The Fold

Project Specification

32 Harris Place, Luggate, New Zealand
Project Ref: 25.08
Date: 04 November 2026



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

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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

Construction of a new three-bedroom, two bathroom home. Using light timber frame construction, Modular StrawSIP Walls, slab foundation, and metal cladding.

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.

Principal's Health & Safety Matters

1.5 PRINCIPAL'S KNOWN SITE HAZARDS

Site hazards known to the principal are:

n/a

1.6 PRINCIPAL'S SITE HEALTH AND SAFETY PLAN

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

Site

1.7 SITE

The site consists of: Recently subdivided flat land near Luggate
As shown on drawing: refer to site plan, sheet A101

1.8 LEGAL DESCRIPTION

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

1.9 EXISTING SERVICES

The following are the network utility services:

Electrical:	QLDC
Communications:	QLDC
Water:	QLDC
Stormwater:	QLDC
Foul water:	QLDC

The services are also shown on the drawings.

1.10 SITE FEATURES

refer to site plan

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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 High (refer to NZS 3604, table 5.4)

Site environment - Seismic

1.13 EARTHQUAKE ZONE - NON SPECIFIC DESIGN

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

The earthquake zone is: 2

Archaeological discovery

1.14 REPORT FINDING ANY ANTIQUITIES AND ITEMS OF VALUE

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

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

Post-1900 items remain the property of the owner, pre-1900 items may remain the property of the owner or the Crown subject to what is found.
Known archaeological information relating to this site includes the following:
none

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1222 PROJECT PERSONNEL

1 GENERAL

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

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

Contractor

1.1 COMPANY

Name:	Sloss Builds
Postal:	31a Black Peak Road, Wanaka, 9382
Telephone:	022 390 8028
Represented by:	Baylee Sloss
Email:	office@slossbuilds.co.nz

Consultants

1.2 ARCHITECTURAL DESIGNER

Practice:	Alki Architecture and Design Studio
Postal:	38 Bernard Road, Albert Town
Telephone:	027 261 1588
Represented by:	Charlotte Muschamp
Email:	charlotte@alkidesign.co.nz

1.3 STRUCTURAL ENGINEER

Practice:	Groove Design Ltd
Postal:	Wellington
Telephone:	021 022 80957
Represented by:	Kevin Spacey
Email:	kevin@groovedesign.co

Territorial Authority

1.4 BUILDING CONSENT AUTHORITY

Name:	QLDC
Postal:	47 Ardmore Street, Wānaka 9305
Telephone:	03 443 0024

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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

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

1.4 DEFINED WORDS

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

1.5 WORDS IMPORTING PLURAL AND SINGULAR

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

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1232S1 EXPLANATION OF SCHEDULE SECTIONS

1 GENERAL

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

1.1 EXPLANATION OF SCHEDULE SECTIONS

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

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

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

1.2 SCHEDULE SECTIONS

The following Schedule sections are contained within the specification:

1237S1 Schedule of Warranties
1239S1 Schedule of Operation & Maintenance Info
1270S1 Schedule of Samples & Prototypes
1270S2 Schedule of Spares & Maintenance Products

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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

1234 DOCUMENTATION

1 GENERAL

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

- Substitutions
- Manufacturers' documents
- Branded work sections
- Care of construction documents
- Confidentiality of documents
- Receipt of construction documents

Building Consent Authority documentation

1.1 BUILDING CONSENT

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

1.2 BUILDING CONSENT COMPLIANCE

It is an offence under the Building Act 2004

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

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

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

1.3 PROJECT PERSONNEL

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

Licensed Building Practitioner documentation

1.4 LICENSED BUILDING PRACTITIONERS

Provide LBP details. Provide names, LBP numbers, areas of practice and contact information. Provide this information to the BCA before commencing work on the Restricted Building Work in the form required by the BCA. Advise the BCA of any change to an LBP previously advised.

Include the following as applicable

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

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Also provide names and contact details of the following

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

1.5 RECORD OF WORK

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

Compliance information

1.6 DOCUMENTATION REQUIRED FOR CODE COMPLIANCE

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

- Applicators approval certificate from the manufacturer / supplier
- Manufacturer's / supplier's warranty
- Installer / applicator's warranty
- Producer Statement (PS1) - Design
- Producer Statement (PS3) - Construction from the applicator / installer
- Producer Statement (PS4) - Construction review from an acceptable suitably qualified person

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

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

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

1.7 PRODUCER STATEMENTS

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

Residential building contract

1.8 CHECKLIST

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

1.9 DISCLOSURE STATEMENT

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

1.10 BUILDING CONTRACT

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

1.11 DOCUMENTATION REQUIRED ON COMPLETION

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

Information and documentation relating to:

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

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

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Substitutions

1.12 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

1.13 NO SUBSTITUTIONS

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

1.14 PROPOSED SUBSTITUTIONS

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

1.15 NOTIFICATION OF SUBSTITUTIONS

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

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

Plus an assessment of:

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

and if requested:

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

1.16 ACCEPTANCE OF SUBSTITUTIONS

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

Amendments to issued Building Consent

1.17 CONTRACTOR AMENDMENTS TO BUILDING CONSENT

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

The contractor must:

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

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1.18 PRINCIPAL AMENDMENTS TO BUILDING CONSENT

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

The principal will:

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

Manufacturer's documents

1.19 MANUFACTURER'S AND SUPPLIER'S INSTALLATION REQUIREMENTS

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

1.20 CONTRACTOR TO OBTAIN CURRENT DOCUMENTATION

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

1.21 DOCUMENTATION PROVIDED FOR BUILDING CONSENT

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

Branded work sections

1.22 BRANDED PRODUCTS / SYSTEMS

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

1.23 CROSS REFERENCED WORK SECTIONS

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

Care of construction documents

1.24 CONSTRUCTION ISSUE

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

1.25 REVISIONS TO CONSTRUCTION ISSUE

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

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

1.26 RETURN DOCUMENTS ISSUED FOR CONSTRUCTION

On completion of the contract works:

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

The Contract Administrator will advise whether such documents shall be:

- delivered to the Contract Administrator/Owner; or

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- disposed of by normal waste disposal methods; or
- disposed of by secure document disposal methods.

Confidentiality of documents

1.27 CONFIDENTIALITY OF DOCUMENTS

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

2 SELECTIONS

Receipt of construction documents

2.1 INITIAL ISSUE & REVISIONS - HARD COPIES

Initial issue:	1 at full size, 1 at reduced size
Revisions:	1 at full size, 1 at reduced size

2.2 DOCUMENT RECEIPT - ELECTRONIC DOCUMENTS

Electronic documents issued for construction shall be obtained as an email attachment sent to an agreed address.

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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

Guarantee - Contractor - New Zealand Certified Builders Association

2.1 HALO 10-YEAR RESIDENTIAL GUARANTEE

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

Weathertightness and watertightness warranty

2.2 WEATHERTIGHTNESS AND WATERTIGHTNESS WARRANTY

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

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

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

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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:

3155MR	MAXRaft Floor System
4161PC	Pro Clima Wall and Roof Underlays, Tapes & Accessories
4161PI	Pro Clima Internal Airtightness System
4161T	Kingspan Thermakraft Underlays, Foils, DPC, DPM, & Tapes
4221LH	LMA Hardwood Horizontal Cladding
4241RI	Roofing Industries Profiled Metal Cladding
4311NZ	Colorsteel® Roofing
4421N	Nuraply 3PM Membrane Roofing & Decking
4511	Exterior Timber Windows & Doors
4541	PVC-U Windows & Doors
4610	Glazing Residential
4710T	Terra Lana Insulation
5122PL	Plytech Panels Residential Linings
5231HS	Hallmark Cavity Slider & Standard Doors
5511PT	Plytech Panels Joinery & Cabinetry
6211MW	Mapei Wall Tiling
6221M	Mapei Floor Tiling Solutions
6511	Carpeting
6700R	Resene Painting General
7120	Hot & Cold Water System
7150	Sanitary Fixtures, Tapware & Accessories.
7411RI	Roofing Industries Metal Rainwater Systems
7421AI	Allproof Interior Floor Waste Systems
7701PC	PDL & Clipsal Electrical

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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1239 OPERATION & MAINTENANCE

1 GENERAL

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

1.1 SCHEDULE SECTION

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

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

Operation and maintenance documents

1.2 OPERATION AND MAINTENANCE INFORMATION - BUILDING ACT

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

1.3 OPERATION AND MAINTENANCE INFORMATION

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

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

1.4 MAINTENANCE REQUIREMENTS

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

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

1.5 APPLIANCE MANUALS AND OPERATING INSTRUCTIONS

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

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

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1.6 SELECTIONS INFORMATION

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

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

Include brochures and other information included with the items supplied.

1.7 SELECTIONS INFORMATION - SUBSTITUTIONS

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

Documentation format

1.8 O&M DOCUMENTATION FORMAT

Unless otherwise specified in a work section,

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

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

Submission and review

1.9 O&M DOCUMENTATION SUBMISSION & REVIEW

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

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

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

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

The reviewer may advise that:

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

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

Final documentation

1.10 SUBMISSION OF FINAL DOCUMENTATION

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

1.11 FINAL O&M DOCUMENTATION - HARDCOPY

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

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

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

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

1.12 FINAL O&M INFORMATION - ELECTRONIC COPY

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

1.13 REVIEW OF FINAL DOCUMENTATION

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

2 SELECTIONS

O&M Documentation

2.1 FINAL DOCUMENTATION - INFORMATION FOR OPERATION AND MAINTENANCE

Provide a complete electronic copy to the contract administrator.

