor and approved by building manager.

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1250 TEMPORARY WORKS & SERVICES

1 GENERAL

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

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

Temporary works

1.1 COSTS RELATING TO TEMPORARY WORKS

Pay all rates/fees in respect of temporary works.

1.2 MAINTENANCE OF TEMPORARY WORKS

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

1.3 SAFEGUARD THE SITE, THE WORKS AND MATERIALS

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

1.4 SITE FENCING

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

Construct the fence with:

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

1.5 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.

1.6 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.



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- Slab watering etc.
- Water cleaning of new concrete elements, fresh used formwork etc.

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.

1.7 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

1.8 SCAFFOLDING

Provide scaffolding for the efficient execution of the works.

Comply with:

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

Temporary services

1.9 PROTECT EXISTING BUILDINGS

Protect existing buildings and other designated features which are to remain in position during the execution of the works.

Care and protection - Site

1.10 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.

1.11 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.

1.12 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.

1.13 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.

1.14 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

1.15 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.

1.16 SPECIAL PROTECTION GENERAL

Refer to individual work sections for any special protection requirements.

Care and protection - miscellaneous

1.17 CONSTRUCTION KEYING AND SECURITY

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

1.18 TEMPORARY STORAGE

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

Rubbish removal

1.19 PERIODIC RUBBISH REMOVAL

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



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1256 WASTE MANAGEMENT

1 GENERAL

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

- **Part REBRI requirements**

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:

REBRI	Resource Efficiency in the Building and Related Industries

1.2 DOCUMENTS

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

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

REBRI contact details

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

Special requirements

1.3 SPECIAL REQUIREMENTS - GENERALLY

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

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

Requirements - part REBRI

1.4 SITE COORDINATOR

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

1.5 WASTE MANAGEMENT PLAN

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

The submitted plan to include the following factors:

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

1.6 REPORTING

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

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

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Requirements - General

1.7 ENSURE

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

2 PRODUCTS

Equipment

2.1 CONTAINERS

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

3 EXECUTION

Conditions

3.1 STORAGE

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

3.2 PLANNING

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

Statutory requirements

3.3 HAZARDOUS WASTE

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

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



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4 APPLICATION

4.1 CONCRETE

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

4.2 WOOD

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

4.3 PLASTERBOARD

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

4.4 PLUMBING

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

4.5 ELECTRICAL

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

4.6 MECHANICAL

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

Completion

4.7 CLEANING

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



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1260 PROJECT MANAGEMENT

1 GENERAL

This general section relates to project management requirements including:

- Meetings
- Reporting
- Cost control
- Communicating and records
- Programming
- Working hours
- Health and safety

Site Meetings

1.1 PURPOSE OF SITE MEETINGS

The purpose of site meetings is to:

- Ensure that the Contractor has all information required to construct the work
- To address and clarify aspects of construction of the work including quality
- To address issues relating to project delivery including, site progress and cost.

1.2 SITE MEETING ATTENDANCE

The following persons to attend:

- Principal
- Architect
- Contractor
- Engineer when needed
- Subcontractors when needed (contractor to inform them)

1.3 REPORTING

The following reports are required to be presented at site meetings:

Contractor:	A detailed status report

1.4 SITE MEETING MINUTES

The contract administrator is to keep full minutes of all site meetings and arrange distribution to all those involved within 3 working days.

The minutes are to record

- Documentation and information issued and required
- Directions and variations issued
- Confirmation of contract insurances
- Programme items
- General business
- Site health and safety
- Payment claim processing including costing variations

Cost control

1.5 MEASUREMENT

Give reasonable notice to the contract administrator before covering up work which requires to be measured.

Communicating and records

1.6 MEANS OF COMMUNICATION

Communications between the parties shall be as follows: -

Directions:	Email / file transfer
Meeting minutes:	Email
RFI's:	Electronically / email

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1.7 DELIVERY OF COMMUNICATIONS

Deliver communications to the addresses listed in the contract agreement by means as allowed.

Where such addresses are not included in the contract agreement:

- deliver to the addressee by hand; or
- send by email to the email address stated in the Project Directory; or
- where agreed, deliver via a file hosting service or an electronic project management system.

1.8 SERVICE OF NOTICES

Serve notices to the addresses listed in the contract agreement by means as allowed.

1.9 CHANGE OF ADDRESS

The principal, contractor and the contract administrator must notify the others if they change their address for delivery or transmission of communications.

1.10 RECORDS

Ensure all records specified are kept, held and collated on site in a form that makes the information easily accessible when it is needed. Distribute copies as and when necessary to those persons entitled under the contract to that information.

1.11 PROGRESS PHOTOGRAPHS

Take digital photographs recording progress. Refer to SELECTIONS.

Programming

1.12 PROGRAMME

Include the proposed sequence of all significant on-site and off-site activities, including any intermediate key dates mentioned in the contract. Identify the critical path. Provide a tabulated schedule of information for each activity in order of:

- brief description
- duration in suitable time unit
- earliest start and latest finish time
- total float
- key dates for the supply of information or materials by others.

Identify the dates by which particular information, material or plant need to be supplied or arranged by the contract administrator. Also identify any constraints which may have been imposed by the programme.

Supply copies of the programme to the following:
Contract administrator 1

Monitor the programme by:

- recording progress regularly on the site chart
- informing the contract administrator promptly of any circumstances affecting any part of the programme structure and timing
- reviewing the programme once a month making alterations as needed and agreed to and re-issuing the required copies.

Working hours

1.13 WORKING HOURS RESTRICTIONS

Working hours are to be agreed with building manager as well as that described below:

Comply with territorial authority consent conditions and noise and nuisance controls.

Work outside these hours is only permitted with the contract administrators consent. Allow a minimum of 24 hours notice (in writing) when seeking the contract administrators consent. If the contract administrator consent is given obtain any required permits and permission for such work.

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Health and safety

1.14 HEALTH AND SAFETY LEGISLATION

Refer to the requirements of the Health and Safety at Work Act 2015. Comply also with all other relevant New Zealand safety legislation.

The Contractor will ensure, so far as is reasonably practicable, that, each subcontractor they engage and each separate contractor is aware of and complies with its obligations under health and safety-related law.

For the purpose of health and safety-related law, the contract administrator and others involved in contract administration and observation and construction monitoring will not at any time have management or control of the Workplace.

1.15 HEALTH AND SAFETY REGULATIONS, CODES AND GUIDES

Comply with:

- Relevant New Zealand safety legislation including, Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, also Health and Safety in Employment Regulations 1995 as amended by that Regulation and the appropriate Health and Safety at Work Regulations.
- WorkSafe publications including "Guidelines for the provision of facilities for general safety in the construction industry".
- Relevant codes of practice, guides, guidelines and standards.

Until further regulations are made under the Health and Safety at Work Act 2015 to cover them, the transitional provisions of the Act continue in force until revoked or amended.

1.16 HEALTH AND SAFETY IMPLEMENTATION

Take all practical steps to make the site and the contract works safe and to provide and maintain a safe working environment. Ensure that all those working on or visiting the site are aware of the rules governing site safety, are properly supervised and are not unnecessarily exposed to hazards and risks.

Co-operate, consult and co-ordinate health and safety matters with each PCBU including all subcontractors, suppliers, separate contractors, others engaged on the project and others who may be affected by the construction of the works.

Identify any significant hazards and risks.

Maintain proper procedures for dealing with any emergencies that may arise. Immediately investigate accidents, identify their cause and maintain a register of accidents and serious harm. Provide a copy of any report which the contractor is required to make to a public authority on any accident which is associated with carrying out the contract works and results in serious harm to any person.

Refer to individual work sections for detailed requirements on this project.

1.17 SUSPENSION OF HAZARDOUS WORK

On the request of the contract administrator, acting on reasonable grounds, suspend any identified hazardous activities and proceed to eliminate, isolate or minimise them in order to comply with the Act, without prejudice to any other rights of the principal under the contract.

1.18 SITE SAFETY PERSON

Appoint a suitably qualified site safety person to co-ordinate site safety and to attend all site meetings.

1.19 HEALTH AND SAFETY PLAN

Prepare and submit a health and safety plan to the contract administrator before commencing work on site. Include in that plan all people on site and the general public, as well as the following items and any other necessary items:

- identification of existing and potential construction hazards and risks
- Any design construction safety matters identified in section 1220 PROJECT and/or any

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separate project design construction safety report.
- safety procedures to eliminate, isolate or minimise construction hazards and risks
- the equipment to be used to minimise the hazards and risks
- the maintenance of a register of hazards and risks for the site
- the name and qualifications of the site safety person
- emergency procedures
- first aid facilities and safety equipment
- the methodology for notifying, recording and investigating accidents and injuries.

Advise the contract administrator of unusual or atypical features in the Plan in addition to any features already identified in section 1220 PROJECT and/or any separate project design construction safety report. Keep a copy of the plan in the site office.

1.20 MAINTAIN HEALTH AND SAFETY PLAN

Maintain health and safety plan and alter to accommodate changing situations and /or substitutions. Advise contract administrator of changes.

1.21 COMPLY WITH SITE SAFETY PLAN

Carry out all construction operations in accordance with the submitted health and safety plan.

1.22 INFORM WORKERS OF HAZARDS AND RISKS

Inform workers and others on the site of:

- hazards and risks they may be exposed to while working or other legitimate activities
- hazards and risks they may create while working which could harm others
- how these hazards and risks may be minimised
- emergency procedures
- the location of first aid facilities and safety equipment.

1.23 EXPLOSIVES

Do not use explosives except with the written approval of the territorial authority/WorkSafe. Comply with their safety requirements and use construction blasters holding a current, appropriate Approved Handler Certificate and Controlled Substance Licence issued by WorkSafe, to the Health and Safety at Work (Hazardous Substances) Regulations.

1.24 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.

2 SELECTIONS

Meetings

2.1 SITE MEETINGS

Frequency:	As required by Contractor / Client, suggested fortnightly
Start date:	TBC
Venue:	Site
Convener:	Contract administrator

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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:

Agree with building manager and Queenstown House operational requirements.

1.12 INCONVENIENCE TO OTHERS

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

1.13 ROADWAY AND FOOTPATH

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

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1.14 VEHICLE CROSSING

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

1.15 TRAFFIC SAFETY

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

1.16 DIRT AND DROPPINGS

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

1.17 DAMAGE AND NUISANCE

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

1.18 SMOKE FREE REQUIREMENTS

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

1.19 RESTRICTIONS

Do not:

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

Set-out and tolerances

1.20 SURVEY INFORMATION

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

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

1.21 DATUM

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

1.22 SET-OUT

Set out the work to conform with the drawings.

1.23 CONFIRM HEIGHT IN RELATION TO BOUNDARY

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

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

1.24 USE OF SET-OUT INSTRUMENTS

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

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:

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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.

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.

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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.

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.

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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.

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.

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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.

Spares & maintenance products

1.57 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

1.58 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.

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1.59 TRADE CLEANING

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

Remove protection

1.60 REMOVE PROTECTION

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

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

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

Refer to individual work sections for any special removal requirements.

Completion

1.61 SPECIAL REQUIREMENTS

Refer to individual work sections for any special completion requirements.

1.62 LEAVE WORK

Leave work to the standard required for the following procedures.

1.63 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.

1.64 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.

1.65 COMPLETE ALL SERVICES

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

1.66 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.

1.67 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.

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- 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

1.68 SPECIAL REQUIREMENTS

Refer to individual work sections for any special commissioning requirements.

1.69 MOVING PARTS

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

1.70 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.

1.71 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.

1.72 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

1.73 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.

Defects period submissions

1.74 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.

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Completion submissions

1.75 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

Refer to the following sections:

6221M Mapei Tiling Solutions

1.3 SAMPLES - ADDITIONAL ITEMS

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

Prototypes

1.4 PROTOTYPES - REVIEW

There are no work section requirements.

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.



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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:

6221M	Mapei Floor Tiling Solutions
8222	Chip Seal & Asphaltic Paving

1.5 SLIP RESISTANCE - PREVIOUSLY TESTED SURFACE

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

6221M	Mapei Floor Tiling Solutions
6221M	Mapei Tiling Solutions

Slip resistance - surfaces requiring testing

1.6 SLIP RESISTANCE - SURFACES REQUIRING TESTING

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

6221M	Mapei Floor Tiling Solutions

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1.7 TEST METHODS & MINIMUM TEST VALUES

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

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

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°

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0.504	1 in 12	4.76°
0.521	1 in 11	5.5°
0.525	1 in 10	5.7°
0.543	1 in 9	6.5°
0.557	1 in 8	7.125°

1.8 GENERAL REPORTING REQUIREMENTS

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

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

Slip resistance - additional items

1.9 SLIP RESISTANCE - ADDITIONAL ITEMS

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



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2112 PARTIAL DEMOLITION

1 GENERAL

This section relates to the partial demolition of existing buildings and structures, to the extent necessary to carry out the contract works.

1.1 RELATED WORK

Refer to1256 WASTE MANAGEMENT for recycling or controlled waste disposal.

Refer to 2133 TEMPORARY SUPPORT TO EXISTING STRUCTURES for lifting and temporary support of existing structures
Refer to 2123 ASBESTOS REMOVAL for asbestos removal

Documents

1.2 DOCUMENTS REFERRED TO

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

NZBC F5/AS1	Construction and demolition hazards
NZDAA	Best practice guidelines for demolition in New Zealand
Health and Safety at Work Act 2015	

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

Requirements

1.3 QUALIFICATIONS

Carry out demolition

- only under the supervision of a suitably experienced person, using only operators and drivers trained for this work
- using only experienced certified/licensed construction blasters for explosives demolition
- calling upon engineering expertise in those areas of demolition required by the NZDAA Best practice guidelines for demolition in New Zealand.

1.4 HEALTH AND SAFETY

Comply with the Health and Safety at Work Act 2015 in general, NZBC F5/AS1 and NZDAA Best practice guidelines for demolition in New Zealand, Section 5 Demolition safety

1.5 HOT WORK - FIRE SAFETY

Refer to section 1270 CONSTRUCTION

1.6 FIRE SAFETY SYSTEMS

Existing fire safety systems must be maintained and appropriate parts progressively deactivated and removed as demolition advances.

1.7 DEMOLITION TIME RESTRICTIONS

Times during which demolition work may be carried out is restricted. Refer to 4. SELECTIONS for times.

2 PRODUCTS

Materials

2.1 ELEMENTS FOR SALVAGE

Carefully dismantle, remove and store on site where directed. Protect from damage and weather.

2.2 ELEMENTS FOR RE-USE

Carefully dismantle, remove and store on site where directed. Protect from damage and weather until required.

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2.3 REMAINING ELEMENTS

Store all elements not scheduled for salvage or re-use on site until convenient for removal.

2.4 MATERIAL AND ELEMENTS FOR DISPOSAL

Remove demolished material and elements continually from the site through the period of the demolition.

3 EXECUTION

Conditions

3.1 EXISTING SERVICES

Disconnect and seal off services before work commences. Protect services adjacent to the area being demolished.

Maintain services to occupied areas of the building, particularly fire services.

3.2 SITE INSPECTION

Visit and check the site, the building or structural work being demolished and any contents for likely hazards.

3.3 ADJOINING BUILDINGS

Check the relationship and condition, including the contents of adjacent areas and adjoining buildings to ensure they will not be adversely affected by the demolition work.

3.4 PLANS AND DESCRIPTIONS

Carefully examine all available plans of the building, including those of the territorial authority and the network utility operators, all descriptions and past uses, and become totally familiar with the past and present condition and use of the building and its services.

3.5 EXAMINE STRUCTURE

Examine roofs, walls, cantilevered structures and basements as required by the NZDAA Best practice guidelines for demolition in New Zealand and follow their requirements.

3.6 EXPOSED WALLS, ADJOINING BUILDINGS

Protect and make weathertight temporarily with 0.125mm black polythene film. Lap and tape joints to the manufacturer's requirements and nail or masonry nail to the wall face with 50mm x 25mm timber battens at 600mm centres.

3.7 PROTECTION

Erect approved temporary screens and shelter to protect from weather and damage, and to prevent dust and dirt penetrating those parts of the existing building, other buildings and the remainder of the site being retained in their present condition.

3.8 SAFETY DURING DEMOLITION

Refer to NZBC F5/AS1 and NZDAA Best practice guidelines for demolition in New Zealand. Carry out the requirements laid down in Section 5 Demolition safety in respect of:

- instability
- supervision
- plant, tools and equipment
- personal protective equipment
- protection of the public
- unauthorised access to site.

3.9 DEMOLITION PROCEDURES

Refer to the NZDAA Best practice guidelines for demolition in New Zealand Carry out the requirements laid down in section 6 Methods of demolition including:

- scaffolding
- health
- disposal of debris and waste material
- fire protection.

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Application

3.10 CARRY OUT DEMOLITION

Carry out all demolition to the requirements of NZDAA Best practice guidelines for demolition in New Zealand.

Completion

3.11 MAKE GOOD

Make good damage to adjoining buildings or property caused by demolition work.

3.12 REINSTATE

Reinstate where any damage is caused by this demolition to those parts of the existing building, other buildings and the remainder of the site being retained.

3.13 LEAVE

Leave work to the standard required by following procedures.

3.14 TAKE AWAY

Take away from the site all plant, tools and equipment, temporary access works, and demolished materials and elements, to leave the site completely clean and tidy.

4 SELECTIONS

4.1 DEMOLITION TIME RESTRICTIONS

Demolition work is restricted to:
In agreement with building manager and contractor and to comply with local authority requirements.

4.2 PROTECTION SCREENS

Provide the following protection screens to NZBC F5/AS1 to separate off and protect unaffected parts of the building:
Protect areas within Penthouse Apartment where no work is being undertaken.

4.3 ELEMENTS FOR SPECIAL PROTECTION

Element	Location/Special protection required
to be agreed with client/ Building Manager	TBC

4.4 ELEMENTS FOR DEMOLITION AND DISPOSAL

Element/component	Location
to be agreed with client/ Building Manager	TBC

4.5 ELEMENTS FOR SALVAGE AND DELIVERY TO OWNER

Salvage the following elements and deliver to the owner.

Element/component	Location	Delivery requirements
to be agreed with client/ Building Manager	TBC	TBC

4.6 ELEMENTS FOR SALVAGE AND DISPOSAL BY CONTRACTOR

Salvage the following elements.

Element/component	Location	Disposal requirements
to be agreed with client/ Building Manager	TBC	TBC

4.7 ELEMENTS FOR RE-USE

Element/component	Location	Location for re-use
Bathroom fittings where possible		
Doors where suitable		

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2123 ASBESTOS REMOVAL

1 GENERAL

This section relates to the removal of asbestos prior to other demolition work, to the extent necessary to carry out the contract works.

1.1 RELATED WORK

Refer to 1256 WASTE MANAGEMENT for recycling or controlled waste disposal.

Refer to 2112 PARTIAL DEMOLITION for demolition.
Refer to 2133 TEMPORARY SUPPORT TO EXISTING STRUCTURES for lifting and temporary support of existing structures

1.2 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

ACD	Asbestos containing dust or debris (restricted by type of asbestos it comes from)
ACM	Asbestos containing material (usually asbestos bound into a composite material)

Documents

1.3 DOCUMENTS

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

NZBC F5/AS1	Construction and demolition hazards
WorkSafe	Management and Removal of Asbestos (Approved CoP)

Health and Safety at Work Act 2015
Health and Safety at Work (Asbestos) Regulations 2016

Requirements

1.4 QUALIFICATIONS

Removal organisation to be members of the NZDAA.

Carry out asbestos removal only under the supervision of a suitably experienced person, using only workers trained for this work.
Except for work that does not require a licence, workers shall hold an appropriate certificate and carry out the work under a PCBU with the appropriate licence for the class of work involved, to the Health and Safety at Work (Asbestos) Regulations 2016 and WorkSafe requirements.

1.5 NOTIFIABLE WORK

Appropriately notify the WorkSafe of licensed asbestos removal to the Health and Safety at Work (Asbestos) Regulations 2016, at least 5 days before starting the work.

1.6 HEALTH AND SAFETY

Comply with the Health and Safety at Work Act 2015 in general, NZBC F5/AS1, WorkSafe requirements including WorkSafe Management and Removal of Asbestos (Approved CoP), and Health and Safety at Work (Asbestos) Regulations 2016.

Holders of a Class A removal licence to have a certified safety management system (SMS) to WorkSafe requirements.

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2 PRODUCTS

2.1 EQUIPMENT

Protective clothing, respirators, vacuum cleaners, decontamination facilities, isolation facilities, etc as appropriate and as required by WorkSafe. Equipment shall be cleaned or disposed of to WorkSafe Management and Removal of Asbestos (Approved CoP).

2.2 ELEMENTS FOR RE-USE

Building elements that need to be temporarily removed to allow the removal of asbestos, dismantle carefully, remove, clean and store on site where directed. Protect from damage and weather until required.

3 EXECUTION

Conditions

3.1 SAFETY DURING ASBESTOS REMOVAL

Refer to NZBC F5/AS1, WorkSafe Management and Removal of Asbestos (Approved CoP). Carry out the requirements for safe removal of friable asbestos in respect of:

- instability
- supervision
- plant, tools and equipment
- personal protective equipment
- protection of the public
- unauthorised access to site.

Application

3.2 CARRY OUT ASBESTOS REMOVAL

Carry out asbestos removal to WorkSafe Management and Removal of Asbestos (Approved CoP).

Completion

3.3 MAKE GOOD

Make good damage caused by asbestos removal work.

3.4 REINSTATE

Reinstate where any damage is caused by this asbestos removal to those parts of the existing building, other buildings and the remainder of the site being retained.

3.5 LEAVE

Leave work to the standard required by following procedures.

3.6 DISPOSAL OF ASBESTOS

Store, label and dispose of asbestos to WorkSafe Management and Removal of Asbestos (Approved CoP).

3.7 TAKE AWAY

Take away from the site all plant, tools and equipment, temporary access works, and demolished materials and elements, to leave the site completely clean and tidy.

4 SELECTIONS

4.1 ASBESTOS TYPE FOR REMOVAL

Unknown if there is any asbestos in the proposed demolition works.
Recommend building owner engage independent asbestos consultant to investigate to determine prior to demolition work commencing.

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2133 TEMPORARY SUPPORT TO EXISTING STRUCTURES

1 GENERAL

This section relates to the temporary support of houses and similar existing structures during lifting for the construction of a new ground floor and for re-piling
It includes requirements for the management of adjacent site conditions

1.1 RELATED WORK

Refer to 2112 PARTIAL DEMOLITION for partial demolition of existing buildings and structures.

Documents

1.2 DOCUMENTS REFERRED TO

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

NZBC F5/AS1	Construction and demolition hazards
NZDAA	Best Practice Guidelines for Demolition in New Zealand
Worksafe	Good Practice Guidelines - Scaffolding in New Zealand

Health and Safety at Work Act 2015

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

Requirements

1.3 QUALIFICATIONS

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

1.4 DEMOLITION PLAN

Submit detailed written and/or drawn demolition and temporary support plan.

Quality control and assurance

1.5 INSPECTIONS

Inspect the area to be supported and confirm position for beams and pigsties to enable subsequent work to be carried out.

2 PRODUCTS

Materials

2.1 PIGSTIES

Timber bearers not less the 200mm x 100mm x 900mm in sound conditions with true faces to support the required loads.

2.2 ADJUSTABLE PROPS

Proprietary steel tube adjustable props. Ensure loadings are within Safe Working Limits (SWL) in accordance with the manufacturer's specifications and to the requirements of Worksafe, Good Practice Guidelines - Scaffolding in New Zealand, clause 13.4.

2.3 LIFTING JACKS AND BASEJACKS

Proprietary hydraulic and mechanical jacks. Ensure loadings are within Safe Working Limits (SWL) in accordance with the manufacturer's specifications and to the requirements of Worksafe, Good Practice Guidelines - Scaffolding in New Zealand clause 13.4.

2.4 HEADER BEAMS

That may be used include the following:

- Timber beams
- Rolled steel joists (RSJ)



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- Universal beams (UB)
- Composite beams
- Laminated beams
- Aluminium ‘A’ or ‘I’ beams with timber infill
- Steel soldier beams

Use in accordance with the manufacturer’s specifications and to the requirements of Worksafe, Good Practice Guidelines - Scaffolding in New Zealand, clause 13.4

3 EXECUTION

Conditions

3.1 SAFETY

All work to comply with WorkSafe requirements, NZBC F5/AS1 and Health and Safety at Work Act 2015.

3.2 CONFIRM SITE SECURITY

Check site security arrangements both at the perimeter of the site and immediately adjacent to the area in which the temporary support is being carried out

3.3 ADJOINING PROPERTY

Support and protect adjoining property. Survey adjoining properties and take all precautionary measures necessary to avoid damage or nuisance. Copy of the survey results to be sent to adjoining property owners.

3.4 SUPPORT

Support and brace the existing structure during the cutting of new openings or the replacement of structural parts. Prevent debris from overloading any part of the structure. Do not remove supports until the new work is strong enough to support the existing structure. Ensure all work remains structurally stable and sound.

3.5 CHECK MATERIAL SUPPLIES

Confirm sufficient materials are available to enable the work to be safely carried out. Check and confirm: -

- Timber for use as pigsties
- Support beams and bearers
- Adjustable props, rope and wedges
- Lifting jacks

3.6 PROHIBIT OPERATION OF HEAVY MACHINERY

Ensure that no heavy machinery is operating in the immediate vicinity of the building until the building has been safely placed on the temporary supports

Installation/application

3.7 LIFTING

Carry out lifting for either excavating under, or for relocation, to the general requirements of the NZDAA publication: Best Practice Guidelines for Demolition in New Zealand, Section 5.7 Temporary support for removal or excavation under, including the precautions required during jacking and pigsty construction.

3.8 DISCONNECT SERVICES

Disconnect all services necessary prior to lifting the building.

Re-direct roof water downpipes away from the work area.

3.9 CHECK GROUND CONDITIONS AT JACKING POINTS

Check ground conditions at each lifting point. Ensure ground is level, has suitable bearing capacity and is otherwise free of loose and unsuitable material

3.10 PLACE TEMPORARY BEAMS FOR JACKING

Place support beam and bearers in positions to adequately support the structure and to allow for required construction work below the supported structure.

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3.11 CONSTRUCT TEMPORARY SUPPORTS

Construct temporary supports progressively during lifting proceed so as to minimise damage from any premature collapse. Limit height of temporary supports to not more than 3 times the minimum base width. Ensure supports remain vertical and that the loads are supported evenly on them.

3.12 JACK BUILDING

Jack building evenly to WorkSafe requirements and build support structure progressively as the building is lifted

3.13 COMPLETE TEMPORARY SUPPORT

When the building is at the required height, construct temporary braces or inclined props to provide adequate support against wind and earthquake loads.

Completion

3.14 ROUTINE CLEANING

Clear our building debris and other material from the work area below the supported structure. Keep area clear of materials not required for subfloor work

3.15 CHECK SUPPORT STRUCTURE

Carry out daily check of the temporary support structure to ensure safe working conditions for both workers working below the supported structure and for any workers carrying out work above the supported area.

3.16 LOWER STRUCTURE ON TO NEW PERMANENT SUPPORT

Lower evenly on jacks progressively removing temporary supports, so as to minimise damage from any premature collapse

3.17 REMOVE TEMPORARY SUPPORTS

Once structure is on the permanent supports, fully supported, stable and secure, remove temporary supports and related items.

4 SELECTIONS



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3102 CONCRETE WORK - STANDARD

1 GENERAL

THIS SECTION HAS BEEN INCLUDED FOR REFERENCE TO CONCRETE FINISH ONLY. ALL CONCRETE WORKS SHOULD BE REFERED TO IN STRUCTURAL ENGINEERS SPECIFICATION.

1.1 RELATED WORK

Refer to STRUCTURAL ENGINEER.

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:

DPM	Damp proof membrane
MPa	Megapascal
CCANZ	Concrete NZ (Legacy Documents)

The following definitions apply specifically to this section:

ACRS	Australasian Certification Authority for Reinforcing and Structural Steels - An independent certification scheme for reinforcing steel and structural steel. Certifies compliance with Australia/New Zealand Standards. Web site - www.steelcertification.com
CNZ PAS:	Concrete New Zealand Plant Audit Scheme - an independent audit scheme for the production of concrete which certifies compliance with NZS 3104 Specification of Concrete Production. Web site: http://rmcplantaudit.org.nz

Documents

1.3 DOCUMENTS

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

NZBC B1/AS1	Structural provisions for buildings
NZBC E2/AS3	External moisture provisions for concrete and concrete masonry buildings
AS 1366.3	Rigid cellular plastics for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS - M)
AS 1478	Chemical admixtures for concrete, mortar and grout - Admixtures for concrete.
AS/NZS 2269.0	Plywood - Structural - Specifications
AS/NZS 3000	Electrical installations
NZS 3101.1	Concrete structures standard
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3121	Water and aggregate for concrete
NZS 3122	Specification for Portland and blended cements (General and special purpose)
NZS 3125	Specification for Portland-limestone filler cement
NZS 3604	Timber-framed buildings
NZS 3631	New Zealand timber grading rules
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4671	Steel reinforcing materials
AS/NZS 4672.1	Steel prestressing materials - General requirements

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Concrete NZ TR3 Alkali silica reaction

Requirements

1.4 QUALIFICATIONS

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

Performance

1.5 QUALITY ASSURANCE

Carry out the whole of this work to the requirements of NZS 3109.

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

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

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

2 PRODUCTS

Materials

2.1 CEMENT

General purpose Portland cement (Type GP) and general purpose blended cement (Type GB) to NZS 3122.

2.2 CEMENT, FILLER

Portland limestone filler cement to NZS 3125.

2.3 SAND

To NZS 3121 and NZS 3104 clause 2.5.4. The provisions of Concrete NZ TR3 apply when the sand is potentially reactive.

2.4 COARSE AGGREGATE, NORMAL CONCRETE

To NZS 3121, except as modified by NZS 3104: clause 2.5.3, Coarse aggregate. The provisions of Concrete NZ TR3 apply when the aggregate is potentially reactive.

2.5 WATER

To NZS 3121.

Concrete

2.6 NORMAL CONCRETE

Normal concrete 17.5, 20, 25 MPA up to 50 MPa grade, maximum aggregate size 37.5mm, ready-mixed to NZS 3104 section 2 Provisions for Ready-Mixed Concrete. Refer to SELECTIONS.

Formwork

2.7 RELEASE AGENT

A release agent that will not stain or adhere to the concrete, contaminate reinforcing steel or construction joints, or have a detrimental effect on any finished surface or applied finishes.

3 EXECUTION

REFER STRUCTURAL ENGINEER

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4 SELECTIONS

4.1 SURFACE FINISHES FLOOR SLABS

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

Finish class	Location
U3	All new concrete slabs. All concrete to have applied floor finishes over.

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 ~ for ~.

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:

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.

2 PRODUCTS

Materials

2.1 TIMBER FRAMING, TREATED

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

2.2 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.

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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 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"

2.6 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

Components

2.7 NAILS

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

2.8 SCREWS

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

2.9 BOLTS AND COACH SCREWS

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

2.10 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.

2.11 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.

2.12 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.

2.13 POWDER ACTUATED FASTENERS

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

2.14 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 PROTECT TIMBER

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

3.2 EXECUTION

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

3.3 SEPARATION

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

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

3.4 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

3.5 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 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.

3.7 SET TIMBERS

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

3.8 TIMBER CUTTING

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

3.9 TIMBER PLATES AND FURRING

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

3.10 HOLES AND NOTCHES

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

3.11 STRAIGHTENING STUDS

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

3.12 EXPOSED TIMBER CONNECTORS AND FIXINGS

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

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3.13 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.

3.14 ADDITIONAL FRAMING

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

3.15 FORM NAILED JOINTS

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

3.16 FORM BOLTED JOINTS

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

3.17 FIT CONNECTORS AND FIXINGS

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

3.18 FIT JAMB BATTENS

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

3.19 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.

3.20 FIT STRUCTURAL CAVITY BATTENS

Fit and fix 20mm cavity battens over wall underlay or rigid air barrier. Permanently fix battens onto the framing using 60mm x 2.8mm jolt head (60mm x 2.87mm power-driven) hot-dip galvanized nails, or 64mm x 2.8mm power driven stainless steel annular grooved nails at 300mm centres maximum up to Very High Wind Zone and 250mm centres maximum for Extra High Wind Zone, and staggered 12mm either side of the batten centreline, to BRANZ BU 673, part 6. 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



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4 SELECTIONS

4.1 EXTERIOR WALL FRAMING - RADIATA PINE

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

4.2 ROOF FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Rafters:	Radiata pine	SG8	H1.2
Trusses:	Radiata pine	SG8	H1.2
Purlins:	Radiata pine	SG8	H1.2
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

4.3 INTERIOR WALL FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Non structural walls:	Radiata pine	SG8	H1.2
Structural and braced walls:	Radiata pine	SG8	H1.2
Framing where fibre cement wall linings (tiled):	Radiata pine	SG8 @ 600crs	H1.2

4.4 CEILING FRAMING - RADIATA PINE

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

4.5 EXTERIOR EXPOSED TIMBER

Member	Species	Grade	Treatment
Posts:	Radiata pine	SG8	H3.2 CCA
Joists:	Radiata pine	SG8	H3.2 CCA
Ground contact members	Radiata pine	SG8	H5 CCA

Note: All CCA preservative code 01 or 02

4.6 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

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4161PC PRO CLIMA WALL AND ROOF UNDERLAYS, TAPES & ACCESSORIES

1 GENERAL

This section relates to the application of **Pro Clima NZ Limited** external wall and roof underlays, internal floor protection membranes, tapes and accessories.

1.1 RELATED WORK

Refer to 4171E ECOPLY BARRIER RIGID AIR BARRIER SYSTEM for rigid air barrier.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

NZMRM	New Zealand Metal Roofing Manufacturers Association Inc.
MVTR	Moisture vapour transmission resistance
TEEE	Thermoplastic Elastomer-Ether Ester
SIPs	Structural Insulated Panels

The following definitions apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
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 F2/AS1	Hazardous building materials
AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials
NZS 2295	Pliable, permeable building underlays
NZS 3604	Timber-framed buildings
AS/NZS 4200.1	Pliable building membranes and underlays - part 1: materials
AS/NZS 4389	Roof safety mesh
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice
CodeMark™ CMNZ30032 verH	SOLITEX EXTASANA Wall Underlay

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Pro Clima documents relating to work in this section are:

SOLITEX EXTASANA® Installation Guide
SOLITEX EXTASANA ADHERO® Mass Timber Application Guide
SOLITEX® ADHERO FC & SOLITEX EXTASANA ADHERO® Wall Application Guide Version 2.0 dated January 2026
SOLITEX EXTASANA ADHERO® Mass Timber Moisture Protection
SOLITEX MENTO® Application Guide 24.06.2025
BRANZ Appraisal 815 (2024) - TESCON EXTOSEAL Sill Tape
BRANZ Appraisal 838 (2024)- TESCON EXTORA Sealing Tape
BRANZ Appraisal 855 (2025)- SOLITEX MENTO 3000 Roof and Wall Underlay
BRANZ Appraisal 876 (2020) - SOLITEX MENTO 1000 Roofing Underlay
BRANZ Appraisal 953 (2024) - KAFLEX and ROFLEX Grommets

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BRANZ Appraisal 989 (2023) - SOLITEX EXTASANA ADHERO® Self-adhesive Underlay - Amendment 1
BRANZ Appraisal 1163 (2021) - SOLITEX EXTASANA® Wall Underlay
SOLITEX MENTO® 1000 CONNECT Roof Underlay Installation Guide
SOLITEX UM CONNECT Application Instructions
Specification Guidelines 30 January 2026
Early-Close-In with SOLITEX EXTASANA®
SOLITEX EXTASANA® Early Close-In Application Guide for Brick Cladding
SOLITEX EXTASANA® Early Close-In Application Guide for Horizontal Cladding
SOLITEX EXTASANA® Early Close-In Application Guide for Vertical Cladding

Manufacturer/supplier contact details

Company:	**Pro Clima NZ Limited**
Web:	www.proclima.co.nz
Email:	welcome@proclima.co.nz
Telephone:	0800 pro clima (776 254)

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	For Pro Clima system

- Provide this warranty on the Pro Clima standard form.
- Commence the warranty from the date of purchase of the product from the manufacturer.