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

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

2.2 FINAL DOCUMENTATION - OPERATION AND MAINTENANCE MANUALS

Provide a complete electronic copy to the contract administrator.

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

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

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Maintenance contract proposals

2.3 MAINTENANCE CONTRACT PROPOSALS

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

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1239S1 SCHEDULE OF OPERATION & MAINTENANCE INFO

1 GENERAL

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

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

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

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

Information for operation and maintenance

1.2 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the following sections:

4221LH	LMA Hardwood Horizontal Cladding
5122PL	Plytech Panels Residential Linings
5511PT	Plytech Panels Joinery & Cabinetry
6700R	Resene Painting General
7120	Hot & Cold Water System
7150	Sanitary Fixtures, Tapware & Accessories.
7421AI	Allproof Interior Floor Waste Systems

Operation and maintenance manuals

1.3 OPERATION AND MAINTENANCE MANUALS

There are no work section requirements.

Maintenance contract proposals

1.4 MAINTENANCE CONTRACT PROPOSALS

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.

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

as required

Site preparation

1.5 SITE ACCESS

Access to the site is limited to: tbc

1.6 WORKING AREA

Limited to the following designated working areas on the site:
as set out by the owner

1.7 SITE AND SOIL SURVEYS

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

Temporary construction

1.8 TEMPORARY BUILDINGS

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

1.9 TEMPORARY SITE FENCING

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

1.10 SITE - SAFETY SIGNAGE

Provide hazard board and other safety signage as required.

1.11 SITE - PROJECT SIGN

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

- Title of contract

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

First aid

1.12 FIRST AID EQUIPMENT

Provide first aid equipment.

1250 TEMPORARY WORKS & SERVICES

1 GENERAL

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

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

Temporary works

1.1 COSTS RELATING TO TEMPORARY WORKS

Pay all rates/fees in respect of temporary works.

1.2 MAINTENANCE OF TEMPORARY WORKS

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

1.3 SAFEGUARD THE SITE, THE WORKS AND MATERIALS

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

1.4 SITE FENCING

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

Construct the fence with:

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

1.5 SITE FENCING - NON-PUBLIC AREAS

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

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

Scaffolding

1.6 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

1.7 WATER

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

1.8 ELECTRICITY

To AS/NZS 3012.

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

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

1.9 TELEPHONE

Provide on-site temporary telephone facilities.

1.10 COMPUTER FACILITIES

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

1.11 PRINTER

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

1.12 IMAGING

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

Care and protection - Site

1.13 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.

1.14 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.

1.15 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.

1.16 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.

1.17 MAKE GOOD - SITE

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

Care and protection - Project

1.18 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.

1.19 SPECIAL PROTECTION GENERAL

Refer to individual work sections for any special protection requirements.

1.20 SPECIAL PROTECTION PROJECT

Existing buildings and services

Care and protection - miscellaneous

1.21 CONSTRUCTION KEYING AND SECURITY

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

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1.22 TEMPORARY STORAGE

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

Rubbish removal

1.23 PERIODIC RUBBISH REMOVAL

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

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1270 CONSTRUCTION

1 GENERAL

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

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

1.1 SCHEDULE SECTION

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

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

Quality control and assurance

1.2 QUALITY ASSURANCE

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

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

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

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

1.3 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.

1.4 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.

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Noise and nuisance

1.5 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.

1.6 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.

1.7 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.

1.8 ROADWAY AND FOOTPATH

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

1.9 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.

1.10 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.

1.11 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.

1.12 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.

1.13 SMOKE FREE REQUIREMENTS

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

1.14 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.

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Set-out and tolerances

1.15 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.

1.16 DATUM

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

1.17 SET-OUT

Set out the work to conform with the drawings.

1.18 USE OF SET-OUT INSTRUMENTS

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

1.19 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.

1.20 TOLERANCES

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

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

Refer to work sections for tolerance requirements for finishes.

Execution

1.21 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.

1.22 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.

1.23 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.

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1.24 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.

1.25 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.

1.26 MINIMISE DELAYS DUE TO WEATHER

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

Defective or damaged work

1.27 DEFECTIVE OR DAMAGED WORK

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

Hot work - fire safety

1.28 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.

1.29 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.

1.30 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.

1.31 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.

1.32 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

1.33 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.

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1.34 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.

1.35 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.

1.36 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.

1.37 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.

1.38 QUALIFICATIONS – PRODUCER STATEMENTS

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

1.39 REPLACEMENT OF PERSON

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

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

Products

1.40 NEW PRODUCTS

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

1.41 COMPATIBILITY OF PRODUCTS

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

1.42 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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

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

Refer to individual work sections for any special requirements.

1.43 SUBSTRATE CONDITIONS

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

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1.44 INSTALLING PRODUCTS

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

1.45 COMPLY WITH STANDARDS

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

1.46 CONDITION OF PRODUCTS

To be in perfect condition when incorporated into the work.

1.47 INCOMPATIBLE PRODUCTS

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

Samples

1.48 SAMPLES FOR REVIEW

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

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

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

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

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

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

Refer to SAMPLES clauses in work sections for further detail.

1.49 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.

1.50 OTHER SAMPLE REQUIREMENTS

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

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Prototypes

1.51 PROTOTYPES - TESTING

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

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

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

1.52 PROTOTYPES - REVIEW

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

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

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

1.53 PROTOTYPES - GENERAL

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

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

Spares & maintenance products

1.54 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

1.55 PERIODIC SITE CLEANING

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

1.56 TRADE CLEANING

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

1.57 SPECIAL SITE CLEANING

As directed by owner

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Remove protection

1.58 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

1.59 SPECIAL REQUIREMENTS

Refer to individual work sections for any special completion requirements.

1.60 LEAVE WORK

Leave work to the standard required for the following procedures.

1.61 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.

1.62 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.

1.63 COMPLETE ALL SERVICES

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

1.64 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.

Commissioning

1.65 SPECIAL REQUIREMENTS

Refer to individual work sections for any special commissioning requirements.

1.66 MOVING PARTS

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

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1.67 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.

1.68 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.

1.69 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

1.70 ADDITIONAL PRACTICAL COMPLETION INFORMATION

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

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

1.71 ADDITIONAL PRACTICAL COMPLETION REQUIREMENTS

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

Defects period submissions

1.72 DEFECTS REMEDIATION - SUBMISSIONS

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

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

Completion submissions

1.73 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:

4541	PVC-U Windows & Doors
4910	Metalwork
6141	Ground, Sealed or Polished Concrete
6700R	Resene Painting General
6711R	Resene Painting Exterior
6721R	Resene Painting Interior

1.3 SAMPLES - ADDITIONAL ITEMS

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

Prototypes

1.4 PROTOTYPES - REVIEW

Refer to the following sections:

4821	Flashings

1.5 PROTOTYPES - TESTING

There are no work section requirements.

1.6 PROTOTYPES - ADDITIONAL ITEMS

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

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1270S2 SCHEDULE OF SPARES & MAINTENANCE PRODUCTS

1 GENERAL

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

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

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

Spares & maintenance products

1.2 SPARES & MAINTENANCE PRODUCTS

There are no work section requirements.

1.3 SPARES & MAINTENANCE PRODUCTS - ADDITIONAL ITEMS

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

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2210 PREPARATION & GROUNDWORK

1 GENERAL

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

- footings and floor slabs
- backfilling behind basement retaining walls

Documents

1.1 DOCUMENTS

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

NZS 3604	Timber-framed buildings
WorkSafe	Good Practice Guidelines - Excavation Safety

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

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

1.3 SITE SAFETY

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

1.4 ARCHAEOLOGICAL DISCOVERY

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

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2 PRODUCTS

2.1 EXCAVATED CLEAN FILL

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

2.2 VOLCANIC TUFF FILL

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

2.3 ROCK FILL

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

2.4 SAND FILL

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

2.5 HARD FILL

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

2.6 GRANULAR FILL

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

2.7 DRESSING COURSE

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

2.8 FREE-DRAINING AGGREGATE

Scoria or crushed gravel graded 50 to 14 clean.

3 EXECUTION

3.1 WASHOUT BAY FOR TRUCK

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

3.2 EXCAVATION GENERALLY

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

3.3 BURNING OF MATERIALS

Burning of materials is not permitted on site.

3.4 PROTECT EXISTING WORK

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

3.5 EROSION CONTROL

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

3.6 SURFACE PREPARATION

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

3.7 STOCKPILE TOPSOIL

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

3.8 GENERAL EXCAVATION

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

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3.9 ROCK EXCAVATION

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

3.10 FOUNDATION EXCAVATION

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

3.11 INADEQUATE BEARING

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

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

If excavation exceeds the required depths, backfill and compact to the correct level with material as listed.
Confirm any changes with the territorial authority and structural engineer.
For inadequate bearing or over excavation of service trenches, use hardfill compacted in 150mm layers.

3.12 STANDARD OF COMPACTION

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

3.13 GRANULAR BASE FOR SLABS

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

3.14 GENERAL BACKFILLING

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

3.15 SURPLUS MATERIAL

Remove surplus and excavated material from the site.

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3155MR MAXRAFT® FLOOR SYSTEM

1 GENERAL

This section relates to the MAXRaft® floor systems.
It includes:

- MAXSlab®
- MAXRaft®
- MAXRaft® Plus+
- MAX85®
- MAXEdge®

1.1 RELATED WORK

Refer to 2221 REMOVING VEGETATION for clearing site.

Refer to 2241 EXCAVATION for excavation.
Refer to 2242 BACKFILLING for blinding.
Refer to 3102 CONCRETE WORK for formwork, concrete and reinforcing.

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:

EPS	Expanded Polystyrene

Documents

1.3 DOCUMENTS

Documents referred to in this section are:

NZBC B1/VM1	Structural design of buildings
NZBC B1/AS1	Structural provisions for buildings
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber-framed buildings
NZS 4229	Concrete masonry buildings not requiring specific engineering design
NZS 4431	Engineered fill construction for lightweight structures
AS/NZS 4671	Steel reinforcing materials

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

MAXEdge® Pre-coated Information Sheet
MAXRaft® Product Guide
MAXSlab® / MAXRaft® Brochure
MAXSlab® / MAXRaft® Durability Statement
MAXSlab® / MAXRaft® Installation Manual
MAXSlab® / MAXRaft® Technical Details
MAXSlab® / MAXRaft® Thermal Performance - compiled by Sustainable Engineering Ltd
Enviro Square Kapo Board Technical & Installation Manual
BRANZ Appraisal 1054 (2024) MAXRaft® Concrete Slab Floor System
BPIR MAX85
BPIR MAXRaft
BPIR MAXRaft+

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BPIR MAXSlab

Manufacturer/supplier contact details

Company:	MBSS Limited
Trading as:	MAXRaft®
Web:	www.maxraft.co.nz
Email:	hello@maxraft.co.nz
Telephone:	0800 MAXRAFT (629 723)

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years For Pre-coated MAXEdge®

- 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

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

Compliance information

1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Applicators approval certificate from the manufacturer / importer / distributor
- Manufacturer / supplier warranty
- 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.

Quality control and assurance

1.9 STEEL REINFORCING COMPLIANCE

Steel reinforcing materials for concrete to AS/NZS 4671. Refer to 3102 CONCRETE WORK for details.

1.10 INSPECTIONS

As specified in PS1 Schedule of Inspections by MAXRaft® Engineer.

1.11 POST-CUT INSPECTION

Inspect and confirm that the soil conditions are as anticipated by the geotechnical investigation and report and conform to the requirements of the MAXSlab® / MAXRaft® Installation Manual.

2 PRODUCTS

MAXRaft® Systems

2.1 MAXSLAB®

MAXSlab® 300/350/400mm thick insulated concrete floor system with 50mm VH EPS under thickenings and S grade insulation underslab. Suitable for good ground conditions or classified as TC1.

2.2 MAXEDGE®

MAXEdge® L shaped perimeter edge footing insulation system. Used for all MAXRaft systems. Available uncoated or pre-coated in 2.4m lengths and in a range of standard heights and widths. Pre-made 600x600mm corners available. Pre-coated MAXEdge® has a 2mm thick, resin based coating system and is UV resistant and waterproof.

Materials

2.3 BLINDING

25mm compacted GAP 7. Refer to 2242 BACKFILLING.

2.4 TIMBER FORMWORK

No. 2 framing and dressing or merchantable grade radiata pine boards to NZS 3631.

Refer to MAXRaft® Onsite Guide, and 3102 CONCRETE WORK.

2.5 DAMP-PROOF MEMBRANE

0.25mm minimum polyethylene to NZS 3604: clause 7.5.4, Damp-proof membrane (DPM).

2.6 POLYSTYRENE SHEETS - MAXSLAB®

MAXSlab® purpose made, NZ made, CFC free, Grade S, expanded polystyrene (EPS) sheets.

2.7 POLYSTYRENE EDGE INSULATION - MAXEDGE®

MAXEdge® purpose made, NZ made, CFC free, Grade VH, expanded polystyrene (EPS), L shaped perimeter edge footing in 2.4m lengths and with 600x600mm external corners. Available either pre-coated with a 2mm thick resin based coating system or uncoated. The pre-coated MAXEdge® is UV resistant and waterproof.

2.8 POLYSTYRENE INTERNAL CONCRETE FOOTING INSULATION

MAXRaft® Systems, NZ made, CFC free, Grade VH, expanded polystyrene (EPS) insulation for internal concrete thickening ribs.

2.9 REINFORCEMENT

Bars to AS/NZS 4671. Grade 500E deformed, other than for ties, stirrups and spirals, unless shown otherwise on the drawings. Refer to 3102 CONCRETE WORK.

2.10 INTERNAL CORNER REINFORCEMENT

Minimum 2 x D10 bars Grade 300E to AS/NZS 4671.

2.11 MESH

Welded reinforcing mesh to AS/NZS 4671, Class E, minimum to NZBC B1/AS1 - Grade 500E, 2.27kg/m2 (1.14kg/m2 in each direction). Minimum SE62 500E mesh or equivalent. Refer to 3102 CONCRETE WORK.

2.12 CONCRETE

25 MPa 100mm slump mix in either 13mm or 19mm nominal aggregate size. Refer to 3102 CONCRETE WORK.

Components

2.13 TYING WIRE

Mild drawn steel wire not less than 1.2mm diameter.

2.14 BAR CHAIRS

MAXRaft® proprietary barchairs.

Finish

2.15 PLASTER - SLAB EDGE

Proprietary plaster system to provide UV protection and waterproofing of perimeter slab edge. Refer to relevant plaster and painting section for 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.

Installation/application

3.3 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.4 SITE CLEARANCE

Refer to 2221 REMOVING VEGETATION.

3.5 BUILDING PLATFORM

To NZS 4431. Create a building platform to a level surface in accordance with MAXRaft® / project engineers requirements. Cut and/or fill sloping sites. Confirm finished floor level. Ensure building platform is prepared as designed and specified by MAXRaft® engineer. Refer to MAXSlab® /MAXRaft® Systems Technical Details and 2241 EXCAVATION.

3.6 TEMPORARY BUILDING PLATFORM DRAINAGE

Divert existing drainage or construct suitable drainage to keep excessive ground water off the building platform during and after construction as required. Refer to 2241 EXCAVATION.

3.7 HARDFILL

Place hardfill and ensure it is spread and compacted with mechanical compaction. Ensure hardfill is prepared as designed and specified by MAXRaft® or project engineer. Refer to 2242 BACKFILLING.

3.8 UNDERGROUND SERVICES

Ensure underfloor services are installed in the subsoil or hardfill in locations as shown on the drawings and in accordance with MAXRaft® requirements, and MAXSlab® /MAXRaft® Installation Manual.

3.9 BLINDING LAYER

Spread GAP 7 blinding layer to a minimum 800mm past the outside edge of the slab, compact to a level layer no greater than 50mm thick and no higher than 250mm below finished ground level.

3.10 FORMWORK

Construct formwork in accordance with MAXSlab® /MAXRaft® Installation Manual and 3102 CONCRETE WORK. Ensure formwork will provide for the topping depth, including rebates and the required concrete finish.

3.11 INSTALL DAMP-PROOF MEMBRANE

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

3.12 PLACE POLYSTYRENE - MAXEDGE®

Place polystyrene in accordance with MAXEdge® Information Sheet, MAXSlab® /MAXRaft® System Installation Manual and as per the MAXSlab® /MAXRaft® Panel plan. Place MAXEdge® polystyrene to sit inside the formwork around slab edge prior to installation of other polystyrene.

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Cut holes for services and trim around piles as required on site. Cut polystyrene on site with a saw or suitable hot wire away from the building footprint. Apply expanding foam to gaps, joins and rebates elsewhere prior to and after concrete pour.

3.13 INSTALL BARCHAIRS

Form standard ribs between pods using 120mm MAXSlab® /MAXRaft® System Rib Insulation. Place the barchairs at a minimum of one barchair along each edge of each pod or part pod. The ribs in both directions form a waffle pattern throughout the slab.

The MAXSlab® /MAXRaft® System perimeter footings form the edge beam. Place the barchairs at 1200mm centres maximum along the perimeter of the slab at least and one spacer per pod or part pod.

Form ribs to support load bearing walls using MAXSlab® /MAXRaft® polystyrene as specified in the panel plan and engineering. Place the barchairs at a minimum of one spacer along the edge of each pod or part pod.

3.14 PLACE REINFORCING STEEL

Place reinforcing bars floor system to MAXRaft® requirements and NZS 3109, and as documented by the consulting structural engineer.

3.15 LAPPED SPLICES

Set length of laps, where not dimensioned on the drawings, in accordance with NZS 3109: 3.7, **Splices in reinforcement**. Plain bars lapped splices must be hooked.

3.16 PLACE REINFORCING MESH AND CHAIRS

Place reinforcing mesh over the polystyrene base sheets and support on the mesh chairs spaced at 1200mm centres minimum.

3.17 MESH LAPS

To NZS 3604 or NZS 4229. Welded reinforcing mesh to be lapped and tied, such that the outermost wires overlap by the greater of:

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

Do not count bar extensions beyond the outermost cross wire.

3.18 TOPPING SLAB DEPTH

Generally 100mm minimum, except MAX85® with 85mm minimum.