Refer to the Pro Clima warranty agreement and the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer warranty:

2 years:	For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 NO SUBSTITUTIONS

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

1.8 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Installation to be carried out by or under the supervision of a Licensed Building Practitioner (LBP) with the relevant License Class.

Installers to be experienced in the installation of Pro Clima products and familiar with Pro Clima NZ Limited technical literature and the related documents listed in this design i.e. NZMRM CoP. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

2 PRODUCTS

Roofing underlays

2.1 ROOF UNDERLAY - LIGHT WEIGHT, TYPE R4, HIGH EXPOSURE (30 DAYS)

SOLITEX MENTO® 1000, consists of a waterproof, non-porous diffusion open membrane laminated to two layers of polypropylene fleece. Has a flammability Index of ≤ 5, when tested to AS 1530.2. Refer to BRANZ Appraisal 876 for details. Supplied in rolls 1.5m or 3m wide x 50m long. Self-supporting to 1200mm.

SOLITEX MENTO® 1000 must be covered and protected against weather or ultraviolet light within 30 days.

2.2 ROOF UNDERLAY - MEDIUM WEIGHT, TYPE R4, VERY HIGH EXPOSURE (90 DAYS)

SOLITEX MENTO® 3000 consists of a waterproof, non-porous diffusion open membrane laminated to two layers of polypropylene fleece. Has a flammability Index of ≤ 5, when tested to AS 1530.2. Complies with NZBC C/AS2, paragraph 4.12.5.2 (b), for suspended flexible fabrics. Refer to BRANZ Appraisal 855 for details. Available in rolls 1.5m or 3m wide x 50m long. Self-supporting to 1200mm.

SOLITEX MENTO® 3000 must be covered and protected against weather or ultraviolet light within 90 days.

Components

2.3 WEATHERTIGHT SEALING TAPE

TESCON EXTORA® weathertight sealing tape, a multi-purpose, UV stable, pressure-sensitive, self-adhering tape comprised of a PP fleece protection layer, solid acrylic glue and siliconized release backing paper. Suitable for jambs and heads of framed openings only. Supplied in rolls 60mm, 100mm, 150mm and 200mm wide x 30m long.

Note: TESCON EXTORA® can be exposed to weather or ultraviolet light for a period of up to 180 days.

2.4 SILL TAPE

TESCON EXTOSEAL® Sill Tape, a butyl rubber, pressure-sensitive, self-adhering, one-piece stretchable, self-sealing, non-bitumen sill tape with a siliconized release backing paper. Workable in cold temperatures, down to - 20°C. Does not melt in the heat and can be applied to damp surfaces. Complies with NZBC E2/AS1, paragraph 9.1.4.1(b). Refer to BRANZ Appraisal 815 for details. Supplied in rolls 150mm, 200mm or 300mm wide x 20m long. TESCON EXTOSEAL® can be exposed to weather or ultraviolet light for a period of up to 180 days.

2.5 WEATHERTIGHT JOINERY SEALING TAPE

TESCON EXTORA® PROFIL weathertight joinery sealing tape, UV stable, pressure-sensitive, self-adhering tape comprised of a PP fleece protection layer, solid acrylic glue and a split, siliconized release backing paper. Applied to perimeter of joinery extrusion and joined to wall underlay. Supplied in rolls 60mm wide x 30m long.

2.6 NAIL & SCREW SEALING TAPE

TESCON® NAIDECK double-sided butyl rubber self-sealing tape, water resistant, reinforced, non-bitumen, used on the underside of a purlin / batten on roofs and behind façade clip and mounts on walls, to form a seal around nail or screw penetrations. Supplied in rolls 50mm wide x 20m long.

2.7 8mm SEPARATION MESH

Polypropylene 3D separation layer. Available in 1.4 x 30m x 8mm thick rolls.

2.8 WINDOW AND DOOR WEATHERTIGHT CONNECTION STRIP

CONTEGA® EXO exterior window and door connection tape for SOLITEX EXTASANA® wall underlay comprised of PP microfibre fleeces, used for weathertight connection to window and door frames to the wall underlay or other weathertightness layer. Supplied in rolls 85mm and 120mm wide x 30m long for different framing widths.

2.9 DOUBLE-SIDED TAPE

DUPLEX Double-sided tape comprised of siliconized release paper, used for bonding the overlaps of roof underlay SOLITEX MENTO® membranes and fixing of membranes to steel frame structures. Supplied in rolls 25mm wide x 80m long.

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2.10 MULTI-PURPOSE ADHESIVE

ORCON® Classic multi-purpose adhesive, for bonding Pro Clima membranes to rough adjoining structural components or mineral surfaces. Supplied in a 310ml cartridge or 600ml sausage.

Accessories

2.11 SEALING GROMMETS FOR ROUND CABLES - SINGLE, 5-12MM DIAMETER

KAFLEX mono sealing grommets 145mm x 145mm, manufactured from special reinforced paper with EPDM. For single cables of diameter 5 - 12mm.

Suitable for sealing penetrations through roof and wall underlays. KAFLEX grommets can be exposed to weather or ultraviolet light for a period of up to 180 days.

2.12 SEALING PATCH FOR CABLES ALREADY INSTALLED, UP TO 20MM DIAMETER

KAFLEX post, cable sealing grommet, flexible and elastic for airtight seals around cables that are already in place.

2.13 MULTIPLE CABLE GROMMET FOR UP TO 16 CABLES, 5-12MM DIAMETER

KAFLEX multi, cable sealing grommet manufactured from EPDM with an integrated adhesive flange. Suitable for sealing up to 16 cables of 4.8 - 12mm diameter each in facades and roof linings.

2.14 SEALING GROMMET - FOR PIPES, 15-30mm DIAMETER

ROFLEX 20 self-adhesive sealing grommet for pipes manufactured from PP fleece, solid acrylic glue and EPDM rubber, 140mm x 140mm in size. Sealing grommet for pipes of diameter 15mm-30mm.

Suitable for sealing penetrations through roof and wall underlays, for indoor and outdoor applications. ROLEX 20 grommets can be exposed to weather or ultraviolet light for a period of up to 180 days.

2.15 SEALING GROMMET - FOR PIPES, 30 - 320mm DIAMETER

ROFLEX 30/50/100/150/200/250/300 self-adhesive sealing grommet for pipes manufactured from PP fleece, solid acrylic glue and EPDM rubber, vary in size from 140mm x 140mm to 500mm x 500mm. Sealing grommet for pipes of diameter 30-50mm, 50-90mm, 100-120mm, 120-170mm, 170-220mm, 220-270mm and 270-320mm.

Suitable for sealing penetrations through roof and wall underlays, for indoor and outdoor applications. ROLEX 30/50/100/150/200/250/300 grommets can be exposed to weather or ultraviolet light for a period of up to 180 days.

2.16 SEALING GROMMET FOR UP TO 9 PIPES/CONDUITS, 15-30MM DIAMETER

ROFLEX 20 multi, a multiple cable sealing grommet manufactured from EPDM. Creates an airtight seal for up to 9 cables of 15 - 30mm diameter in façades and roof underlays. ROFLEX 20 multi can be exposed to ultraviolet light for up to 180 days

2.17 STUD STRAPS - POLYPROPYLENE

Stud straps, 19mm wide polypropylene straps.

2.18 WIRE NETTING

75mm galvanized hexagonal wire netting to AS/NZS 4534.

2.19 SAFETY MESH

Safety mesh, 2mm x 150 x 300mm galvanized or PVC coated safety mesh to AS/NZS 4389.

2.20 ROOF SARKING / SUBSTRATE

For roof pitches less than 10° Pro Clima recommend that underlay is laid on solid roof sarking.

2.21 GUTTER AND UNDER FLASHINGS

SOLITEX MENTO® range roof underlay to NZS 2295, cut to width for use under valley, apron flashing and internal gutters.

2.22 CAVITY CLOSERS, EAVES FLASHINGS, RIDGE VENT FLASHINGS

Fix cavity closers, eaves and ridge vent flashings and finishing accessories to complete the Pro Clima Roof Ventilation system in accordance with SOLITEX MENTO® Roof Application Guide and to Pro Clima Construction details.

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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 GENERAL REQUIREMENTS

Design application and installation of Pro Clima NZ Limited products to NZBC E2/AS1, BRANZ Appraisals, Pro Clima Technical Literature and Industry Codes of Practice.

3.4 INSPECTION

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

Preparation

3.5 PREPARATION

Before starting work, ensure all surfaces are stable, dry, smooth, and free from dust, dirt, silicone and grease. Remove all unwanted material from the surface with a vacuum cleaner or cloth if necessary. Remove flaking and loose materials such as peeling paintwork, building papers and labels. Adhesion to frozen surfaces not possible, if in doubt carry out adhesion tests.

Application - roofing underlay

3.6 WIRE NETTING

Lay 75mm galvanized wire netting at right angles across the purlins and drawn taut before fixing. Tie edges of netting together with galvanized wire clips.

3.7 SAFETY MESH

Lay safety mesh over exposed roof areas fixed in accordance with AS/NZS 4389 and NZMRM CoP.

3.8 FIX ROOF UNDERLAY - STANDARD METHOD

Fix roof underlay in accordance with SOLITEX MENTO® Application Guide and as follows:

- Fix roof underlay at maximum 150mm centres to all framing with large-head clouts 20mm long, 8mm-12mm stainless steel staples, self-drilling screws or proprietary underlay fixings.
- Pull membrane taut over framing before fixing.
- Run underlay vertically or horizontally at roof pitches greater than 8°, horizontally with roof pitches less than 8°.
- Underlay must extend from the ridge and overhang the fascia board by 20mm - 25mm. Vertical laps must be no less than 150mm wide. Horizontal laps must be no less than 150mm wide, with the direction of the lap ensuring that water is shed to the outer face of the underlay. End laps must be made over framing and be no less than 150mm wide.
- Repair damaged areas such as tears, holes or gaps around service penetrations by covering with new material lapping the damaged area by at least 150mm and taping with TESCON EXTORA® Sealing Tape.

3.9 FIX ROOF UNDERLAY - PRO CLIMA METHOD

Fix roof underlay in accordance with SOLITEX MENTO® Application Guide and as follows. Applicable when the underlay is separated from the roofing to provide additional ventilation to the roof space:

- Fix roof underlay horizontally and fix direct to the top of the rafter or truss top chord and secure with minimum 20mm x 45mm counter batten fixed directly over the rafter or truss member. Increase the length of fixings used to secure purlins and tile battens to the rafter or truss by the depth of the counter batten.
- All laps to be a minimum of 150mm. Seal all laps with TESCON EXTORA® Sealing Tape.

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- For pitches less than 15° or less, seal laps with ORCON® CLASSIC before applying TESCON EXTORA® or alternatively use SOLITEX roof underlays with "connect" inbuilt adhesive strip.
- For pitches less than 10° Pro Clima recommend that the underlay is laid on solid sarking
- SOLITEX non-porous membrane roof underlay to be used.

3.10 GUTTER AND UNDER FLASHINGS

Install SOLITEX MENTO® range roof underlay for use as an underlay to valley, apron flashings, and internal gutters. Lap under flashings with adjoining underlays. Fix SOLITEX MENTO® range soffit liner from top plate down 150mm past ribbon plate.

Application - tape systems

3.11 APPLY TESCON TAPE SYSTEMS

Apply TESCON tape systems in accordance with Pro Clima TESCON Installation Guides.

Note: Tapes can be specified for all joins in SOLITEX membranes to prevent wind-wash of insulation and resulting degradation of insulation performance.

Application - grommet and detail solutions

3.12 INSTALL GROMMETS AND DETAIL SOLUTIONS

Install grommets and detail solutions in accordance with Pro Clima KAFLEX and ROFLEX Installation Guides.

Completion

3.13 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 PRO CLIMA SOLITEX MENTO 1000 ROOF UNDERLAY

Location:	Under metal profile roofs
Manufacturer:	Pro Clima NZ Limited
Type:	SOLITEX MENTO® 1000 three layer underlay
Jointing tape:	As recommended by ProClima
Sealing tape:	As recommended by ProClima
Adhesive:	ORCON® Classic multi-purpose adhesive

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

1 GENERAL

This section relates to the application of Kingspan Insulation NZ Ltd, 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.

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.

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.

2.2 THERMAKRAFT PERIMETER

Sand coated black paper DPC composed of cardboard, bitumen and fine sand. Tested to AS/NZS 4347 in accordance with AS/NZS 2904. Available in various width. Refer to SELECTIONS.

DPM

2.3 THERMAKRAFT THERMATHENE BLACK

0.25mm x 4000mm wide black DPM composed of recycled alloyed polythene. Membrane has a vapour flow resistance of at least 90MNs/g to NZS 3604 and NZS 4229, Damp-Proof Membranes. Refer to SELECTIONS.

2.4 THERMAKRAFT THERMAFLASH

BRANZ appraised self-adhering synthetic flexible flashing tape, white on the top surface. Available in 75mm, 150mm and 200mm width. Refer to SELECTIONS.

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2.5 THERMAKRAFT ALUBAND

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

2.6 THERMAKRAFT PREMIUM JOINING TAPE

75mm wide, black self-adhering multi-layer synthetic construction tape. Refer to SELECTIONS.

2.7 THERMAKRAFT WHITE GENERAL PURPOSE TAPE

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

Vapour control

2.8 THERMAKRAFT VAPOUR SHIELD

Woven synthetic sarking and moisture vapour barrier, coated both sides with a vapour impermeable film. One side is coated black and the reverse side white. Available in 2130mm width. Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation/application - generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Installation - DPC

3.5 INSTALL DPC

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

Installation - DPM

3.6 INSTALL DPM - CONCRETE FLOOR

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

Installation - vapour control layers

3.7 INSTALL VAPOUR CONTROL LAYER

Lay Thermakraft Vapour Shield™ either side up in a continuous manner with 150mm minimum laps fully taped and sealed. Pull taut before fixing. Fix with 8-12mm stainless steel staples or 20mm flat head galvanized clouts at 300mm centres to timber framing. Fix to steel framing to NZMRM CoP requirements. Where battens are nailed through the membrane, cover pre-nail battens with sealant. Seal projections and penetrations with sealant or Thermakraft joining tape. 80°C recommended maximum temperature.



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Completion

3.8 COMPLETION MATTERS

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

4 SELECTIONS

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

DPC

4.1 THERMAKRAFT SUPERCOURSE 500™ DPC

Location:	Suitable between concrete and timber, primarily the external bottom plate
Type:	Supercourse 500™

DPM

4.2 DPM - THERMAKRAFT THERMATHENE BLACK

Location:	Under slabs
Manufacturer:	Thermakraft
Brand:	Thermathene Black
Type:	Damp proof membrane
Width:	4000mm
Joint tape:	White General Purpose Tape

4.3 THERMAKRAFT THERMAFLASH™ FLASHING TAPE

Location:	Around framed openings
Sill/head tape:	150mm Thermakraft Thermaflash™ (for 90mm framing) 200mm Thermakraft Thermaflash™ (for 140mm or 150mm framing)
Sill second layer:	75mm Thermakraft Thermaflash™ (on top of sill over first layer)
Sill corners:	Thermakraft Thermaflash™
Head corners:	75mm Thermakraft Thermaflash™ butterfly corners

4.4 THERMAKRAFT PREMIUM JOINING TAPE™

Joining tape:	75mm Thermakraft Premium Joining Tape™

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4171E ECOPLY® BARRIER RIGID AIR BARRIER SYSTEM

1 GENERAL

This section relates to the supply and installation of Carter Holt Harvey Plywood Limited Ecoply® Barrier plywood as a rigid wall underlay and air barrier behind cavity wall cladding systems.

1.1 RELATED WORK

Refer to 4337 PLYWOOD ROOFING & DECKING SUBSTRATE for membrane roof plywood substrate.

Documents

1.2 DOCUMENTS

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

NZBC C/AS1	Protection from fire for buildings with sleeping (residential) and outbuildings (risk group SH)
NZBC C/AS2	Protection from fire for buildings other that risk group SH
AS/NZS 1604.3:2012	Preservative-treated wood-based products - Plywood
AS/NZS 2269.0	Plywood - structural - specifications
NZS 3604	Timber-framed buildings

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Ecoply® Structural Rigid Air Barrier - Barrier Specification & Installation Guide (June 2026)
Ecoply® Barrier Plywood Product Technical Statement and Building Product Information Sheet
Ecoply® Barrier Safety Data Sheet
Ecoply® Barrier sITe App
Ecoply® Barrier CAD drawings
BRANZ Appraisal 827 (2025) - Ecoply® Barrier Rigid Air Barrier

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.

Compliance information

1.6 COMPLIANCE - BRANZ APPRAISAL

Ecoply® Barrier Rigid Air Barrier has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 827.

Performance

1.7 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.

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2 PRODUCTS

Materials

2.1 ECOPLY BARRIER PLYWOOD

7mm thick, square edge, synthetic phenolic (PF) resin Type A bonded timber veneer plywood sheets, manufactured to AS/NZS 2269. H3.2 CCA treated to AS/NZS 1604.3:2012. Stress grade F8/F8. Appearance grade DD with water-resistant beige polyester powder coated on front face and four edges. Sheets marked Ecoply® Barrier. Sheets 1197mm wide. Available in 2440mm and 2745mm lengths. Refer to SELECTIONS.

2.2 GIB STANDARD PLASTERBOARD

Refer to 5113G GIB PLASTERBOARD LININGS for GIB® standard plasterboard.

Components

2.3 NAILS

Refer to SELECTIONS.

2.4 ECOPLY BARRIER SILL TAPE

Flexible weathertight tape with butyl rubber and polyethylene film carrier paper, siliconized foil release paper. 20m long roll. Available in 150mm and 200mm widths to suit application. Black colour.

2.5 ECOPLY BARRIER SEALING TAPE

Water-resistant tape with polypropylene fleece carrier paper and siliconized release paper. 25m long roll. Available in 60mm, 150mm, and 200mm widths to suit application. Grey colour.

2.6 GIB HANDIBRAC HOLD-DOWN BRACKET

Galvanized steel bracket by MiTek New Zealand Limited, supplied with 5 Tek screws and 2 BOWMAC screw bolts.

2.7 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 - TIMBER FRAMING

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® Structural Rigid Air Barrier - Barrier Specification & Installation Guide.

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3.6 BOTTOM PLATE FIXING - BRACING SYSTEM

Fix GIB® HandiBrac® hold-down brackets at each end of bracing element with supplied fasteners. Within the length the bracing element, fix bottom plates to the requirements of NZS 3604.

3.7 TREAT CUTS

Brush timber preservative onto cut edges and penetration cut outs.

3.8 FIT ECOPLY BARRIER SHEETS

Fit Ecoply® Barrier sheets with long edge oriented vertically, beige polyester powder coated face outwards, and cut sheet ends oriented upward. Sheets to overhang the bottom plate, joist or bearer by a minimum of 25mm. Allow 2mm expansion gap between sheets.

3.9 FIX GIB STANDARD PLASTERBOARD - BRACING SYSTEM

Refer to 5113G GIB PLASTERBOARD LININGS for GIB® standard plasterboard.

3.10 FASTENERS - STANDARD NAILING PATTERN

Nail fix to framing to the standard Ecoply nail pattern. Maintain clearances to sheet edges to Ecoply requirements. Finish fastener heads flush with the panel surface.

3.11 FASTENERS - NAILING PATTERN FOR BRACING SYSTEM

Nail fix to framing to the specific Ecoply nail pattern for the brace element. Maintain clearances to sheet edges to Ecoply requirements. Finish fastener heads flush with the panel surface. Refer to Ecoply® Structural Rigid Air Barrier - Barrier Specification & Installation Guide.

3.12 FIXING TO RESIST UPLIFT

Nail fix the top of the sheet directly to the centre of the top plate using the specific Ecoply nail pattern for a 4.7kN fixing of the top plate to the studs. Fix the remainder of the sheet to standard nailing pattern. Horizontal sheet joints are not permitted within 300mm of top plate. Maintain clearances to sheet edges to Ecoply requirements. Finish fastener heads flush with the panel surface.

3.13 LINTEL CONNECTION FOR UPLIFT

Nail framing and Ecoply® Barrier sheets to Ecoply lintel connection detail for uplifts not exceeding 7.5kN.

3.14 TAPE - GENERAL

Remove dust from sheets before adhering tape. Apply pressure to seal the tapes with minimal wrinkles.

3.15 VERTICAL ECOPLY BARRIER SHEET JOINTS - WALL PLANE

Centre Ecoply® Barrier Sealing Tape over vertical sheet joints.

3.16 VERTICAL ECOPLY BARRIER SHEET JOINTS - CORNERS

Centre Ecoply® Barrier Sealing Tape over sheet joints at external and internal wall corners.

3.17 HORIZONTAL SHEET JOINT - TAPE Z FLASHING

Apply Ecoply® Barrier Sealing Tape over lower sheet with 60mm overlap to sheet and 80mm upstand to form a Z flashing. Fit upper Ecoply® Barrier sheet over tape upstand with a 15mm expansion gap between upper sheet edge and taped-over lower sheet edge.

3.18 HORIZONTAL SHEET JOINT - FACE SEAL

Fit Ecoply® Barrier sheets with 5mm expansion gap between edges. Apply 150mm wide Ecoply® Barrier Sealing Tape to sheet face centred over sheet joint.

3.19 TAPE SPLICES & JOINTS

Where tape splices occur at a junction, create an overlapping splice of at least 50mm. Take special care to remove any wrinkles or voids at splice areas.

3.20 WINDOW & DOOR OPENINGS

Apply Ecoply® Barrier Sill Tape to cover the bottom of the opening and Ecoply® Barrier Sealing Tape to the vertical trimmer stud and lintel, reinforce corners at each end of the lintel with 100m strip of 150mm wide Ecoply® Barrier Sealing Tape.



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3.21 PENETRATIONS - ECOPLY BARRIER SILL TAPE

Apply Ecoply® Barrier Sill Tape to flash to Ecoply® Barrier sheet, provide 100mm minimum cover to sheet. Bandage around pipes with Ecoply® Barrier Sealing Tape with 25mm minimum width of cover to pipe.

3.22 FLASHINGS

Apply Ecoply® Barrier Sealing Tape over horizontal flashings as required.

Completion

3.23 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.

4.1 ECOPLY® BARRIER PLYWOOD

Location:	As shown on drawings
Manufacturer:	Carter Holt Harvey Plywood Limited
Brand:	Ecoply® Barrier
Width:	1197mm
Length:	2440mm or 2745mm (to suit)
Thickness:	7mm
Treatment:	H3.2 CCA

4.2 ECOPLY® BARRIER BRACING

Refer to Ecoply® Structural Rigid Air Barrier - Barrier Specification & Installation Guide for specific bracing details. For bracing element location refer to drawn documentation.

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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 4161 UNDERLAYS, FOIL AND DPC for wall underlay
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.

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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 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.

2.12 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.

2.13 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.

2.14 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.



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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

2.15 COATINGS AND FINISHES

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

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: 18% maximum to 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.

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 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.

3.10 GLASS WOOL INSULATION

Refer to related insulation section.

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3.11 FLEXIBLE UNDERLAY

Refer to the appropriate separate section(s).

3.12 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.

3.13 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.

3.14 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.

3.15 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.

3.16 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.

3.17 NON JAMES HARDIE CLADDING LAYOUT AND FIXINGS - GENERAL

Refer to related CLADDING section.

3.18 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.

3.19 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.

Completion & Commissioning

3.20 COMPLETION MATTERS

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

3.21 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 30/30/30 SYSTEM - EXTERNAL TIMBER FRAMED WALL

Location:	External boundary wall on grid A
Brand:	James Hardie Fire & Acoustic system
System #:	JHETGR60-N
FRR:	60/60/60
STC:	44
Cladding:	Trapezoidal Profiled Metal - Metalcraft Kahu or similar approved
Cavity batten:	20mm horizontal
Underlay:	9mm RAB™ Board
Framing size:	140x45mm
Insulation:	R3.6 140mm Terra-lana wool insulation
Lining type:	10mm GIB Fyreline®

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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® Eclipsa™ Eaves Lining
- James Hardie® Hardie™ Flex Eaves Lining
- James Hardie® Hardie™ Groove Soffit Lining
- 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.

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 CAPPING & SCOTIA MOULDS

Extruded uPVC capping and scotia mould.

2.4 INSEAL TAPE

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

2.5 POLYPROPYLENE TAPE

Polypropylene tape, 30mm minimum width.

2.6 CONTROL JOINT

Refer to SELECTIONS.

2.7 HARDIE™ DRIVE SCREW

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

2.8 HARDIE™ FLEX NAILS

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

2.9 SEALER

Multiplast resin by Plaster systems

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

2.11 JOINT REINFORCING TAPE
52mm wide perforated paper tape.

2.12 BEDDING COMPOUND
Hardie™ Base Coat compound powder.

2.13 FINISHING COMPOUND
Hardie™ Top Coat topping compound premixed.

Components - General

2.14 FLEXIBLE JOINT SEALANT
Refer to SELECTIONS.

3 EXECUTION

Conditions

Installation/application

3.1 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

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

3.3 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.

3.4 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.

3.5 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.

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

3.7 SEAL EDGES
Seal Villaboard™ Soffit Lining sheet edges with Multiplast Resin in a diluted form prior to flush stopping.

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

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

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

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3.11 INSTALL FASTFIX FASTENERS

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

3.12 SEALANTS

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

3.13 FINISHING OVER DRIVEN FASTENERS

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

3.14 VILLABOARD™ JOINT FINISHING - LEVEL 4 FINISH

Set joints with Hardie™ jointing compounds reinforced with perforated paper tape. Jointing and finishing to requirements of James Hardie® installation manual to achieve a level 4 finish.

3.15 PAINTING

Refer to painting section/s for protective coating system.

Completion

3.16 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:	Refer drawings
Brand/type:	James Hardie® Villaboard™ Soffit Lining
Edge:	Square edge
Thickness/size:	9mm
Joint:	Expressed joint - with Inseal® 3259 sealing strip, up to 10mm max gap between sheets, requires 70mm min. width framing at joint location
Fixing method:	Screw and adhesive - superior finish by minimising screw fixings
Fixing Type:	HardieDrive™ Screw, 316 stainless steel, 30mm x 7g
Adhesive:	Sikaflex-11FC by Sika or Seal N Flex-1 by Bostik
Level of Finish:	Level 4

Painting

4.2 PAINTING

Refer to painting section/s for details.

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4241M METALCRAFT ROOFING PROFILED CLADDING

1 GENERAL

This section relates to the supply and fixing of **Metalcraft Roofing** profiled cladding complete with accessories.
It includes:

- Trough section cladding profiles
- Asymmetrical and symmetrical rib cladding profiles
- Corrugated cladding profile
- Bevelback weatherboard cladding profile
- Rusticated weatherboard cladding profile
- Translucent cladding

1.1 RELATED WORK

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

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:

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

Documents

1.3 DOCUMENTS

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

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 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
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
NZS 3602	Timber and wood-based products for use in building
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's and supplier's documents relating to this part of the work:

Metalcraft Roofing Metdek500 product literature
Metalcraft Roofing Metdek855 product literature
Metalcraft Roofing Metrib760 product literature
Metalcraft Roofing MC760 product literature
Metalcraft Roofing T-Rib product literature
Metalcraft Roofing MC1000+700 product literature

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Metalcraft Roofing Metcom7 product literature
Metalcraft Roofing Metcom930+700 product literature
Metalcraft Roofing Metcom965 product literature
Metalcraft Roofing Kahu® product literature
Metalcraft Roofing Metclad850 product literature
Metalcraft Roofing Corrugate product literature
Metalcraft Roofing Bevelback Weatherboard product literature
Metalcraft Roofing Alsynite Topglass® product literature

Manufacturer/supplier contact details

Company:	**Metalcraft Roofing**
Web:	www.metalcraftgroup.co.nz
Email:	technical@metalcraftroofing.co.nz
Telephone:	09 274 0408

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	Failure of coating adhesion (manufacturer's standard warranty)
30 years	Weatherproofing failure caused by material penetration as a result of corrosion (manufacturer's standard warranty)

- Provide this warranty on the material manufacturers standard warranty form.
- Commence the warranty from the date of practical completion of the contract works.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	for workmanship

- Provide this warranty on the material manufacturers standard warranty form.
- Commence the warranty from the date of date of completion of installation.

Include a copy of the Metalcraft Roofing maintenance requirements with the warranty.

Requirements

1.7 NO SUBSTITUTIONS

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

1.8 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicator approval certificate from the manufacturer / importer / distributor
- 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 - General

1.10 CO-ORDINATE

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

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1.11 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed wall cladding system, including all penetrations through the walls and junctions with other cladding materials and parapets.

Performance - Fire

1.12 EXTERNAL FIRE SPREAD - NON-COMBUSTIBLE MATERIAL

Zincalume®, COLORSTEEL® Maxam™, COLORSTEEL® Maxam™ Dridex® and COLORSTEEL Altimate™ are non-combustible materials with a surface finish no more than 1mm in thickness applied directly to the non-combustible substrate.

1.13 EXTERNAL FIRE SPREAD - CLADDING MATERIAL, CLASSIFICATION

COLORSTEEL® Maxam™ and COLORSTEEL® Maxam™ Dridex® have been tested to ISO 5660.1 and to specific requirements of NZBC C/AS1 or NZBC C/AS2 achieving:

Type A classification (peak heat release rate ≤ 100 kW/m², total heat release rate ≤ 25 MJ/m²).

1.14 SURFACE FIRE PROPERTIES FOR LININGS

Zincalume®, COLORSTEEL® Maxam™, COLORSTEEL® Maxam™ Dridex® and COLORSTEEL® Altimate™ have been tested to ISO 5660.1 & ISO 5660.2 and have been assigned the following Group Numbers in accordance with BPS, 8.5.1 Group Numbers:

Zincalume®	Group Number 1-S
COLORSTEEL® Maxam™	Group Number 1-S
COLORSTEEL® Maxam™ Dridex®	Group Number 1-S
COLORSTEEL Altimate®	Group Number 1-S

2 PRODUCTS

Materials

2.1 EXTERIOR CAVITY WALL BATTENS - WITH DRAINED CAVITY

Proprietary horizontal cavity batten system.

2.2 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Perforated uPVC, aluminium or stainless steel trays with upstands. Upstand one side 10mm and the other 75mm. Length and width to suit cavity.

2.3 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

2.4 FASTENERS GENERALLY

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

2.5 FIXING SCREWS

To AS 3566. Screws appropriate to the roofing material and the supporting structure, and wind load as required by Metalcraft Roofing, and with a durability not less than the material fixed.

2.6 RIVETS

Sealed aluminium, minimum diameter 4.8mm.

2.7 FLASHINGS GENERALLY

To NZBC E2/AS1, 4.0, Flashings.

Formable grade 0.55 BMT for galvanized, Type AZ or Type AM - coated and pre-painted steel and 0.90 BMT for aluminium, to the same standards as the profiled sheets, notched where across profile or provided with a soft edge.

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2.8 WALL AND PARAPET FLASHINGS

Supplied by Metalcraft Roofing to match or to suit the cladding.

Accessories

2.9 UNDERLAY AND REFLECTIVE FOIL

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.10 SEALANT

Neutral curing silicone or polymer sealant as required by Metalcraft Roofing and used as directed.

2.11 CLOSURE STRIPS

Polyurethane profiled closed cell foam strips to fit the sheet profile.

Brand:	Ecofoam
Profile:	To suit selected cladding profile

3 EXECUTION

Conditions

3.1 INSPECTION

Inspect the wall framing and supporting structure to ensure that it is complete and fully braced ready for cladding and free from any misalignments or protrusions that could damage the cladding.

3.2 FRAMING TIMBER MOISTURE

When continuous metal cladding runs along a long continuous timber member and is directly fixed to it, the timbers equilibrium moisture content (EMC) to be 18% or less. For flashings in this situation (sometimes called transverse flashings) the framing EMC to be maximum 16%, and preferably as low as 12%. Transverse flashings can be temporarily tacked in place and final fixing done when moisture content is acceptable.

3.3 STORAGE

Take delivery of and accept packs of cladding dry and undamaged on delivery. Reject all damaged material. Store on a level firm base clear of the ground, with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets.

3.4 HANDLING

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

3.5 SEPARATION

Isolate dissimilar materials in close proximity as necessary by painting the surfaces or fitting separator strips of compatible materials. Place isolators between metals and treated timber and cement based materials.

Application

3.6 FIX INSULATION

Refer to thermal insulation sections.

3.7 HORIZONTAL SET-OUT

Set cladding out to a horizontal level line checking the set out point lines up with any door or window openings. Lay sheets from the bottom towards the top. Check laying to avoid creep or spread off the horizontal.

3.8 FORMING

Form stop-ends and downturns to Metalcraft Roofing recommendations.

3.9 END LAPS

End laps are not recommended, except where specifically detailed to Metalcraft Roofing requirements.

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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

Roof fixing and jointing to conform with Metalcraft Roofing requirements for thermal movement.

3.12 FIXING GENERALLY

Install and fix in accordance with the Metalcraft Roofing installation manual and the NZMRM CoP and to Metalcraft Roofing required fixing patterns and details for each area of the building roofing. Use only screws as required by Metalcraft Roofing. Paint colour matched fixings and accessories before installation.

3.13 WALL UNDERLAYS

Ensure that the appropriate wall underlays have been installed and fixed correctly, before proceeding with installation of the cladding.

3.14 PENETRATIONS

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

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

3.15 MARKING AND CUTTING

Cut only by shearing tools. Do not use black lead pencils for marking Zincalume®, Colorsteel® products. Use ink pen, chalk line or coloured pencil for marking cladding sheets prior to cutting.

3.16 FIX SHEETS

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

Screw-fixed cladding to be screwed through pans.

3.17 FIX FLASHINGS AND CAPPINGS

Flash parapets, walls and penetrations, cap corners and edges to detail in Metalcraft Roofing installation manual and to the NZMRM CoP and Metalcraft Roofing requirements. Cut accurately and fix using sealant and rivets/ screws to detail to form a weatherproof cover. Ensure flashings are designed and installed to avoid water ponding.

Completion

3.18 REPLACE

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

3.19 LEAVE

Leave this work complete with all necessary flashing and capping all properly installed as the work proceeds so the finished cladding is completely weathertight.

3.20 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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



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Cladding - symmetrical trapezoidal profile

4.1 METALCRAFT - KAHU™ SYMMETRICAL TRAPEZOIDAL PROFILE CLADDING

Location:	Grid A - Boundary wall
Manufacturer:	Metalcraft Roofing
Profile:	Kahu™
Dimensions:	Sheet width 955mm, cover 875mm, rib height 32mm, and roll formed to any length
BMT/material:	0.55MM Steel
Coating system:	COLORSTEEL® Maxam
Coating colour:	TBC
Batten material:	20mm timber horizontal cavity battens
Fixings:	Class 4 12G or 12G with load spreading washer

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4284RE RCS INSULATED FACADE SYSTEM

1 GENERAL

This section relates to the supply and fixing of **Resene Construction Systems** Insulated Facade cavity based exterior wall cladding system based on styrene fixed over a drained cavity to timber or steel framing and with an applied textured surface finish.

Refer to RCS custom specification in Supporting Documents prepared by:

Resene Construction Systems
Stefan Heinrich
0212228420
stefan@reseneconstruction.co.nz

2 PRODUCTS

3 EXECUTION

4 SELECTIONS

For further details on selections go to www.reseneconstruction.co.nz
Substitutions are not permitted to the following Resene Construction Systems product, unless stated otherwise.

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4311D DIMOND PROFILED METAL ROOFING

1 GENERAL

This section relates to the supply and fixing of Dimond Roofing profiled roofing and includes:

- Metal roofing
- Duraclad roofing
- and associated accessories and components

1.1 RELATED WORK

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

Refer to 4421N for Nuralite warm roof systems

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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:.

15 years:	for failure of coating adhesion
15 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 NO SUBSTITUTIONS

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

1.8 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer's, importer's or distributors warranty
- Installer's warranty
- Producer Statement - Construction from the installer/applicator
- Other information required by the BCA in the Building Consent Approval documents

Performance - Wind

1.10 DESIGN PARAMETERS WIND - NON SPECIFIC DESIGN

The design wind pressures are to NZS 3604, table 5.4. Refer to general section 1220 PROJECT for details.

1.11 FIXINGS, WIND

Design and use the fixings/fixing pattern appropriate for the wind design parameters. Refer to Dimond Roofing Technical Information for load span tables and fixing charts for the selected profile. Allow for specific loadings at corners and the periphery of the roof, where localised pressure factors apply. Fixing pattern to also take into account fixing method and purlin spacings.