3.19 EQUIPOTENTIAL BONDING REINFORCING

Co-ordinate with electrician to provide for equipotential bonding of reinforcing as required by AS/NZS 3000, 5.6 Equipotential Bonding, before concrete placement.

3.20 CONCRETE PLACEMENT AND COMPACTION

Ensure the rib and edge beam canals are clean, free of debris. Lay concrete to NZS 3109. Pour the floor in a single pour ensuring that the pods remain in position during placing. Pour concrete onto the top of each pod prior to filling the ribs around the pod to help prevent them from floating and lifting. Refer to MAXSlab® /MAXRaft® Installation Manual and 3102 CONCRETE WORK.

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

3.21 CONCRETE FINISHING

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

3.22 CONCRETE CURING

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

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

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3.23 SHRINKAGE CONTROL JOINTS

Cut shrinkage control joints in accordance with the MAXSlab® /MAXRaft® Installation Manual and as shown on the plans after hardening to a minimum depth of 25mm within 24 hours in summer, or 48 hours in winter.

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

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

3.24 UNCOATED MAXEDGE® - PLASTER & PAINT

Refer to appropriate plastering and painting sections.

3.25 STRIKE FORMWORK

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

3.26 SURFACE DEFECTS

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

3.27 CLEAN OUT SHRINKAGE CONTROL JOINTS

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

3.28 WATERPROOFING EXTERIOR OPENINGS

Apply a waterproofing of unreinforced wet area membrane to AS/NZS 4858 for waterproofing around openings for doors, meters and other services openings at floor level. Do not use bituminous coatings.

Completion & Commissioning

3.29 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements. Obtain the Certificate of Compliance issued by MAXRaft® on completion of the project and provide a copy to the contract administrator.

4 SELECTIONS

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

Materials

4.1 DAMP-PROOF MEMBRANE

Type:	Polythene
Brand:	Thermakraft

4.2 MAXSLAB®

Brand:	MAXSlab®
Overall depth:	350mm
Slab thickness:	125mm to engineers design
Edge:	MAXEdge® - VH EPS insulation
Construction R-value:	R3.85 - determined in accordance with NZBC H1/VM1 Appendix E

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4.3 UNCOATED MAXEDGE® - PLASTERED AND PAINTED

Brand:	MAXEdge®
Polystyrene Type:	VH EPS insulation
Size:	350mm x 500mm
Finish:	StoMiral Plaster System

4.4 CONCRETE SURFACE FINISH

Location:	refer to finish plan, sheet A501
Finish class:	refer to section 6141 GROUND, SEALED OR POLISHED CONCRETE

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3820 CARPENTRY

1 GENERAL

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

1.1 RELATED WORK

Refer to 5113G for GIB PLASTERBOARD LININGS.

Refer to 5122PL for PLYTECH PANELS RESIDENTIAL LININGS.
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
PEFC	Programme for the Endorsement of Forest Certification

1.3 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 1328.1	Glued laminated structural timber - Performance requirements and minimum production requirements
AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3622	Verification of timber properties
NZS 3640	Chemical preservation of round and sawn timber
AS/NZS 4357.0	Structural laminated veneer lumber - Specification
FTMA CoP	Frame and Truss Manufacturers Association Code of Practice

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

1.5 QUALIFICATIONS

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

1.6 DIMENSIONS

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

2 PRODUCTS

2.1 TIMBER FRAMING, CHEMICAL FREE

Species, grade and moisture content in service as set out in NZS 3602, NZBC B2/AS1.

2.2 ENGINEERED WOOD

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

Treatment to NZS 3640 and AS/NZS 1604.1.

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2.3 WALL DWANGS, NOGS AND BLOCKING

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

2.4 EXTERIOR CAVITY WALL BATTENS - TIMBER - NON-STRUCTURAL

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

2.5 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".

Components

2.6 NAILS

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

2.7 SCREWS

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

2.8 BOLTS AND COACH SCREWS

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

2.9 NAIL PLATES

Comply with the requirements of NZS 3604, section 4, **Durability**, and of the number and form required for each particular junction to NZS 3604, sections 6 - 10. Plates to the plate manufacturer's design for the particular locations as shown on the drawings.

2.10 CONNECTORS

Comply with the requirements of NZS 3604, section 4, **Durability**, and of the number and form required for each particular junction to NZS 3604, sections 6-10. Connectors and structural brackets to the connector manufacturer's design for particular locations shown on drawings.

2.11 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

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3 EXECUTION

3.1 EXECUTION GENERALLY

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

3.2 SEPARATION

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

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

3.3 ATTENDANCE

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

3.4 MOISTURE CONTENT

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

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

3.5 SET-OUT

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

3.6 FRAMING FLOORS

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

3.7 FRAMING WALLS

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

3.8 FRAMING ROOFS

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

3.9 FRAMING CEILINGS

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

3.10 INSTALLING WALL UNDERLAYS

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.11 FIT CAVITY BATTENS

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

3.12 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

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4 SELECTIONS

4.1 EXTERIOR WALL FRAMING

Member	Species	Grade	Treatment
Exterior Timber Stud:	Radiata Pine	LVL8	H1.2
Internal service cavity:	Radiata Pine	SG8	H1.2

4.2 CAVITY BATTENS

Cavity battens	Species	Grade	Treatment
Vertical - Non Structural:	Radiata Pine	SG8	H3.2
Horizontal - Structural:	Radiata Pine	SG8	H3.2
Cavity closer:	Radiata Pine	SG8	H3.2

4.3 ROOF FRAMING

Member	Species	Grade	Treatment
Rafters:	Radiata Pine	LVL11	H1.2
Purlins and Counter Purlins:	Radiata Pine	SG8	H3.2
Ceiling joists and battens:	Radiata Pine	LVL8	H1.2
Trusses:	Radiata Pine	SG8	H1.2
Lintels and Structural Beams:	Radiata Pine	refer to engineer's plans	H1.2
Box Beams:	Radiata Pine	SG8, LVL11 over sliding doors	H1.2

4.4 INTERIOR FRAMING

Member	Species	Grade	Treatment
Non structural walls:	Radiata Pine	LVL8	H1.2
Structural and braced walls:	Radiata Pine	LVL8	H1.2

4.5 SPECIAL FRAMING ELEMENTS

4.6 LAMINATED VENEER LUMBER (LVL)

Member	Brand/type	Treatment
refer to plans	refer to engineer	H1.2

4.7 NAILS

Location	Type	Material	Finish
refer to engineer	refer to engineer	refer to engineer	refer to engineer

4.8 SCREWS

Location	Type	Material	Finish
refer to engineer	refer to engineer	refer to engineer	refer to engineer

4.9 BOLTS AND COACH SCREWS

Location	Type	Material	Finish
refer to engineer	refer to engineer	refer to engineer	refer to engineer

4.10 NAIL PLATES

Location	Type	Material	Finish
refer to engineer	refer to engineer	refer to engineer	refer to engineer

4.11 CONNECTORS

Location	Type	Material	Finish
refer to engineer	refer to engineer	refer to engineer	refer to engineer

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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 4161PI PRO CLIMA INTERNAL AIRTIGHTNESS SYSTEM for INTELLO® PLUS reinforced high performance air barrier & vapour control layer

Refer to 4710T for TERRA LANA INSULATION

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

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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
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.

Compliance

1.7 COMPLIANCE - CODEMARK CERTIFICATE

SOLITEX EXTASANA Wall Underlay meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ30032.

1.8 COMPLIANCE - BRANZ APPRAISAL 815

TESCON EXTOSEAL Sill Tape has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 815.

1.9 COMPLIANCE - BRANZ APPRAISAL 855

SOLITEX MENTO 3000 Roof and Wall Underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 855.

1.10 COMPLIANCE - BRANZ APPRAISAL 953

KAFLEX and ROFLEX Grommets have been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of their BRANZ Appraisal 953.

1.11 COMPLIANCE - BRANZ APPRAISAL 1163

SOLITEX EXTASANA® Wall Underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 1163.

Requirements

1.12 NO SUBSTITUTIONS

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

1.13 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

Wall underlays

2.1 WALL PROTECTION MEMBRANE - MECHANICAL FIX

SOLITEX EXTASANA® wall underlay to NZS 2295, comprised of a non-porous, UV stable, water resistant TEEE film, laminated between two layers of non-woven spun-bonded polypropylene, coloured blue on the top surface and grey on the bottom. Watertight to >10,000mm water column pressure, with low MVTR (vapour open).

Has a flammability Index of ≤ 5, when tested to AS 1530.2 and meets the requirements of NZBC C/AS2, paragraph 4.12.5.2 (b), for suspended flexible fabrics, NZBC B2 Performance B2, 3.1(a), 3.1(b), 3.2, NZBC E2 Performance E2, 3.2 and NZBC F2 Performance F2, 3.1 in accordance with CodeMark™ Certificate CMNZ30032. Refer to BRANZ Appraisal 1163 for details. Supplied in rolls 1.5m x 36.5m long (55m²), 1.5m x 50m long (75m²) and 2.74m wide x 36.5m long (100m²). SOLITEX EXTASANA® must be covered and protected against weather or ultraviolet light within 180 days.

2.2 WALL 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 (for roof applications).

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

Roofing underlays

2.3 ROOF UNDERLAY - MEDIUM WEIGHT, TYPE R4, VERY HIGH EXPOSURE (90 DAYS), SELF-ADHESION STRIP

SOLITEX MENTO® 3000 CONNECT 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 and 3m wide x 50m long. Self-supporting to 1200mm.