Performance - General

2 PRODUCTS

Materials

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

Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397.

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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 CLIPS - DIMONDEK 400

Galvanized steel for steel roofs, nylon coated galvanised steel for aluminium roofing and brass for copper roofing to suit profile of the rigid sheet and location as required by the roofing manufacturer. Refer to SELECTIONS for fixings.

2.4 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

2.5 RIVETS - ALUMINIUM

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

Components

2.6 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.

2.7 FLASHINGS TO VERGE, RIDGE AND HIP

Supplied by the roofing manufacturer to match or to suit the roofing in the same material as the roof.

2.8 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

2.9 WIRE NETTING AND SAFETY MESH

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.10 UNDERLAY AND REFLECTIVE FOIL

Refer to 4161 UNDERLAYS, FOIL AND DPC

2.11 SEALANT

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

2.12 CLOSURE STRIPS

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

2.13 LAP SEALING TAPE

Closed cell self adhesive nitrile tape.

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3 EXECUTION

Conditions

Installation/application

3.1 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.2 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.

3.3 SET-OUT

Carefully set out with consideration of the position of side laps to take account of the prevailing wind and line of sight. Ensure all sheets are square and oversailing the gutter true to line. Check during fixing to eliminate creep or spread and string lines along purlin centres to keep fastenings in line.

3.4 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.

3.5 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.

3.6 THERMAL MOVEMENT

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

3.7 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.

3.8 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.

3.9 FIX SHEETS

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

3.10 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.

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Application - Flashings

3.11 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.

3.12 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.

3.13 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

3.14 COMPLETION MATTERS

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

4 SELECTIONS

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

Roofing

4.1 DIMOND ROOFING - DIMONDEK 400 TROUGH SECTION ROOFING

BMT/material:	0.55mm Steel
Effective cover:	406mm
Profile height:	46mm
Purlin material:	Timber
Clips:	Dimondek 400 hidden fixing clips.
Clip material:	Zinc/aluminium coated steel
Clip Fixing:	10-12x45 Class 3 wafer head Woodteks with square drive, 2 per clip

Accessories

4.2 FLASHINGS - GENERALLY

Profile:	As required, refer drawings
BMT/material:	0.55BMT, Steel
Coating system:	To match roofing
Paint colour:	To match roofing

4.3 CLOSURE STRIPS

Brand:	As supplied by manufacturer

4.4 BIRD PROOFING

Type:	Provide and fit birdproofing to all eaves

4.5 UNDERLAYS

Refer to 4161 UNDERLAYS, FOIL AND DPC.

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4337 PLYWOOD ROOFING & DECKING SUBSTRATE

1 GENERAL

This section relates to the use of plywood sheets for:

- decking or decking substrate
- substrate for roofing
- substrate for gutters

1.1 RELATED WORK

Refer to 4421N Nuralite for membrane roofing.

Refer to Structural Engineer for blocking requirements for ply roofing.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FSC	Forest Stewardship Council
PEFC	Programme for the Endorsement of Forest Certification

Documents

1.3 DOCUMENTS

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

NZBC B1/AS1	Structural provisions for buildings
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
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment.
AS/NZS 2269.0	Plywood - Structural - Specifications
NZS 3604	Timber-framed buildings

2 PRODUCTS

Materials

2.1 PLYWOOD

Radiata pine veneer ply to AS/NZS 2269.0, face sanded, grade as scheduled.

H3 CCA treated to AS/NZS 1604.1 when used as a deck substrate. Confirm compatibility with adhesives being used with the waterproofing membrane.
F11 grade to be used as a substrate for decking membranes. F8 or F11 grades to be used for roofing.

Components

2.2 SCREWS

Stainless steel, counter-sunk. Refer to the plywood manufacturer's requirements for size and use.

General

7 - 9mm plywood:	No. 8 x 30mm
12 -15mm plywood:	No. 8 x 40mm
17mm plywood:	No. 10 x 40mm
19 - 21mm plywood:	No. 10 x 45mm
25mm plywood:	No. 10 x 50mm



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Under membranes
17 - 25mm plywood: No. 10 x 50mm (to NZBC E2/AS1, paragraph 8.5.3.2.)

2.3 ADHESIVE

Single pack waterproof general purpose construction adhesive, as recommended by the manufacturer.

2.4 TIMBER FILLETS

20mm H3.2 CCA treated triangular timber internal corner fillets, for membrane installations.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Handle sheets carefully and reject those with damaged faces or edges.

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:	18% maximum

3.4 PRE-COATING/FINISHING REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for specified finish. Carry out such additional preparatory work as required to bring the substrate to suitable condition.

3.5 SUPPORT FRAMING

Ensure support framing is completed to the plywood manufacturer's stated requirements for laying plywood sheets.

Application/installation

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 SUPPORT EDGES AND JOINTS

Fully support edges and joints on square edged sheets.

3.8 FIXINGS

Minimum 7mm, maximum 15mm from the edge, 150mm centres along edges and 200mm centres on intermediate supports.

3.9 FIXING PLYWOOD SHEETS

Fix sheets to the plywood manufacturers requirements. Lay sheets in a staggered layout, face-grain of sheet at right-angles to support and with sheets in square, true alignment and plane. Allow a 3mm gap between square edge sheets.

3.10 UNDER MEMBRANES

To NZBC E2/AS1, 8.5 Membrane roofs and decks. Screw and adhesive fix sheets for membrane to the plywood and membrane manufacturers' requirements. CD grade plywood with the C face up (or better). Provide a 5mm radius chamfer to external edges where the membrane is to be wrapped over. Fix internal corner fillets.

Provide whichever is the greater falls:

- as shown on the drawings
- to the membrane manufacturer's requirements
- minimum to NZBC E2/AS1, 8.5.1 Use and limitations, - 1:30 for roofs, 1:40 for decks and 1:100 for gutters

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Completion

3.11 COMPLETION MATTERS

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

4 SELECTIONS

4.1 PLYWOOD - ROOFING SUBSTRATE

Location:	Refer drawings. Coordinate with Structural engineer
Brand/grade:	CD
Stress grade:	Refer structural engineer
Thickness:	17mm if required for bracing
Treatment:	H3 CCA
Fixing:	Screws stainless steel

4.2 SCREWS

Type/size/material:	10g x 50mm stainless steel required by NZBC E2/AS1 for membrane installations

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4421N NURAPLY 3PM MEMBRANE ROOFING & DECKING

1 GENERAL

This section relates to the application of Nuralite Group Limited Nuraply 3PM as a double layer, fully adhered bituminous membrane system with associated components & accessories.

It includes:

- Nurathem insulated roof system with Nuraply 3PM membrane over Nuratherm insulation installed over concrete, plywood, strandboard (for roofs only), cross laminated timber or metal tray deck substrates.
- Nuraply 3PM membrane installed directly over concrete, plywood, strandboard (for roofs only) or cross laminated timber substrates.

1.1 RELATED WORK

Refer to 4381NJ NURAJACK DECK SUPPORT SYSTEM for pedestal support systems for floating timber and tile / stone paved decks.

1.2 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
AS 2122.1	Combustion characteristics of plastics - Determination of flame propagation - Surface ignition of vertically orientated specimens of cellular plastics
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
BRANZ Good practice guide	Membrane roofing
CodeMark™ CMNZ70032 ver4	Nuraply 3PM Torch-on Membrane for Roofs, Decks, Gutters and Parapets

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Nuralite Group Limited: CAD drawings
Nuraply 3PM Roofing Membrane Installation Manual
Nuralite Group Limited: Substrate Readiness Checklist
BRANZ Appraisal 547 - Nuraply Roof and Deck Membranes
BRANZ Appraisal 732 - Nuraply Nuratherm Insulating Roof System

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years:	For Nuraply 3PM membrane roofing & decking system

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

Refer to the general section 1237 WARRANTIES for additional requirements.

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1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years: For membrane system installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 NO SUBSTITUTIONS

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

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

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

1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

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

Performance - general

1.9 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed Nuraply roofing system, including all penetrations through the roof and junctions with walls and parapets. In the event that there are issues relating to any aspect of this work, arrange for a meeting to resolve these issues. The following should attend:

- Nuraply roofing applicator
- Nuralite representative
- Contractor
- Principal
- Principal's consultant(s)

1.10 AS APPROVED

"As approved" means that the materials are compatible with Nuraply 3PM roofing and are part of the system required by the roofing supplier for each specific location.

Compliance Information

1.11 COMPLIANCE - CODEMARK CERTIFICATE

Nuraply 3PM Roofing Membrane System meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark® certificate of conformity CMNZ70032.

Performance - Wind

1.12 WIND ZONE DESIGN PARAMETERS – LOW TO HIGH

According to the wind zone parameters of NZS 3604, table 5.4 this project is rated as high or lower. Ensure that the installation is adequate for this standard or greater.

1.13 WIND ZONE DESIGN PARAMETERS – VERY HIGH OR EXTRA HIGH

According to the wind zone parameters of NZS 3604, table 5.4 this project is rated as very high or extra high. Ensure that the installation is adequate for this standard or greater.



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Performance - Nuratherm Insulated roof system

1.14 DURABILITY

Nuratherm insulated roof system complies with NZBC B2/AS1 when maintained to Nuralite requirements.

1.15 ENERGY EFFICIENCY

IKO Nuratherm ALU insulation board has an aged thermal resistance (R Value) of the following:

40mm	R1.80
50mm	R2.25
60mm	R2.70
70mm	R3.15
80mm	R3.60
100mm	R4.55

based on an aged thermal conductivity of 0.022 W/mK.

1.16 FIRE SAFETY

IKO Nuratherm PIR insulation board complies with the flame propagation criteria as specified in AS 2122.1.

2 PRODUCTS

Materials - Nuratherm insulated roof system

2.1 INSULATION BOARD

IKO Nuratherm ALU insulation board, comprised of a core of hard polyisocyanurate foam coated on both sides with tri-ply gas-tight aluminium.

2.2 TAPERED INSULATION BOARDS

Nuralite Nuratherm tapered insulation materials available to provide a 1:60 slope.

2.3 VAPOUR BARRIER

Nuraply ALU, 0.6mm thick self-adhesive modified bitumen sheet membrane with a top side of polyester reinforced aluminium foil. Used as a vapour barrier between the substrate and insulation board when required. Supplied in 1.08m wide x 25m long rolls.

2.4 NURAPLY WATERPROOFING MEMBRANE, PRESSURE DIFFUSER BASE LAYER

Nuraply 3PV-SA single layer, 3mm thick self-adhesive reinforced fibre asphalt waterproofing membrane with built in vapour pressure diffuser based on a diamond pattern. Used as a base layer for Nuratherm insulated roof system. Supplied in 1m wide x 10m long rolls.

2.5 NURAPLY WATERPROOFING MEMBRANE, MINERAL FACE TOP LAYER

Nuraply 3PM single layer, 4mm thick reinforced fibre asphalt waterproofing membrane with textured mineral aggregate finish. Top layer over Nuraply 3PV-SA basesheet. Supplied in 1m x 7.5m long rolls.

Components - general

2.6 MS DETAIL

Liquid waterproofing to provide additional waterproofing protection.

2.7 NURADECK BANDAGE SYSTEM

Liquid applied elastomeric, fibre reinforced waterproofing system.

Components - Nuratherm insulated roof system

2.8 FASTENERS AND WASHERS

Nuratherm IKO Fix Screws and Flange system.

Polypropylene telescopic sleeves for fixing membrane and insulation. Screws supplied in lengths to suit both the substrate and installed insulation.

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Accessories

2.9 NURATHERM ADHESIVE

Nuralite approved adhesive. Refer to Nuralite for further information.

2.10 PRIMER

Nuraflux QD or Nuraflux WB primer for substrate preparation prior to bonding Nuraply roofing systems to concrete and plywood, to Nuralite specification.

2.11 SEALANT

IKO Stickall Bitumen - high performance bitumen mastic sealant.

Soudal Gorilla MS - single component elastomeric MS UV stable sealant.

2.12 EXPANDING FOAM

Soudal Gorilla Nailpower fire rated expanding foam.

2.13 ALUMINIUM TAPE

3M Aluminium tape in 150mmm or 48mm widths.

2.14 BITUMEN FILLET

Nuralite Triangular.

2.15 PENETRATION SEAL

Lockin Pocket.

2.16 OUTLETS

As detailed and rebated into surfaces as required by Nuralite. Refer to SELECTIONS for details.

2.17 EDGE TRIM

To Nuralite details and to suit the specific location. Nuratrim aluminium verge trim where detailed.

2.18 GUTTER LIP TRIM

0.55 folded sheet to provide a protected face to insulation board at gutter lip.

2.19 DRIP EDGE

“L” profile 50mm x 50mm

2.20 NURAPLY TERMINATION BARS

Nuraply Aluminium Termination Bars are used to terminate the membrane on vertical and horizontal services. Pre-drill holes at 200mm centres. Flat - 28mm wide x 3mm thick x 2.5 metres long. Folded - 45mm wide x 3mm thick x 2.4 meters long.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

Take delivery of rolls undamaged and include for site handling facilities where required. Stack on end, off the ground on a level surface and with accessories. Store in shade or cover in hot sun. Protect liquid components from freezing.

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 GENERALLY

Work and materials to Nuraply 3PM Installation Manual, BRANZ Good practice guide - Membrane roofing, and to Nuralite installation instructions.



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3.4 LAYOUT

Refer to drawings for details. Supplement with Nuralite generic details if situation is not covered on drawings. If not detailed on the drawings, confirm the layout to suit site conditions and for the performance of the Nuraply 3PM system. Stagger junctions of Nuraply 3PM rolls to avoid 4 layer membrane build-up at corner lap joints.

3.5 INSTALLATION SEQUENCE

Install Nuraply 3PM membrane systems in sections to produce a weather tight at the end of each work period. Ensure that moisture absorbent substrates and insulation panels are covered with Nuraply 3PM membrane on the same day they are laid or ensure that the base is kept covered and dry until Nuraply 3PM membrane is laid. Seal exposed Nuraply 3PM membrane edges at the end of each work period to ensure complete system remains dry.

Installation - preparation

3.6 PRELIMINARY WORK

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

3.7 ACCEPTANCE OF SUBSTRATE

Confirm that the substrate, including fillets, sumps, rebated outlets and projections, will ensure Nuraply work of the required standard. Ensure the substrate is smooth, clean and dry. Complete “Substrate Readiness Checklist” provided by Nuralite. Refer to MANUFACTURER/SUPPLIER DOCUMENTS.

Confirm the moisture content of substrates:

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

3.8 PLYWOOD SUBSTRATE

Ensure that sheets have been stretcher bond laid to falls, are rigid, with joints flush, edges arrised, upstands filleted, no lumps or hollows, smooth, clean, dry and free of debris. Plywood grain across the line of supports below.

Constructed falls on roofs and decks to be 1 in 80 minimum and 1 in 100 for gutters.

Installation - general

3.9 WELD JOINTS

Heat fuse joints minimum width 80mm side and 100mm end laps using Nuralite self-checking lap welding techniques.

3.10 PENETRATIONS

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

3.11 MOVEMENT JOINTS

Form and weatherproof movement joints as designed to Nuralite details.

3.12 JUNCTIONS

Check that adjoining walls and parapets are prepared ready for the installation of NURAPLY roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof.

Required work includes the following:

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

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Installation - Nuratherm insulated roof system

3.13 LAY VAPOUR BARRIER

Lay Nuraply ALU self-adhesive vapour barrier onto the Nuraflux QD primed substrate to Nuralite requirements with joints being rolled and well-sealed shut.

3.14 LAY NURATHERM INSULATION

When using tapered boards to create the fall, layout needs to be carefully considered before commencing so that there is positive drainage to all outlets. Ensure that sheets have been stretcher bond laid to falls, are rigid, with joints flush upstands filleted, no lumps or hollows, smooth, clean, dry and free of debris.

For double layered systems, use one fixing to hold the first layer of sheets and then fix down the second sheet using IKOfix thermal break flanges at the prescribed amount.

Seal any gaps in the insulation with expanding foam to produce a continuous insulation blanket with no gaps. Apply a layer of Aluminium Tape to any exposed ends of insulation sheets, flanges, wall junctions, fixings and sheet joins to provide a surface for the membrane to adhere to. Support edges of sheets with a metal angle. On the lip of gutters, a Gutter Lip Trim may be installed if the insulation sheet edge requires additional protection from damage.

Secure the sheets to the substrate with Nuratherm fasteners at a rate based in the Installation checklist.

3.15 INSTALL BASE LAYER

Install Nuraply 3PV-SA self-adhesive base layer in accordance with Nuralite requirements.

3.16 INSTALL NURAPLY WATERPROOFING MEMBRANE - MINERAL FACE TOP LAYER

Lay the second Nuraply 3PM layer by heat fusing over the cleaned repaired and Nuraflux QD primed (if necessary) surface of the first layer in the same sequence. Joints in the second layer must not correspond with joints in the first layer. Second layer joints to be welded lap-joints, minimum 80mm wide down roll edges and minimum 150mm wide across roll ends, to the Nuraply 3PM supplier's requirements. Roll junctions must be staggered to avoid 4-layer lap-weld build-up of Nuraply 3PM at corners. Ensure unobstructed drainage flow at outlets.

Conditions - completion

3.17 ACCESS BOARDS

Provide access boards for later operations and remove when no longer needed.

3.18 FOOT TRAFFIC

Do not allow construction foot traffic on the Nuraply 3PM installation after laying to avoid dirt and damage to the surface.

3.19 ACCEPTANCE

Arrange for an inspection of the completed work. Protect and maintain roofing until completion of the contract works.

3.20 SUBSEQUENT WORK

Make good any covering cut or deformed by later work. Making good to take the form of inserting a new whole or part infill sheet to maintain the appearance of the covering as originally laid.

Completion

3.21 COMPLETION MATTERS

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

4 SELECTIONS

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

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Nuratherm insulated roof system

4.1 NURATHERM INSULATED ROOF SYSTEM ON PLYWOOD, CROSS LAMINATED TIMBER AND STRANDBOARD

Location:	Replacement roofing to level 05 bedroom and ensuite & level 04 walk in wardrobe
Supplier:	Nuralite Waterproofing Limited
Substrate:	Plywood
Substrate adhesion:	Nuraflux QD
Vapour barrier:	Nuraply ALU
Insulation layer:	IKO Nuratherm ALU insulation board
Insulation thickness:	140mm
R-value:	R6.6
Fixings:	IKO Fix fasteners - fixing pattern to suit wind loading (for fixing insulation board to substrate)
Base layer:	Nuraply 3PV-SA
Top layer:	Nuraply 3PM
Colour:	Slate

Accessories

4.2 NURAPLY ACCESSORIES

Location:	New membrane roofs to L04 & L05
Supplier:	Nuralite Waterproofing Ltd
Type:	Nuratrim - aluminium edge accessory 100mm high x 80mm wide Nuravent -roof vent Gutter Lip Trim Drip Edge Trim L profile 50mm x 50mm

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4554 SKYLIGHTS

1 GENERAL

This section relates to the manufacture, supply, and installation of sloped overhead skylights including:

- proprietary skylights fixed

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 E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
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 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
AS/NZS 2208	Safety glazing materials in buildings
NZS 3604	Timber-framed buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
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
AS/NZS 4666	Insulating glass units
BS EN 673	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
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
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.
BRANZ BU 634	Finishing Aluminium

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Warranties

1.3 WARRANTY - MANUFACTURER / SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years: For the supply of product as specified in SELECTIONS

- 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:

10 years: For the installation of product as specified in SELECTIONS.

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS

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

1.6 SHOP DRAWINGS

Submit shop drawings showing product profile, components, installation details, including fixings flashings and accessories.

1.7 SELECTION OF GLASS

Selection of glass for sloped overhead glazing and insulated glass units to NZS 4223.4 and NZS 4223.2.

1.8 SAFETY GLAZING MATERIAL

To NZS 4223.3, and the relevant requirements of AS/NZS 2208. Ensure material is legibly marked and if cut by the distributor or installer mark each piece to NZS 4223.3.

Performance

1.9 THERMAL PERFORMANCE - SKYLIGHTS

Thermal performance of skylights to NZBC H1/AS1 or H1/AS2 & NZBC H1/VM1 or H1/VM2. The construction R-value of skylight determined by NZBC H1/VM1 or H1/VM2, Appendix D, D2 Skylights:

- Thermal transmittance of skylights in accordance with ISO 10077-1.
- Thermal transmittance of framing in accordance with ISO 10077-2.
- Thermal transmittance of glazing using BS EN 673, considering the effects of horizontal or angled glazing on the heat transfer.

Refer to SELECTIONS for Construction R-values.

1.10 PERFORMANCE, WIND, DEAD, SNOW, AND LIVE ACTIONS

The design wind pressures, and snow loads to NZS 3604 and NZS 4223.4. Live loads and glazing design, for glass or equivalent plastics, to NZS 4223.4, and to manufacturer's literature and details.

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2 PRODUCTS

2.1 SKYLIGHTS FIXED

Prefinished aluminium exterior frame with timber internal frame, fitted with toughened double glazing (IGU), complete with manufacturer's flashing kit.
Refer to SELECTIONS for type, finish and accessories.

Components

2.2 ALUMINIUM EXTRUSIONS

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

2.3 ALUMINIUM SHEET AND STRIP

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

Alloy designation: 5251 - H16 or 5005 - H16.

2.4 STAINLESS STEEL SHEET AND STRIP

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

2.5 FIXINGS

Ensure all fixings and brackets are compatible with the skylight. Do not use electroplated zinc fasteners or brass fastenings.

2.6 GLAZING

IGU to AS/NZS 4666, NZS 4223.2 and NZS 4223.1

2.7 FLASHINGS GENERALLY

Material, grade and colour of flashings to be compatible with the roofing material. Use proprietary flashing kits where supplied by the manufacturer.

Accessories

2.8 SKYLIGHT HARDWARE

Fasteners, stays, locks, vents and other hardware as scheduled. Refer to SELECTIONS for type and finish. Where hardware is not scheduled, use hardware from manufacturer's standard range.

Finishes

2.9 POWDER COATED ALUMINIUM - EXTRA-DURABLE POLYESTER

Polyester powder organic coating in accordance with WGANZ PQAS, AS 3715, and AAMA 2603.

2.10 TIMBER TREATMENT

Treated with water repellent coating, suitable for later finishing. Refer to 6721 PAINTING INTERIOR.

3 EXECUTION

Generally

3.1 CONFIRM

Confirm framed openings on site for dimensions, to suit the proprietary skylight.

3.2 EXECUTION GENERALLY

Check that the preparation of the opening is to NZBC E2/AS1, 8.1.7 Roof penetrations.

3.3 HARDWARE GENERALLY

Factory fit all required and scheduled hardware.

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3.4 HANDLING

Avoid distortion of elements during transit, handling and storage. Prevent pre-finished surfaces from rubbing together. Prevent contact with mud, plaster and cement. Do not deliver to site any elements which cannot be immediately unloaded into suitable conditions of storage.

3.5 RETAIN PROTECTIVE COVERINGS

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

Skylights

3.6 INSTALL SKYLIGHTS

Check that the trimmed openings are formed and constructed to suit the required units. Do not proceed until roof and structural openings are properly formed and weathertight roof flashings installed. Install and fix the skylight units strictly in accordance with the skylight manufacturer's requirements and installation instructions. Repack any thermal insulation around rough openings where disturbed by the installation. Install proprietary flashings and overflashings as detailed by the manufacturer to make the installation completely weatherproof.

3.7 SKYLIGHT ACCESSORIES AND OPERATING SYSTEMS

Install selected accessories and hardware and complete all operating systems.

Completion

3.8 CLEAN FRAMES AND GLAZING

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

3.9 CONFIRM

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

4 SELECTIONS

4.1 ROOFING PROFILE

Confirm with main Contractor before manufacture/supply of skylight. Refer to the appropriate roofing section for more detail.

Roofing material:	Nuratherm insulated warm roof system
Roofing profile:	Refer drawings
Roof pitch:	Refer drawings

Performance

4.2 THERMAL PERFORMANCE - SKYLIGHTS

Skylight Number:	Construction R-value:
Skylight 01 - WIR	R0.62

Skylights

4.3 SKYLIGHT FIXED

Location:	Walk in wardrobe
Brand:	APL or similar approved
Model:	pyramid style skylight
Glazing:	Refer 4610VR
Colour:	To match window joinery
Accessories:	n/a

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Components

4.4 FLASHINGS

Supplied with skylight: 3mm powdercoated aluminium flashings

For flashings supplied with roofing refer to appropriate roofing section and details.

Accessories

4.5 FINISHING TRIM

Ceiling diffusers:	n/a
Security grilles:	n/a

Finishes - Powder Coating

4.6 POWDER COATED ALUMINIUM - EXTRA-DURABLE POLYESTER

Type:	Polyester organic powder coating
System integrity:	Minimum 10-years film integrity; 10-years colour integrity
Thickness:	Average of 90 microns with a minimum of 50 microns
Colour:	To match window joinery
Finish:	Satin

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4610VR VIRIDIAN GLASS RESIDENTIAL GLAZING

1 GENERAL

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

- windows and doors
- frameless shower and bath screens
- mirrors and mirror frames

1.1 RELATED WORK

Refer to 4521AR APL ALUMINIUM WINDOWS AND DOORS for aluminium joinery.

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
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
AS/NZS 2208	Safety glazing materials in buildings
NZS 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.Supp1	Glazing in buildings - Supplement 1 to NZS 4223.1:2008 and NZS 4223.4:2008
NZS 4223.2	Glazing in buildings - Insulating glass units
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live action
AS/NZS 4666	Insulating glass units
BRANZ BU 636	Protecting glass from damage
BPS	Building Product Specifications

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Viridian Architectural Glass, Architectural Glass Guide

Manufacturer/supplier contact details

Company:	**Viridian**
Web:	www.viridianglass.co.nz
Email:	info@viridianglass.net.nz
Telephone:	0800 847 434

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years:	For insulating glass units
10 years:	For toughened glass
5 years:	For laminated glass

- Provide the warranty in the standard form in the general section 1237WA WARRANTY

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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 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Viridian Glass**, products or systems.

Performance

1.6 THERMAL STRESS ANALYSIS

Obtain the glass manufacturer's thermal stress analysis for spandrel panels and for tinted, reflective and other solar control vision glasses 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 as required by NZS 4223.1 and NZS 4223. Supp 1.

2.2 LAMINATED GLASS

Grade A safety glazing material to AS/NZS 2208 with PVB, EVA or SentryGlass interlayer.

2.3 TOUGHENED GLASS

Grade A safety glazing material to AS/NZS 2208. Refer to SELECTIONS.

2.4 SEALED INSULATING GLASS UNITS (IGU'S)

To the performance requirements of 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 the 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

Materials, mirrors

2.5 MIRROR GLASS

Clear silvering quality annealed mirror glass, including silver, activation, passivation and two protective coats.

2.6 SAFETY MIRROR GLASS

4 mm and 6 mm Float plate mirror with silver plating and vinyl coating, safety glazing material to AS/NZS 2208.

Materials, shower and bath screens

2.7 GLASS SHOWER AND BATH SCREENS

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

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Components, general

2.8 JOINTING, PUTTY AND SEALING MATERIALS

Ensure jointing, putty and sealing materials compatible with glass substrates. Confirm compatibility with laminated glass, IGU's and coatings.

Components, aluminium and uPVC glazing

2.9 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.

2.10 SETTING BLOCKS

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

Components, wall mounted glass (mirrors and splashbacks)

2.11 GLASS ADHESIVE

Adhesive mirror-mastic and double-sided adhesive tape.

2.12 MIRROR DE-MISTER

Refer to BATHROOM AND TOILET FIXTURES for type.

3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

To NZS 4223.1, NZS 4223.2, 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 of accurate size with clean, undamaged edges and surfaces.

3.4 GLASS THICKNESS

If not specifically stated in the glazing schedule determine the minimum thickness of glass for each sheet as required by NZS 4223.1, NZS 4223.3, NZS 4223.4, and NZS 4223. Supp 1. For windows tested to NZS 4211, ensure glass meets the requirements of the window testing.

Determine the final glass thickness based on whether wind loading or human impact considerations govern.

3.5 REBATE DIMENSIONS

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

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 as modified by BPS paragraph 4.4.1.4 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**, Section 5, **Framed**, **Unframed**, **Partly FramedGlass Assemblies**.

3.14 INSTALL SAFETY GLASS

To NZS 4223.3.

Application - wall mounted glass (mirrors and splashbacks)

3.15 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

3.16 INSTALL GLASS SCREENS

Install shower and bath screens and doors to manufacturer's requirements. Fix wall channel with silicone sealant.

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.

3.18 MANIFESTATIONS

To NZS 4223.3, 2.2 Manifestation (making glass visible).

Completion

3.19 TRADE CLEAN

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

3.20 REPLACE

Replace damaged, cracked or marked elements.

3.21 LEAVE

Leave work to the standard required by following procedures.



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3.22 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

Performance - wind

4.1 WIND ZONE - NON-SPECIFIC DESIGN

Building wind zone: VH (as determined from NZS 3604, NZS 4223.4)

Glass by type

4.2 VIRIDIAN LIGHTBRIDGE1.1™ - HI PERFORMANCE LOW E INSULATING GLASS UNITS (IGU'S)

Location:	Windows & doors
Brand/type:	Viridian LightBridge1.1™
Outer glass type:	Vfloat clear
Thickness:	As per NZS4223
Spacer width:	14mm (recommended)
Space gas:	Argon
Inner glass type:	LightBridge1.1™ Low E
Coated surface:	Low E on surface #3

Mirrors

4.3 VIRIDIAN MIRROR

Location:	Bathroom & ensuite
Brand/type:	Viridian MirraEcho™
Dimensions:	As per drawings
Thickness:	6mm
Fixing method:	Glue fixed
Edgework:	Flat polish all edges

Glass shower and bath screens

4.4 VIRIDIAN TOUGHENED - FRAMELESS SHOWER SCREENS AND DOORS

Location:	Bathroom & ensuites
Brand/type:	Viridian VTough™
Glass:	Clear toughened
Thickness:	10mm
Hardware:	Viridian 18mm x 18mm Glazing channels

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4711 THERMAL INSULATION

1 GENERAL

This section relates to materials installed, laid, hung or fitted as thermal insulation to the building fabric.

1.1 RELATED WORK

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

Refer to 4711T TERRA LANA for batt insulation
Refer to roofing sections for 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 (term used by some manufacturers)
EPS	Expanded polystyrene sheets

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 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 3000	Electrical installations (Known as the Australian/New Zealand Wiring Rules)
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
AS/NZS 4859.1	Thermal insulation materials for buildings - General criteria and technical provisions
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance.

Health and Safety at Work Act 2015

1.4 WARRANTY - MANUFACTURER/SUPPLIER

15 years	For materials
5 years	For workmanship

- 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.

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2 PRODUCTS

Materials

2.1 CELLULAR POLYSTYRENE INSULATION

Proprietary extruded polystyrene (XPS) foam board.

Components

2.2 ADHESIVE TAPE

Adhesive tapes to compliment the underlay. Pressure sensitive aluminium foil tapes for joining foil insulation and vapour barriers.

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 HANDLING

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

3.4 HAZARD & RISK MANAGEMENT

To Health and Safety at Work Act 2015 and take all safety precautions necessary to reduce potential hazards and risks.

3.5 INSPECTION

Before starting installation of blankets and pads, check that the location and framing are free from moisture, that the cavities are not interconnected and that mesh, netting, underlays and vapour barriers are in place.

Application

3.6 INSTALL INSULATION - GENERAL

Lay, install, fit and fix insulation without gaps, tucks, folds and over compaction to NZBC H1/AS1 or AS2 and insulation manufacturer's requirements. For all housing and buildings up to 300m², install in accordance to NZS 4246 sections 5 Walls, 6 Ceilings & Roofs, 7 Underfloor - Suspended Framed Floors and 10 Concrete Slab-on-Ground Insulation, for residential light timber or steel framed buildings. 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.

3.7 FIT EPS INSULATION - UNDER CONCRETE FLOORS

Lay XPS on damp proof membrane before pouring the concrete floor slab.

Completion

3.8 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.

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4.1 EXPANDED POLYSTYRENE INSULATION

Location:	Under slab
Brand / Product:	Goldfoam
Type:	XPS
R Value:	3.6
Thickness:	100mm



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4711T TERRA LANA NATURAL WOOL INSULATION

1 GENERAL

This section relates to **Terra Lana** wool and polyester fibre blend insulation for new and retrofit residential buildings. Installed, laid, hung or fitted as thermal and acoustic insulation, including:

- ceiling service cavity insulation
- skillion/truss roof insulation
- I-Beam rafter fillet
- wall and service cavity insulation
- wall insulation
- underfloor insulation
- new build drop in floor insulation
- pipe lagging
- acoustic internal walls/mid-floor insulation

1.1 RELATED WORK

Refer to 4161 UNDERLAYS, FOIL AND DPC for wall underlay and roofing underlay.

REFER TERRA LANA H1 REPORT FOR INSULATION BUILDUP 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:

SCI	side clearance to insulation

Documents

1.3 DOCUMENTS

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

NZBC C/AS1	Protection from fire for buildings with sleeping (residential) and outbuildings (risk group SH)
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC C/VM1	Protection from Fire
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC G9/VM1	Electricity
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
AS/NZS 5110	Recessed Luminaire Barriers
AS/NZS 3000	Electrical installations (Known as the Australian/New Zealand Wiring Rules)
AS/NZS 4859.1	Thermal insulation materials for buildings - General criteria and technical provisions
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings

BRANZ Appraisal 682 Terra Lana Wool Insulation
Health and Safety at Work Act 2015.

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

Terra Lana, Technical Datasheet, 1 March 2023
Branz Appraisal 682 - Terra Lana Wool Insulation
Terra Lana 50-year product Warranty
Terra Lana Drop-In Floor insulation - 14-day product exposure Warranty
Terra Lana Wool Insulation, Installation Instructions. Version 1, 5 December 2022
Marshall Day Acoustics - report on Terra Lana 90mm insulation - Chatterblock

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Marshall Day Acoustics - report on Terra Lana 60mm insulation - Chatterblock

Manufacturer/supplier contact details

Company:	**Terra Lana Products Ltd**
Web:	www.terralana.co.nz
Email:	sales@terralana.co.nz
Telephone:	0800 485 262 / (03) 982 0211

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

50 years: For materials (refer Terra Lana for details)

- 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 GENERAL

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Terra Lana** systems, or associated components and products.

1.8 RETURNING OFFCUTS TO TERRA LANA FACTORY FOR RECYCLING

After completion of works, the installer/contractor contacts Terra Lana manufacturer/supplier to organise return of any offcuts to the factory for recycling.

Performance - General

1.9 COMPLIANCE

Terra Lana Wool Insulation, meets the requirements of Branz Appraisal 682 [2022] when designed, used, installed and maintained within the standards and conditions of this Appraisal.

1.10 FIRE PREVENTION

Provide separation or protection from heat sources: fireplaces, heating appliances, flues, chimneys and recessed luminaires to NZBC C/VM1, NZBC C/AS1-AS2 and NZBC G9/VM1.

1.11 SOUND RATING REQUIREMENTS

Provide sound rated systems as detailed in SELECTIONS.

2 PRODUCTS

Materials

2.1 CEILING SERVICE CAVITY INSULATION

Terra Lana Ceiling Service Cavity insulation to NZBC H1/AS1-AS2 and AS/NZS 4859.1, is manufactured from a minimum of 60% recycled and new, sheep wool fibre, combined with high performance melt bond polyester fibres. Refer to SELECTIONS for options.

2.2 SKILLION ROOF INSULATION - SEGMENT

Terra Lana Skillion Roof insulation to NZBC H1/AS1-AS2 and AS/NZS 4859.1, is manufactured from a minimum of 60% recycled and new, sheep wool fibre, combined with high performance melt bond polyester fibres. Refer to SELECTIONS for options.

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2.3 TRUSS ROOF INSULATION - SEGMENT

Terra Lana Truss Roof insulation to NZBC H1/AS1-AS2 and AS/NZS 4859.1, is manufactured from a minimum of 60% recycled and new, sheep wool fibre, combined with high performance melt bond polyester fibres. Refer to SELECTIONS for options.

2.4 SINGLE LAYER TRUSS ROOF INSULATION

Terra Lana Single Layer Truss Roof insulation to NZBC H1/AS1-AS2 and AS/NZS 4859.1, is manufactured from a minimum of 60% recycled and new, sheep wool fibre, combined with high performance melt bond polyester fibres. Refer to SELECTIONS for options.

2.5 DOUBLE LAYER TRUSS ROOF INSULATION - SEGMENT

Terra Lana Double Layer Truss Roof insulation to NZBC H1/AS1-AS2 and AS/NZS 4859.1, is manufactured from a minimum of 60% recycled and new, sheep wool fibre, combined with high performance melt bond polyester fibres. Refer to SELECTIONS for options.

2.6 WALL INSULATION - SEGMENT / BLANKET

Terra Lana Wall insulation to NZBC H1/AS1-AS2 and AS/NZS 4859.1, is manufactured from a minimum of 60% recycled and new, sheep wool fibre, combined with high performance melt bond polyester fibres. Refer to SELECTIONS for options.

2.7 TERRA LANA PIPE LAGGING - HOT WATER PIPING

Terra Lana Pipe Lagging insulation to NZBC H1/AS1-AS2 and AS/NZS 4859.1, is manufactured from recycled and natural wool fibres on a jute substrate.

2.8 TERRA LANA CHATTERBLOCK® ACOUSTIC WALL / MID-FLOOR INSULATION

Terra Lana Chatterblock® acoustic insulation to NZBC H1/AS1-AS2 and AS/NZS 4859.1. Recycled Terra Lana insulation offcuts blended with polyester melt bond fibre. It varies in colour from light to dark grey. Chatterblock® is designed to absorb reverberation within walls, to improve the acoustic performance of wall systems. Refer to SELECTIONS for options.

Components

2.9 WIRE NETTING

Refer to 4161 UNDERLAYS, FOIL AND DPC for wire netting used to support the insulation.

2.10 PLASTIC STRAPPING TAPES

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

For drained cavities where stud spaces are greater than 450mm and only flexible underlay is used, strapping required to NZBC E2/AS1, paragraph 9.1.1.5.

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: 20% maximum for timber framing at the time of insulation installation
Location and framing Cavities are not interconnected

3.4 HAZARD & RISK MANAGEMENT

To Health and Safety at Work Act 2015 and take all safety precautions necessary to reduce potential hazards and risks. Refer also to NZS 4246, Appendix B. - Health and Safety.

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Application - general

3.5 INSULATION - GENERAL

Remove insulation from packaging within 3 months for full loft recovery.

3.6 INSTALL INSULATION - GENERAL

Lay, install, fit and fix insulation without gaps, tucks, folds and over compaction to NZBC H1/AS1 H1/AS2, C/AS1, C/AS2, BRANZ Appraisal 682 and the recessed light fitting manufacturer's requirements. For housing and buildings up to 300m². Install in accordance to NZS 4246 section 6 Ceilings & Roofs. For buildings greater than 300m². Install insulation in accordance with AS/NZS 3000 as required by NZBC G9/VM1. 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. For optimum performance, use within 6-months of the date of manufacture (on the pack label).

3.7 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.

Application - insulation ceiling

3.8 FIT CEILING INSULATION BLANKET - BETWEEN RAFTERS / TRUSS BOTTOM CHORDS

Friction fit **Terra Lana** insulating blankets in place to completely fill the cavity. Slightly oversize by 10 to 15mm for friction fitting to framing or abutting another segment. Use smaller pieces for smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating blankets over the whole of the installation. Staple to the side of rafters/bottom chord where extra support is required. Refer to SELECTIONS for options.

3.9 FIT ROOF TRUSS DOUBLE LAYER SYSTEM

Lay a second layer of insulation, perpendicular to the bottom layer, covering the top of the truss bottom chords. Leave no gaps between, and maintain full thickness of the insulating blanket over the whole of the installation. Refer to SELECTIONS for options.

3.10 FIT ROOF BATTEN INSULATION (FOR SKILLION AND TRUSS)

After fixing ceiling battens, and the ceiling insulation is installed between rafters or truss bottom chords. Friction-fit **Terra Lana** roof batten insulation between timber battens, below rafter/truss bottom chords. Slightly oversize by 15 to 20mm and staple at 300mm centres to the side of timber battens. If installing between steel rondo batten, support by stapling through the insulation, directly into the rafter above. If installed above a suspended ceiling, strapping could be used for extra support if needed. Use smaller pieces for smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulation over the whole of the installation. Refer to SELECTIONS for options.

Application - insulation wall

3.11 FIT WALL INSULATION

Friction fit **Terra Lana** insulating segments in place to completely fill the whole of the cavities. Tear across the width of the Fold at dwangs/nogs and the bottom plate aiming to slightly oversize by 5 to 10mm on each edge for friction fit to framing and each other. Rip and fit smaller pieces for smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulation over the whole of the installation.

Refer to SELECTIONS for options.

Application - new build, drop in from above floor joists

3.12 STAPLE PLASTIC STRAPPING TAPE ON TOP OF JOISTS

Using the proprietary set-down tool supplied by Terra Lana, staple 19mm wide plastic strapping to Terra Lana Installation Guide at 300mm centres maximum, and within 150mm at each end of the insulation segment. For segments less than 500mm in length, a minimum of two straps are required. Maintain the minimum set-down for each joist spacing.

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Application - hot water pipes

3.13 FIT TERRA LANA PIPE LAGGING - HOT WATER PIPING

Fit **Terra Lana Pipe Lagging**, tubular or flat, to Terra Lana instructions.

Application - components

3.14 LAY WIRE NETTING - UNDER RAFTERS/JOISTS / PURLINS

Lay at right angles under the rafters/roof joists/ceiling battens. Pull tight and fix.

3.15 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.

Completion

3.16 COMPLETION MATTERS

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

4 SELECTIONS

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

4.1 TERRA LANA SKILLION/TRUSS ROOF INSULATION

Location:	Refer to drawings
Brand:	**Terra Lana Skillion/Truss Roof Insulation**
R-Value:	R3.6
Dimensions:	140mm
Colour:	Grey

4.2 TERRA LANA TRUSS ROOF DOUBLE-LAYER INSULATION

Location:	Refer to drawings
Brand:	**Terra Lana Truss Roof Double Layer Insulation**
R-Value:	R7.2 (R3.6 + R3.6)
Dimensions:	360mm
Colour:	Grey

4.3 TERRA LANA WALL INSULATION - FOR 90MM STUDS

Location:	Refer to drawings
Brand:	**Terra Lana Wall Insulation**
R-Value:	R2.4
Dimensions:	90mm
Colour:	Grey

4.4 TERRA LANA WALL INSULATION - FOR 140MM STUDS

Location:	Refer to drawings
Brand:	**Terra Lana Wall Insulation**
R-Value:	R3.6
Dimensions:	140mm
Colour:	Grey

4.5 TERRA LANA PIPE LAGGING - HOT WATER PIPING

Location:	Hot water pipes
Brand:	**Terra Lana Pipe Lagging**
Thickness:	7mm
Colour:	Grey

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4.6 TERRA LANA CHATTERBLOCK® ACOUSTIC INSULATION- INTERNAL WALLS/MID-FLOOR INSULATION

Location:	Refer to drawings
Brand:	**Terra Lana Chatterblock®**
Dimensions:	90mm 140mm
Colour:	Grey

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4811S SIKA SEALANTS

1 GENERAL

This section relates to the selection of Sika sealants/adhesives and appropriate application methods for sealants nominated in other work sections.

It includes:

- Sika sealants
- Sika fire rated sealants
- Sika adhesives
- All required associated primers, cleaners and accessories necessary for installation.

1.1 ABBREVIATIONS

The following abbreviations and terms are used throughout this part of the specification:

VOC	Volatile Organic Compound

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 1530.4:2005	Methods for fire tests on building materials, components & structures. Part 4: Fire resistance test of elements of construction
AS/NZS 4020	Testing of products for use in contact with drinking water
ASTM C719	Standard test method for adhesion and cohesion of elastomeric joint sealants under cyclic movement
EN 1366.4	Fire resistance tests for service installations. Linear joint seals.
ISO 9047	Building construction - Jointing products - Determination of adhesion/cohesion properties of sealants at variable temperatures
ISO11600	Building construction - Jointing products - Classification and requirements for sealants

1.3 MANUFACTURER'S DOCUMENTS

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

Relevant Sika Product	Technical Data Sheets
Relevant Sika Product	Safety Data Sheets
CETEC Test Certificates	For VOC content of selected Sika sealants
CSIRO Test certificates	For fire rating of various Sika sealants
EXOVA Test certificates	For fire rating of various Sika sealants
BRANZ Appraisal 311 [2024]	Sikaflex® MS (Building Sealant)
BRANZ Appraisal 613 [2024]	Sikaflex® AT - Facade Sealant

Manufacturer/supplier contact details:

Company:	Sika (NZ) Ltd
Web:	nzl.sika.com
Email:	info@nz.sika.com
Telephone:	0800 SIKA NZ, 0800 745 269

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years: For Sika sealants and adhesives

- Provide this warranty on the Sika standard form. (For materials only. Warranty excludes application)
- Commence the warranty from the date of practical completion of the contract works.
- **Sika** (NZ) Ltd will warrant that Sika sealant products will perform in accordance with the information stated in **Sika** (NZ) Ltd current Technical Data Sheets.
- Refer to **Sika** (NZ) Ltd for further information on warranty.

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

Sealant work, including preparation, to be carried out by competent and experienced sealant applicators.

1.7 SEALANT SELECTION

Refer to the **Sika** (NZ) Ltd current Technical Data Sheet before commencing sealant installation. Ensure that the correct sealant has been selected for the intended application and substrates. Check that the joint design allows for movement and or substrate thermal expansion and contraction, and is within the sealants range of service.

1.8 NO SUBSTITUTIONS

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

2 PRODUCTS

Joint Substrate Primers & Accessories

2.1 NON-POROUS SUBSTRATE CLEANER - TO IMPROVE SEALANT ADHESION

Sika Aktivator-205, a transparent, alcohol based, one component cleaner with adhesion promoters for cleaning and activating non-porous substrates prior to the application of Sika sealants. For use with Sika products only.

2.2 POROUS SUBSTRATE PRIMER - TO IMPROVE SEALANT ADHESION

Sika Primer-3N, transparent solvent based, one component, reactive epoxy resin primer for use on a wide range of porous substrates. For use with Sika products only.

2.3 BACKING ROD - TO CONTROL DEPTH OF JOINT SEALANT

Sika PEF Backing Rod is a closed cell polyethene foam backing rod used to fill the base of a joint to control depth of applied sealant. Available in a range of diameters.

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2.4 BOND BREAKER TAPE

A pressure sensitive self-adhesive polyethylene or PVC bond breaker tape. Masking tape is not permitted.

Facade sealants for concrete / masonry brickwork - non-fire rated

2.5 FACADE SEALANT - HIGHEST MOVEMENT, POLYURETHANE, PAINTABLE

SikaHyflex®-250 Facade, is a durable, low VOC, one component, solvent free, moisture curing elastic polyurethane sealant with a joint movement capacity of +100/-50% and elongation at break of 800%. Conforms to: ISO 11600 Type F, Class 25LM.

Can be over-painted with a range of paints and coatings.

2.6 FACADE SEALANT - MEDIUM MOVEMENT, HYBRID, PAINTABLE

Sikaflex® AT-Facade, is a one component hybrid (silane terminated polymers), low VOC, moisture curing sealant with good weathering and a joint movement capacity +/-25%. Conforms to ISO 11600 Type F, Class 25LM and has a BRANZ Appraisal 613.

Can be over-painted with a range of paints and coatings.

2.7 FACADE SEALANT / AIR SEAL - MEDIUM MOVEMENT, MS, PAINTABLE

Sikaflex® MS is a one component MS (silane modified polymer), low VOC, moisture curing sealant with good weathering and a joint movement capacity +/-25%. Conforms to ISO 11600 Type F, Class 25LM and has a BRANZ Appraisal 311. Complies with NZBC E2/AS1, 9.1.5 Air seals, for use as an air seal around exterior windows and doors.

Can be over-painted with a range of paints and coatings.

Facade sealants for concrete / masonry brickwork - fire rated

2.8 FACADE SEALANT - PU, FOR FIRE RATED JOINTS, UP TO 4 HOURS

Sikaflex®-400 Fire is a one component, fire rated, polyurethane, moisture curing, paintable, elastic joint sealant with a movement capacity of +/-35%. For internal and external applications. Up to 4 hour fire resistance (depending on tested joint configuration) in accordance with AS 1530.4 and EN1366.4.

Facade sealants for aluminium composite panel systems and metal profiled sheet

2.9 FACADE SEALANT - HIGHEST MOVEMENT, POLYURETHANE, PAINTABLE

SikaHyflex®-250 Facade is a durable, low VOC, one component, solvent free, moisture curing elastic polyurethane sealant with a joint movement capacity of +100/-50% and elongation at break of 800%. Conforms to ISO 11600, Type F, class 25LM.

Can be over-painted with a range of paints and coatings.

Facade sealants for timber / fibre cement sheets and boards

2.10 FACADE SEALANT - HIGHEST MOVEMENT, POLYURETHANE, PAINTABLE

SikaHyflex®-250 Facade is a durable, low VOC, one component, solvent free, moisture curing elastic polyurethane sealant with a joint movement capacity of +100/-50% and elongation at break of 800%. Conforms to ISO 11600, Type F, class 25LM.

Can be over-painted with a range of paints and coatings.

2.11 FACADE SEALANT - MEDIUM MOVEMENT, HYBRID, PAINTABLE

Sikaflex® AT-Facade is a one component hybrid (silane terminating polymer), low VOC, moisture curing sealant with good weathering and a joint movement capacity +/-25%. Conforms to ISO 11600 Type F, class 25LM and has a BRANZ Appraisal 613.

Can be over-painted with a range of paints and coatings.

2.12 FACADE SEALANT - MEDIUM MOVEMENT, MS, PAINTABLE

Sikaflex® MS is a one component MS (silane modified polymer), low VOC, moisture curing sealant with good weathering and a joint movement capacity +/-25%. Conforms to ISO 11600 Type F, Class 25LM and has a BRANZ Appraisal 311. Complies with NZBC E2/AS1, 9.1.5 Air seals, for use as an air seal around exterior windows and doors.

Can be over-painted with a range of paints and coatings.



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Window and door sealants - aluminium / timber / PVC

2.13 WINDOW & DOOR SEALANT - HIGHEST MOVEMENT, POLYURETHANE, PAINTABLE

SikaHyflex®-250 Facade is a durable, low VOC, one component, solvent free, moisture curing elastic polyurethane sealant with a joint movement capacity of +100/-50% and elongation at break of 800%. Conforms to ISO 11600, Type F, class 25LM. Air seals, for use as an air seal around exterior windows and doors.

Can be over-painted with a range of paints and coatings.

2.14 WINDOW & DOOR SEALANT - MEDIUM MOVEMENT, HYBRID, PAINTABLE

Sikaflex® AT-Facade, is a one component hybrid (silane terminating polymer), low VOC, moisture curing sealant with good weathering and a joint movement capacity +/-25%. Conforms to ISO 11600 Type F, class 25LM and has a BRANZ Appraisal 613. Air seals, for use as an air seal around exterior windows and doors.

Can be over-painted with a range of paints and coatings.

2.15 WINDOW/DOOR SEALANT - MEDIUM MOVEMENT, MS, PAINTABLE

Sikaflex® MS is a one component MS (silane modified polymer), low VOC, moisture curing sealant with good weathering and a joint movement capacity +/-25%. Conforms to ISO 11600 Type F, Class 25LM and has a BRANZ Appraisal 311. Complies with NZBC E2/AS1, 9.1.5 Air seals, for use as an air seal around exterior windows and doors.

Can be over-painted with a range of paints and coatings.

Concrete Floor Sealant - control joints & movement joints

2.16 CONCRETE FLOOR - JOINTS IN FLOORS & CIVIL ENGINEERING STRUCTURES

Sikaflex® PRO-3 Purform, is a one component, low VOC, moisture curing polyurethane floor joint sealant with a joint movement capacity of +/- 25% to ISO 9047 and +/-50% to ASTM C719. High chemical and mechanical resistance provides good durability. Conforms to ISO 11600 Type F, Class 25HM. Complies with AS/NZS 4020.

Can be over-painted with a range of paints and coatings.

Roofing sealants

2.17 ROOFING SEALANT - METAL ROOFING PROFILES & FLASHINGS

Sikasil® Roofing and Plumbing, a one component neutral curing silicone sealant with movement joint capacity of +/-25%. Non-corrosive to metals and has excellent adhesion to many substrates including copper and zinc. Conforms to ISO 11600 Type F, class 25LM.

2.18 ROOFING SEALANT - BITUMEN ROOFING & FLASHING

SikaSeal®-173 is a one component, bitumen-based sealant. Compatible with most bitumen roofing systems and bonds to many substrates including timber, concrete and metal. Can be applied to damp substrates and can be used in conjunction with Sika Blackseal Elastic System, a below grade tanking system. Cartridge applied sealant.

2.19 ROOFING SEALANT & FLEXIBLE ADHESIVE - CONCRETE / CLAY / TERRACOTTA TILES

Sikaflex® -123 MS Bond is a one component, polyurethane / MS hybrid, flexible sealant /adhesive based on silane terminated polymers. Excellent adhesion to many porous and non-porous substrates (including PVC and lead).

Interior sealants / adhesives

2.20 BATHROOM ADHESIVE - ACRYLIC SHOWER LINERS & BATHWARE

Sika Showerbond, a one component solvent based, fast grab, gun grade adhesive, specifically formulated for bonding plastic shower linings to unpainted gypsum plasterboard or fibre cement wall linings.

2.21 BATHROOM SEALANT - ACRYLIC BATHWARE

Sikasil ® NG, a one component, neutral curing silicone sealant formulated for use with acrylic, ASB and polycarbonate bathware.

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2.22 INTERIOR GENERAL SEALANT - WALL PANELS, MOULDINGS ETC

Sikasil ® Wet Areas is a one component, neutral curing wet area silicone sealant with joint movement capacity of +/-25%. Good durability and adhesion to a wide range of substrates including standard wet area substrates. Conforms to ISO 11600 Type F & G, class 25LM.

2.23 INTERIOR SOLVENT BASED ADHESIVE - BONDING WALL PANELS

Sika® Nailbond® SB is a one component, solvent based, general purpose, rubber adhesive for bonding internal lining panels including wet area internal lining panels such as seratone or hardiglaze to substrates. Can use on LOSP or CCA treated timber.

2.24 INTERIOR LOW VOC ADHESIVE - BONDING WALL PANELS

Sikaflex® -123 MS Bond is a one component, polyurethane / MS hybrid flexible sealant /adhesive based on silane terminated polymers. Excellent adhesion to many porous and non-porous substrates including wet area internal lining panels such as seratone or hardiglaze.

2.25 INTERIOR GENERAL SEALANT - CERAMIC TILING TO FLOORS & WALLS

SikaSeal®-190 N Silicone is a one component, neutral cure, low odour, silicone sealant with joint movement capacity of +/-50%. Excellent adhesion to tiles and glass. Available in a range of colours which match Sika Ceram grout colours..

Specialist sealants - for clean rooms / potable water / electronics

2.26 SPECIALIST POLYURETHANE SEALANT, - FOOD PREP / CLEAN ROOMS / POTABLE WATER / ELECTRONICS

Sikaflex® PRO-3 Purform, is one component, low VOC, moisture curing polyurethane joint sealant with a joint movement capacity of +/-50% to ASTM C719. Good chemical and mechanical resistance. Conforms to ISO 11600 Type F, class 25HM. Complies with AS/NZS 4020.

Can be over-painted with a range of paints and coatings.

2.27 SPECIALIST SILICONE SEALANT - REFRIGERATION

Sikasil® C (NZ) is one component, neutral cure silicone sealant for use in sealing joints in refrigeration applications with a joint movement capacity of +/-25%. Good durability and adhesion to a wide range of substrates.

Specialist sealants - for civil engineering & swimming pools

2.28 SPECIALIST POLYURETHANE SEALANT, - CHEMICALS / FUELS / WASTE WATER

Sikaflex® PRO-3 Purform, is one component, low VOC, moisture curing polyurethane joint sealant with a joint movement capacity of +/-50% to ASTM C719. Good chemical and mechanical resistance. Conforms to ISO 11600 Type F, class 25HM. Complies with AS/NZS 4020.

Can be over-painted with a range of paints and coatings.

2.29 SPECIALIST SILICONE SEALANT, - SWIMMING POOLS, CHLORINE

Sikasil® Pool is a one component, neutral curing, silicone joint sealant with a joint movement capacity of +/-25%. For use in and adjacent to swimming pools and permanently immersed applications. Good adhesion to ceramic tiles, concrete, glass and metals.

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.

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3.4 CONDITIONS FOR APPLICATION

Ensure conditions for application are clean, dry and dust free as possible. Avoid dust, dirt, water and other contamination settling on the cleaned and prepared joint substrate.

Ensure adequate ventilation is maintained during the preparation and application of sealant work and all relevant health and safety equipment is utilised.

Ensure application of Sika products occurs when the ambient and substrate temperature is in accordance with the appropriate Product Data Sheet.

3.5 JOINT DESIGN

Ensure that joints to be filled are in accordance with the current best practice such as BRANZ Bulletin 584 and in accordance to joint requirements stated in the relevant Product Data Sheet.

Unless stated otherwise in relevant Product Data Sheet, a typical joint should be configured on a 2:1 width to depth ratio. Minimum joint width should be not less than 10mm and should typically not exceed 35mm.

A Sika PEF backing rod should be applied to the base of all open backed joints and a generic bond breaker tape should be adhered to the base of all shallow joints to prevent 3-sided adhesion.

3.6 COMPATIBILITY

Ensure compatibility by using only Sika branded sealants with Sika branded products including cleaners, primers, sealants, adhesives, filler and backing rods. Products should not be substituted without the prior approval of the specifier.

3.7 SUBSTRATE STAINING

Note that some sealants can cause staining on porous substrates such as concrete, masonry and natural stone. If in doubt, compatibility testing should be undertaken to confirm suitability prior to application.

3.8 SEALANT PAINTABILITY

Ensure that a paintable sealant is selected when the sealant joint requires painting. The overpainting of sealant will reduce its flexibility at the coating interface. If in doubt about the sealant / over-coating compatibility, testing should be undertaken to confirm suitability prior to application.

NOTE: This excludes silicone based sealants which are not paintable.

3.9 COLOURS

Refer to SELECTIONS for colour option/s. Where colour is not specified, choose sealant colours from the **Sika** standard/special colour ranges.

3.10 LIMITATIONS

All relevant and current Sika Technical Data Sheets must be consulted prior to application, to ensure that the specified product is suitable based on the actual site / joint conditions observed. All current technical literature is available on nzl.sika.com or by phoning 0800 SIKANZ.

Installation/application

3.11 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Preparatory work

3.12 PRE-COMMENCEMENT CHECK

Ensure that joints to receive Sika sealants are suitable for the proposed application and are within the specified width to depth ratios in accordance with the relevant and current Product Data Sheet.

Ensure that surfaces are sound, dry, free from dust, dirt, scale, laitance, corrosion or other loose material, oil, grease, paint, release agents or other contaminants which may affect the bond, or the performance of the sealing material.

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3.13 TEST SUBSTRATES

If in doubt about the suitability of substrate, test the affected substrate for indications of poor adhesion, staining and contamination.

If poor adhesion is evident from initial tests, consult **Sika** about the application of a suitable cleaning and preparation process and the application of a primer. Only use combinations of sealants and substrates for which favourable adhesion and compatibility have been confirmed.

3.14 SUBSTRATE CLEANING & PREPARATION

Prepare and clean joint substrates in accordance with the relevant and current Product Data Sheet. Protect adjacent surfaces from abrasion or other damage.

Typically concrete surfaces should be ground to remove concrete laitance and other surface contaminates. Non-porous surfaces such as metal to be cleaned with a Sika approved cleaner / activator to remove any contaminating films or barriers.

Apply a suitable masking tape to the adjacent surfaces along the length of joints to prevent contamination during application. Mask off any surfaces which would be difficult to clean if smeared with sealant, or where excess sealant could not be neatly trimmed off or removed.

Application - sealants / adhesives

3.15 INSTALLATION BACKING ROD

Insert a Sika PEF backing rod to the specified depth within the cleaned and prepared joint to provide a solid base for the sealant application.

The diameter of the Sika PEF backing rod should be 25% larger than the gap width and compressed evenly into the joint using a blunt instrument to avoid puncturing or damaging the rod. Do not twist the rod during application. Punctured rod may lead to 'out-gassing' which can cause the bubbling during sealant curing.

The rod should be consistently and evenly installed without any gaps. The midpoint of the installed rod should be sitting at the specified depth for each joint.

3.16 INSTALLATION BOND BREAKER TAPE

Adhere a suitable bond breaker tape to the base of the cleaned and prepared joint. The width of the tape needs to be slightly narrower than the width of the joint and must be adhered in a manner that avoids adhesion to either side of the joint.

3.17 PRIMING - POROUS SUBSTRATES

Confirm the porous primer selection with the selected sealant current Product Data Sheet. Generally, for porous substrates such as concrete, masonry or unpainted timber, apply by brush a uniform, thin film of Sika Primer 3N to the substrate. The primer seals, densifies and increases the surface area of substrate to promote adhesion of the selected sealant.

Allow primer to dry for the recommended time, at least 30 minutes before the application of sealant and should be left no more than 8 hours. Do not prime more than can be sealed in one day. Primed joints that have been left for more than specified time (or overnight) or have become contaminated will need to be cleaned and re-primed prior to sealant application.

Do not contaminate the bond breaker tape or backing rod with primer.

3.18 PRIMING - NON-POROUS SUBSTRATES

Confirm the non-porous primer selection with the selected sealant current Product Data Sheet. Generally, non-porous substrates such as aluminium (coated / anodised), stainless steel, galvanised steel, powdercoated metals, zinc, glazed tiles and paint/epoxy coatings, should be cleaned and treated using Sika Aktivator-205.

Wipe on Sika Aktivator-205 with a clean cloth and allow to dry for minimum 15 minutes and a maximum of 6 hours prior to sealant application. Primed joints that have been left for more than 6 hours (or overnight) or have become contaminated will need to be cleaned and re-treated.

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Do not allow primer to contaminate other surfaces as a slight discolouration on some finishes may occur.

For substrates not mentioned above, refer to the relevant and current Sika Sealant Product Data sheet for priming requirements.

3.19 PRIMING - FOR ACRYLIC AND BITUMEN BASED SEALANTS

Substrate cleaning and preparation to be in accordance with the relevant and current Sika Sealant Product Data sheet. No primers are required for these products.

3.20 SEALANT APPLICATION

Sika sealants are supplied ready to use, insert the cartridge / uni-pack into a sealant pressure gun. After the necessary substrate / joint preparation and priming, extrude uniformly the selected sealant into the joint cavity.

Apply sealant to ensure full contact with the substrate on each side of the joint with no voids or pockets of entrapped air. There should be a minimum amount of overfill.

3.21 SEALANT TOOLING & FINISHING

Tool sealant as soon as practical after application and prior to the sealant surface forming a skin. Tool sealant face firmly to compact into the joint to form a smooth, flat or concave profile, to give the desired effect when cured.

Tooling must be carried out carefully, ensuring that the sealant minimum depth profile is not compromised.

A compatible tooling agent or fresh clean water can be used sparingly to assist with the smoothing of the tooled surface. Do not use products containing solvent, alcohol or fuel, as these products will inhibit the curing of the sealant.

Remove masking immediately after tooling and remove excess sealant from adjoining surfaces before sealant surface starts to skin. Refer to the relevant and current Product Data Sheet for information on curing times. Note skinning times are temperature dependent.

Any cured sealant can only be removed mechanically and care must be taken to avoid damage of surrounding surfaces.

3.22 ADHESIVE APPLICATION

Apply selected Sika adhesive for bonding shower liners and wall panels such as seratone and hardiglaze in accordance with Sika NZ Ltd instruction and the relevant and current Product Data Sheets.

3.23 SURROUNDING WORK

Leave surrounding surfaces in a neat, clean condition with no evidence of spill over.

Completion

3.24 COMPLETION MATTERS

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

4 SELECTIONS

For further details on selections go to nzl.sika.com.
Substitutions are not permitted to the following, unless stated otherwise.

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Facade joints - concrete, masonry & brickwork - non-fire rated

4.1 SIKAHYFLEX®-250 FACADE - FACADE SEALANT FOR CONCRETE, MASONRY, BRICK

Location:	Concrete joints
Product:	SikaHyflex®-250 Facade
Product colour:	Concrete Grey
Joint width	Max 15mm
Substrates:	insitu concrete
Primer/cleaner:	Sika Primer 3N - for porous substrates
Backing:	Sika PEF Backing rod - (diameter - 25% wider than joint)

4.2 SIKAFLEX® AT-FACADE SEALANT - WEATHER AND AIR SEAL

Location:	Exterior or interior sealing of horizontal or vertical joints
Application detail:	substrates including: Porous substrates: blockwork, timber & fibre cement.
Product:	Sikaflex® AT-Facade
Product colour:	To match substrate as closely as possible
Primer/cleaner:	Sika Primer 3N - for porous substrates
Backing:	Sika PEF Backing rod - (diameter - 25% wider than joint)

Facade joints - Timber, fibre-cement sheets & boards

4.3 SIKAHYFLEX 250 FACADE - FACADE SEALANT FOR TIMBER / FIBRE CEMENT

Location:	Timber or fibre cement
Product:	SikaHyflex®250 Facade
Product colour:	Concrete Grey
Joint width:	10mm minimum to 50mm maximum width. Refer to Product Data sheet for guidance if required.
Primer/cleaner:	Sika Primer 3N - for porous substrates
Backing:	Sika PEF Backing rod - (diameter - 25% wider than joint)

Window & Door Sealant - Aluminium / PVC / Timber

4.4 SIKAHYFLEX®-250 FACADE - WINDOW & DOOR SEALANT

Location:	Exterior or interior sealing of window / door joints
Product:	SikaHyflex®-250 Facade
Product colour::	Concrete Grey
Joint width:	10mm minimum to 50mm maximum width. Refer to Product Data sheet for guidance if required.
Primer/cleaner:	Sika Aktivator 205 - for non-porous substrates or Sika Primer 3N - for porous substrates
Backing:	Sika PEF Backing rod - (diameter - 25% wider than joint)

Roof sealant

4.5 SIKASIL® ROOFING AND PLUMBING - METAL ROOFING PROFILES & FLASHINGS

Location:	Use for roofing and plumbing applications including metal roofing systems, flashings, joints, peripheral joints, gutters, downpipes, skylights etc.
Product:	Sikasil® Roofing and Plumbing
Product colour:	Translucent
Primer/cleaner:	None

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Interior sealants and adhesives

4.6 SIKASIL® NG - SEALANT FOR ACRYLIC BATHWARE

Location:	Use for sealing around acrylic, ABS and polycarbonate bathware including shower linings, baths, basins and adjacent building components.
Product:	Sikasil® NG
Product colour:	White
Primer/cleaner:	None

4.7 SIKASIL WET AREAS - GENERAL INTERIOR SEALANT

Location:	Use for general purpose silicone in wet areas such as around wall panels, mouldings, fittings etc
Product:	Sikasil ® Wet Areas
Product colour:	White
Primer/cleaner:	None

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4821 FLASHINGS

1 GENERAL

This section relates to the fabrication and installation of flashing systems not forming part of a proprietary system.

1.1 RELATED WORK

Refer to 4311D DIMOND PROFILED METAL ROOFING for metal roofing.

Documents

1.2 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 3566	Self-drilling screws for the building and construction industries - General requirements and mechanical properties
NZS 3604	Timber-framed buildings
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

Requirements

1.3 QUALIFICATIONS

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

1.4 VERIFY DIMENSIONS

Verify dimensions against site measurements prior to fabrication.

Standards of performance

1.5 DURABILITY REQUIREMENTS

Design and install the flashings appropriate for the durability applications in accordance with NZBC B2/AS1. The Building Code B2, 3.2 requires that all hidden elements have at least the same durability as that of the element that covers it. Refer to NZBC B2/AS1, Table C.1.1.1 and NZBC E2/AS1, Table C.1.1.1A: Material selection.

1.6 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.

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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

Type	Material and finish / colour
General flashings:	0.55mm Colorsteel Maxam / Ironsand to match existing lower roofs (confirm colour on site prior)
Window/doors (visible):	0.55mm Colorsteel Maxam / Electric Cow Matt (to match powder coated windows)
Window/doors (concealed):	0.55mm Colorsteel Maxam / Ironsand
Barge:	0.55mm Colorsteel Maxam / Ironsand to match existing lower roofs (confirm colour on site prior)
Apron:	0.55mm Colorsteel Maxam / Ironsand to match existing lower roofs (confirm colour on site prior)
Parapet capping:	0.55mm Colorsteel Maxam / Ironsand to match existing lower roofs (confirm colour on site prior)

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5111H JAMES HARDIE® FIBRE CEMENT SHEET LININGS

1 GENERAL

This section relates to the supply and installation of **James Hardie®** Villaboard™ Lining and Hardie™ Groove Lining for:

- internal wall linings
- ceiling linings

1.1 RELATED WORK

Refer to 4231HI for RAB for fire & acoustics

Refer to 4239JH for Fibre Cement soffits

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
NZBC C/AS2	Protection from fire for buildings other than risk group SH
AS/NZS 2589	Gypsum linings - Application and finishing
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in buildings

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

James Hardie® documents relating to this part of the work:

Villaboard™ Lining
Hardie™ Groove Lining
Fire and Acoustic Design Manual by James Hardie, May 2025
BRANZ Appraisal 1285 (2025) - James Hardie Fire And Acoustic Wall Systems - 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

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

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

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 NO SUBSTITUTIONS

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



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1.6 SAFE WORKING

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

1.7 COMPLIANCE

Fibre cement sheets to AS/NZS 2908.2.

Performance

2 PRODUCTS

Materials

2.1 PLAIN FIBRE CEMENT SHEET LININGS

James Hardie® Villaboard™ Lining manufactured from treated cellulose fibre, portland cement, sand and water. Cured by high pressure autoclaving and manufactured to AS/NZS 2908.2. Sealed on the face.

2.2 PROFILED FIBRE CEMENT SHEET LININGS

James Hardie® Hardie™ Groove Lining treated cellulose fibre in a matrix of cement and sand autoclaved sheet.

Components

2.3 BATTENS, TIMBER

Minimum 45mm wide, 35mm deep timber with depth suitable for length of fasteners used.

2.4 PACKERS

3 - 4mm timber packers.

2.5 NAILS

6mm and 9mm linings:	40mm x 2.8mm galvanized flathead Hardie™ Flex nails
Over Gypsum plasterboard:	50mm x 2.8mm galvanized flathead Hardie™ Flex nails

2.6 SCREWS FOR POWER SCREW GUN DRIVING

Timber framing

6mm and 9mm linings:	Villadrive 6 gauge x 30mm self embedding screws or Hardie™ Drive self embedding stainless steel screws
Steel framing:	Steel 8 gauge x 32mm self embedding screws

2.7 WALL BOARD ADHESIVE

Polyurethane wallboard adhesive. Refer to James Hardie® product installation manual.

Accessories

2.8 CONTROL JOINTS SECTION

45mm x 10mm shaped PVC control joint or Rondo P35 jointer.

2.9 EXTERNAL CORNER SECTIONS

30mm x 30mm x 1.2mm PVC angle.

2.10 POLYETHYLENE TAPE

Self adhesive polyethylene for behind expressed joints and expressed control joints.

2.11 JOINT REINFORCING TAPE

52mm wide perforated paper tape.

2.12 BEDDING COMPOUND

Hardie™ Base Coat compound powder.

2.13 FINISHING COMPOUND

Hardie™ Top Coat premixed.

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2.14 SEALANT

Silicone or polyurethane sealant. Refer to the James Hardie® installation manual.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 MOISTURE CONTENT

Maximum moisture content of timber framing to NZS 3602.

3.4 PROTECT

Protect joinery, fittings and finishes already in place from water staining or damage from lining installation.

3.5 BUILDING

Ensure building is weatherproof before lining work commences.

3.6 STORAGE

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

3.7 HANDLING

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

3.8 SUBSTRATE

Do not commence work until the substrate is of the standard required by the relevant manufacturer's technical literature for the specified finish; plumb, level and in true alignment. Maximum moisture content of timber framing to NZS 3602.