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

Components

2.4 8mm SEPARATION MESH

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

2.5 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.

2.6 WINDOW AND DOOR CONNECTION TAPE

CONTEGA SOLIDO EXO-D, a full-surface adhesive plaster/window-sealing tape with an additional adhesive zone on the fleece side, for exterior use. Can be plastered over directly.

2.7 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.

2.8 PRIMER

TESCON® PRIMER RP is a solvent free acrylic copolymer used to stop water capillarity in the fleece of SOLITEX EXTASANA ADHERO® when used in low pitch roof applications. Used to pre-treat rough or dirty surfaces before applying SOLITEX® ADHERO VISTO floor protection membrane on internal floors, or before applying COMPEGO sealing tape. Supplied in a 1 litre bottle.

2.9 FAÇADE CONTROL JOINT STRIP

TFLEX façade control joint strip for inter-floor transitions wtihin the WRB layer. Comprises a sealing strip made from strong and highly flexible Thermoplastic Polyurethane for control joints and seismic movement joints in facade inter-floor transitions. Fire retardant with high UV stability, compatible with the SOLITEX EXTASANA ADHERO® or SOLITEX® ADHERO FC façade applications.

Tapes

2.10 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.

2.11 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.

2.12 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.

2.13 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.

2.14 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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Accessories

2.15 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.

2.16 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.

2.17 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.

2.18 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.

2.19 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.

2.20 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

2.21 SAFETY MESH

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

2.22 ROOF SARKING / SUBSTRATE

Refer to sarking section 4337 PLYWOOD ROOFING & DECKING SUBSTRATE or 4338LS LAMINEX NZ STRANDSARKING ROOFING SUBSTRATE.

2.23 GUTTER AND UNDER FLASHINGS

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

2.24 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.

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 - wall underlay - SOLITEX EXTASANA

3.6 SCOPE LIMITATIONS - WALL PROTECTION MEMBRANE OVER RIGID WALL UNDERLAYS

SOLITEX EXTASANA® Wall Protection Membrane is to be used as a flexible wall underlay over rigid wall underlays on timber and steel framed buildings within the following scope limitations:

- The scope limitations of NZBC E2/AS1, 1.1.1 Scope of this document, with regards to building height and floor plan area.
- With absorbent and non-absorbent wall claddings installed over an 18mm minimum drained cavity.
- With masonry veneer to NZBC E2/AS1.
- Situated in NZS 3604 Wind Zones up to and including Extra High.

Application - wall underlay - SOLITEX MENTO 3000

3.7 FIX WALL UNDERLAY - TIMBER FRAMING

Fix wall underlay in accordance with SOLITEX MENTO® 3000 Application Guide and as follows:

- Apply underlay to exterior walls from below bottom plate to top plate. Fix securely with fasteners e.g. "LITTLE GRIPPERS", 6mm - 8mm staples or 20mm large head galvanized clouts at 300mm centres horizontally and vertically. Provide additional fixings around window and door openings.
- In sea spray zone (Zone D) all fixings to be stainless steel.
- Allow a 150mm minimum lap at joins and all vertical overlaps over studs and tape with Pro Clima TESCON EXTORA® to increase weathertightness. Repair any forced tears using TESCON EXTORA®.
- Pro Clima recommendation: Apply ORCON® Classic adhesive to perimeter at footing level to prevent wind wash over insulation.
- Pro Clima recommendation: Apply TESCON EXTORA® to horizontal laps to prevent wind wash over insulation.
- Note: Fastenings behind brick veneer must have equivalent service life of 50 years. Refer to NZS 3604 Tables 4.1, 4.2 and 4.3.
- When ready to install doors and windows cut at each opening at 45° from each corner. Pull SOLITEX MENTO® 3000 flaps inside and fasten to frame.
- Apply TESCON EXTOSEAL® sill tape.

3.8 METAL CLADDING ON TIMBER CAVITY BATTENS

Fix strip of generic DPC as a separator between timber and metal cladding.

Application - roofing underlay

3.9 SAFETY MESH

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

3.10 SCOPE LIMITATIONS - OVER RIGID ROOF SARKING

SOLITEX EXTASANA ADHERO® Self-Adhesive Underlay is to be used over plywood and OSB roof sarking on timber and steel framed buildings within the following scope:

- The scope limitations of NZBC E2/AS1, 1.1.1 Scope of this document, regarding building height and floor plan area.
- With roof claddings in accordance with NZBC E2/AS1, 8.1-8.4
- Situated in NZS 3604 Wind Zones up to and including Extra High.

3.11 SCOPE LIMITATIONS - OVER ROOFS OF SIP AND CLT CONSTRUCTION

SOLITEX EXTASANA ADHERO® Self-Adhesive Underlay is to be used over plywood and OSB roof sarking on timber and steel framed buildings within the following scope:

- The scope limitations of NZBC E2/AS1, 1.1.1 Scope of this document, regarding building height and floor plan area.
- used on buildings constructed from Structural Insulated Panels (SIPs) or
- used on buildings constructed from Cross Laminated Timber (CLT) and
- With roof claddings in accordance with NZBC E2/AS1, 8.1-8.4
- Situated in NZS 3604 Wind Zones up to and including Extra High.

3.12 SCOPE LIMITATIONS - SPECIFIC DESIGN ROOFS

SOLITEX EXTASANA ADHERO® Self-Adhesive Underlay may be used over roof sarking on buildings subject to specific weathertightness design.

3.13 FIX ROOF UNDERLAY - PRO CLIMA METHOD WITH SELF-ADHESION STRIP

Fix roof underlay in accordance with SOLITEX MENTO® 3000 CONNECT 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 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.
- 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 laps with self-adhesion strips provided on either side of sheet.
- For pitches less than 10° Pro Clima recommend that the underlay is laid on solid sarking.

3.14 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

3.15 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

3.16 INSTALL GROMMETS AND DETAIL SOLUTIONS

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

Completion

3.17 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 PRO CLIMA SOLITEX MENTO 3000 ROOF & WALL UNDERLAY

Location:	refer to plans (roof)
Manufacturer:	Pro Clima NZ Limited
Type:	SOLITEX MENTO® 3000 three layer underlay
Jointing & sealing tape:	TESCON EXTORA® weathertight sealing tape
	TESCON EXTOSEAL® sill tape
	TESCON® NAIDECK nail sealing tape
Adhesive:	ORCON® Classic multi-purpose adhesive
Accessories:	KAFLEX multi-sealing grommet for multiple cables ∅ 6-12mm
	ROFLEX 30 / 50 / 100 / 150 / 200 / 250 / 300 sealing grommets for pipes ∅ 30-320mm

4161PI PRO CLIMA INTERNAL AIRTIGHTNESS SYSTEM

1 GENERAL

This section relates to the supply and installation of Pro Clima NZ Limited internal intelligent air tightness and vapour control 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:

ACH	Air changes per hour
ATTMA	Air Tightness Testing and Measurement Association
DAP	Design air permeability
EDPM	Ethylene propylene diene monomer
IAB	Intelligent air barrier
IAS	Intelligent airtightness system
MVTR	Moisture vapour transmission rate
PET	Polyethylene terephthalate
PP	Polypropylene
UV	Ultraviolet

Documents

1.2 DOCUMENTS

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

AS/NZS 9972	Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurization method

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

INTELLO® System Brochure
INTELLO® Application Guide (July 2023)
INTELLO® Techincal Datasheet
INTELLO® PLUS Techincal Datasheet
INTELLO® BPIR
INTELLO® PLUS BPIR
INTELLO® Installer QA Checklist
INTELLO® ConneX Connection Strip Technical Datasheet
AEROSANA® VISCONN Technical Datasheet
AEROSANA® VISCONN Installation Instructions (March 2026)
AEROSANA® VISCONN BPIR
DASATOP® Technical Datasheet
DASATOP® Installation Instructions (March 2026)
DASATOP® BPIR
Pro Clima Warranty Agreement
BRANZ Appraisal 1149 (2021) - Intello Humidity Variable Intelligent Airtightness System - Amended 22 March 2022

Manufacturer/supplier contact details

Company:	Pro Clima NZ Limited
Web:	www.proclima.co.nz
Email:	support@proclima.co.nz
Telephone:	0800 PRO CLIMA (776 254)

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years For Pro Clima 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 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 NO SUBSTITUTIONS

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

1.8 QUALITY CONTROL SYSTEM - MANUFACTURER / SUPPLIER REQUIREMENTS

Installer/applicator to maintain quality control system to Pro Clima NZ Ltd requirements, including but not limited to:

- Organise WINCON testing carried out by Pro Clima
- Arrange for and submit Blower Door testing to AS/NZS 9972 carried out by independent ATTMA certified tester
- Complete and submit INTELLO Installer QA Checklist

Make available quality control records if requested by the contract administrator or consenting authority.

Compliance information

1.9 COMPLIANCE - BRANZ APPRAISAL

INTELLO Humidity Variable Intelligent Airtightness System has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 1149.

2 PRODUCTS

INTELLO® Intelligent airtightness system (IAS)

2.1 INTELLO MEMBRANE

Air barrier and vapour control layer, comprised of PP microfibre fleeces and polyethylene copolymer membrane. Supplied in rolls 1.5m wide x 20m and 50m long, and 3m wide x 50m long. Refer to SELECTIONS.