3.9 FIRE RESISTANCE RATING, FIBRE CEMENT

Install mineral fibre insulation or glass fibre insulation fitted tightly in the timber framing cavity. Apply fire retardant underlay to the exterior face of the framing and fix fibre cement cladding and lining sheets, direct or on cavity. Refer to project drawings for FRR system construction details and James Hardie® Fire and Acoustic Design Manuals for further information.

Application

3.10 FIXING WITH BUTT JOINTS

Cut sheet using the appropriate method for the specified finish. Prepare and fix square edged sheets in accordance with James Hardie Installation Manual. Include flexible sealant in wet areas.

Joint width: 1 - 2mm

3.11 FIXING FLUSH JOINTED WALLS, PAINT OR WALLPAPER

Prepare and fix recessed edge sheets to James Hardie® installation manual. Fix with screws and/or nails at edges.

3.12 FIXING IN CERAMIC TILED AREAS

Prepare and fix sheets, horizontally or vertically and stagger joints where possible, to James Hardie® installation manual.

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3.13 PROVIDE VERTICAL CONTROL JOINTS

Provide vertical control joints at 7.2 metre centres maximum for general application and 4.2 metres centres maximum for tiled applications. Provide acoustic sealant in walls having an acoustic rating.

3.14 PROVIDE HORIZONTAL CONTROL JOINTS

Provide horizontal control joints at 7.2 metres centres maximum for general application and 4.2 metre centres maximum for tiled applications.

3.15 PROVIDE EXTERNAL CORNER ANGLE

Provide perforated PVC external corner angle or paper faced rigid spine corner mould to external corners.

3.16 INTERNAL CORNERS

When used in tiling applications provide a Lumberlock Stud saver to framed internal corner prior to fixing of Villaboard™ Lining.

Provide perforated PVC corner mould, or paper faced rigid spine corner mould or solid blocking to internal corners.

3.17 FORMING HOLES

Required holes accurately formed and cut to James Hardie® requirements.

3.18 SILICONE JOINTS

Provide polyethylene tape behind joints finished with flexible sealant.

Levels of Finish

Refer to AS/NZS 2589.
Refer to SELECTIONS/drawings for required levels of finish.

3.19 LEVEL 0, 1 and 2 FINISHES

Refer to James Hardie® installation manual.

3.20 LEVEL 3 FINISH

Application:	For use in areas which are to receive heavy or medium texture (spray or hand applied) finishes or where heavy paper wall coverings are to be applied as the final decoration.
Jointing/setting:	Joints and corner joints will be set with Hardie™ Base Coat reinforced with perforated paper tape and Hardie™ Top Coat.
Finish:	This level of finish must be sufficiently smooth to accept vinyl, tiles or textured coatings without blemishes.

3.21 LEVEL 4 FINISH

Application:	This is generally the accepted level of finish for domestic construction. It is used where light textures or wall coverings and smooth textured finishes and satin/flat/low sheen paints are illuminated by non-critical lighting.
Jointing/setting:	Refer to flush jointing recommendations on page 11 James Hardie® Villaboard™ Lining installation manual.
Finish:	For use where light-texture coatings or wallpaper or other lightweight wall coverings are to be applied. For painted finishes in non-critical lighting areas flat and low-sheen textured paints are to be applied. Gloss and semi-gloss paints are not generally suitable over this level of finish as any minor blemish will show under critical light. The weight, texture and sheen level or wall coverings applied over this level of finish must be carefully evaluated. Joints and fasteners must be adequately concealed if the wallcovering material is lightweight, contains limited pattern, has a gloss finish, or any combination of these features is present. Unbacked vinyl wall coverings are not suitable over this level of finish.

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3.22 LEVEL 5 FINISH

Application:	This level of finish is for use where gloss or semi-gloss paints are specified or where critical lighting conditions occur on satin, flat or low sheet paints.
Jointing/setting:	Typically all joints and corner joints will have tape embedded in Hardie™ Base Coat applied over all joints, angles, fastener heads and accessories. A thin skim coat of Hardie™ Top Coat must be applied to the entire surface to be plastered. The surface must be finished smooth and free of tool marks and ridges and special care must be taken with the application of the finishing compound to achieve a smooth, true surface suitable for these critical finishes.
Finish:	This level of finish is for use where gloss, semi-gloss, low-sheen or non-textured paints are specified or where critical lighting conditions occur.

Joint Finishing

3.23 JOINT FINISHING FOR LOW SHEEN PAINT

Apply Hardie™ Base Coat to fill recess. Firmly embed perforated paper tape in joints and cover with a thin layer of Hardie™ Top Coat over all joints, angles, fastener heads and accessories and allow to dry. Apply a second coat of Hardie™ Top Coat over the recess and feather the edges to achieve a level 4 finish.

3.24 JOINT FINISHING FOR TILED AREAS

Joints and corner joints set with Hardie™ Base Coat reinforced with perforated paper tape to achieve a level 3 finish.

Completion & Commissioning

3.25 COMPLETION MATTERS

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

4 SELECTIONS

Linings

4.1 JAMES HARDIE® VILLABOARD™ LINING

Location:	All bathroom walls behind tiling
Type:	James Hardie® Villaboard™ Lining
Thickness:	9mm
Fixing method:	Screw
Framing:	Ensure framing @ 600crs

4.2 FIXING CERAMIC TILED AREAS

Location:	Bathroom walls
Fasteners:	Villadrive 6 gauge x 30mm self embedding screw or Hardie™ Drive 7 gauge x 30mm self embedding screw as recommended by tile supplier

4.3 LEVELS OF FINISH

To conform to the following levels of finish:

Location	Finish level
Bathrooms	n/a (not finished surface)

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5113G GIB® PLASTERBOARD LININGS

1 GENERAL

This section relates to the supply, fixing and jointing of GIB® plasterboard linings and accessories to timber and steel framed walls and ceilings to form:

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

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BRANZ Appraisal 394 (2025) GIB® Noise Control Systems
BRANZ Appraisal 427 (2021) GIB® Wet Area Systems
BRANZ Appraisal 928 (2021) GIB EzyBrace® Systems

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 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.

2 PRODUCTS

Materials

2.1 GIB® PLASTERBOARD

Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to AS/NZS 2588. Refer to SELECTIONS for location, type, thickness and finish.

GIB® Standard plasterboard
GIB Wideline® plasterboard
GIB Ultraline® high quality surface plasterboard
GIB Fyreline® fire resistant plasterboard
GIB Braceline® & GIB® Noiseline® dual purpose wall bracing & noise control plasterboard
GIB Aqualine® wet area plasterboard
GIB Toughline®
GIB Toughline® Aqua
GIB Curveline® plasterboard for forming tight curves.

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

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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.

2.10 ACOUSTIC SEALANT

GIB Soundseal® ultra low VOC water based highly flexible acoustic sealant.

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.

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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 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.

3.6 PROTECTION

Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB® Site Guide.

Application

3.7 INSTALL CEILING BATTENS

Install to GIB® Rondo® Ceiling Batten Systems requirements.

3.8 INSTALL GIBFIX® ANGLES

Install GIBFix® Angles to the wall and ceiling junctions to the GIBFix® Framing System requirements. Install GIBFix® Angles before installation of GIB® plasterboard linings.

Run GIBFix® Angles as continuous lengths between framing members. If joints are necessary for the GIBFix® Angles, overlap the angles by a minimum of 300mm and fix as per manufacturers requirements. When jointing GIBFix® Angles, locate the shorter section at the top of the stud.

3.9 INSTALL RONDO FLEXIBLE TRACK

Run Rondo® Flexible Track along the top and bottom of the curved wall area. Cut studs 10mm shorter than the required stud height, to facilitate insertion and positioning of the studs into the Rondo® Flexible Track. Position and fix studs into the Rondo® Flexible Track through the pre-punched holes and fastened off using minimum 13mm x 7g pancake drill tip screws.

When fastening off plasterboard sheets, place fasteners into studs and where possible avoid fastener placement into the Rondo® Flexible Tracks.

3.10 LINING WALLS AND CEILINGS GENERALLY

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

3.11 BOARD ORIENTATION

Minimise joints by careful sheet layout using the largest sheet sizes possible, and generally fixing horizontally. Where part sheets are required for various stud heights they should be positioned so the cut sheet is as low as possible to keep joints below eye level.

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3.12 BOARD INSTALLATION FOR GIBFIX® SYSTEM

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

3.13 FORM NOISE CONTROL SYSTEMS

Form to GIB® Noise Control Systems requirements.

3.14 FORM WET AREA SYSTEMS

Form to GIB Aqualine® Wet Area Systems requirements.

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
Bedroom walls where critical light strikes wall from windows. Refer drawings for locations.	GIB® Standard plasterboard	13mm	5
Typical walls where painted	GIB® Standard plasterboard	13mm	4

4.2 GIB® WATER RESISTANT SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Walls in wet areas (Ensuites) where not tiled Refer drawings for locations.	GIB Aqualine® plasterboard	13mm	4

4.3 GIB® STANDARD SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Entry, all bedrooms	GIB® Standard plasterboard	13mm	5. Refer drawings for locations
Typical ceilings where painted	GIB® Standard plasterboard	13mm	4

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4.4 GIB® WATER RESISTANT SYSTEMS CEILINGS

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

4.5 GIB® SOUND RATED SYSTEMS

Refer to GIB® Noise Control Systems

Location	Plasterboard type / Lining requirements	STC / System specification	Finish Level
Between bedrooms and bathrooms	Gib system GNT133	46	5 where critical light. Refer drawings for locations.

4.6 GIB® FIRE RATED SYSTEMS

Refer to GIB® Noise Control Systems

Location	Plasterboard type / Lining requirements	STC / System specification	Finish Level
Grid A boundary wall	Gib 13mm Fyreline as part of James Hardie JHETGR60-N system	44	5 where critical light. Refer drawings for locations.

Accessories

4.7 GIB® RONDO® CEILING BATTENS

Brand/type: GIB® Rondo® Ceiling battens

4.8 GIB® EDGE PROFILES

Brand/type: As required to form negative details shown on details



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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

1.1 RELATED WORK

Refer to 3821 for General timber framing.

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.

Components

2.2 NAILS

Bright steel to dimension requirements of NZS 3604. Use galvanized where prone to dampness.

2.3 BRADS

Bright steel of a length three times the thickness of the member being fixed. Use cadmium plated where prone to dampness.

2.4 SCREWS, STEEL

Bright steel of a length to penetrate the substrate up to the shank. Use stainless steel in wet areas.

2.5 SCREWS, CHROME PLATED

Chrome plated of a length to penetrate the substrate up to the shank.

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.

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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.

Finishing

3.6 PUNCH

Punch all nail heads below the face of trim ready to receive stopping, as specified under painting preparation.

3.7 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.

3.8 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

3.9 LEAVE

Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following procedures.

3.10 PROTECTION

Protect the completed work and make good before any surface finish is applied.

3.11 REPLACE

Replace damaged or marked elements.

3.12 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 INTERNAL TIMBER TRIM

Species/grade:	Pinus radiata, clears grade A
Finish:	Painted
Location:	To all gib lined, painted walls

Member	Size	Finish
Groove liners (typ.)	Size & profile to match existing elsewhere in Apartment. 30mm wide, sized to suit skirting.	Paint finish
Skirtings where gib walls	Size & profile to match existing elsewhere in Apartment. Cut to suit floor finish. Surface mounted	Paint finish

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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 RELATED WORK

Refer to 4231C for CSforDoors cavity sliders

Refer to glazing sections for glazing
Refer to painting sections for finishes

Documents

1.2 DOCUMENTS

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

AS/NZS 1170.1	Structural design actions - Permanent, imposed and other actions
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3610	Specification for profiles of mouldings and joinery
NZS 4223.3	Glazing in buildings - Human impact safety requirements

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

Performance - doorsets

1.3 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.

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.

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Components

2.4 WINDOW AND DOOR FURNITURE

Refer to 5521 HARDWARE for type and finish.

2.5 SCREWS

Stainless steel or non-corrodible metal. Length sufficient to penetrate into the background support up to the shank. Screws for fixing hinges, hardware or furniture to match the item being attached.

2.6 NAILS

Length sufficient to penetrate into the background support at least half the nail length, except if into radiata pine then three-fifths their length.

2.7 DOOR HINGES

Size and gauge to carry door size and weight. 4 hinges per door.

Size:	100x75mm heavy duty
Material:	Stainless steel
Pin:	Fixed pin
Finish:	Satin

2.8 DOOR SKIN (FACINGS)

Doors skins as detailed and dimensioned.

Finish

2.9 TIMBER - PAINT 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).

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.

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Assembly

3.8 FABRICATION GENERALLY

Manufacture and fabricate frames and doors as detailed. Install hinges and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

Application - generally

3.9 FIXING FRAMES

Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion and with all opening sashes fully and easily operating. Fit architraves.

3.10 DISTORTION

Do not distort frames when wedging or other packing, or when tightening fixings. If necessary adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

3.11 FIXINGS

Fix frames so that nail heads are covered by applied stops and beads. Punch all nail heads below timber surfaces which will be visible in completed work. Ensure that at least one frame fixing is adjacent to each hanging point.

Application - doorsets

3.12 PROPRIETARY ELEMENTS

Fix in accordance with the door manufacturer's requirements.

3.13 INSTALLATION GENERALLY

Wedge frames into opening and fix through into the wall framing. Locate all wedges and fixing at hinge positions and opposite, with one fixing in the vicinity of the lock. Fixings concealed behind planted stops.

Hang doors on hinges, sliding or bi-fold gear as specified and to operate freely. Fit all hardware and door furniture.

3.14 TIMBER STUD WALLS - TIMBER FRAMES

Wedge into opening and nail through into the studs. All wedges and fixing to be at hinge positions and opposite, with one fixing in the vicinity of the lock.

3.15 BOTTOM CLEARANCE

Provide for specified floor coverings plus 5mm clearance at any point of swing. When floor covering is not specified, allow 25mm total.

For ventilated and/or air conditioned spaces allow 20mm clearance above finished floor coverings for supply/return air.

3.16 REMOVE DOORS

Remove doors from the frames if necessary to protect them, or for re-finishing, store safely and near completion refit them, all without any damage.

3.17 INSTALL PANELS

Prime rebates and beads, install sealant backing strips or silicone. Install dry beading to outside of panels as selected. Do not mitre corners of beads.

3.18 INSTALL FURNITURE

Install latches, locks and door furniture as scheduled.

3.19 CHECK

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

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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

Frames

4.1 DOOR FRAMES - TIMBER

Location:	Refer Door and Window schedule and plans.
Timber species:	Pinus radiata
Grade:	Clears, dressed
Finish:	Painted Frames to match existing elsewhere within apartment
Leaf size:	Refer drawings
Thickness:	Refer drawings

Doors

4.2 INTERIOR DOORS (STANDARD)

Location:	Refer Door and Window schedule and plans
Door type:	Solid core 40mm
Material:	Timber
Door leaf size:	Refer schedule
Door finish:	Painted Grooved, to match existing elsewhere within apartment
Hinge type/finish:	Hang all doors on Ryobi Stainless Steel, Ball Bearing, Flat Butt Hinge, Fixed Pin hinges or similar. 2 pair for doors above 2000 high

Finish

4.3 PAINT FINISH

Hardware

4.4 HARDWARE
Refer to 5521 HARDWARE section.

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5231C CS FOR DOORS®

1 GENERAL

This section relates to the supply and installation of **CS FOR DOORS®** product range.
It includes;

- cavity sliders
- door leaves

1.1 RELATED WORK

Refer to 5231 INTERIOR DOORS & WINDOWS for other internal doors.

Documents

1.2 DOCUMENTS

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

NZS 3602	Timber and wood-based products for use in building
NZS 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:

CS Cavity Sliders Specification Guide (Sep 2025)
CS Cavity Sliders Product Installation Instructions
CS Cavity Sliders Maintenance Manual
CS Cavity Sliders Warranty
BRANZ Appraisal 900 (2020) - CS Cavity Sliders - Amended 09 December 2021

Manufacturer/supplier contact details

Company:	Cavity Sliders Ltd
Trading as:	CS Cavity Sliders
Web:	www.cavitysliders.com/nz/
Email:	info@cavitysliders.co.nz
Telephone:	0800 754 337 09 276 0800 Auckland 07 928 0800 Waikato/Bay of Plenty 03 348 6158 South Island

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	For CaviSlider, CaviRobe, CaviTrack and Pre-hung Jambs
5 years	For CS manufactured door leaves and Automatic Units
2 years	For CaviLock
1 year	For electrical components and parts

- 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.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

3 months	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.

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Requirements

1.6 QUALIFICATIONS WORKERS - MANUFACTURER / SUPPLIER REQUIREMENTS

Workers to be approved by CS Cavity Sliders. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

Compliance information

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:

CS Cavity Sliders Maintenance Manual

Provide this information prior to practical completion.

1.9 COMPLIANCE - BRANZ APPRAISAL

CS Cavity Sliders cavity sliding doors have been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 900.

2 PRODUCTS

Materials - general

2.1 TIMBER

Solid timber to NZS 3602 to profiles detailed. Moisture content approximately 16% ex factory.

2.2 INTERIOR TIMBER

To NZS 3602. Moisture content approximately 10-14%.

Materials - Cavity Slider units

2.3 CAVITY SLIDER UNITS

CaviSlider cavity slider units to profile as scheduled, detailed and dimensioned. Refer to SELECTIONS.

Components

2.4 DOOR FURNITURE

CaviLock architectural handles and locks as scheduled.

2.5 SCREWS

Stainless steel or non-corrodible metal. Length sufficient to penetrate into the background support up to the shank. Screws for fixing hinges, hardware or furniture to match the item being attached.

2.6 NAILS

Length sufficient to penetrate into the background support at least half the nail length, except if into radiata pine then three-fifths their length.

2.7 SLIDING DOOR GEAR

CS Cavity Sliders track to suit door size, weight and application. Stainless steel carriages and mount plates are available for the CS240 kg and CS500 kg systems.

Finish

2.8 FINISH

Powdercoated finish

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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.

Timber substrate: 14% maximum moisture content

3.4 GENERALLY

Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.5 FABRICATE DOORSETS

Fabricate doorsets in the **CS FOR DOORS®** 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

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 or NZS 1170.5.

Assembly

3.8 FABRICATION GENERALLY

Manufacture and fabricate frames and doors as detailed in a factory with provision for door furniture, applied finishes and operation. Hang doors on sliding gear as specified and to operate freely. Provide temporary bracing and protection to secure all opening elements for transportation.

Installation/application

3.9 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.10 INSTALLATION GENERALLY

Install in accordance with CS Cavity Sliders installation instructions.

3.11 FIXING FRAMES

Fit to frame as required. Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion. Fit facings, scribers, draught-stopping and sealants.

3.12 DISTORTION

Do not distort frames when wedging or other packing, or when tightening fixings. If necessary adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

3.13 FIXINGS

Fix frames so that nail heads are covered by applied stops and beads. Punch all nail heads below timber surfaces which will be visible in completed work. Ensure that at least one frame fixing is adjacent to each hanging point.

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Application - doorsets

3.14 PROPRIETARY ELEMENTS

Fix in accordance with **CS FOR DOORS®** requirements.

3.15 FIXING FRAMES GENERALLY

Wedge frames into opening plumb, level, and true to line and face without distortion. Align wedges with fixing points and hinge locations. Fix rigidly into wall framing. Conceal fixing heads behind stops and beads where possible. Punch fixing heads below timber surfaces where visible. Adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

3.16 TIMBER STUD WALLS - TIMBER FRAMES

Fix direct to opening and pack, with one fixing in the vicinity of the lock.

3.17 STEEL STUD WALLS - STEEL FRAMES

Using a pilot hole in the frame, fix to steel studs with countersunk self-drilling corrosion proof screws. Fix direct to opening and pack, with one fixing in the vicinity of the lock.

3.18 STEEL STUD WALLS - TIMBER FRAMES

Drill the timber frame and fix to steel studs with countersunk self-drilling corrosion proof screws. Fix direct to opening and pack, with one fixing in the vicinity of the lock.

3.19 BOTTOM CLEARANCE

Provide for specified floor coverings plus a minimum of 5mm clearance at any point of slide. 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.

3.20 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.

3.21 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.

3.22 MANIFESTATIONS

To comply with NZS 4223.3.

3.23 INSTALL FURNITURE

Install latches, locks and door furniture as scheduled.

3.24 CHECK

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

Completion & Commissioning

3.25 COMPLETION MATTERS

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

4 SELECTIONS

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



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CS Cavity Sliders Standard Range

4.1 CS CAVITYSLIDERS® TIMBERFORMED®

Location:	D5.02 Refer drawings
Leaf dimensions:	Refer D&W schedule for dimensions
Door type:	Timber door grooved to match existing doors, client to confirm previous supplier if known.
Door finish:	Paint
Closing action:	SofStop® Single Soft Close
Single or Biparting:	Single
Jamb type/finish:	SquareStop *Note: this is different to the other doors within the house, can change to Timber grooved jambs if want to match existing. Confirm with client.* *Choose SquareStop to have full height door.*
Framing/size:	140
Lining thickness:	13mm
Track finish:	Natural Anodised
Detail option:	Full height
Handle type:	Refer to CaviLock® specialised hardware

4.2 CS WALLMOUNT TRACK

Location:	D3.02 & D5.01 Refer drawings
Leaf dimensions:	Refer D&W schedule for dimensions
Door type:	Timber door grooved to match existing doors, client to confirm previous supplier if known.
Door finish:	Paint
Closing action:	SofStop® Single Soft Close
Single / Biparting:	Single
Pelmet finish:	Powder coated
Handle type:	Refer to CaviLock® specialised hardware

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5313KL RONDO SYSTEMS - PLASTERBOARD & SHEET CEILINGS

1 GENERAL

This section relates to the supply and installation of **Rondo Ceiling Systems.** It includes;

- Rondo KEY-LOCK Concealed Ceiling System
- Rondo XPRESS® Drywall Grid System
- Rondo Steel Stud Drywall Concealed Ceiling System
- Direct-fix or fully suspended applications
- Non-fire rated and fire-rated systems
- Bulkhead, curved ceilings
- Seismic and acoustic designs

1.1 RELATED WORK

Refer to 5113G for Plasterboard 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:

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
AS/NZS 1170.0	Structural design actions - General principles
AS/NZS 1170.1	Structural design actions - 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 2588	Gypsum plasterboard
AS/NZS 2785	Suspended Ceilings - Design & Installation
NZS 4219	Seismic performance of engineering systems in buildings
NZS 4541	Automatic fire sprinkler systems
AS/NZS 4600:2005	Cold formed steel structures
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Rondo Professional Design Manual
Rondo KEY-LOCK® installation guide
Rondo XPRESS® Drywall Grid System Rondo brochure
Rondo Steel Stud Drywall Concealed Ceiling System in Design 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

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	For Rondo branded products against defects in materials under normal use. In addition, Rondo warrants that the Rondo KEY-LOCK® Suspended Ceiling Systems will remain structurally sound for a period of 15 years.

- Provide this warranty on the manufacturer/supplier standard form
- 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.

Provide evidence of experience, listing completed projects of similar size and complexity.

1.7 NO SUBSTITUTIONS

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

Compliance information

1.8 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

1.9 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.

1.10 ENVIRONMENTAL REQUIREMENTS

Durability to NZBC B2/AS1.

2 PRODUCTS

Suspension system - Rondo KEY-LOCK suspended ceiling system

2.1 KEY-LOCK DIRECT FIX CEILING SYSTEM

KEY-LOCK direct fix ceiling system to AS/NZS 2785, including suspension depths of up to 200mm. Furring channels, Direct fix clips for fixing to timber, steel and concrete, to carry ceiling sheets, light fixtures and air distribution elements to comply with NZS 1170.5.
Provide diagonal bracing to provide lateral stability if required. Perimeter trim, expansion joints and seismic joints etc. to AS/NZS 2785, as required.
Hot-dip galvanized steel elements manufactured from steel strip to AS 1397.

2.2 PRIMARY SECTIONS

Rondo 25mm or 38mm top cross rail to AS 1397. Steel grade and zinc coating class G2 Z275 to AS 1397.

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2.3 FURRING BATTEN SECTIONS

Rondo 16mm, 28mm, or 35mm furring/batten sections to AS 1397. Steel grade and zinc coating class G2 Z275 to AS 1397.

Components

2.4 DIRECT FIX CLIPS

Hot-dip galvanized steel elements manufactured from steel strip to AS 1397.

2.5 SECTION JOINERS

Hot-dip galvanized steel elements manufactured from steel strip to AS 1397.

2.6 RONDO WALL TRIM

Rondo wall trim sections to AS 1397. Steel grade and zinc coating class G2 Z275 to AS 1397.

Accessories

2.7 FASTENERS DIRECT FIX

8g-16 x 25mm (minimum) self drilling wafer head screws for fixing to timbers detailed in Rondo Professional Design Manual and to Rondo Building Services Pty Ltd requirements.

2.8 SCREWS

25mm x 6 gauge non-rusting Type S self-drilling and self-tapping bugle head screws as detailed in Rondo Professional Design Manual and to Rondo Building Services Pty Ltd requirements.

Lining and Insulation

2.9 PLASTERBOARD

Gypsum plaster core encased in a face and backing paper formed to AS/NZS 2588. Refer to SELECTIONS for type and thickness.

2.10 LINING BOARD

Refer to SELECTIONS for type, thickness and finish.

2.11 INSULATION

Refer to SELECTIONS for type and thickness.

Access Panels

2.12 ACCESS PANEL

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 COMMENCING THIS WORK

Commencing this work means the substrate is accepted as allowing work of the required standard.

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3.5 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 ceiling tiles below 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 systems 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 be to NZS 4219, and/or NZS 4541 for sprinklers.

3.6 SITE CONDITIONS

Do not begin installation until the building is closed in, fully glazed, the roof watertight, and mechanical and electrical duct work above the ceiling completed. To AS/NZS 2785, Appendix C, site Conditions, Installation and Inspections.

Installation generally

3.7 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.8 SETTING OUT

Set out the framing work true to line and square before starting erection.

3.9 INSTALL

Installation to AS/NZS 2785 minimum standards, and the systems Rondo Professional Design Manual and Rondo Building Services Pty Ltd requirements.

Allowance for support members:

- Space required by the loads on the system and the type of ceiling.
- For the installation of services and accessories, including ductwork, light fittings and diffusers.
- Additional back support or suspension members for the fixing of services and accessories to prevent distortion, overloading or excessive vertical deflection.
- For access for maintenance of services.

Allowance for a ceiling system where failure of any one suspension point does not cause a progressive failure of the ceiling.
Allowance for height adjustment with a length adjustment device at each suspension point, permitting length variation of at least 50mm.

If required, allow for notch grid members at the junction with the perimeter trim to make sure the ceiling lining lies flat on the perimeter trim. Do not attach the suspension system to the lip or flange of purlins.

Fix, erect and fit to finish rigid, plumb, square and true to line and face. Where components required cutting on site, use metal snips, fine-toothed band or hack saws. Adjust all suspension systems and clips by laser level until they are all level. Hangers and bracing are not to be fixed closer than 150mm to plenum building services.

Install all movement joints required.

Services support to conform to the following:

- If the service has not been designed to accept the ceiling load, do not fix suspension members to services (e.g. ductwork).

- If services obstruct the ceiling supports, provide bridging and suspension on each side of the services.
- Do not support services terminals on ceiling lining, unless specified.

3.10 BULKHEADS

Form bulkheads to manufacturer requirements. Diagonally brace at regular intervals to provide lateral stability. In addition to the dead load of the bulkhead, all bulkheads should be designed for the following minimum loads:

- 0.25 kPa laterally.
- 0.15 kPa vertically.

3.11 INSTALL SEISMIC RESTRAINTS

Install ceiling system seismic restrains and bracing as required to prevent lateral movement and resist the imposed horizontal seismic force, to AS/NZS 2785.

3.12 PENETRATIONS

To AS/NZS 2785 and NZS 4219 generally, with sprinkler systems to NZS 4219 and/or NZS 4541.

Accommodate recessed light fittings, air conditioning outlets and other electrical and/or mechanical services that are fixed to or pass through the ceiling system. Provide independent support for these as necessary.

3.13 ISOLATE

Isolate dissimilar metals with neoprene sheeting, tape or pipe lagging.

3.14 INSULATION

Install insulation to insulation manufacturer and Rondo Building Services Pty Ltd requirements.

3.15 LINING

Fix and finish lining boards to manufacturer and Rondo Building Services Pty Ltd requirements.

Install services before lining. Stagger sheet joins.

3.16 ACCESSIBILITY

Provide access to the ceiling system and the in-ceiling and above-ceiling services so that maintenance and removal of any part can be carried out without damage to the ceiling system or panels.

3.17 ACCESS PANEL

Install to Rondo Panther installation requirements.

3.18 PROTECT EXISTING WORK

Protect adjacent existing work from damage during the installation.

Installation - Rondo KEY-LOCK Ceiling System

3.19 INSTALLATION

Install the Rondo KEY-LOCK suspension system to AS/NZS 2785, and the Rondo Professional Design Manual and KEY-LOCK® installation guide.

Screw-fix sheets to furring channel sections at the centres required by the ceiling lining manufacturer. Stagger joints and fully support on furring sections and primary sections at centres to suit the load and Rondo installation manual.
Refer to 5113 PLASTERBOARD LININGS for plasterboard and stopping specification.

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.rondo.co.nz
Substitutions are not permitted.

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Rondo KEY-LOCK Ceiling System

4.1 RONDO KEY-LOCK DIRECT FIX CEILING SYSTEM

Location:	Flat gib ceilings
Type/Brand:	KEY-LOCK Direct Fix Ceiling System
Finish:	Square stopping

Components

4.2 INSULATION

Refer 4711T Terra Lana insulation

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5521 HARDWARE

1 GENERAL

This section covers the supply and installation of door and window hardware and furniture.

1.1 RELATED WORK

Refer to 5231 INTERIOR DOORS AND WINDOWS for interior doors other than sliding.

Refer to 5231C CS FOR DOORS for interior sliding doors.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS.

Requirements

1.3 SUPPLIER

A specialist in the supply of hardware, employing an experienced architectural hardware representative available to assist during the course of the hardware installation.

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

Door hardware to match existing. Client to supply information of previous hardware installed. Refer to A7.01 schedule for locks, stops etc.

4.2 CABINET WORK HARDWARE

Door hardware to match existing. Client to supply information of previous hardware installed.

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6211MW MAPEI WALL TILING

1 GENERAL

This section relates to the supply and installation of MBP (NZ) Ltd internal and external wall tiling systems.

It includes:

- primers
- waterproofing membranes
- adhesives
- grouts
- sealants

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

PVC	Polyvinyl chloride
WMAI	Waterproofing Membrane Association (NZ) Incorporated
WPM	Waterproofing membrane

Documents

1.2 DOCUMENTS

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

AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
ISO 13007.1	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for adhesives
ISO 13007.3	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for grouts
NZS 4121	Design for access and mobility - Buildings and associated facilities
WMAI CoP	Code of Practice for Internal Wet Area Membrane Systems

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Mapei® Technical Manual - Tile Installer's Manual - Products for Ceramic Tiles (Sept 2016)
Mapei® Technical Manual - Cementitious adhesives for installing ceramic tiles and natural stone (Sept 2016)
Mapei® Technical Manual - Guide for the Installation of Ceramic Materials (Sept 2018)
Mapei® product Technical Data Sheets
BRANZ Appraisal 484 (2018) - Mapegum WPS, Mapelastic, Mapelastic Smart, and Mapelastic AquaDefense Wet Area Membranes - Amended 6 October 2022
BRANZ Appraisal 485 (2018) - Mapelastic Smart and External Waterproofing Membranes - Amended 6 October 2022
Mapei® product BPIR

Manufacturer/supplier contact details

Company:	MBP (NZ) Ltd.
Web:	www.mbpltd.co.nz
Email:	enquiries@mbpltd.co.nz
Telephone:	09 921 1994

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For Mapelastic AquaDefense, Mapelastic Smart and Mapegum WPS
10 years	For other Mapei ceramic tile and stone products (excluding Ultracare products)

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years:	For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 QUALIFICATIONS WORKERS - MANUFACTURER / SUPPLIER REQUIREMENTS

Waterproofing applicators to be approved by MBP (NZ) Ltd. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

Compliance information

1.9 COMPLIANCE - BRANZ APPRAISAL 484

Mapegum WPS, Mapelastic AquaDefense and Mapelastic Smart internal wet area membranes have been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 484.

1.10 COMPLIANCE - BRANZ APPRAISAL 485

Mapelastic Smart external wet area membrane has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 485.

1.11 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicator approval certificate from the manufacturer / importer / distributor
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents

2 PRODUCTS

Levelling mortar

2.1 NIVORAPID & LATEX PLUS

Cement-based, thixotropic levelling mortar with flexible polymer water dispersion for thicknesses from 3mm to 20mm.

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Primers

2.2 PRIMER 3296
Acrylic polymer based primer in water dispersion for porous substrates.

2.3 ECO PRIM T PLUS
Acrylic resin primer in water dispersion.

2.4 ECO PRIM GRIP PLUS
One component synthetic resin primer in water dispersion.

Waterproofing membrane

2.5 MAPEGUM WPS
One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Grey colour.

2.6 MAPELASTIC AQUADEFENSE
One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Light blue colour.

2.7 MAPELASTIC SMART
Two component flexible cementitious liquid waterproofing membrane.

Adhesives

2.8 GRANIRAPID
Two component, cementitious adhesive with synthetic rubber latex. Classified C2FS1 to ISO 13007.1.

2.9 KERAQUICK MAXI S1
Cementitious adhesive. Suitable for application in layers up to 15mm thick. Classified C2FTS1 to ISO 13007.1.

2.10 KERAQUICK MAXI S1 & LATEX PLUS
Cementitious adhesive with flexible polymer water dispersion. Suitable for application in layers up to 15mm thick. Classified C2FS2 to ISO 13007.1.

2.11 KERABOND PLUS & ISOLASTIC
Cementitious adhesive with elastic polymer water dispersion. Classified C2TS2 to ISO 13007.1.

2.12 KERALASTIC T
Two component, polyurethane adhesive. Classified R2T to ISO 13007.1.

2.13 KERAFLEX MAXI S1 ZERO
Cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.14 KERAPOXY ADHESIVE
Two component epoxy adhesive. Classified R2T to ISO 13007.1.

2.15 ULTRAMASTIC III
Pre-mixed acrylic resin paste adhesive. Classified D2TE to ISO 13007.1.

2.16 ADESILEX P10 & ISOLASTIC FOR MOSAICS
Two component cementitious adhesive with elastic polymer water dispersion. Classified C2TES1 to ISO 13007.1.

2.17 ULTRALITE S1 FLEX ZERO
One component cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.18 ULTRALITE S2 T FLEX
One component thixotropic cement and synthetic resin based adhesive. Classified C2ES2 to ISO 13007.1.

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Grouts

2.19 ULTRACOLOR PLUS

Cement-based, polymer-modified grout for joints from 2mm to 10mm, with water repellent DropEffect and anti-mould with BioBlock technologies.

2.20 KERAPOXY

Two-component, chemical resistant epoxy grout for joints 3mm to 10mm wide. Classified RG to ISO 13007.3.

2.21 KERAPOXY EASY DESIGN

Two-component, chemical resistant epoxy grout with anti-mould BioBlock technology for joints 3mm to 15mm wide. Classified RG to ISO 13007.3.

Components - waterproofing

2.22 MAPEBAND SA TAPE

Alkali resistant butyl self-adhesive waterproofing tape.

2.23 MAPEBAND SA GASKET

Alkali resistant butyl self-adhesive waterproofing gasket, 370mm x 370mm square.

2.24 MAPEBAND EASY TAPE

Alkali resistant rubber waterproofing tape with a non-woven fabric face and back.

2.25 MAPEBAND EASY GASKET

Alkali resistant rubber waterproofing gasket with a non-woven fabric face and back, available 200mm x 200mm and 400mm x 400mm square.

2.26 MAPENET 150 REINFORCING MESH

Alkali-resistant fiberglass reinforcing mesh.

2.27 MAPETEX SEL REINFORCING FABRIC

Alkali resistant non-woven polypropylene reinforcing and anti-fracture fabric.

Components - cleaning

2.28 ULTRACARE KERANET EASY

Acid-based, pre-mixed general tile and grout cleaner.