2.2 INTELLO PLUS MEMBRANE

Reinforced air barrier and vapour control layer, comprised of PP microfibre fleeces with PP reinforcement and polyethylene copolymer membrane. Supplied in rolls 1.5m wide x 20m and 50m long, and 3m wide x 50m long. Refer to SELECTIONS.

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2.3 INTELLO CONNEX CONNECTION STRIP

UV-stabilised humidity variable strip, comprised of PP microfibre fleeces and polyethylene copolymer membrane. Supplied in rolls 300mm wide and 900mm wide.

Components

2.4 TESCON VANA ADHESIVE TAPE

Airtight multi-purpose adhesive tape comprised of special PP fleece and solid acrylic adhesive with siliconized release paper. Supplied in rolls 60mm wide x 30m long.

2.5 TESCON PROFIL CORNER SEALING TAPE

Corner sealing tape comprised of special PP fleece and solid acrylic adhesive with siliconized release paper in individual strips 12 / 23 / 25mm. Supplied in rolls 60mm wide x 30m long.

2.6 TESCON PRIMER RP

Acrylic copolymer primer.

2.7 ORCON CLASSIC ADHESIVE

Multi-purpose adhesive comprised of non-aging acrylate polymers. Supplied in a 310ml cartridge or 600ml sausage.

2.8 CONTEGA IQ WINDOW AND DOOR SEALING TAPE

Window and door connection strip comprised of PP microfibre fleeces on PP copolymer membrane. Supplied in rolls 90mm wide x 30m long.

2.9 CONTEGA PV RENDER CONNECTION STRIP

Fleece tape for interior airtight plaster connections, comprised of PET fleece with functional membrane and plaster reinforcement. Supplied in rolls 200mm wide x 15m long.

2.10 DUPLEX DOUBLE SIDED TAPE

Double sided tape comprised of siliconized release paper, used for bonding the overlaps of membranes and fixing of membranes to steel frame structures. Supplied in rolls 25mm wide x 20m long.

2.11 STAPLES

Zinc plated staples. 8-10mm crown width. 8mm long legs.

Accessories

2.12 KAFLEX SEALING GROMMETS

Sealing grommets manufactured from EPDM. Available in a range of penetration configurations for cables 6-12mm diameter. Refer to SELECTIONS.

2.13 ROFLEX SEALING GROMMETS

Sealing grommets manufactured from EPDM. Available in a range of sizes for pipe and conduit penetrations 15-320mm diameter. Refer to SELECTIONS.

2.14 INSTAABOX

260mm x 130mm x 55mm deep installation box manufactured from flexible and extensible polyethylene. Suitable for up to three flush boxes. Pre-pressed exit points for cables up to 20mm in diameter.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products. Protect INTELLO and INTELLO PLUS membranes from water, moisture and exposure to direct UV radiation.

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Timber substrate: 20% 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 Pro Clima NZ Limited installation instructions.

INTELLO® Intelligent airtightness system installation

3.6 CO-ORDINATION

Co-ordinate the installation of INTELLO ConneX connection strips with the erection of framing and flooring.

3.7 FIX INTELLO CONNEX CONNECTION STRIP

Staple fix INTELLO ConneX connection strip to framing at 200mm centres at framing junctions (e.g. junction between external and internal walls, at uppermost ceiling framing, and at midfloor junctions on multilevel buildings). Adhere the connection strip to floor with a continuous 5mm bead of ORCON CLASSIC adhesive. Seal the connection strip to the floor with TESCON VANA tape.

3.8 INSTALL FIRST LAYER OF INTELLO MEMBRANE

Install first layer of INTELLO membrane horizontally with print facing into building interior. Leave 20mm membrane overhang onto floor. Staple fix membrane taut to framing at 100mm centres to all framing members with staples crown oriented perpendicular to direction of tension.

Use DUPLEX double side tape to temporarily fix INTELLO membrane to steel framing before staple fixing.

3.9 INSTALL SUBSEQUENT LAYERS OF INTELLO MEMBRANE

Install subsequent layers of INTELLO membrane horizontally with a minimum 100mm overlap to first layer and end laps minimum 150mm. Staple fix membrane taut to framing at 100mm centres to all framing members with staples crown oriented perpendicular to direction of tension.

Use DUPLEX double side tape to temporarily fix INTELLO membrane to steel framing before staple fixing.

3.10 SEAL INTELLO MEMBRANE LAPS

Seal all membrane laps with a continuous layer of TESCON VANA adhesive tape. At corners and tight junctions, tape membrane laps with TESCON PROFIL.

3.11 SEAL INTELLO MEMBRANE AT WINDOWS & DOORS

Seal membrane to reveal with TESCON PROFIL tape. For windows and doors without reveals, seal membrane to window and door frame with CONTEGA IQ strips.

3.12 SEAL INTELLO MEMBRANE TO FLOOR

Brush TESCON PRIMER RP onto floor substrate. Allow to dry. Adhere the 20mm membrane overhang to floor with a continuous 5mm bead of ORCON CLASSIC adhesive. Seal membrane to floor with TESCON VANA adhesive tape.

3.13 SEAL INTELLO MEMBRANE TO MASONRY SUBSTRATE

Terminate membrane at junction with masonry substrate. Seal membrane at junction with CONTEGA PV render strips adhered over membrane overlapping onto mesh over masonry substrate.

3.14 INSTALL GROMMETS

Pull the grommet over the penetrating pipe or conduit. Tape the grommet in place with TESCON VANA tape.

For self-adhesive grommets, pull grommet over the penetrating cable, pipe or conduit. Remove the release paper. Press the grommet into place to secure the adhesive bond.

3.15 INSTALL INSTAABOX

Cut membrane and to suit INSTAABOX. Pull penetrating cable through pre-pressed perforated exit points. Fit INSTAABOX into membrane and secure in place with TESCON VANA tape.

Quality control

3.16 VERIFICATION OF INSTALLATION OF INTELLO INTELLIGENT AIRTIGHTNESS SYSTEM

Organise WINCON air leakage testing carried out by Pro Clima. Carry out air leakage test upon completion of the installation. Identify leak points by feel or smoke pen. Remedy leaks with ORCON adhesive or TESCON VANA tape.

3.17 MEASURING BUILDING PERFORMANCE

Carry out Blower Door testing to AS/NZS 9972 carried out by independent ATTMA certified tester to measure infiltration rates. Refer to SELECTIONS for DAP/ACH required.

Completion

3.18 COMPLETION MATTERS

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

4 SELECTIONS

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

4.1 DESIGN AIR PERMEABILITY

Airtightness level: < 1

4.2 INTELLO INTELLIGENT AIRTIGHTNESS SYSTEM

Location:	refer to plan
Manufacturer:	Pro Clima NZ Limited
System:	INTELLO IAS
Membrane:	INTELLO PLUS
Connection strip:	INTELLO ConneX
Jointing tape:	TESCON VANA
Corner + Joinery tape:	TESCON PROFIL
Junction Tape:	CONTEGA PV for plaster connections where IAS system terminates at masonry substrate
Adhesive:	ORCON Classic

4.3 PRO CLIMA PENETRATION GROMMETS

Location:	as required
Manufacturer:	Pro Clima NZ Limited
Grommet type:	as required
Size:	as required
Jointing tape:	TESCON VANA

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

1 GENERAL

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

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

The following definitions apply specifically to this section:

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

Documents

1.2 DOCUMENTS

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

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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

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

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

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For Kingspan Thermakraft product range.

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

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

Compliance information - CodeMark certified

1.7 CODEMARK CERTIFICATE - THERMAKRAFT WATERGATE PLUS

Thermakraft Watergate Plus wall underlay meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ10002.

1.8 CODEMARK CERTIFICATE - THERMAKRAFT COVERTEK 407

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

1.9 CODEMARK CERTIFICATE - THERMAKRAFT COVERTEK 405

Thermakraft Covertek 405 roof and wall underlay meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ30030.

1.10 CODEMARK CERTIFICATE - THERMAKRAFT COVERTEK 403

Thermakraft Covertek 403 roof and wall underlay meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ30069.

Compliance information - BRANZ appraised

1.11 BRANZ APPRAISED - THERMAKRAFT SUPERCOURSE 500

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

1.12 BRANZ APPRAISED - THERMAKRAFT COVERTEK 407

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

1.13 BRANZ APPRAISED - THERMAKRAFT WATERGATE PLUS

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

1.14 BRANZ APPRAISED - THERMAKRAFT COVERTEK 405

Thermakraft Covertek 405 roof and wall underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 743

1.15 BRANZ APPRAISED - THERMAKRAFT 220

Thermakraft 220 wall underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 912

1.16 BRANZ APPRAISED - THERMAKRAFT COVERTEK 403

Thermakraft Covertek 403 roof and wall underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 917

1.17 BRANZ APPRAISED - THERMAKRAFT ONESEAL

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

1.18 BRANZ APPRAISED - THERMAKRAFT COVERTEK 401

Thermakraft Covertek 401 roof and wall underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 943

1.19 BRANZ APPRAISED - THERMAKRAFT THERMABAR 397

Thermakraft Thermabar 397 roof and wall underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 1000

1.20 BRANZ APPRAISED - THERMAKRAFT THERMAFLASH

Thermakraft Thermaflash flashing tape has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 1122

1.21 BRANZ APPRAISED - THERMAKRAFT COVERTEK 215

Thermakraft Covertek 215 roof underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 1229

1.22 BRANZ APPRAISED - THERMAKRAFT RAINARMOR

Thermakraft RainArmor self-adhesive roof underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 1277

2 PRODUCTS

DPC

2.1 THERMAKRAFT SUPERCOURSE 500

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

DPM

2.2 THERMAKRAFT THERMATHENE 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.

Synthetic underlays - fire retardant

2.3 THERMAKRAFT 220

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

2.4 THERMAKRAFT WATERGATE PLUS

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

2.5 THERMAKRAFT COVERTEK 407

CodeMark certified and BRANZ appraised self-supporting synthetic roof and wall underlay, white with red logo print, composed of a water resistant vapour permeable film laminated to two layers of non-woven, spun bonded polyolefin sheet. Fire retardant, tested to AS 1530.2 and assigned a Flammability Index of ≤5. Available in 1250mm, 2550mm and 2740mm width. Suitable for use as an Early Close Wall Application providing up to 120 days temporary weather protection. Suitable for use as temporary weather protection for up to 30 days on roofs. Refer to SELECTIONS.