2.29 ULTRACARE KERAPOXY CLEANER

Concentrated liquid detergent for removing epoxy grout.

Accessories

2.30 TRIMS

Tile trim, edge strips, floor finish divider strips and weather bars. Available in aluminium, brass and stainless steel. Refer to SELECTIONS.

2.31 MOVEMENT JOINT - ANGLE

Metal or PVC angle. Refer to SELECTIONS.

2.32 MOVEMENT JOINT - INSERT

Polyurethane or neoprene insert. Refer to SELECTIONS.

2.33 MOVEMENT JOINT - SILICONE SEALANT

One part, flexible silicone sealant, Mapesil AC for acetic cure or Mapesil LM for neutral cure. Refer to SELECTIONS.

2.34 MOVEMENT JOINT - POLYURETHANE SEALANT

Mapeflex PU40, one part flexible thixotropic polyurethane based sealant. Refer to SELECTIONS.

2.35 MOVEMENT JOINT - BACKING ROD

Polyethylene foam (PEF) backing rod. 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 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Moisture content concrete:	75% maximum relative humidity, minimum 28 day cured

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 APPLICATION GENERALLY

To AS 3958.1, Mapei technical data sheets, and to WMAI CoP recommendations. Surfaces to be clean, sound and free of dust, oil, grease, curing compounds or release agents.

3.6 APPLY PRIMER

Brush or roll primer over surface.

3.7 APPLY LEVELLING MORTAR

Mix levelling mortar to Mapei instructions. Trowel onto prepared substrate to required thickness and fall, where required:

3.8 APPLY WATERPROOFING MEMBRANE

Reinforce corners and penetrations with waterproofing tape. Mix waterproofing components to Mapei instructions. Trowel, brush or roll on liquid waterproofing membrane over prepared surface. Apply two coats to achieve required minimum total dry film thickness to Mapei product technical data sheet.

3.9 SETTING OUT

Confirm tile layout and bond pattern. Cut tiles to tile manufacturer's recommendations. Provide joint widths to the tile manufacturer's recommendations.

3.10 MOVEMENT JOINTS GENERAL

Provide movement joints to AS 3958.1:

Depth:	Movement joints to go right through the tile and bed to the background.
Width:	6mm
Locations:	At junctions with floors, columns, nibs, and similar. Around sanitary fixtures. Around fixtures interrupting the tile surface (e.g. at junctions with joinery fixtures, window/door frames, and built in cupboards). At changes in substrate.
Large areas:	Provide vertical joints at not less than 3.5 metres spacing along the length of a wall. Provide horizontal joints at each storey rise in the height of a wall. Provide joints over existing joints in the substrate.

3.11 ADHESIVE APPLICATION GENERAL

For general wall tiling, use a 6mm x 6mm x 6mm notched trowel.

For mosaics, use a 4.5mm x 4.5mm x 4.5mm notched trowel.

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3.12 APPLY ADHESIVE

Mix adhesive to Mapei instructions. Spread adhesive over prepared surface with a notched trowel to Mapei recommended bed thickness.

3.13 INSTALL TRIM

Press trim into wet adhesive.

3.14 INSTALL MOVEMENT JOINT ANGLE

Press angle into wet adhesive.

3.15 LAY TILES

Firmly press tiles into the adhesive bed for full contact between tile and adhesive with no voids. Butter the back of tiles with ribbed or keyed underside before laying into adhesive bed by spreading a thin layer of adhesive on the back of the tile. Remove a tile periodically during installation to check for correct adhesive coverage. Do not fix tiles over skinned adhesive. Remove surplus adhesive from tile surfaces before adhesive sets.

3.16 APPLY GROUT

Mix grout to Mapei instructions. Work grout into joints with a rubber trowel to AS 3958.1. Allow the grout to firm up in the joint before wiping tile surface with a damp, dense sponge.

3.17 INSTALL MOVEMENT JOINT INSERT

Place insert between movement joint angles.

3.18 INSTALL MOVEMENT JOINT BACKING ROD & SEALANT

Place PEF backing rod into movement gap. Apply a continuous bead of silicone sealant over PEF backing rod.

Completion & Commissioning

3.19 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 TILES

Location:	Refer to Architectural Details
Type:	Ceramic or Porcelain

Tiled Internal Walls

4.2 MAPEI INTERNAL WALL TILING SYSTEM OVER FIBRE CEMENT SHEET - WET AREA

Location:	Refer to Architectural Details
Supplier:	MBP (NZ) Ltd.
Substrate:	Fibre cement sheet
Levelling mortar:	Nivorapid & Latex Plus
Primer:	Primer 3296
WPM:	Mapelastic AquaDefense
Adhesive:	Ultralite S1 Flex
Grout:	Ultracolor Plus or Kerapoxy Easy Design
Grout colour:	TBA

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Components

4.3 MAPEI WATERPROOFING DETAILING & REINFORCEMENT

Location:	Refer to Architectural Details
Supplier:	MBP (NZ) Ltd.
Edges/expansion joints:	Mapeband SA
Penetrations:	Mapeband SA Gaskets

Accessories

4.4 TRIMS

trims to match existing used elsewhere in the apartment

4.5 MOVEMENT JOINT - ANGLE & INSERT

as required & to match existing elsewhere in the apartment

4.6 MOVEMENT JOINT - BACKING ROD & SEALANT

Location:	Refer to Architectural Details
Type:	Closed cell polyethylene foam
Diameter:	25-30% greater than the width of the joint
Sealant:	Mapesil AC
Sealant colour:	TBA



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6221M MAPEI FLOOR TILING SOLUTIONS

1 GENERAL

This section relates to the supply and installation of MBP (NZ) Ltd internal and external floor tiling systems.

It includes:

- primers
- screed and levelling compounds
- acoustic underlays
- waterproofing membranes
- adhesives
- grouts
- sealants

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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
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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Mapei® Technical Manual - Tile Installer's Manual - Products for Ceramic Tiles (Sept 2016)
Mapei® Technical Manual - Cementitious adhesives for installing ceramic tiles and natural stone (Sept 2016)
Mapei® Technical Manual - Guide for the Installation of Ceramic Materials (Sept 2018)
Mapei® product Technical Data Sheets
BRANZ Appraisal 484 (2018) - Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes - Amended 6 October 2022
BRANZ Appraisal 485 (2018) - Mapelastic Smart and External Waterproofing Membranes - Amended 6 October 2022
Mapei® product BPIR

Manufacturer/supplier contact details

Company:	MBP (NZ) Ltd.

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Web:	www.mbpltd.co.nz
Email:	enquiries@mbpltd.co.nz
Telephone:	09 921 1994

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For Mapelastic AquaDefense, Mapelastic Smart and Mapegum WPS
10 years	For other Mapei ceramic tile products (excluding Ultracare products)

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years:	For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Waterproofing applicators to be approved by MBP (NZ) Ltd. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

Compliance information

1.9 COMPLIANCE - BRANZ APPRAISAL 484

Mapegum WPS, Mapelastic AquaDefense and Mapelastic Smart internal wet area membranes have been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 484.

1.10 COMPLIANCE - BRANZ APPRAISAL 485

Mapelastic Smart external wet area membrane has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 485.

1.11 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicator approval certificate from the manufacturer / importer / distributor
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents

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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.

1.14 SLIP RESISTANCE - PREVIOUSLY TESTED SURFACE
The following walking surfaces have previously been tested for slip resistance, and comply with NZBC D1/AS1 requirements.

1.15 TEST - SLIP RESISTANCE
Test walking surfaces for slip resistance, refer to SELECTIONS for test condition.

2 PRODUCTS

Levelling compounds

2.1 FIBERPLAN
Cement-based, fibre-reinforced, self-levelling compound for thicknesses from 3mm to 10mm.

2.2 ULTRAPLAN RENOVATION
Cement-based, fibre-reinforced, self-levelling compound for thicknesses from 3mm to 40mm.

2.3 ULTRAPLAN ECO
Cement-based, self-levelling smoothing compound for thicknesses from 1mm to 10mm.

2.4 NIVORAPID
Cement-based, thixotropic levelling mortar for thicknesses from 3mm to 20mm.

2.5 PLANITOP SMOOTH & REPAIR R4 ZERO
Cement-based, fibre reinforced levelling mortar for thicknesses from 3mm to 40mm.

2.6 PLANITOP FAST 330
Cement-based, fibre-reinforced levelling mortar with synthetic resin additives, for thicknesses from 3 to 30mm.

2.7 UC LEVELLER
Cement-based, self-levelling compound for thicknesses from 3mm to 70mm.

2.8 MAPECEM
Cement-based, rapid setting hydraulic binder for shrinkage-compensated screeds.

2.9 MAPECEM PRONTO
Cement-based, pre-mixed, rapid setting shrinkage compensated screed.

2.10 TOPCEM
Cement-based, hydraulic binder for shrinkage-compensated screeds.

2.11 PLANICRETE
Synthetic-rubber latex additive for use with cement based screeds and adhesives to improve mechanical and adhesive characteristics.

Primers

2.12 PRIMER 3296
Acrylic polymer based primer in water dispersion for porous substrates.

2.13 ECO PRIM T PLUS
Acrylic resin primer in water dispersion.

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2.14 ECO PRIM GRIP PLUS

One component synthetic resin primer in water dispersion.

2.15 PLANISEAL MR

Two component water based epoxy primer/barrier hydrostatic resistant coating.

Waterproofing membrane

2.16 MAPEGUM WPS

One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Grey colour.

2.17 MAPELASTIC AQUADEFENSE

One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Light blue colour.

2.18 MAPELASTIC SMART

Two component flexible cementitious liquid waterproofing membrane.

Adhesives

2.19 GRANIRAPID

Two component, cementitious adhesive with synthetic rubber latex. Classified C2FS1 to ISO 13007.1.

2.20 KERAQUICK MAXI S1

Cementitious adhesive. Suitable for application in layers up to 15mm thick. Classified C2FTS1 to ISO 13007.1.

2.21 KERAQUICK MAXI S1 & LATEX PLUS

Cementitious adhesive with flexible polymer water dispersion. Suitable for application in layers up to 15mm thick. Classified C2FS2 to ISO 13007.1.

2.22 KERABOND PLUS & ISOLASTIC

Cementitious adhesive with elastic polymer water dispersion. Classified C2TS2 to ISO 13007.1.

2.23 KERALASTIC T

Two component, polyurethane adhesive. Classified R2T to ISO 13007.1.

2.24 KERAFLEX MAXI S1 ZERO

Cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.25 KERAPOXY ADHESIVE

Two component epoxy adhesive. Classified R2T to ISO 13007.1.

2.26 ADESILEX P10 & ISOLASTIC FOR MOSAICS

Two component cementitious adhesive with elastic polymer water dispersion. Classified C2TES1 to ISO 13007.1.

2.27 ULTRALITE S1 FLEX ZERO

One component cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.28 ULTRALITE S2 T FLEX

One component thixotropic cement and synthetic resin based adhesive. Classified C2ES2 to ISO 13007.1.

Grouts

2.29 ULTRACOLOR PLUS

Cement-based, polymer-modified grout for joints from 2mm to 10mm, with water repellent DropEffect and anti-mould with BioBlock technologies.



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2.30 KERAPOXY

Two component, chemical resistant epoxy grout for joints 3mm to 10mm wide. Classified RG to ISO 13007.3.

2.31 KERAPOXY EASY DESIGN

Two component, chemical resistant epoxy grout with anti-mould BioBlock technology for joints 3mm to 15mm wide. Classified RG to ISO 13007.3.

Components - waterproofing

2.32 MAPEBAND SA TAPE

Alkali resistant butyl self-adhesive waterproofing tape, 100mm wide roll.

2.33 MAPEBAND SA GASKET

Alkali resistant butyl self-adhesive waterproofing gasket, 370mm x 370mm square.

2.34 MAPEBAND EASY TAPE

Alkali resistant rubber waterproofing tape with a non-woven fabric face and back, 130mm wide roll.

2.35 MAPEBAND EASY GASKET

Alkali resistant rubber waterproofing gasket with a non-woven fabric face and back, available 200mm x 200mm and 400mm x 400mm square.

2.36 MAPENET 150 REINFORCING MESH

Alkali-resistant fiberglass reinforcing mesh.

2.37 MAPETEX SEL REINFORCING FABRIC

Alkali resistant non-woven polypropylene reinforcing and anti-fracture fabric.

Components - cleaning

2.38 ULTRACARE KERANET EASY

Acid-based, pre-mixed general tile and grout cleaner.

2.39 ULTRACARE KERAPOXY CLEANER

Concentrated liquid detergent for removing epoxy grout.

Accessories

2.40 UNDERTILE HEATING

Proprietary electric undertile heating system complete with thermostat/controller.

Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for undertile heating.

2.41 TRIMS

Tile trim, edge strips, floor finish divider strips and weather bars. Available in aluminium, brass and stainless steel. Refer to SELECTIONS.

2.42 MOVEMENT JOINT - ANGLE

Metal or PVC angle. Refer to SELECTIONS.

2.43 MOVEMENT JOINT - INSERT

Polyurethane or neoprene insert. Refer to SELECTIONS.

2.44 MOVEMENT JOINT - SILICONE SEALANT

One part, flexible silicone sealant, Mapesil AC for acetic cure or Mapesil LM for neutral cure. Refer to SELECTIONS.

2.45 MOVEMENT JOINT - POLYURETHANE SEALANT

Mapeflex PU40, one part flexible thixotropic polyurethane based sealant. Refer to SELECTIONS.

2.46 MOVEMENT JOINT - BACKING ROD

Polyethylene foam (PEF) backing rod. 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 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, Mapei technical data sheets, and to WMAI CoP recommendations. Surfaces to be clean, sound and free of dust, oil, grease, curing compounds or release agents.

3.6 APPLY PRIMER

Brush or roll primer over surface.

3.7 APPLY LEVELLING COMPOUND

Mix levelling compound to Mapei 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 minimum	cross fall for outdoor accessways in public areas to NZS 4121

3.8 APPLY WATERPROOFING MEMBRANE

Reinforce corners and penetrations with waterproofing tape. Mix waterproofing components to Mapei instructions. Trowel, brush or roll on liquid waterproofing membrane over prepared surface. Apply two coats to achieve required minimum total dry film thickness to Mapei product technical data sheet.

3.9 INSTALL UNDERTILE HEATING

Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for installation of undertile heating.

3.10 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.

3.11 MOVEMENT JOINTS GENERAL

Provide movement joints to AS 3958.1:

Depth:	Movement joints to go right through the tile and bed to the background.

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Width:	6mm
Locations:	At junctions with floors, columns, nibs, and similar. Around sanitary fixtures. Around fixtures interrupting the tile surface (e.g. at junctions with joinery fixtures, window/door frames, and built in cupboards). At changes in substrate.
Large areas:	Provide 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.

3.12 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.

3.13 APPLY ADHESIVE

Mix adhesive to Mapei instructions. Spread adhesive over prepared surface with a notched trowel to Mapei recommended bed thickness.

3.14 INSTALL TRIM

Press trim into wet adhesive.

3.15 INSTALL MOVEMENT JOINT ANGLE

Press angle into wet adhesive.

3.16 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 underside before laying into adhesive bed by spreading a thin layer of adhesive on the back of the tile to AS 3958.1. Remove a tile periodically during installation to check for correct adhesive coverage. Allow for grout joints between laid tiles to tile manufacturer's recommended width. Do not fix tiles over skinned adhesive. Promptly remove surplus adhesive from the tile surface.

3.17 APPLY GROUT

Mix grout to Mapei instructions. Work grout into joints with a rubber trowel to AS 3958.1. Allow the grout to firm up in the joint before wiping tile surface with a damp, dense sponge.

3.18 INSTALL MOVEMENT JOINT INSERT

Place insert between movement joint angles.

3.19 INSTALL MOVEMENT BACKING ROD & SEALANT

Place PEF backing rod into movement gap. Apply a continuous bead of silicone sealant over PEF backing rod.

Completion & Commissioning

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

Test

4.1 TEST - SLIP RESISTANCE

Test walking surface for slip resistance to comply with NZBC D1/AS1, 2.1 Slip resistance. Refer to 1278SR SCHEDULE OF SLIP RESISTANCE TESTING for test method, minimum test value required and general reporting requirements.

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Location:	Entry
Surface:	New exterior tiles
Test condition:	Sloping access wet
Level / slope:	Sloping surfaces for wet conditions - slopes > 1:50 but < 1:10

Materials

4.2 CERAMIC TILES (FLOORS)

Location:	L05 Ensuite
Supplier:	to match existing if known Tiler to provide samples
Class:	Class 2 - residential floor/wall tiles (suitable for light traffic e.g. bedrooms, bathrooms, hallways)
Edging:	All exposed external corners to be mitred

4.3 STONE TILES (ENTRY)

Location:	L03 Entry
Supplier:	Selection TBC. Tiler to provide samples
Class:	Class 3 - residential/commercial floor/wall tiles (suitable for heavy residential traffic e.g. kitchens, stairs, and light commercial traffic, e.g. offices, reception areas)
Format:	600x600

4.4 EXTERIOR TILES (L05 TERRACE)

Location:	L05 Terrace
Supplier:	Reuse existing
Notes:	These tiles to be placed on proprietary deck supports, assess if possible to reuse existing. If new deck supports are required use MARSHALL INNOVATIONS DECKING SYSTEMS 'ProFoot Pedestal' or similar

Tiled internal floors

4.5 MAPEI INTERNAL TILING SYSTEM OVER CONCRETE FLOOR

Location:	Refer drawings for location
Supplier:	MBP (NZ) Ltd.
Substrate:	Concrete
Levelling:	Mapecem Pronto as a bonded screed for creating falls from a minimum of 10mm Nivorapid trowel applied leveler for creating falls from 3mm to 20mm Ultraplan Renovation for self-leveling from 3mm to 50mm
Primer:	Bond slurry for Mapecem bonded screed - 1-part Planicrete, 1-part clean water and 2-parts pure Mapecem powder Eco Prim T Plus prior the installation of the Nivorapid or Ultraplan Renovation - diluted with water dependent on the porosity of the concrete
Adhesive:	Ultralite S1 Flex for all porcelain and ceramic tiles Keraquick S1 for all natural stone
Grout:	Kerapoxy Easy Design or Ultracolor Plus for any porcelain or ceramic tiles Ultracolor Plus only for all natural stone
Grout colour:	TBA

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4.6 MAPEI INTERNAL TILING SYSTEM OVER CONCRETE FLOOR - HEATED WET AREA

Location:	Refer drawings for location
Supplier:	MBP (NZ) Ltd.
Substrate:	Concrete
Heating system:	Electric undertile. Tiler to nominate and confirm with client.
Levelling:	Mapecem Pronto as a bonded screed for creating falls from a minimum of 10mm Nivorapid trowel applied leveler for creating falls from 3mm to 20mm Ultraplan Renovation for self-leveling from 3mm to 50mm - to be used to encapsulate heating cables
Primer:	Bond slurry for Mapecem bonded screed - 1-part Planicrete, 1-part clean water and 2-parts pure Mapecem powder Eco Prim T Plus prior the installation of the Nivorapid or Ultraplan Renovation - diluted with water dependent on the porosity of the concrete
WPM:	Mapelastic AquaDefense
Adhesive:	Ultralite S1 Flex for all porcelain and ceramic tiles Keraquick S1 for all natural stone
Grout:	Kerapoxy Easy Design or Ultracolor Plus for any porcelain or ceramic tiles Ultracolor Plus only for all natural stone
Grout colour:	TBA

Components

4.7 MAPEI WATERPROOFING DETAILING & REINFORCEMENT

Location:	Refer to drawings
Supplier:	MBP (NZ) Ltd.
Edges/expansion joints:	Mapeband SA
Penetrations:	Mapeband SA Gaskets

Accessories

4.8 TRIMS

Trims to match existing used elsewhere in the apartment

4.9 MOVEMENT JOINT - ANGLE & INSERT

As required, to match existing used elsewhere in the apartment

4.10 MOVEMENT JOINT - BACKING ROD & SEALANT

Location:	Refer to drawings
Type:	Closed cell polyethylene foam for wet areas and open cell polyethylene foam for dry areas
Diameter:	25-30% greater than the joint width
Sealant:	Mapesil AC for ceramic and porcelain Mapesil LM for natural stone
Sealant colour:	TBA

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6221M MAPEI® TILING SOLUTIONS

1 GENERAL

This section relates to floor and wall tiling systems with Mapei® tiling products:

- primers / sealers
- acoustic underlays
- wet area membranes
- adhesives
- grouts
- sealants

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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
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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Mapei® Technical Manual - Tile Installer's Manual - Products for Ceramic Tiles (Sept 2016)
Mapei® Technical Manual - Cementitious adhesives for installing ceramic tiles and natural stone (Sept 2016)
Mapei® Technical Manual - Guide for the Installation of Ceramic Materials (Sept 2018)
Mapei® product Technical Data Sheets
BRANZ Appraisal 484 (2018) - Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes - Amended 6 October 2022
BRANZ Appraisal 485 (2018) - Mapelastic Smart and External Waterproofing Membranes - Amended 6 October 2022
Mapei® product BPIR

Manufacturer/supplier contact details

Company:	MBP (NZ) Ltd.
Web:	www.mbpltd.co.nz
Email:	enquiries@mbpltd.co.nz
Telephone:	09 921 1994

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a tile manufacturer/supplier warranty:

2 years:	For tiling products

- Provide this warranty on the manufacturer/supplier standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For Mapelastic AquaDefense, Mapelastic Smart and Mapegum WPS
10 years	For other Mapei ceramic tile products (excluding Ultracare products)

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years:	For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Waterproofing applicators to be approved by MBP (NZ) Ltd. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.9 NO SUBSTITUTIONS

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

Compliance information

1.10 COMPLIANCE - BRANZ APPRAISAL 484

Mapegum WPS, Mapelastic AquaDefense and Mapelastic Smart internal wet area membranes have been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 484.

1.11 COMPLIANCE - BRANZ APPRAISAL 485

Mapelastic Smart external wet area membrane has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 485.

1.12 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicator approval certificate from the manufacturer / importer / distributor
- Producer Statement - Construction from the applicator / installer



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

1.13 SAMPLES

Refer to the general section 1270 CONSTRUCTION for details of how samples will be reviewed and how instructions to proceed will be given. Provide the following samples for review:

	Sample A	Sample B	Sample C
Sample description:	Bathroom wall tiles	Bathroom floor tiles	Exterior stone tiles
Sample type:	Portable sample for review	Portable sample for review	Portable sample for review
Reviewer:	Architect Client	Architect Client	Architect Client
Time for review:	10 working days	10 working days	10 working days
Review criteria:	- Appearance - Texture - Colour	- Appearance - Texture - Colour	- Appearance - Texture - Colour

1.14 DEFLECTION CRITERIA FOR SUSPENDED FLOORS

Check that the floor is rigid enough for the tiling. Deflection of suspended floors should not exceed 1/360th of the span under dead load and live load.

Performance

1.15 INTERNAL / EXTERNAL MOISTURE

Wet area membranes under tiled areas to AS 3740, NZBC E2/AS1, NZBC E3/AS1 and to BRANZ Good Tiling Practice.

Performance - Slip resistance

1.16 SLIP RESISTANCE - PREVIOUSLY TESTED SURFACE

The following walking surfaces have previously been tested for slip resistance, and comply with NZBC D1/AS1 requirements.

Refer to tile suppliers information sheets.
All interior wet area floor tiles to comply with NZBC D1/AS1.

2 PRODUCTS

Underlay

2.1 FIBRE CEMENT UNDERLAY

Fibre cement board to AS/NZS 2908.2 manufactured from cellulose fibre, Portland cement, sand and water, or glass-mat gypsum board manufactured from gypsum core with coated fiberglass mat facing.

Levelling compounds

2.2 FIBERPLAN

Cement-based, fibre-reinforced, self-levelling compound for thicknesses from 3mm to 10mm.

2.3 ULTRAPLAN RENOVATION

Cement-based, fibre-reinforced, self-levelling compound for thicknesses from 3mm to 40mm.

2.4 NIVORAPID

Cement-based, thixotropic levelling mortar for thicknesses from 3mm to 20mm.

2.5 PLANITOP SMOOTH & REPAIR R4 ZERO

Cement-based, fibre reinforced levelling mortar for thicknesses from 3mm to 40mm.

2.6 PLANITOP FAST 330

Cement-based, fibre-reinforced levelling mortar with synthetic resin additives, for thicknesses from 3 to 30mm.

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2.7 UC LEVELLER
Cement-based, self-levelling compound for thicknesses from 3mm to 70mm.

2.8 MAPECEM
Cement-based, rapid setting hydraulic binder for shrinkage-compensated screeds.

2.9 MAPECEM PRONTO
Cement-based, pre-mixed, rapid setting shrinkage compensated screed.

2.10 TOPCEM
Cement-based, hydraulic binder for shrinkage-compensated screeds.

2.11 PLANICRETE
Synthetic-rubber latex additive for use with cement based screeds and adhesives to improve mechanical and adhesive characteristics.

Primers

Waterproofing membrane

2.12 PRIMER 3296
Acrylic polymer based primer in water dispersion for porous substrates.

2.13 ECO PRIM T PLUS
Acrylic resin primer in water dispersion.

2.14 ECO PRIM GRIP PLUS
One component synthetic resin primer in water dispersion.

2.15 PLANISEAL MR
Two component water based epoxy primer/barrier hydrostatic resistant coating.

Adhesives

2.16 GRANIRAPID
Two component, cementitious adhesive with synthetic rubber latex. Classified C2FS1 to ISO 13007.1.

2.17 KERABOND PLUS & ISOLASTIC
Cementitious adhesive with elastic polymer water dispersion. Classified C2TS2 to ISO 13007.1.

2.18 KERALASTIC T
Two component, polyurethane adhesive. Classified R2T to ISO 13007.1.

2.19 KERAFLEX MAXI S1 ZERO
Cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.20 KERAPOXY ADHESIVE
Two component epoxy adhesive. Classified R2T to ISO 13007.1.

2.21 ADESILEX P10 & ISOLASTIC FOR MOSAICS
Two component cementitious adhesive with elastic polymer water dispersion. Classified C2TES1 to ISO 13007.1.

2.22 ULTRALITE S1 FLEX ZERO
One component cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.23 ULTRALITE S2 T FLEX
One component thixotropic cement and synthetic resin based adhesive. Classified C2ES2 to ISO 13007.1.

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Grouts

2.24 ULTRACOLOR PLUS

Cement-based, polymer-modified grout for joints from 2mm to 10mm, with water repellent DropEffect and anti-mould with BioBlock technologies.

2.25 KERAPOXY

Two component, chemical resistant epoxy grout for joints 3mm to 10mm wide. Classified RG to ISO 13007.3.

Components - waterproofing

2.26 MAPEBAND SA TAPE

Alkali resistant butyl self-adhesive waterproofing tape, 100mm wide roll.

2.27 MAPEBAND EASY TAPE

Alkali resistant rubber waterproofing tape with a non-woven fabric face and back, 130mm wide roll.

2.28 MAPEGUM WPS

One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Grey colour.

2.29 MAPELASTIC AQUADEFENSE

One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Light blue colour.

2.30 MAPELASTIC SMART

Two component flexible cementitious liquid waterproofing membrane.

Components - cleaning

2.31 ULTRACARE KERANET EASY

Acid-based, pre-mixed general tile and grout cleaner.

2.32 ULTRACARE KERAPOXY CLEANER

Concentrated liquid detergent for removing epoxy grout.

Accessories

2.33 UNDERTILE HEATING

Proprietary electric undertile heating system complete with thermostat/controller.

Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for undertile heating.

2.34 TRIMS

Tile trim, edge strips, floor finish divider strips and weather bars. Available in aluminium, brass and stainless steel. Refer to SELECTIONS.

2.35 MOVEMENT JOINT - ANGLE

Metal or PVC angle. Refer to SELECTIONS.

2.36 MOVEMENT JOINT - SILICONE SEALANT

One part, flexible silicone sealant, Mapesil AC for acetic cure or Mapesil LM for neutral cure. Refer to SELECTIONS.

2.37 MOVEMENT JOINT - POLYURETHANE SEALANT

Mapeflex PU40, one part flexible thixotropic polyurethane based sealant. Refer to SELECTIONS.

2.38 MOVEMENT JOINT - BACKING ROD

Polyethylene foam (PEF) backing rod. 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 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

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 CHECK TILES

Check tiles to ensure that they are as specified, from the same batch, of a consistent colour and pattern and sufficient to complete the work. Reject tiles that vary widely in colour or pattern. Reject tiles that are damaged.

3.6 CONFIRM LAYOUT

Before commencing work confirm the proposed layout of tiles and expansion joints and other visual considerations of the finished work.

3.7 BACKGROUND MATERIALS

Ensure that the installation of background materials and substrate materials meets relevant standards and the manufacturer's instructions. Inspect background and substrate materials for any conditions unsuitable for tiling over. Do not commence work until the affected area is rectified. Confirm any specific preparation required for the adhesive being used.

3.8 PREPARATION OF BACKGROUNDS

Prepare backgrounds in accordance with AS 3958.1, section 4 and in accordance with the Mapei® instructions for the selected substrate.

3.9 APPLY LEVELLING COMPOUND

Mix levelling compound to Mapei 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 minimum	cross fall for outdoor accessways in public areas to NZS 4121

Installation/application

3.10 APPLICATION GENERALLY

To AS 3958.1, Mapei technical data sheets, and to WMAI CoP recommendations. Surfaces to be clean, sound and free of dust, oil, grease, curing compounds or release agents.

3.11 APPLY PRIMER

Brush or roll primer over surface.

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3.12 INSTALL UNDERTILE HEATING

Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for installation of undertile heating.

3.13 APPLY WATERPROOFING MEMBRANE

Reinforce corners and penetrations with waterproofing tape. Mix waterproofing components to Mapei instructions. Trowel, brush or roll on liquid waterproofing membrane over prepared surface. Apply two coats to achieve required minimum total dry film thickness to Mapei product technical data sheet.

3.14 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 junctions with floors, columns, nibs, and similar. Around sanitary fixtures. Around fixtures interrupting the tile surface (e.g. at junctions with joinery fixtures, window/door frames, and built in cupboards). At changes in substrate.
Large areas:	Provide 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.

3.17 APPLY ADHESIVE

Mix adhesive to Mapei instructions. Spread adhesive over prepared surface with a notched trowel to Mapei recommended bed thickness.

3.18 INSTALL TRIM

Press trim into wet adhesive.

3.19 INSTALL MOVEMENT JOINT ANGLE

Press angle into wet adhesive.

3.20 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 underside before laying into adhesive bed by spreading a thin layer of adhesive on the back of the tile to AS 3958.1. Remove a tile periodically during installation to check for correct adhesive coverage. Allow for grout joints between laid tiles to tile manufacturer's recommended width. Do not fix tiles over skinned adhesive. Promptly remove surplus adhesive from the tile surface.

3.21 APPLY GROUT

Mix grout to Mapei instructions. Work grout into joints with a rubber trowel to AS 3958.1. Allow the grout to firm up in the joint before wiping tile surface with a damp, dense sponge.

3.22 INSTALL MOVEMENT JOINT INSERT

Place insert between movement joint angles.

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3.23 INSTALL MOVEMENT BACKING ROD & SEALANT

Place PEF backing rod into movement gap. Apply a continuous bead of silicone sealant over PEF backing rod.

3.24 CLEAN TILES

Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave them completely clean and without blemish. Use Mapei Keranet to clean tiles of cementitious residue as necessary and Mapei Kerapoxy Cleaner to remove residues of epoxy grout from tile surfaces. Finally polish glazed tiles with a clean dry cloth.

Completion & Commissioning

3.25 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 CERAMIC TILES (WALLS AND FLOORS)

Location:	L04 Ensuite L05 Ensuite
Details:	to match existing if known Tiler to provide samples
Edging:	All exposed external corners to be mitred

4.2 EXTERIOR TILES (L05 TERRACE)

Location:	L05 Terrace
Manufacturer:	Reuse existing
Notes:	These tiles to be placed on proprietary deck supports, assess if possible to reuse existing. If new deck supports are required use MARSHALL INNOVATIONS DECKING SYSTEMS 'ProFoot Pedestal' or similar

4.3 STONE TILES (L03 ENTRY)

Location:	L03 Entry
Manufacturer:	Selection TBC
Pattern/number:	600x600x20mm
Colour:	TBC

4.4 MAPEI® LEVELLING COMPOUNDS

Location:	L04 Ensuite L05 Ensuite
Type:	Confirm selection with tiler

4.5 MAPEI® PRIMERS/SEALERS

Location:	L04 Ensuite L05 Ensuite
Type:	Confirm selection with tiler

4.6 MAPEI® ADHESIVES

Location:	L04 Ensuite L05 Ensuite
Type:	Mapei® Adesilex LP

4.7 MAPEI® WATERPROOFING TAPE

Location:	As required

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4.8 MAPEI® WATERPROOFING MEMBRANE REINFORCING MESH

Location: L04 Ensuite
L05 Ensuite

4.9 MAPEI® GROUT

Location: L04 Ensuite
L05 Ensuite
Type: Mapei®
Colour: TBC with Architect

4.10 MAPEI® SEALANT

Location: L04 Ensuite
L05 Ensuite
Type: Mapei®
Colour: To match grout

Components

4.11 MAPEI® - MAPEGUM WPS WATERPROOFING MEMBRANE SYSTEMS

Location: L04 Ensuite
L05 Ensuite
Membrane: Mapegum WPS

4.12 MAPEI® - MAPELASTIC AQUADEFENSE WATERPROOFING MEMBRANE SYSTEMS

Location: L04 Ensuite
L05 Ensuite
Membrane: Mapelastic AquaDefense

4.13 MAPEI® - MAPELASTIC SMART WATERPROOFING MEMBRANE

Location: L04 Ensuite
L05 Ensuite
Membrane: Mapelastic Smart
Reinforcement: Mapenet 150 waterproof reinforcing mesh

Accessories

4.14 ITEM

Location: To flooring junctions (to carpet)
Type: to match elsewhere within apartment



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6511 CARPETING

1 GENERAL

This section relates to the supply and installation of carpet laid conventionally (stretched), direct stuck or double bonded (double direct stuck).
It includes:

- carpet underlay
- woven sheet carpet

Documents

1.1 DOCUMENTS

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

NZBC C/AS2	Protection from fire for buildings other than risk group SH
AS/NZS 2270	Plywood and blockboard for interior use
AS/NZS 2455.1	Textile floor coverings - Installation practice - General
BPS	Building Product Specifications

Warranties

1.2 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

1 year: For materials

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.3 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year: For execution

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.4 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 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.

1.6 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 UNDERLAY

To AS/NZS 2455.1 Soft underlay and underlays manufacturer's requirements.

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Refer to SELECTIONS for product selection.

2.2 CARPET

To AS/NZS 2455.1 Textile floor coverings.

Refer to SELECTIONS for product selection.

Components

2.3 BINDER BARS

Anodised aluminium section with fluted face.

2.4 DIVIDER STRIPS

Hardwood strips 20mm x 15mm or as specified. Refer to SELECTIONS for type and size.

2.5 EDGE GRIPPER

Timber/plywood to AS/NZS 2270 with steel grippers to carpet manufacturer's requirements, constructed of sufficient pins and nails so as to withstand a minimum stretching force of 6580N over a 1220 mm length.

Accessories

2.6 TAPE

To carpet manufacturer's 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.

Handle carpet on flat dollies using carpet cradles, with probes on fork- lifts and without sharp bending or folding. Store carpet in flat bins with a maximum height of three rows. Keep dry. Protect from damage.

3.2 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 all fittings and fixtures around which the carpet is to be scribed are in place. Carry out such additional preparatory work as required in bringing the substrate to suitable condition.

Confirm moisture content of substrate in accordance with AS/NZS 2455.1. Appendix B Do not commence laying carpet until readings for the whole area are within acceptable levels as follows:

Moisture Content:	Timber substrate - 8 -12% for air conditioned buildings - 10 -14% for intermittently heated buildings - 12 -16% for unheated buildings
	Concrete substrate 75%RH

3.4 BEFORE COMMENCING WORK

Ensure that the building is enclosed, wet work complete, doors hung and lockable, finishes and trim complete, and good lighting available, before starting work.

3.5 TEMPERATURE

Acclimatise carpet to a room temperature above 15°C through the whole of the installation.

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3.6 PROTECTION

Protect adjoining work surfaces and finishes during the carpet installation.