2.6 THERMAKRAFT COVERTEK 405

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

2.7 THERMAKRAFT COVERTEK 403

CodeMark certified and BRANZ appraised synthetic roof and wall underlay, white with green logo print, composed of a water resistant vapour permeable film laminated to two layers of non-woven, spun bonded polyolefin sheet. Fire retardant, tested to AS 1530.2 and assigned a Flammability Index of ≤5. Available in 1350mm width. Refer to SELECTIONS.

Synthetic underlays - not fire retardant

2.8 THERMAKRAFT COVERTEK 401

BRANZ appraised self-supporting synthetic roof and wall underlay, light grey with dark grey logo print, composed of a water resistant vapour permeable film laminated to two layers of non-woven, spun bonded polyolefin sheet. Available in 1350mm and 2700mm width. Refer to SELECTIONS.

2.9 THERMAKRAFT COVERTEK 215

BRANZ appraised self-supporting synthetic roof and wall underlay, grey with black logo print, composed of a water resistant vapour permeable film laminated to two layers of non-woven, spun bonded polyolefin sheet. Available in 1350mm and 2700mm width. Refer to SELECTIONS.

2.10 THERMAKRAFT RAINARMOR SELF ADHESIVE

BRANZ appraised self adhesive roof and wall underlay, composed of a three-layer water-resistant and water vapour-permeable synthetic membrane. Available in 1460mm wide and 31m long rolls.

Foil underlay & vapour control layers

2.11 THERMAKRAFT THERMABAR 344

Self-supporting, lightweight, high tensile roof & wall underlay and vapour control layer composed of reinforced aluminium foil sheet bonded to white synthetic woven fabric. Fire retardant, tested to AS 1530.2 and assigned a Flammability Index of ≤5. Light reflectance of 65 - 75%. Available in 1350mm width. Refer to SELECTIONS.

2.12 THERMAKRAFT THERMABAR 397

BRANZ appraised self-supporting synthetic foil roof & wall underlay and vapour control layer composed of a middle layer of spun bonded polypropylene material with bonded outer layers of white polypropylene film to one side and metallised polyolefin film to the other side. Fire retardant, tested to AS 1530.2 and assigned a Flammability Index of ≤5. Light reflectance of 75 - 85%. Not electrically conductive. Available in 1350mm width. Refer to SELECTIONS.

Components - sealing

2.13 THERMAKRAFT WHITE GENERAL PURPOSE TAPE

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

2.14 THERMAKRAFT ONESEAL

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

2.15 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.

Fixings

2.16 FIXINGS - TO TIMBER

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

2.17 FIXINGS - TO STEEL

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation/application - generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Installation - DPC

3.5 INSTALL DPC

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

Installation - DPM

3.6 INSTALL DPM - CONCRETE FLOOR

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

3.7 APPLY TAPE TO LAPPED DPM JOINTS

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

Installation - wall underlay

3.8 INSTALL WALL UNDERLAY

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

3.9 INSTALL WALL PENETRATION SEALS

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

3.10 INSTALL RAINARMOR SELF ADHESIVE

Align membrane with edge of substrate, peel off the removable protective film gradually and press membrane firmly with a hand roller or plastic spreader. Apply 400mm wide strip centred on wall corners before laying sheets over. Lay upper sheets over lower sheets with minimum 150mm overlap. Penetrations and repair for small, damaged areas can be made with any Thermakraft window flashing tape or Premium Joining Tape. Larger damage can be repaired by installing a new layer over the top with a minimum of 150mm overlap on all sides. Limit UV and weather exposure to no more than 120 days.

Preparation of wall underlay for window/door placement

3.11 FORM OPENINGS

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

3.12 FLASHING TAPE APPLICATION - GENERALLY

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

3.13 APPLY FLASHING TAPE ACROSS SILL/JAMB CORNERS

Cut 75mm wide tape to 100mm length. Apply to exterior wall surface across sill/jamb corners at 45°, overlap corners by 3mm.

3.14 APPLY FLASHING TAPE TO SILL

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

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3.15 CREATE PENETRATION SELF-SEAL AT SILL

Cut 75mm wide flashing tape to sill length. Apply along entire length of sill at window/door fixing location to ensure fixing penetration self-seal.

3.16 APPLY FLASHING TAPE TO HEADER

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

3.17 APPLY FLASHING TAPE ACROSS HEAD/JAMB CORNERS

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

Completion

3.18 COMPLETION MATTERS

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

4 SELECTIONS

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

DPC

4.1 DPC - THERMAKRAFT SUPERCOURSE 500

Location:	refer to plan
Manufacturer:	Thermakraft
Brand:	Supercourse 500
Type:	Damp proof course
Width:	as required

DPM

4.2 DPM - THERMAKRAFT THERMATHENE BLACK

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

Components for Magnum Board RAB

4.3 PENETRATION SEAL - THERMAKRAFT ONESEAL

Location:	Magnum Board RAB
Manufacturer:	Thermakraft
Brand:	OneSeal
Type:	Pipe and service penetration seal
Size:	as required
Maximum UV exposure:	120 days

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4.4 75MM FLASHING TAPE - THERMAKRAFT THERMAFLASH

Location:	Magnum Board RAB
Manufacturer:	Thermakraft
Brand:	Thermaflash
Type:	Flashing tape
Width:	75mm
Maximum UV exposure:	180 days

4.5 200MM FLASHING TAPE - THERMAKRAFT THERMAFLASH

Location:	Magnum Board RAB
Manufacturer:	Thermakraft
Brand:	Thermaflash
Type:	Flashing tape
Width:	200mm
Maximum UV exposure:	180 days

4171 EGGER DHF

1 GENERAL

1.1 GENERAL

Refer to Egger DHF specification and instructions

2 PRODUCTS

2.1 PRODUCTS

Refer to Egger DHF specification and instructions

3 EXECUTION

3.1 EXECUTION

Refer to Egger DHF specification and instructions

4 SELECTIONS

4.1 SELECTIONS

Refer to Egger DHF specification and instructions

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4171 MAGNUM BOARD RIGID AIR BARRIER

1 GENERAL

1.1 GENERAL

Refer to Health Based Building for Magnum Board guides and specifications..

2 PRODUCTS

2.1 PRODUCTS

Refer to Health Based Building for Magnum Board guides and specifications..

3 EXECUTION

3.1 EXECUTION

Refer to Health Based Building for Magnum Board guides and specifications..

4 SELECTIONS

4.1 SELECTIONS

Refer to Health Based Building for Magnum Board guides and specifications..

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4221LH LMA HARDWOOD HORIZONTAL CLADDING

1 GENERAL

This section relates to the supply and installation of LMA Timber Ltd, Australian hardwood timber horizontal weatherboard cladding. It includes:
Cavity battens
Fixings
Flashing
Trims

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:

ACQ	Alkaline Quaternary treated timber
BMT	Base Metal Thickness

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 than risk group SH
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZS 3602	Timber and wood-based products for use in building
AS 5604	Timber-Natural durability ratings

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
LMA Timber Cladding Installation and Maintenance Guide
LMA Non-Rebated Bevel-back Weatherboard Cladding Specification
LMA Rebated Bevelback Weatherboard Cladding Specification
LMA Horizontal Shiplap Weatherboard Cladding Specification
LMA Rusticated Shiplap Weatherboard Cladding Specification
LMA Non-Rebated Bevelback Weatherboard Cladding Specification
LMA Timber Limited Hardwood Cladding Warranty

Manufacturer/supplier contact details

Company:	LMA Timber Limited
Web:	lmatimber.co.nz
Email:	martin@lmatimber.co.nz
Telephone:	021 398 800

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For LMA hardwood cladding

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

Refer to the general section 1237 WARRANTIES for additional requirements.

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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:
LMA Timber Cladding Installation and Maintenance Guides

Include record of factory applied finish with operation and maintenance information.

Provide this information prior to practical completion.

Performance

1.8 EXTERNAL FIRE SPREAD - CLADDING EXEMPT FROM TESTING

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

1.9 DURABILITY

The LMA hardwood cladding typically contains between 80% to 85% heartwood and 15% to 20% sapwood. The residual sapwood is treated to H3 ACQ. LMA Timber heartwood is classified under AS 5604 as natural durability, class 1 and has several decades of in-service history in Australia.