3.7 TAPE

Tape for binding and seaming using type and width required by the carpet manufacturer to suit the specified carpet and the standard of performance required.

3.8 LAYING GENERALLY

Carry out the whole of the work to AS/NZS 2455.1 and to the flooring manufacturer's requirements.

3.9 LAYOUT

Plan the general layout so that:

- seams run lengthways
- traffic runs along the seam
- light from windows is not across the seam
- pile faces away from the light source.

Application - general / substrate preparation

3.10 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.11 PREPARING NEW CONCRETE FLOOR

To be level, smooth, clean, cured and dry. Remove loose material and dust.

Application - carpet laying

3.12 INSTALLATION, UNDERLAY

Installation to underlay manufacturer's requirements. Lay at right angles to the carpet direction.

3.13 INSTALLATION, CONVENTIONAL SYSTEM

Tape carpet joints, fix grippers to floor and install underlay and carpet to AS/NZS 2455.1, section 3. Stretch carpet tight in both width and length evenly without bowing, square with walls.

3.14 FIXING TRIMS

Fix binder bars, carpet to carpet bars, and trims to all junctions with other materials and to carpet edges, to the carpet manufacturer's requirements. Ensure that junctions with other materials are neatly formed, with bars and trim securely fastened to the substrate, 20mm from each end and at a maximum of 100mm centres.

Completion

3.15 PROTECTION

Provide the following temporary protection of the finished work: Sheeting, fabric as required.

3.16 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 UNDERLAY

Location	Brand	Type/thickness /weight
All carpeted areas	Duralay heatflow carpet (or as advised by carpet supplier)	Sponge rubber

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4.2 CARPET

Location	Brand/type /weight/code	Installation method
L04: WIR L05: Bed 3, Wardrobe areas	to match existing if known.	As required and recommended by the carpet manufacturer

Accessories

4.3 BINDER BARS

Brand: As required and recommended by the carpet manufacturer

4.4 DIVIDER STRIPS

Brand/material: Refer drawings
All carpet accessories that will be visible following installation (e.g. trim/threshold strips) to be approved via samples provided to Client prior to ordering



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6711RE RESENE ENVIRONMENTAL PAINTING EXTERIOR

1 GENERAL

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

Related work

1.1 RELATED WORK

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

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

2 PRODUCTS

Materials

2.1 PRODUCTS

Refer to 6700R RESENE PAINTING GENERAL for product clauses.

3 EXECUTION

Conditions

3.1 EXECUTION

Refer to 6700R RESENE PAINTING GENERAL for execution clauses.

4 SELECTIONS

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

Resene exterior paint systems

Environmental fibre cement – new

4.1 RESENE NEW EXTERIOR FIBRE CEMENT SOFFITS - PAINT

Surface Prep:	Resene SIPDS No3 and Spec Sheet 3: 4/1
1st coat:	Resene Concrete Primer D405, Acrylic Concrete Primer
2nd coat:	Resene Lumbersider Low Sheen D34, Waterborne Acrylic
3rd coat:	Resene Lumbersider Low Sheen D34, Waterborne Acrylic

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6721RE RESENE ENVIRONMENTAL PAINTING INTERIOR

1 GENERAL

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

Related work

1.1 RELATED WORK

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

2 PRODUCTS

Materials

2.1 PRODUCTS

Refer to 6700R RESENE PAINTING GENERAL for product clauses.

3 EXECUTION

Conditions

3.1 EXECUTION

Refer to 6700R RESENE PAINTING GENERAL for execution clauses.

4 SELECTIONS

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

Resene interior paint systems

Environmental interior plasterboard - new

4.1 RESENE NEW INTERIOR PLASTERBOARD WALLS; DRY AREAS

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

4.2 RESENE NEW INTERIOR PLASTERBOARD CEILINGS; DRY AREAS

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

4.3 RESENE NEW INTERIOR PLASTERBOARD CEILINGS; WET AREAS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1: 1A/1
Fire rating:	Group 1-S
1st coat	Resene Waterborne Sureseal D42a, Waterborne Pigmented Sealer (NEC)
2nd coat:	Resene SpaceCote Flat Kitchen & Bathroom D314K, Waterborne Enamel
3rd coat:	Resene SpaceCote Flat Kitchen & Bathroom D314K, Waterborne Enamel

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Environmental interior timber - new

4.4 RESENE NEW INTERIOR TIMBER DOORS, JOINERY, SKIRTING

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 9/1
1st coat	Resene Quick Dry D45, Waterborne Acrylic Primer Undercoat
2nd coat:	Resene Lustacryl D310, Semi-Gloss Waterborne Enamel
3rd coat:	Resene Lustacryl D310, Semi-Gloss Waterborne Enamel

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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.

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
AS/NZS 3500.4	Plumbing and drainage - Heated water services
NZS 3501	Specification for copper tubes for water, gas and sanitation

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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 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

1.6 HOT WATER TEMPERATURES

To NZBC G12/AS1, 6.14

Storage water heaters to store water at not less than 60ºC.

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

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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.

Performance

1.7 TESTING - TO NZBC G12/AS1

Test to NZBC G12/AS1, 7.6, Watertightness, for hot and cold water.

- Test to a pressure of 1500 kpa for period not less than 15 minutes.

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Slowly fill service pipes with water to exclude air. Test and ensure there is no measurable loss of pressure for the minimum period. Slowly fill distribution pipes with water to exclude air. Ensure that with draw-off taps closed the system must remain water-tight.

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 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.

2.3 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.

2.4 WATER METER

To the requirements of the network utility operator.

2.5 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.

2.6 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.

2.7 TEMPERING VALVE

Tempering valve to NZS 4617 or AS 4032.2 to NZBC G12/AS1.

Materials - Hot water heating appliances

2.8 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.

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Components

2.9 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.

2.10 PROTECTIVE TAPE

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

3 EXECUTION

3.1 EXECUTION GENERALLY

Generally carry out the whole of this work and tests to NZBC G12/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 POLYETHYLENE PIPE

Seal ring compression joints and electrofusion to NZBC G12/AS1 and AS/NZS 2033.

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Application - Pipework installation

3.12 WATER SUPPLY CONNECTION

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

3.13 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.

3.14 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.

3.15 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.

3.16 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.

3.17 PENETRATIONS

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

Application - Hot water systems

3.18 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.

3.19 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.

3.20 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.

3.21 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.

3.22 INSTALL STORAGE HOT WATER CYLINDER OVERFLOW TRAY

Install drained overflow tray to storage hot water cylinder to NZBC G12/AS1.



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3.23 INSTALL TEMPERING VALVE

Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install copper pipework for 1 metre minimum downstream of tempering valve prior to connection of non-metallic pipework.

Installation - valves

3.24 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.

3.25 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.

3.26 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

3.27 LABEL

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

3.28 CLEAN IN-LINE FILTER

Clean all in-line filters on completion of works.

3.29 REPLACE

Replace damaged or marked elements.

3.30 LEAVE

Leave work to the standard required by following procedures.

3.31 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

Water main

4.1 POLYETHYLENE WATER MAIN

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

Pipework

4.2 PIPEWORK INSULATION

Refer 4711T for TERRA LANA lagging



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7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES

1 GENERAL

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

1.1 RELATED WORK

Refer to 7120 or 7123 HOT AND COLD WATER SYSTEM for hot water cylinders.

Refer to 7420 or 7421 SANITARY SYSTEMS for the supply and fitting of waste disposal pipework
Refer to the electrical section/s for electrical connection of accessories.

Documents

1.2 DOCUMENTS

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

NZBC E3/AS1	Internal moisture
NZBC 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

Requirements

1.3 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.4 SUPPLIER

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

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2 PRODUCTS

2.1 SANITARY FIXTURES

Refer to SELECTIONS for product selection.

2.2 TAPWARE

Refer to SELECTIONS for product selection.

2.3 SANITARY APPLIANCES

Refer to SELECTIONS for product selection.

2.4 SANITARY ACCESSORIES

Refer to SELECTIONS for product selection.

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 STORAGE AND HANDLING

Take delivery of and store components complete with protective casings and coverings in areas that are enclosed, clean and dry and where no work is being done. Remove protection only to the extent that will allow installation.

3.3 QUALITY STANDARDS INCLUDING NZBC G13/AS1

Installation work to comply with NZBC G1/AS1, NZBC G12/VM1, NZBC G12/AS1, NZBC G13/AS1 and the fixture manufacturer's requirements.

3.4 SUBSTRATE

Ensure substrate and fixings will allow work of the specified standard.

3.5 CO-ORDINATION

Do not proceed if the points of supply and drainage services do not match the points of the fixtures without force or distortion.

3.6 INSTALLATION REQUIREMENTS INCLUDING NZBC G13/AS1

Install to NZBC G1/AS1, AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3, NZBC G12/AS1, NZBC G13/AS1, NZBC E3/AS1 and to the fixture manufacturer's installation requirements for each component.

3.7 PROVIDE SUPPORT

Confirm fixing points needed for each unit and provide solid blocking at each fixing bracket location.

3.8 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.

Conditions - tapware

3.9 RETAIN

Retain tapware in the manufacturer's original packaging and ensure that units are complete with fixings and installation instructions. Label each unit separately with its fitting name and space number.

3.10 STORE

Store tapware packages in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.



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Conditions - sanitary accessories

3.11 RETAIN

Retain fixtures, fittings and hardware in the manufacturer's original packaging and ensure that units are complete with associated fixings and installation instructions. Label each unit separately to match the submitted and approved schedule.

3.12 PACKAGE

Package fixtures, fittings and hardware units required in clear plastic and label each to match the drawings and the submitted schedule. Place packages in cartons selected for 'level', 'location', and/or 'sector' and label the packages and the cartons similarly.

3.13 STORE

Store items in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.

3.14 INSPECTION

Before starting the installation of proprietary items, check relevant spaces and wall and floor finishes for any condition that would not allow the proper installation of any unit. Do not proceed until such conditions have been remedied.

Installation - sanitary fixtures

3.15 INSTALLING TOILET PAN

Carry out preparatory and assembly work, including connections to supply and drainage services and the application of slurries/bedding and sealants in sequence. Fit the toilet pan in position, plumb, level, flush and rigid without stressing the attachment points of the component. Fixings to be corrosive resistant. Fit seat.

3.16 INSTALLING CISTERNS

Fit firmly in place and connect the specified cisterns from the supply services through the flush pipes to the relative fixtures in the positions as detailed all plumb and level.

3.17 INSTALLING URINALS - WALL HUNG

Carry out preparatory and assembly work, including connections to supply and drainage services and the application of sealants in sequence. Fit and fix the urinal in position plumb, level, flush and rigid without stressing the attachment points of the component. Connect units to drainage pipework through trap and complete screw fixing of units to wall. Fixings to be corrosive resistant. Seal perimeter of each unit to wall surface, using a compatible silicone sealant.

Installation - Basins

3.18 INSTALLING WASHBASINS

Install to NZBC G1/AS1, AS/NZS 1730. Set basins firmly to walls or vanities as detailed and to comply with NZBC E3/AS1. Connect to supply and drains through trap to the drainage system.

3.19 INSTALLING VANITIES - BLANK TOP

Install in accordance with the manufacturer's requirements. Cut out basin profile to basin manufacturer's template. Make penetrations for supply and drainage. Fix securely with corrosive resistant fixings. Seal top and upstand to wall surface to comply with NZBC E3/AS1.

Installation - Showers

3.20 INSTALLING SHOWER FITTINGS

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

3.21 INSTALLING SHOWER DOOR AND SCREEN

To NZS 4223.3 and to the product manufacturer's requirements. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating.



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Installation - Baths

3.22 INSTALLING BATH FITTINGS

Bath waste, taps, mixer, spout and shower set, where required in SELECTIONS to be installed to NZBC G1/AS1.

If shower set is required, seal related wall lining penetrations (shower head, shower hose, mixer, taps, spout etc) to NZBC E3/AS1, Fig. 6.

3.23 INSTALLING BATHS

Install to NZBC G1/AS1. Set firmly in cradle with required points fully supported, level and flush. Connect to supply and drainage services.

Installation - Sinks

3.24 INSTALLING SINK BENCHES

Install in accordance with manufacturer's/supplier's requirements. Connect to supply and drainage services.

3.25 INSTALLING CLEANERS SINKS AND TUB UNITS

Install in accordance with manufacturer's requirements. Connect to supply and drainage services.

Installation - Miscellaneous

3.26 INSTALLING STAINLESS STEEL FIXTURES

Carry out preparatory work and fit elements in position plumb, level, flush and rigid without stressing the attachment points in sequence. Connect to supply and drainage services.

Application - tapware

3.27 INSTALLATION TAPWARE

In accordance with the manufacturer's requirements. Maintain safe water temperatures to comply with NZBC G12/AS1 6.14 Safe water temperatures.

Application - sanitary accessories

3.28 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

3.29 LOCATE

Locate units at heights and/or locations shown on the drawings, or as required to comply with NZBC G1/AS1. For any dimension not shown or known, request direction before proceeding.

3.30 CUTTING AND FITTING

Where cutting and fitting of the substrate is necessary for installing any unit, carry out this work before the painting or finishing of that surface. Remove any hardware when required for painting, placing it in the packaging or carton originally supplied and returning it to the secure store until ready for re-installation.

3.31 INSTALLING UNITS

Install each unit in accordance with the proprietary fixture manufacturer's requirements, using the templates and tools supplied or recommended by them. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating. Do not make any modifications to supplied units.

Completion & Commissioning

3.32 REPLACE

Replace damaged or marked elements.



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3.33 PROTECTIVE COVERINGS

Leave fixtures, fittings and accessories clean and unblemished with stickers and protective coverings removed, with supply and drainage connections and all parts fully operating and working. Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following work.

3.34 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

4.1 TOILET (FF-003)

Location:	Ensuite L04 Refer drawings
Toilet pan:	Caroma Liano CleanFlush Wall faced toilet suite
Trap type:	Universal trap pan for S or P trap installations

4.2 BASIN (FF-001)

Location:	Ensuite L05 Refer drawings
Basin:	2x Countertop vessel basin (400dia x 120H) Model - Caroma Liano II Vessel Basin Round
Basin taps/mixer:	Model - Methven Waiproi Hi Rise Basin Mixer, Chrome (FF-002)
Waste/plug:	Pop up, Chrome
Trap:	P/S trap - PVC. Suitable for concealed trap, confirm when joinery is finalised.

4.3 SHOWER ENCLOSURE - PROPRIETARY (FF-010)

Location:	Ensuite L04 Refer drawings
Shower:	Proprietary 2-sided Tiled Shower Enclosure with hinged door - 1000 x 1000 (measure on site prior to ordering to confirm size). Model - Atlantis Hydra
Mixer:	Reuse existing or to match existing if known. Option for new - Methven Aio Shower Mixer, Chrome (FF-005)
Shower set:	Reuse existing or to match existing if known. Option for new - Methven Aurajet Aio Rail Shower mixer (FF-004)

4.4 SHOWER ENCLOSURE - NON-PROPRIETARY

Location:	Ensuite L05 Refer drawings
Shower waste	Refer 7421AI
Mixer:	Reuse existing or to match existing if known. Option for new - Methven Aio Shower Mixer, Chrome (FF-005)
Shower set:	Reuse existing or to match existing if known. Option for new - Methven Aurajet Aio Rail Shower mixer (FF-004)

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4.5 BATH (FF-007)

Location:	Ensuite L04 Refer drawings
Bath model:	Back to wall corner bath, Right hand. Model shown - Enya 1700, Supplier - Harrison Bloy (1700L x 730W x 600H). Can be substituted for another bath same size and arrangement. **Note this model has been selected to avoid penetrations to prestressed slab**
Bath mixer:	Bath mixer, tapware to match existing if known. Option - Methven Aio wall mounted bath mixer with spout, Chrome (FF-008)
Waste/plug:	to confirm with selection
Trap:	to confirm with selection
Accessories:	Client to confirm with selection

4.6 TAPWARE - MISCELLANEOUS

Taps not related to and separate from sanitary fixtures:

Hose tap external:	Refer to P&D Plan Confirm if there is an existing hose tap to L05 terrace, if so relocate.

4.7 SANITARY ACCESSORIES

Location:	
Roll holder:	to match existing if known
Towel rail:	refer 7701 Electrical
Toilet brush holder:	to match existing if known
Hooks:	to match existing if known

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7411 RAINWATER SPOUTING SYSTEMS

1 GENERAL

This section relates to rainwater disposal systems including spouting and downpipes in:

- metal
- PVC

1.1 ABBREVIATIONS AND DEFINITIONS

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

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
Spouting	Roof gutter bracketed off the roof edge or fascia.
Gutter	Internal gutter or gutter formed as integral part of the roof fabric.

Documents

1.2 DOCUMENTS

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

NZBC E1/AS1	Surface water
NZBC E1/AS2	Surface water
AS 1273	Unplasticised PVC (uPVC) downpipe and fittings for rainwater
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal environmental and use conditions:

10 Years	For failure of coating adhesion
10 Years	For weatherproofing by material penetration
Form:	Manufacturer's standard warranty form
From:	Commence the warranty from the date of completion of installation

Refer to the general section 1237 WARRANTIES for details of when completed warranty must be submitted.

1.4 WARRANTY - INSTALLER/APPLICATOR

Warrant this work under normal environmental and use conditions against:

3 years:	For weatherproofing by substandard workmanship:
From:	Commence the warranty from the date of completion of installation
Form:	Installers standard warranty form

Refer to the general section 1237 WARRANTIES for details of when completed warranty must be submitted.

Requirements

1.5 QUALIFICATIONS

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



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Performance

1.6 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 - uPVC

2.1 UPVC DOWNPIPES

To suit the spouting system, pipes solvent cement jointed and complete with stand-off brackets, galvanized screws and accessories, brand matched and complete to the manufacturer's specifications. Refer to SELECTIONS for type.

Materials - metal

2.2 SPOUTING

Complete with matching brackets to suit spouting and screws. Refer to SELECTIONS for type.

2.3 SPOUTING BRACKETS

All exposed brackets to be colour matched before installation. Brackets to be hot-dipped galvanised, zincalume, aluminium, stainless steel or brass as specified and to suit application. Electroplated components are not acceptable. Refer to SELECTIONS for type.

2.4 DOWNPIPES

Complete with stand-off brackets, screw fixed. Refer to SELECTIONS for type.

Materials - fascia/barge system

2.5 EXTERNAL FASCIA/BARGE SPOUTING SYSTEM

Fascia/barge type complete with jointing, brackets, fittings and accessories, brand matched and complete to the manufacturer's requirements. Refer to SELECTIONS for type.

Components

2.6 DROPPERS

Metal or uPVC droppers, compatible with spouting material and sized to fit inside the downpipe.

2.7 FASTENERS GENERALLY

Minimum Class 4 durability and not less than the roofing material being fixed.

2.8 RIVETS

Sealed aluminium, minimum diameter 4mm.

2.9 SEALANT

MS Polymer sealant.

3 EXECUTION

Conditions

3.1 HANDLE AND STORE

Handle and store downpipes, spouting and accessories to avoid damage. Store on site under cover, on a clean level area, stacked to eliminate movement and away from work in progress. Avoid exposure to sunlight if strippable film is still on the product.

3.2 SUBSTRATE

Check that fascias, barges or cladding are level and true to line and face and will allow work of the required standard without distortion to the product alignment. Do not proceed until they are up to standard.

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3.3 THERMAL MOVEMENT

Make adequate provision in the fixing and jointing of the spouting for thermal movement in the length of the spouting. Provide an expansion joint in spouting over 18 metres in length for steel gutter.

3.4 CORROSION

Separate metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips. Do not allow copper downpipes to discharge onto lower galvanized or zinc aluminium coated steel roofs.

Application - uPVC

3.5 INSTALL UPVC DOWNPIPES

Assemble downpipes, solvent welded complete, fit to outlets, galvanized screw fix with pipe clips to rigidly stand 25mm off the wall, plumb and discharging into the stormwater gully or pipe inlet to the downpipe manufacturer's required practice.

Application - metal

3.6 INSTALLATION GENERALLY

Install to NZMRM CoP recommendations where not otherwise specified.

3.7 INSTALL VALLEY GUTTERS

Attach valley gutters to valley boards by clips allowing for thermal movement to NZMRM CoP, clause 5.6, **Valley Gutters**. Separate valley gutter from valley boards with a layer of bituminous roof underlay.

3.8 INSTALL SECRET GUTTERS

Install secret gutters to fall allowing for thermal movement to NZMRM CoP, clause 5.5.7 **Secret Gutters**. Rivet and seal joints with MS Polymer sealant.

3.9 INSTALL METAL SPOUTING

Establish minimum falls necessary (minimum 1:500, 2mm in 1 metre) to outlets to prevent ponding and screw fix brackets, true to line at 750mm centres maximum for external gutters less than 175mm wide and at 600mm centres maximum for gutters 175mm to 300mm wide. In areas where snow fall is possible the centres should be reduced to 600mm maximum. Lap spouting joints a minimum of 40mm, silicone seal between surfaces and pop rivet to the manufacturer's recommendations. Ensure the joint is fixed over its full girth. Cut out neatly for and fit the pre-formed downpipe dropper and rivet and seal around the joint. All installation to NZMRM CoP recommendations.

3.10 INSTALL PRE-PAINTED METAL SPOUTING

Establish minimum falls necessary (minimum 1:500, 2mm in 1 metre) to outlets to prevent ponding and screw fix brackets true-to-line at 750mm centres maximum for external gutters less than 175mm wide and at 600mm centres maximum for gutters 175mm to 300mm wide. In areas where snow fall is possible the centres should be reduced to 600mm maximum. Lap spouting joints a minimum of 40mm and silicone seal and pop rivet to the manufacturer's recommendations. Cut out neatly for and fit the pre-formed downpipe dropper and silicone seal around the lap joint. All installation to NZMRM CoP recommendations.

3.11 INSTALL EXTERNAL FASCIA/BARGE SPOUTING SYSTEM

Install concealed fascia brackets to rafters with either screws or nails and fit fascia to a level line. Fit gutter brackets to fall to outlet. Cut and form corner junctions and barge junctions and fit spouting rigidly to brackets. Cut out neatly for and fit pre-formed downpipe droppers. Silicone seal and pop-rivet all lap joints. All installation to NZMRM CoP recommendations.

3.12 INSTALL DROPPERS

Install either 2 outlets or one outlet and an overflow to each spouting section. Cut out neatly for and fit the pre-formed downpipe dropper and rivet and seal around the joint. All installation to NZMRM CoP recommendations.

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3.13 INSTALL METAL DOWNPIPES

Form downpipes complete with angle bends as needed with joints lapped and sealed. Screw fix with pipe clips to rigidly stand off the wall plumb and discharging into stormwater gully or inlet pipe. All installation to NZMRM CoP recommendations.

3.14 INSTALL RAINWATER HEADS

Install rainwater heads where required to NZMRM CoP, clause 5.8.1, **Rainwater Heads**.

3.15 INSTALL OUTLETS AND OVERFLOWS

Install outlets and overflows where required to NZMRM CoP, clauses 5.8.2, **Outlets and Overflows.**

Completion

3.16 REPLACE

Replace damaged or marked elements.

3.17 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.

3.18 REMOVE

Remove debris, unused materials and elements from the site.



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4 SELECTIONS

4.1 SPOUTING

Profile/size:	Half round gutter 150mm
Material:	Precoated steel
Thickness:	0.55mm
Coating system:	Colorsteel Maxx
Colour:	to match existing lower roofs (Ironsand - confirm on site with swatch, WAM can supply swatch if required)

4.2 SPOUTING BRACKETS

Type:	External
Material:	Metal colour to match spouting
Snow straps:	Allow snow straps @ 600crs min Membrane roof supplier to confirm snowstrap fixing method to membrane roof

4.3 DOWNPIPES

Profile/size:	Refer roof plan and plumbing and drainage plans
Material:	Steel
Thickness:	0.55mm
Coating system:	Colorsteel Maxx
Colour:	to match existing lower roofs Assume Ironsand - confirm on site with swatch, WAM can supply swatch if required

4.4 DOWNPIPE BRACKETS

Type:	2-part standoff brackets @600crs
Material:	Steel, colour to match downpipes

UPVC system

4.5 UPVC DOWNPIPES (INTERNAL ONLY)

Location:	Refer plumbing and drainage plans and roof plan
Type/Size:	Sizes as shown on drawings but not less than NZBC requirements
Connection:	Internal DPs connected to drain direct (sealed) to be fitted with sealed clean-out
Footings:	All downpipes travelling within or through poured insitu concrete slabs to be sleeved
Noise insulation:	Internal downpipes to be wrapped. The following options are suitable: - Pyrotek Soundlag 45425C acoustic pipe wrap - Acoustop Barrier Wrap ABW/8-25 (supplied by Forman Insulation)

Fascia/barge spouting system

4.6 EXTERNAL FASCIA/BARGE SPOUTING SYSTEM

Brand/type:	Refer drawings / details

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7421 SANITARY SYSTEMS

1 GENERAL

This section relates to above ground gravity flow sanitary systems;

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

1.1 RELATED SECTIONS

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures.

Refer to 7123 HOT AND COLD WATER SYSTEM for potable water systems.
Refer to 7431 DRAINAGE COMMON REQUIREMENTS for underground drains.
Refer to 7142 GREYWATER SYSTEMS for greywater systems.

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC G1/AS1	Personal hygiene
NZBC G13/AS1	Foul water - Sanitary plumbing
NZBC G13/AS3	Foul water - Sanitary plumbing and drainage
AS 1589	Copper and copper alloy waste fittings
AS 2887	Plastic waste fittings
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage
AS/NZS 4401	Plastic piping systems for soil and waste discharge (low and high temperature) inside buildings - polyethylene (PE)
AS/NZS 7671	Plastic piping systems for soil and waste discharge (low and high temperature) inside buildings - Polypropylene (PP)
BS EN 1124 .1	Pipes and fitting of longitudinally welded stainless steel pipes with spigot and socket for waste water systems. Requirements, testing, quality control.
BS EN 1124 .2	Pipes and fitting of longitudinally welded stainless steel pipes with spigot and socket for waste water systems. System S, forms and dimensions.

Plumbers, Gasfitters and Drainlayers Act 2006

Requirements

1.3 QUALIFICATIONS

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

1.4 PIPEWORK LAYOUTS

Refer plumbing and drainage plans.

1.5 OPERATION AND MAINTENANCE MANUALS

Supply maintenance manual information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

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Performance

1.6 TESTING

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC G13/AS1, 7.1 Test Methods or AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations, as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

2 PRODUCTS

Materials

2.1 COPPER PIPES AND TRAPS

To NZS 3501 for pipes and AS1589 for fittings.

Pipes complete with copper-alloy compression fittings and/or crox type joints and seal ring compression joints. Traps complete with screwed access ports. Exposed traps and wastes, complete with matching ferrules at penetration location, satin chrome plated.

2.2 PVC-U WASTE PIPES AND TRAPS

To AS/NZS 1260, complete with fittings and accessories to the pipe manufacturer's requirements, all brand matched.

2.3 PVC-U VENT PIPE

To AS/NZS 1260, complete with fittings and accessories to the pipe manufacturer's requirements and all brand matched.

2.4 CHROME EXPOSED PIPES AND TRAPS

Chrome plate on copper pipes and associated copper and brass fittings, or chromed plastic.

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for locations and types of traps.

2.5 FLOOR WASTES

Floor wastes and floor waste gullies to AS/NZS 3500.2, complete with chrome grates to suit flooring.

Components

2.6 PROTECTIVE TAPE

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

3 EXECUTION

Conditions

3.1 EXECUTION GENERALLY - NZBC G13/AS1

Carry out this work to NZBC G13/AS1 and NZBC G1/AS1 and complete all tests to G13/AS1, 7.1 Test Methods.

3.2 ELECTROLYTIC ACTION

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

3.3 EQUIPOTENTIAL BONDING METALLIC WASTE PIPES

Before enclosing, co-ordinate with electrician to provide for equipotential bonding to ensure metallic waste pipes connected to metallic drains and attached metallic sanitary fixtures, using an earth bonding conductor to requirements of AS/NZS 3000, 5.6 Equipotential bonding.

3.4 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site under cover on a clean level area, stacked to eliminate movement and away from work in progress.

3.5 SETTING OUT

Set out location of all stacks, discharge pipes, fittings and vent pipes and the completeness of their discharge into the drainage system.

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3.6 CORE HOLES AND SLEEVES

Fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Sleeve diameter to be 25mm larger than outside diameter of pipe accommodated. Strip core holes and make good after installation of pipework.

3.7 PIPE ACCESS

Fit and fix stacks, wastes and pipes in ducts independent of all other services so they are easily replaceable for their full length. Wrap or tape pipes buried in concrete.

3.8 FITTINGS ACCESS

Fit and fix traps and wastes to enable access for cleaning and for maintaining the total system.

3.9 CONFIRM LOCATIONS

Unless the location and height are clearly delineated on the drawings, confirm installation height and plan locations of sanitary fittings before commencing the piping installation.

3.10 TRAPS AND WASTES

Conceal traps and wastes in the fabric of the building unless detailed otherwise. Fit and fix satin chrome plated exposed pipes, traps and wastes unless detailed otherwise.

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for locations and types of traps.

3.11 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.

Application - jointing

3.12 JOINTING COPPER PIPE - NZBC G13/AS1

Braze pipe, fit alloy compression fittings, crox type joints and seal ring compression joints to NZBC G13/AS1.

3.13 JOINTING PVC-U PIPE

Prime and solvent weld joints using spigots and sockets, flanged joints and seal ring compression joints to AS/NZS 2032.

Application - fixing

3.14 THERMAL MOVEMENT

Accommodate longitudinal movement in pipes resulting from temperature changes. Incorporate expansion joints in copper and PVC-U pipes. Install PVC pipes to AS/NZS 2032. Take particular care to allow for movement at horizontal take-off locations from stacks.

3.15 TRAPS AND FIXTURE DISCHARGE PIPES - NZBC G13/AS1

Size traps and pipes as required for each fixture or appliance. Establish the developed length of waste pipes. Vent and allow access for cleaning as required. Follow the most direct line with the least number of bends to NZBC G13/AS1: Foul water sanitary plumbing, table 4, Discharge unit loading for stacks and graded discharge pipes and NZBC G13/AS1, table 7, Distance between supports.

3.16 DISCHARGE STACKS AND VENTS - NZBC G13/AS1

Size stacks and vents to NZBC G13/AS1, table 2, Fixture discharge pipe sizes and discharge units and NZBC G13/AS1, table 6, Vent pipe sizes. Extend up past the highest branch to form a discharge stack vent terminating to NZBC G13/AS1, figure 12 and finishing at the base with a 45 degree bend. Support system to NZBC G13/AS1, table 7, Distances between supports.

3.17 FLASH ROOF PENETRATIONS

Flash or arrange for roofer to flash all penetrations to NZBC E2/AS1.

For profiled metal roofs, fit proprietary EPDM pipe collar flashings to NZBC E2/AS1, 8.4.12 Roof penetrations, and manufacturer's requirements.

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Completion

3.18 REPLACE

Replace damaged or marked elements.

3.19 LEAVE

Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following procedures.

3.20 REMOVE

Remove debris, unused materials and elements from site.

4 SELECTIONS

4.1 SANITARY SYSTEMS - COPPER PIPES AND TRAPS

Location:	Refer plumbing and drainage plan
Wall thickness:	Refer to framing plan
Exposed pipes/traps	Allow for any exposed traps to be chrome finish (not PVC)

4.2 SANITARY SYSTEMS - PVC-U WASTE PIPES AND TRAPS

Location:	Refer plumbing and drainage plan
Manufacturer/Brand:	PVC where concealed

4.3 SANITARY SYSTEMS - PVC-U VENT PIPE

Location:	Refer plumbing and drainage plan

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7421AI ALLPROOF INTERIOR FLOOR WASTE SYSTEMS

1 GENERAL

This section relates to **Allproof Industries** interior floor waste systems suitable for residential and commercial applications.
It includes:

- Vision series shower channel kit
- Tile waste kit
- Vinyl waste kit
- Cyclone waste kit
- Easy clean trap floor waste kit
- Revolver waste kit
- Flange and grate system (flange and grate combo only, not a full kit)
- Grate, flange and floor waste gully components necessary to complete the installation

1.1 RELATED WORK

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures.

Refer to 7420 and 7421 SANITARY SYSTEMS for above ground gravity flow sanitary systems

Documents

1.2 DOCUMENTS

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

NZBC G1/AS1	Personal hygiene
NZBC G13/AS1	Foul water - Sanitary plumbing
NZBC G13/AS3	Foul water - Sanitary plumbing and drainage
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage

Plumbers, Gasfitters and Drainlayers Act 2006

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Allproof Industries interior floor waste system brochures
Allproof Industries interior floor waste system technical details
Allproof Industries interior floor waste system installation guide.

Manufacturer/supplier contact details

Company:	**Allproof Industries**
Web:	www.allproof.co.nz
Email:	info@allproof.co.nz
Telephone:	09 481 8020

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5-50 years	For Allproof Industries interior floor waste system components. For warranty conditions and details refer to Allproof Industries.

- Provide this warranty on Allproof Industries Ltd standard form
- Commence the warranty from the date of purchase.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS

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

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Compliance information

1.6 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

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

Performance

1.7 TESTING

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC G13/AS1, 7.1 Test Methods or AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations, as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

2 PRODUCTS

Materials - Allproof floor waste kit systems

2.1 VISION SERIES SHOWER CHANNEL KIT

Allproof Vision series shower channel kit comprised of the following:

- Stainless steel grate and channel with a central outlet
- VF80 leak control flange
- 80mm x 50mm Floor waste gully standard, 80mm x 65mm available
- Channels available in 4 stock lengths, 5 grate options, and custom colour powder coating options.
- Customized lengths and outlet locations available

Refer to SELECTIONS for options.

3 EXECUTION

Conditions

3.1 EXECUTION GENERALLY - NZBC G13/AS1

Carry out this work to NZBC G13/AS1 and NZBC G1/AS1 and complete all tests to G13/AS1, 7.1 Test Methods.

3.2 ELECTROLYTIC ACTION

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

3.3 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site under cover on a clean level area, stacked to eliminate movement and away from work in progress.

3.4 SETTING OUT

Set out location of all fittings and vent pipes and the completeness of their discharge into the drainage system.

3.5 CORE HOLES AND SLEEVES

Fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Sleeve diameter to be 25mm larger than outside diameter of pipe accommodated when installed in the foundation, Allproof Pipe Sleeve to be used through other penetrations. Strip core holes and make good after installation of pipework.

3.6 PIPE ACCESS

Fit and fix wastes and pipes in ducts independent of all other services so they are easily replaceable for their full length. Wrap or tape pipes buried in concrete.

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3.7 FITTINGS ACCESS

Fit and fix traps and wastes to enable access for cleaning and for maintaining the total system.

3.8 CONFIRM LOCATION

Unless the location and height are clearly delineated on the drawings, confirm installation height and plan locations of sanitary fittings before commencing the piping installation.

3.9 CORROSION

Separate metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

Installation - generally

3.10 INSTALLATION - WATERPROOFING MEMBRANES

Refer to relevant waterproofing membrane section(s) for installation of membranes and associated sub-trades.

Installation - Allproof floor waste kit systems

3.11 INSTALL FLOOR WASTE KIT SYSTEMS

Install floor waste kit systems in accordance with Allproof interior floor waste system brochure and installation guide.

Completion

3.12 ROUTINE CLEANING

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

3.13 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable.

Commissioning

3.14 TESTING

Pre-test all waste pipe during construction. On completion of the work and before approval for acceptance of the pipework, carry out a final test to the approval of the engineer and if required witnessed by the representative of the territorial authority.

4 SELECTIONS

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

Materials - Allproof floor waste kit systems

4.1 ALLPROOF VISION SERIES SHOWER CHANNEL KIT

Location:	To all showers. Refer drawings for locations
Manufacturer:	Allproof Industries
Channel size:	80mm wide. Length to suit shower, full width
Channel finish:	Stainless Steel
Grate:	Equator
Flange type:	VF80 leak control flange
Floor waste gully:	80x50mm

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7451AL ALLPROOF LEVEL THRESHOLD DRAINAGE SYSTEMS

1 GENERAL

This section relates to **Allproof Industries** level threshold drainage systems suitable for residential and commercial applications.
It comprises of an in-ground drainage channel complete with a range of grate options and fittings including connection to the network utility operators system.
It includes:

- Allproof Perimeter Drain
- Allproof Cantilever Bracket (CB) level threshold drainage system
- Allproof Threaded Leg (TL) level threshold drainage system

1.1 RELATED WORK

Refer to 7431 DRAINAGE COMMON REQUIREMENTS for general matters

Refer to 7441 GROUNDWATER DRAINAGE for sub-soil drainage
Refer to 7461 FOUL WATER DRAINAGE for waste/foul water drainage

Documents

1.2 DOCUMENTS

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

NZBC E1/AS1	Surface water
NZBC E1/AS2	Surface water
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage

Plumbers, Gasfitters and Drainlayers Act 2006

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Allproof Industries Level Threshold Brochure
Allproof Industries Level Threshold Technical Details
Allproof Industries Level Threshold Installation Details

Manufacturer/supplier contact details

Company:	**Allproof Industries**
Web:	www.allproof.co.nz
Email:	info@allproof.co.nz
Telephone:	09 481 8020

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For Allproof Industries Level Threshold Drainage System components. For warranty conditions and details refer to Allproof Industries.

- Provide this warranty on Allproof Industries Ltd standard form.
- Commence the warranty from the date of purchase.

Refer to the general section 1237 WARRANTIES for additional requirements.

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Requirements

1.5 QUALIFICATIONS

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

1.6 ORDERING REQUIREMENTS

Allow manufacturing / delivery lead time after on-site measurement for the following custom products:

- Allproof Perimeter Drain Stainless Steel Grates
- Allproof Cantilever Bracket (CB) System
- Allproof Threaded Leg (TL) level threshold drainage System

1.7 SITE CONFIRMATION

Meet with the territorial authority drainage inspector to confirm the drainage layout in relation to site conditions. Confirm changes resulting and seek written site instruction before carrying out any work.

1.8 SITE CONDITIONS

Before starting work check on site the drainage layout, dimensions, levels and invert levels and ensure that line, level, falls and cover are correct.

1.9 NO SUBSTITUTIONS

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

Performance

1.10 TECHNICAL APPLICATION

Refer to Allproof Industries for technical support on grate performance and engage a hydraulics engineer for hydraulic performance, run layout and scheduling, ponding analysis and information on the chemical resistance of the trench and grate materials.

1.11 COMPLIANCE WITH NZ BUILDING CODE

All work to comply with:

- NZBC E2/AS1, paragraph 7.4.2.2, system materials and construction.
- NZBC E1/AS1: Surface water, 3.0 Drainage system materials and construction.

2 PRODUCTS

Materials - Allproof level threshold drainage systems

2.1 ALLPROOF PERIMETER DRAIN

Perimeter Drain level threshold drainage system, complies with NZBC E2/AS1, paragraph 7.4.2.2, and Figure 7.4.2.1: Level thresholds for ground level, and is comprised of the following:

- L Shaped pre-cast polymer concrete channel 200mm wide x 195mm high (internal depth 180mm) with two standard and two custom grate options.

Refer to SELECTION for options.

3 EXECUTION

Conditions

3.1 GROUND CONDITIONS

Specific ground conditions or contaminated ground may require an increase in the concrete surround dimensions or the addition of reinforcement.

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3.2 TEMPORARY INSTALLATION

Allproof Industries level threshold drainage channels are not trafficable until fully installed. During site work and after the trench run is laid, route site traffic away from the trench. If temporary crossings are required lay base course of minimum 1 metre wide either side of the trench for protection and install temporary protective cover or timber infill for support.

Installation

3.3 GENERAL

All work to NZBC E2/AS1, paragraph 7.4.2.2, system materials and construction, AS/NZS 3500.3 as modified by NZBC E1/AS2 : and Allproof Industries Installation Details.

3.4 INSTALL ALLPROOF PERIMETER DRAIN

Install Allproof Perimeter Drain in accordance with Allproof Industries Level Threshold Technical Details, and as follows:

- Set channel up against building line. Level channel and make any cuts that are required working from the centre outwards.
- Install grates or insert timber into channel. This will reduce any movement when pouring the concrete.
- Pour concrete.
- Lay screeding towards the outlet to create a 1:200 fall in accordance with NZBC E2/AS1, paragraph 7.4.2.2, and Figure 7.4.2.1: Level thresholds for ground level.
- Install grates. Cut down grates and place into the channel keeping a 12mm distance between the grate and the building line. Clip grates into place or install into bracket. Or measure and order custom fabricated grates.

Installation - connection

3.5 CONNECT TO SURFACE WATER DRAIN

Connect Allproof level threshold drainage system to stormwater drain to the requirements and satisfaction of the network utility operator.

3.6 CLEAN

Clean and flush out the whole installation and remove all silt and debris before handing over.

Completion

3.7 REPLACE

Replace damaged or marked elements.

3.8 LEAVE

Leave the whole of this work discharging completely and freely into the stormwater system and free of all debris. Leave work to the standard required by following procedures.

3.9 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

Materials - Allproof level threshold drainage systems

4.1 ALLPROOF PERIMETER DRAIN

Location:	Refer drawings
Manufacturer:	Allproof Industries
Grate type:	Perimeter drain with 316 stainless steel wedge wire grate
Grate width:	Adjustable up to 185mm on selected grates
Grate finish:	316 stainless steel
Load rating:	A - Pedestrian (330kg nominal wheel load)

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7701 ELECTRICAL BASIC

1 GENERAL

This section relates to the wiring for domestic and small scale commercial installations, including:

- power
- lighting
- electrical automation
- security system
- complete with componentry
- electrically-powered fittings
- fire rated sealers, liners and accessories

1.1 RELATED WORK

Refer to FIRE ENGINEER'S Fire Report for all fire 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:

AFDD	Arc Fault Detection Device
COC	Certificate of Compliance
ELV	Extra Low Voltage
IP	international (ingress) protection classification
MCB	Miniature circuit breakers
NUO	Network Utility Operator
PCB	printed circuit board
RCCB	Residual Current-operated Circuit Breaker
RCD	Residual Current Device
SIA	security integration architecture
TCF	Telecommunications Carriers' Forum

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture 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
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 3111	Approval and test specification - Miniature overcurrent circuit-breakers

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AS/NZS 3112:2017	Approval and test specification - Plugs and socket-outlets
AS/NZS 3113	Approval and test specification - Ceiling roses
NZS 3604	Timber framed buildings
NZS 4246	Energy Efficiency - Installing bulking thermal insulation in residential buildings
AS/NZS 5000.2	Electric cables - Polymeric insulated - for working voltages up to and including 450/750v
AS/NZS 60898	Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations - Series
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance.
AS/NZS 61439.3	Low-voltage switchgear and controlgear assemblies - Part 3: Distribution boards intended to be operated by ordinary persons (DBO).
IEC 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	Components for low voltage surge protection 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
Private Security Personnel Investigations Act 2010

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's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.6 QUALIFICATIONS WORKERS – 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 WORKERS - 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.

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1.8 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.

1.9 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.

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2 PRODUCTS

2.1 MAINS SUPPLY

Tough plastic sheathed neutral screened cable to AS/NZS 5000.2 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

2.2 CABLES

Tough plastic sheathed copper conductors to AS/NZS 5000.2, stranded above 1.0mm², and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the MCB rating, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.5mm² on 10 amp MCBs
Lighting circuits:	Commercial: 1.5mm² on 16 amp MCBs
Power circuits:	2.5mm² on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
	2.5mm² on 16 amp MCBs for domestic insulated construction, or filled cavity
	2.5mm² on 20 amp MCBs for unenclosed or unfilled cavity construction
	2.5mm² on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Hot water cylinder circuits:	Single phase: 2.5mm² on 20 amp MCBs
Range/oven/hob circuits:	Single phase: 6mm² high temperature cable on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions that may be above 35°C (roof spaces above insulation etc).

2.3 METER BOX

Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.

2.4 DISTRIBUTION BOARD

Flush surface mount boards manufactured to AS/NZS 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.

2.5 CIRCUIT PROTECTION

General requirements including main switch 63A or 100A to AS/NZS 3000, 2.3.3 Main Switches and additional isolating switches to AS/NZS 3000, 2.3.4 Additional isolating switches.

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.

2.6 SURGE PROTECTION

Provide surge protection device(s) to AS/NZS 3000, Appendix F Surge Protection Devices. Protection for the home's appliances with IEC 61643 Class II surge protection devices fitted to the switchboard. For variable electronic equipment fit IEC 61643 Class III surge protection to switched socket outlets.

2.7 WALL BOXES

Standard grid size or equivalent to be manufactured from plastic or metal, with 2 or more gang size to be metal with steel inserts for accessory securing screws. Screw fixed.

2.8 SWITCH UNITS

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Single pole switches to be 10 amp minimum rated, double pole or intermediate to be 16 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units.
Label all switch units that control electrical equipment or special lighting circuits by proprietary engraved switch mechanisms where applicable.
Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units and 2 way units.
Refer to SELECTIONS.

2.9 SWITCHED SOCKET UNITS

To AS/NZS 3000, 4.4 Socket-Outlets, 10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters to AS/NZS 3112 clause 3.12 as modified by Electricity (Safety) Regulation, single or multi gang as detailed. Refer to SELECTIONS.

2.10 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.

2.11 HOT WATER SYSTEM ISOLATION SWITCH

To AS/NZS 3000, 4.8.2 Water heaters, one way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

2.12 BATTEN HOLDERS

Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.

2.13 SMOKE ALARMS

Type 1 domestic smoke alarm to NZBC F7/AS1. 1.2 **Descriptions of alarm systems**. Alarm to AS 3786. A wired 230 volt ionised smoke detector type.

2.14 DOOR BELL SYSTEM

Complete with transformer for mounting on distribution board.

2.15 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.

2.16 RECESSED LIGHT FITTINGS - RESIDENTIAL

Residential recessed light fittings to AS/NZS 3000, 4.5.2.3.5:

- Existing fittings or retrofit situations, fittings maybe unmarked.
- New fittings can only be labelled - CA 80, CA 90, CA 135, IC, IC-F, & IC-4.

Refer to SELECTIONS.

2.17 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.

2.18 EXHAUST FANS

Ceiling, wall or duct mounted exhaust fans for ventilation to NZBC G4/AS1, and compliant with Electrical (Safety) Regulations 2010, Schedule 4, 1 Household & similar appliances. Refer to SELECTIONS.

2.19 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.

2.20 EXTERIOR SWITCHES AND SWITCHED SOCKET UNITS

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.

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2.21 EXTERIOR LIGHT FITTINGS

Using materials with superior UV protection, impact strength, and addition chemical resistance.

Weather protection minimums:

- IP54 for protected areas under eaves or verandahs etc.
- IP55 for exposed areas not subject to pressurised water (hoses).
- IP66 for areas subject to pressurised water or major splashing.
- IP67 for inground lights
- IP68 for submerged pool fittings

Refer to SELECTIONS.

Security system

2.22 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.

2.23 DETECTORS

Standard passive infrared sensors: Install in stable environments with no wind flow and no direct bright sunlight

or

Passive infrared/ microwave sensors: Install in area where environmental stability is an issue.

2.24 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, 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.

2.25 CABLING

Security alarm wiring to AS/NZS 1125 for cables.

Security alarm wiring to be multi stranded and not single stranded, minimum 0.5mm².

2.26 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.

2.27 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 rated accessories

2.28 FIRE RATED / ACOUSTIC 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.

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.

Installation

3.3 MAIN SUPPLY

Lay underground mains to the NUO and AS/NZS 3000, 3.11 Underground Wiring Systems requirements. Excavate trench, 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.

3.4 METER BOX

Fit to meter box manufacturer and Electricity Retailer requirements. Recess into external wall in sheltered area and flash to weatherproof to NZBC E2/AS1, Figure 9.1.8.3B: General meterbox and similar penetrations. Arrange for meter installation and connection.

3.5 DISTRIBUTION BOARD

Fit to AS/NZS 3000, 2.10 Switchboards and board manufacturer requirements. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

3.6 CIRCUIT BREAKERS

Install MCBs at distribution board to AS/NZS 3000 to protect each final sub circuit.

3.7 EARTHING CONDUCTIVE STRUCTURE & MATERIALS

Earth all at risk structural metalwork and conductive building materials to AS/NZS 3000, 5.4.6, and the Electricity (Safety) Regulations 2010.

If they form part of the building, this includes:

- Structural steel frames or members
- Light steel framing
- Exposed conductive materials, like metal sink/tub or vanity benches etc, with attached electrical units or equipment

3.8 EQUIPOTENTIAL BONDING

Equipotential Bond extraneous conductive parts together and to the electrical installation earthing system to AS/NZS 3000, 5.6, and the Electricity (Safety) Regulations 2010 and the fitting manufacturer requirements.

If they form part of the building, this includes:

- Conductive water piping (including tap etc) and exposed related connected conductive surfaces (like metal sink benches or metal cladding etc). Not required where isolated by non-conductors (plastic pipe etc) from the mass of earth.
- Other conductive piping (not earthed by other means) and exposed related connected conductive surfaces.
- Concrete reinforcing - for floor or wall forming part of a room with a shower or bath, or the shell and surround of a swimming/spa pool
- Built-in Swimming pool and spa pool - exposed conductive parts of electrical equipment, as well as exposed conductive, fixtures, fittings and pool structures within 1.25m of pool edge

3.9 MAIN EARTH

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.

3.10 ARC FAULT DETECTION DEVICE (AFDD)

To AS/NZS 3000 clause 2.9, AFDD on all final sub-circuits not exceeding 20A.

3.11 EARTH LEAKAGE PROTECTION

Install RCD protection to AS/NZS 3000.

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3.12 SURGE PROTECTION

Install surge protection devices to manufacturer requirements and in accordance with AS/NZS 3000, Appendix F, F1.2.2 Installation.

3.13 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.

3.14 RCD - NON-RESIDENTIAL INSTALLATIONS

Install 30mA RCD and 10mA RCD additional protection to AS/NZS 3000 2.6.3.3.2 Non-residential installations - New Zealand only, for education and childcare facilities.

For all other locations, install 30mA RCD for socket outlets not exceeding 30A which supplies to directly connected hand-held equipment installed in outdoor location or locations that have easy, unsupervised public access to AS/NZS 3000, 2.6.3.3.2 Non-residential installations - New Zealand only.

3.15 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.

3.16 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.

3.17 CABLING

Install wiring systems to AS/NZS 3000, Section 3 Selection and Installation of Wiring Systems. All cabling run concealed fix in position by suitable clips, saddles or clamps. Where possible, run cabling horizontally / vertically in straight line.

Locate holes in timber framing for the passage of cables at the centre line of 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.

3.18 CABLING CIRCUITS

Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.

3.19 WALL BOXES

Mount flush in cavity construction size to fit products selected. Fix vertically mounted wall boxes to studs. Screw fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

3.20 SWITCHES AND SWITCHED SOCKET UNITS

Fit all switch units and socket units to the manufacturers requirements with heights and mounting directions as indicated in SELECTIONS.

3.21 ISOLATING SWITCHES

Locate isolating switches in positions as confirmed by the Contract Administrator, when not specifically shown on the drawings.

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3.22 LIGHT FITTINGS

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 (including clearances) and to AS/NZS 3000, 4.5 Lighting Equipment & Accessories, 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.

3.23 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.

3.24 INSULATION CLEARANCES

Refer to relevant INSULATION section.

3.25 INSULATION CLEARANCES – RETROFIT RECESSED LUMINAIRES

For retrofitting or replacement recessed luminaire applications, check insulation clearances to NZS 4246, AS/NZS 3000, 4.5.2.3 and, where allowed by these standards, to the light manufacturers stated insulation clearances.

3.26 ELECTRIC HOT WATER SYSTEM

Install to manufacturer's requirements and to AS/NZS 3000, 4.8.2 Water heaters. Wire as a separate circuit through a wall-mounted, lockable, isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end. Hot water cylinders, thermostats and 3000 watt element supplied and fitted under the hot and cold water system section.

3.27 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.

3.28 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.

Security system

3.29 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.

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Fire rated applications

3.30 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.

3.31 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.

Completion & Commissioning

3.32 COMPLETION MATTERS

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

3.33 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 and ensure Verification Records supplied to AS/NZS 3000, clause 8.4
Submit results to:	as required for CCC

3.34 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

As required for CCC

4 SELECTIONS

Materials

4.1 SELECTIONS - FITTINGS AND HARDWARE

Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.

4.2 SECURITY SYSTEM

To be arranged by Client by separate Contractor. Allow to coordinate with other trades.

Outlets - fittings

4.3 INTERIOR SWITCHES AND SWITCHED SOCKET UNITS

Item	Brand / type
Switch / socket outlets:	PDL Iconic (confirm if selection matches elsewhere within apartment)
Coverplate colour:	White on light painted walls / wallpaper Black on dark painted walls / cedar cladding / timber veneer
Switch module colour:	To match coverplate

Item	Brand / type
Light dimmers:	PDL Iconic Refer elec drawings for locations
PIR sensor switch:	Allow sensors to activate low-level night lights to bathrooms (under vanity) and gallery, refer plans

4.4 INTERIOR LIGHT FITTINGS

Refer Reflect Ceiling Plans

- Light fittings to match elsewhere within apartment. Building manager to confirm previous selections if known, otherwise electrician to advise of suitable matches with approval from client prior to ordering.

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4.5 SMOKE ALARMS

Location:	Refer reflected ceiling plans Heat-detector in Gym
Brand / type:	Cavius wireless in recessed kit

4.6 ELECTRIC BLINDS

N/A

4.7 EXTERIOR SWITCHES AND SWITCHED SOCKET UNITS

Item	**Brand / type**
Weatherproof socket outlets:	PDL

4.8 EXTERIOR LIGHT FITTINGS

Refer Reflect Ceiling Plans

- Light fittings to match elsewhere within apartment. Building manager to confirm previous selections if known, otherwise electrician to advise of suitable matches with approval from client prior to ordering.

4.9 MISCELLANEOUS ELECTRICAL ITEMS

Item	**Brand / type**
Door bell system:	TBC with Client

4.10 MIRROR DE-MISTERS

Location	**Size**
All for behind all bathroom mirrors	Refer drawings for mirror sizes
Switching:	Connect to extracts

4.11 BATHROOM FANS

Location	**Brand / type**
Ensuite-Extract:	L05 Ensuite: Schweigen Repose Bathroom ventilation system Exterior grill powdercoated to match roof colour Confirm L04 existing extraction fan can be retained with renovation work to bathroom.

4.12 BATHROOM UNDER TILE HEATING

Location	**Brand / type**
Ensuites	Allow for undertile heating to L05 Ensuite connected to digital programmable timers. DEVImat DSVF-150 or similar. Confirm if undertile heating is provided at L04 Ensuite currently and extend to new works if present.

4.13 BATHROOM TOWEL RAILS (FF-006)

Location	**Brand / type**
Ensuites	Heirloom Genesis 1220 ESP towel warmer, concealed wiring. Alternatively towel rail to match existing elsewhere within apartment.

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7817 COMMUNICATIONS CABLING RESIDENTIAL

1 GENERAL

This section relates to generic structured communications cabling systems for residential projects.

Related work

1.1 RELATED SECTIONS

Refer to 7701 for Electrical Basic.

Documents

1.2 DOCUMENTS

Documents referred to in this section are:

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3085.1	Telecommunications installations - Basic requirements
AS/NZS 11801.1	Information technology - Generic cabling for customer premises Part 1: General requirements (ISO/IEC 11801-1:2017, MOD)
AS/CA S009	Installation requirements for customer cabling (Wiring Rules)
PTC 225	Star-wiring boxes and small office/home office (SOHO) cabling installations

TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services
Electricity (Safety) Regulations 2010

1.3 ABBREVIATIONS

The following abbreviations used in the text are:

BCT	Broadcast and Communications Technology
ETP	External Termination Point
ICT	Information and Communications Technology

Requirements

1.4 COMPLY

Comply with Electricity (Safety) Regulations 2010, AS/CA S009, AS/NZS 11801.1, AS/NZS 3000, TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services and the manufacturer requirements. Arrange for the required manufacturer's inspections of the listed work.

1.5 QUALIFICATIONS

Communications cabling installation to be carried out by competent workers experienced with the materials and in the techniques specified and accredited to work on the proposed manufacturer system.

Warranties

1.6 WARRANTY

Warrant this part of the work under normal environmental and use conditions against failure of materials and execution.

1 years:	Warranty period

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

1.7 WARRANTY - MANUFACTURER/SUPPLIER

Manufacture's warranty for the performance of the system under normal environmental and use conditions against failure.

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~ years: Warranty

Provide this warranty on the manufacturer standard form.

2 PRODUCTS

Components

2.1 COMMON COMPONENTS

All system components (distributors, cabling and outlets), where possible, to be of a common manufacturer and every component to meet the required level of performance.

2.2 EXTERNAL TERMINATION POINT

Comply with Telecommunication Service Provider's requirements.

2.3 HOME DISTRIBUTOR

In accordance with AS/NZS 11801.1 or TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services.

2.4 OUTLETS

ICT outlets:	4 pair 100 ohm balanced Category 6 - multiple outlets on common faceplates.
BCT outlets:	4 pair 100 ohm screened balanced Category 7 or coaxial (type 9.52 or type F) outlets - multiple outlets on common faceplates.
Outlet plates:	To match electrical socket outlet faceplates. Refer to SELECTIONS.

3 EXECUTION

Application

3.1 NETWORK CONNECTION

Arrange for Telecommunication Service Provider to supply lead-in cable to termination point (all cables), then to distributor (fibre). Install Service Provider approved conduit to location(s) nominated by the Service Provider. Conduit to have draw wire and bends to be radiused/swept bends Arrange for the Service Provider to install and terminate the lead-in cable(s).

3.2 DISTRIBUTORS

Install to AAS/NZS 11801.1 or PTC225, to the Service Provider's and manufacturer's requirements.

3.3 CABLES

Install to AS/NZS 11801.1, to the Service Provider's and manufacturer's requirements. Size the cables to suit the installation requirements plus 30% spare capacity.

Network Access cable:
From ETP to distributor. Three 4 pair 100 ohm balanced Category 6 or higher performance cables.

Telecommunications outlet cable:
4 pair 100 ohm balanced Category 6, terminate 4 pair per line.

Broadcast outlet cable:
4 pair 100 ohm screened Category 7, terminate 4 pair per line.

3.4 CABLE INSTALLATION

Comply with AS/CA S009. Conceal all cables. Support all cables clear of hot and sharp surfaces without placing unnecessary strain on the cables or terminations. Earthed or insulated high tensile catenaries or cable trays in ceiling/floor cavities. Cable trays for greater than 24 cables in a common route. Cables run parallel to power cables separated by 300mm and cross at right angles with segregation. Do not share cable supports or penetrations with other services.

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3.5 OUTLETS

Quantities and locations as drawn. Allow to move up to 2 metres prior to installation. Confirm all locations prior to installation. Mount at 400mm above finished floor level unless noted otherwise. Mount aligned with electrical socket outlets where present, separated at 100mm centres.

3.6 CONNECTING HARDWARE

To AS/NZS 11801.1 and the manufacturer's requirements.

3.7 TV AERIAL AND CABLING

Fix aerial, and ensure the system is suitable for high quality reception of all VHF, UHF, digital and satellite channels - Sky satellite TV installation practices minimum. Test to ensure adequate TV/video at every outlet with a RF field strength meter. Cable penetrations through the cladding to be weatherproofed to comply with NZBC E2/AS1.

Completion

3.8 TESTING

At completion test to AS/NZS 11801.1 and provide a certified copy of the results. Correct or replace any sub-standard items and re-test.

3.9 LABELLING

To AS/NZS 3085.1. Common and consistent labelling on each outlet and at the Distributor. Machine made permanent labels. Arrange numbering sequentially by floor, then by room and then around the walls of each room.

3.10 REPLACE DAMAGED WORK

Replace damaged, cracked or marked elements. Jointing cables is not permitted - replace any damaged or short cables.

3.11 LEAVE CLEAN

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

3.12 REMOVE DEBRIS

Remove debris, unused materials and elements from inside frames and from the rest of the site.

4 SELECTIONS

Materials

4.1 COMMUNICATIONS CABLES

Cables	Manufacturer / type
4 pair 100 ohm screened Category 7:	To data points as shown on electrical plan

4.2 COMMUNICATIONS OUTLETS

Location: As shown on plans

Colour: To match elec outlets (white to gib painted walls, black to timber veneer / dark painted walls)

4.3 MISCELLANEOUS ITEMS

Item	Brand / type
TV outlets:	Refer plans for locations of TV and data points Allow solid blocking in wall for TV locations where wall mounted

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8212 SUB BASES TO SEALING & PAVING

1 GENERAL

This section relates to the supply, placing and compaction of basecourse as required for asphaltic sealing and paving.

Related work

1.1 RELATED SECTIONS

Refer to 8222 CHIP SEAL AND ASPHALTIC PAVING for asphalt-based sealing.

Documents

1.2 DOCUMENTS

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

NZS 4402	Methods of testing soils for civil engineering purposes
NZS 4431:1989	Code of practice for earth fill for residential development
TNZ M/4	Specification for basecourse aggregate

Performance

1.3 TESTING

Before metalling test subgrade and on completion of metalling test sub base to NZS 4402, test 6.1.1. Take one test every 100 m².

- No more than 5% of the test shall be less than the minimum allowable CBR.
- No single test shall be less than 75% of the minimum allowable CBR.

Minimum allowable CBR's

	Top of subgrade	Top of subbase
Carpark areas and building platforms:	7	15
Lower grade pavement:	15	30
Premium pavement:	20	40

2 PRODUCTS

Materials

2.1 VOLCANIC TUFF FILL

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

2.2 HARDCORE

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

2.3 GRANULAR BASE

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

2.4 TNZ BASECOURSE

Metal aggregate to TNZ M/4.

2.5 TNZ SUB-BASECOURSE

Metal aggregate to TNZ M/4 specification notes.

2.6 DRESSING COURSE

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

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3 EXECUTION

Conditions

3.1 TESTING - BEFORE METALLING

Before commencing metalling test subgrade to NZS 4402, test 6.1.1. Remove unsuitable filling material from the site.

3.2 REMOVE SURPLUS

Remove surplus imported filling materials from the site.

3.3 PLACE FILLING

Place filling using approved methods, to required dimensions, levels, lines and profiles and so that surface water drains freely.

3.4 PROTECTION OF FORMATION

Do not allow construction traffic on filling until the level has been raised not less than 150mm above formation level by properly compacted temporary protective filling. Remove temporary protective filling from the site before beginning permanent construction. Do not stockpile materials on newly filled areas.

3.5 DIFFERING MATERIALS

Where materials of widely divergent characteristics are used for filling, spread and compact in clearly defined separate layers.

3.6 COMPACTION

Do not use earthmoving equipment for compaction.

3.7 COMPACTION NEAR EDGE SUPPORTS

Ensure that edge supports are strong enough to support compaction forces without movement, cracking or other damage. Make good damage caused by compaction.

3.8 MOISTURE CONTENT, GENERAL FILL

Moisture content at time of compaction to be within the range of optimum less 6% up to optimum. Do not use filling with moisture content above optimum value. If necessary:

- Adjust moisture content of filling by turning and drying.
- Provide water sprinkling equipment if fill is too dry.

Application

3.9 PLACE GRANULAR FILL

Spread and level in layers not more than 150mm loose depth from the approved level. Compact filling in layers as specified by at least four passes of a vibratory roller having a static linear loading of 1.8 - 2.3 kg/mm, or twelve passes of a vibratory roller having a static linear loading of 0.8 - 1.2 kg/mm. Achieve a density of not less than 95% of maximum at optimum moisture content to NZS 4431.

Alternative compaction plant may be used provided it can be shown that the density requirement can be achieved.

3.10 PLACE HARDCORE

Spread and level in layers of not more than 150mm loose depth where required to make up from subgrade to the underside of sub base or to where shown on the drawings. Compact as described under GRANULAR FILL.

3.11 PLACE VOLCANIC TUFF

Spread and level in layers of not more than 150mm loose depth where required to make up from subgrade to the underside of the sub base. Remove lumps larger than 100mm. Compact as described under GRANULAR FILL.

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3.12 SUB BASES TO ROADING, DRIVEWAY, PARKING AREAS

From subgrade, spread and level sub-basecourse and basecourse to detailed depths. Spread evenly over the full width of the dry subgrade to a loose depth not exceeding 100mm. Roll with a smooth wheeled steel roller having a static linear loading of greater than 5.4 kg/mm or a vibrating roller with equivalent compactive effort.

Water in during rolling. Do not add more water than necessary to maintain the material in a sufficiently plastic condition for maximum compaction with a minimum contraction factor.

Compact to a density not less than 95% of maximum density at optimum moisture content to BS 1377. Dry by continuous turning with a power grader if the material gets too wet. Maintain the uniformity of grading while turning. Loose or "bony" areas may require the whole of the base course in a particular area to be taken up and recompacted, or for small areas to be "tightened up" by the addition of a small amount of binder fraction. Ensure the finished surface is tight, fully compacted mosaic, ready for asphaltic seal coats.

3.13 SURFACE FINISH

Finished to have smooth transitions between gradients, regular falls to drainage points and no sudden changes in level at corners, manhole, cesspits and the like.

- Maximum deviation from 3 metre straightedge: 12mm

3.14 TESTING - COMPLETION

On completion of metalling test top of subbase to NZS 4402, test 6.1.1. and confirm acceptance.

Completion

3.15 TAKE AWAY

Take away from the site excavated material or brought-in material not used for backfilling, leaving the site clear and tidy.

3.16 LEAVE

Leave work to the standard required by following trades.

3.17 REMOVE

Remove debris and unused materials from the site.



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8222 CHIP SEAL AND ASPHALTIC PAVING

1 GENERAL

This section relates to chip seal paving and asphaltic paving, laid over compacted granular basecourse.

1.1 RELATED WORK

Refer to 8212 SUB BASES TO SEALING AND PAVING for basecourse work.

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
NZTA M1	Specification for roading bitumens
NZTA M6	Specification for sealing Chip
NZTA M07	Specification for roadmarking paints
NZTA M10	Specification for Dense Graded and Stone Mastic Asphalts
TNZ P/3	Specification for first coat sealing
TNZ P/4	Specification for re-sealing
TNZ C3	Specification for the Repair of Potholes in Bituminous Surfaced Roads

Requirements

1.3 QUALIFICATIONS

Chip sealing and Asphaltic paving to be carried out using experienced, competent applicators, familiar with the materials and techniques specified.

1.4 ACCESSIBLE ROUTES

Accessible routes to comply with NZBC D1/AS1 and NZS 4121, section 6, **Footpaths, Ramps and Landings**.

Performance - Slip resistance

1.5 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 - Asphaltic Concrete

2.1 TACK COAT FOR ASPHALTIC CONCRETE

Bituminous emulsion to NZTA M1, type and breaking rate suitable for climatic and surface conditions.

Fine chip blinding layer or thin layer of lean asphaltic mix if protection of tack coat from construction traffic is required.

2.2 ASPHALTIC CONCRETE

To NZTA M10, mix DG7.



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3 EXECUTION

Conditions

3.1 PLANT

Use only the correct and necessary plant to place the paving efficiently to ensure the required standard of work is achieved.

3.2 INSPECTION

Before starting work inspect the basecourse to ensure that it is compacted to specification and will allow work of the required standard and that all kerbs, service outlets, gully traps and fittings are in place.

3.3 PROTECT DURING CONSTRUCTION

Protect adjoining work and fittings at all stages. Repair any damage.

Take full precautions to protect the road and street furniture, kerb and channel, edgings, buildings or other features from discolouration by bitumen. Any discolouration, which does occur, shall be thoroughly cleaned off.
Protect the completed work from damage and from dropping other materials during the remainder of the construction period. Do not use the completed work as a building platform or for material storage.
Protect all sumps drains, drains, catchpits etc with filter systems.

3.4 ACCEPT AND PREPARE

Prepare the surface to be paved to TNZ P/3 and P/4 for Chip seal and NZTA M10 for Asphaltic concrete.

- Clean down the surface and prepare for surfacing.
- Define the edges of the sealing course by string lines.
- Apply an approved non-leaching residual type weedkiller to a strip 600mm wide adjacent to the kerb and channel on each side of the carriageway basecourse.
- Spray the weedkiller in accordance with the manufacturer's recommendations immediately after brooming the basecourse and immediately before paving.

Application - Asphaltic Concrete Paving

3.5 APPLY TACK COAT FOR ASPHALTIC CONCRETE

Apply over cleaned surface a uniform application of residual binder at a rate of 0.1 - 0.2 litre/m² to suit surface conditions and to form a seal over the basecourse.

3.6 LAY ASPHALT CONCRETE PAVING

Lay to the requirements of NZTA M10 mix DG7 to the minimum compacted thickness. Where possible run joints with the fall and ensure that transverse and all joints are levelled to the generally smooth even surface required and to a flatness tolerance of 6mm maximum gradual deviation over a 5 metre straight-edge so that ponding does not occur. Carry out the NZTA M10 specified actions if material temperature drops below 100°C in any particular situation. Compact only with the plant and the procedures laid down in NZTA M10. Finish flush to edges and fittings with a tolerance of +3mm to -0mm.

Protection

3.7 PROTECT FROM TRAFFIC

Keep traffic off the sealing until the final brooming and rolling has been completed. All traffic shall not exceed 25 km/hr for three days after the application of the second coat. On no occasion shall vehicles pass over uncovered bitumen. This includes rollers, chip trucks and any other construction plant or vehicles.

Completion

3.8 SURFACE FINISH AND REMEDIAL WORKS

The finished sealed surface to be safe, durable, waterproof and smooth. Carry out promptly remedial works due to stripping, scabbing, potholes for public safety. Undertake pothole repairs in accordance with TNZ C3.

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The repaired surface shall have an equal standard of safety, durability, impermeability and smoothness to that of an undamaged new surface and it shall be virtually indistinguishable from the adjacent surface.

3.9 CLEAN UP

Clean up as the work proceeds. On completion of the work, ensure all surfaces affected by the works are reinstated to pre-construction condition (e.g. removal of surplus sealing chip from road surface, channels, footpaths, berms, driveways, catchpits etc).

Remove all rubbish and spoil from the site on completion of the works, leaving it in a clean and tidy condition. Remove all temporary protection.

3.10 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 ASPHALT CONCRETE DRIVEWAY

Location:	Refer drawings
Minimum compacted thickness:	25mm

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8420 MISCELLANEOUS SITE WORKS

1 GENERAL

This section relates to the supply and installation of hard landscaping including:

- paths
- other minor structures

1.1 DOCUMENTS

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

NZBC B1/VM1	Structural design of buildings
NZBC F9/AS1	Means of restricting access to residential pools
NZS 3104	Specification for concrete production
NZS 3114	Specification for concrete surface finishes
NZS 3124	Concrete construction for minor works
AS/NZS 4671	Steel reinforcing materials

Requirements

1.2 QUALIFICATIONS

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

2 PRODUCTS

2.1 TIMBER

Refer to SELECTIONS for details of amount, type, suppliers.

2.2 CONCRETE

Normal concrete or prescribed mix concrete, maximum aggregate size 19mm to NZS 3104.

2.3 SITE MIXED CONCRETE

To NZS 3124. Prescribed mix 17.5 MPa minimum strength, using either separate batching of sand and coarse aggregate to NZS 3104, or builder's mix.

2.4 REINFORCEMENT

To AS/NZS 4671. Welded reinforcing mesh to AS/NZS 4671.

3 EXECUTION

3.1 CONSTRUCT CONCRETE PATHS AND DRIVEWAYS

Excavate for path thickness and hardfill. Remove plants, tree roots and soft fill to firm subgrade. Compact with a plate vibrator to form a level surface of even bearing. Place and compact a layer of basecourse. Reinforcement where scheduled to AS/NZS 4671. Place concrete with a fall of 1:100 (minimum) and construction joints/saw cuts, thickness and finish to NZS 3114 as scheduled and NZS 3124 Specification for concrete construction for minor works.

4 SELECTIONS

4.1 CONCRETE TERRACES AND SLABS FOR PAVING

Refer Structural Engineer for details
Terrace area to be paved with 20mm stone tiles on proprietary deck supports refer finishes plans

4.2 CONCRETE DRIVEWAYS

Basecourse thickness:	150mm minimum
Concrete thickness:	100mm minimum
Concrete strength:	20 MPa minimum
Reinforcement:	665 mesh or equivalent
Exposing method:	Retarder and wash
Finish:	Exposed aggregate, lightly washed

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