2 PRODUCTS

Materials

2.1 LMA TIMBER

Australian Eucalyptus hardwood timbers. Kiln dried to between 9-14% moisture. Available dressed or sawn with lightly brushed face. Supplied with factory coating. These timbers include:
Grey Iron Bark (Eucalyptus paniculata)
Red Iron Bark (Eucalyptus sideroxylon)
Tallowwood (Eucalyptus microcorys)
Blackbutt (Eucalyptus pilularis)
Spotted Gum (Corymbia maculata)

2.2 LMA TIMBER - HORIZONTAL SHIPLAP WEATHERBOARDS

Horizontal shiplap weatherboards with weathergrooves and 115mm effective cover. 140mm wide x 21mm thick for dressed face. 140mm wide x 22mm thick for sawn with a lightly brushed face. Supplied precoated all sides. Refer SELECTIONS.

2.3 LMA TIMBER - TIMBER TRIMS

Cover battens, scribers, mouldings and weatherheads to LMA profiles.

2.4 WALL UNDERLAYS

Refer to the appropriate wall underlay section(s).

2.5 CAVITY BATTENS

H3.1, radiata pine kiln dried battens, 20mm thick, 45mm minimum width, height to match timber framing studs. Requires wood-based building components to achieve a 50-year durability performance to NZS 3602.

2.6 CAVITY CLOSER / VERMIN PROOFING

Cavity closure strip, punched with 3mm-5mm holes or slots to provide a minimum ventilation opening area of 1000mm² per lineal metre of wall. Length and width to suit cavity. Refer to SELECTIONS.

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Components

2.7 WEATHERBOARD FIXINGS
Refer SELECTIONS.

2.8 CLINCH NAILS
Annular Grooved Grade 316 Stainless Steel Clinch Nails, 40 x 2.0mm.

2.9 FLASHINGS
Refer SELECTIONS.

2.10 ADHESIVE & SEALANT
One component polyurethane elastic joint sealant and adhesive suitable for exterior use with timber and metals. Refer SELECTIONS.

Finishes

2.11 FACTORY APPLIED FINISH
Factory applied finish. Refer SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS
Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

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

3.3 PRE-INSTALLATION REQUIREMENTS
Check work previously carried out and confirm it is of the required standard for this part of the work.

3.4 ACCLIMATISE TIMBER
Fillet stack LMA timber on site with a 6mm gap between profiles and strop the filleted pack tight. Allow air to circulate to acclimatise LMA Timber to site conditions. Keep timber dry at all times.

Installation/application

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

3.6 MOISTURE CONTENT - LMA WEATHERBOARDS
Do not install if the moisture content for the LMA timber product is above 14%. Test the moisture content of the weatherboards immediately before fixing. Use an electrical moisture meter to test 5% of boards, but not less than 10 boards in the centre of the length.

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

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

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3.8 INSTALL CAVITY BATTENS

Fit and fix cavity battens over wall underlay into the framing to NZBC E2/AS1. Space vertical battens at 600mm maximum centres. Use cavity spacers set to 5° fall where fixing is required between cavity battens.

3.9 INSTALL FLASHINGS

Install flashings as detailed. Upper flashings to overlap lower flashings by 75mm where required.

3.10 SET-OUT

Using laser or mechanical devices set-out the boards to ensure the exposed face is constant and that boards remain horizontal. Use a string line to set out all nailing that will be visible in the finished work. Align all nailing accurately in straight lines.

3.11 INSTALL CAVITY CLOSER / VERMIN PROOFING

Seal the top of the cavity and install a cavity closer / vermin proofing at the base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc).

3.12 EXPOSED BOTTOM EDGES

Cut bottom edge of weatherboards to form a drip edge (15° degree slope to horizontal) where weatherboards terminate below the bottom plate, above window head, and flashing locations.

3.13 CUT EDGES

Apply two coats of product to match the factory finish to all cut edges and cut surfaces of weatherboards and timber trims.

3.14 JOINING WEATHERBOARDS

Splice board joints with a 30 degree cut angle for scarf joints.

3.15 INSTALL HORIZONTAL SHIPLAP WEATHERBOARDS

Install level, true to line and face with a 25mm lap. Pilot drill all cladding fixings slightly smaller than gauge of fixing and allow fixing to be installed with a slightly upward slope. Position fixings 40mm from lap edge.

Position clinch nail against but not into the hidden lap board edge to restrain the hidden lap tongue. Drive the clinch nail into the frame so that the clinch head settles flush into the weatherboard's surface.

3.16 NAIL FIXING

Finish the base of heads of rose head nails flush with the board surface.

3.17 INSTALL TIMBER TRIMS

Install timber trims to NZS 3604 and NZBC E2/AS1. Refer SELECTIONS.

3.18 INSTALL ADHESIVE & SEALANT

Install adhesive and sealant at weatherboard junctions, flashings, cladding penetrations and flashings as shown on LMA details. Install to manufacturers installation instructions.

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

Materials

4.1 LMA TIMBER HORIZONTAL SHIPLAP WEATHERBOARDS

Location:	refer to plans
Source:	Reclaimed timber
Species:	Spotted Gum
Profile Size:	140mm (provides 115mm cover)
Thickness:	22mm
Fixings:	Nails - 75mm x 3.25 rose head, annular grooved 304 stainless steel
Surface finish:	Dressed Face, 21mm thick - Can only have a clear penetrating oil finish.
Factory finish:	Clear penetrating oil - clear natural timber colour
Stain colour:	none

4.2 LMA TIMBER TRIMS

Location:	custom, refer to plans
Type:	Vertical Battens (30mm x 50mm), refer to elevations Vertical Battens at window/door jambs (50mm x 85mm, trimmed to suit joinery profile on site), refer to details. Horizontal Trims (40mm x 80mm with tapered top at 15 degrees, refer to details), refer to elevations **Sliding Shutter:** Main Frame Timber: 50mm x 65mm, see sheet A610. Horizontal Members: 42mm x 42mm
Source:	Reclaimed preferred. New timber if necessary.
Species:	Spotted Gum
Fixings:	Nails - 75mm x 3.25, Stainless Steel, annular grooved, Rose head Nails - 90mm x 3.15, Stainless Steel, annular grooved, Rose head
Surface finish:	Dressed Face, 21mm thick - Can only have a clear penetrating oil finish.
Factory finish:	Clear penetrating oil - clear natural timber colour
Stain colour:	none

Components

4.3 FLASHINGS

Location:	refer to plans
Material:	Galvanized steel 0.55mm minimum, Aluminium 0.7mm

4.4 CAVITY CLOSER / VERMIN PROOFING

Location:	refer to plans
Material:	uPVC 0.75mm

4.5 ADHESIVE & SEALANT

Location:	refer to plans
Type:	Sikaflex-11FC

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4241RI ROOFING INDUSTRIES PROFILED METAL CLADDING

1 GENERAL

This section relates to the supply and fixing of **Roofing Industries** profiled cladding complete with accessories.

1.1 RELATED WORK

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

1.2 ABBREVIATIONS

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

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:

NZBC C/AS1	Protection from fire for buildings with sleeping (residential) and outbuildings (risk group SH)
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC C/VM2	Framework for fire safety design
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials
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
AS/NZS 4201.6	Pliable building membranes and underlays - methods of test Method 6: Surface water absorbency
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:

Roofing Industries Technical Literature

Manufacturer/supplier contact details

Company:	Roofing Industries Ltd
Web:	www.roof.co.nz
Email:	techinfo@roof.co.nz
Telephone:	0800 844 822

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For paint will not flake, peel or excessively fade
30 years	For substrate will not perforate through corrosion
0 years	For weathered galvanised corrugate

- Provide this warranty on the material manufacturer's standard Warranty Form

- Commence the warranty from the date of practical completion of the contract works

Refer to the general section 1237 WARRANTIES for additional requirements.
For Warranty requirements in excess of this contact Roofing Industries.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	For workmanship

- Provide this warranty on the metal cladding installers standard warranty form.
- Commence the warranty from the date of practical completion of the contract works.

NOTE: Include a copy of the Roofing Industries maintenance requirements with the warranty.
Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

Performance - General

1.9 EXTERNAL FIRE SPREAD - CLADDING MATERIAL, NON-COMBUSTIBLE MATERIAL

Roofing industries profiled metal claddings are a non-combustible substrate to NZBC C/AS1 and NZBC C/AS2, as composed of entirely steel or aluminium with a surface finish no more than 1mm in thickness.

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. Prefinished /prepainted to AS/NZS 2728.

2.2 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.

2.3 ALUMINIUM, PREPAINTED

Aluminium alloy series 5000 temper H34 for flashings or H36 for roll forming to suit application, coated to AS/NZS 2728.

Fixings

2.4 FASTENERS GENERALLY

Fixings and fasteners are to be compatible with all materials, the environment and meeting the requirements of the NZ Building Code.

2.5 FIXING SCREWS

Screws to AS 3566 and Roofing Industries Profile Technical Summary fixing chart or Specific Engineered Design, with a minimum Class 4 or 5 durability and not less than the material being fixed. Refer to SELECTIONS.

2.6 RIVETS

Sealed aluminium, minimum diameter 4.0mm. Refer to Roofing Industries for requirements.

Components

2.7 FLASHINGS GENERALLY

To NZBC E2/AS1, 4.0 Flashings.

Formable grade 0.55 BMT for coated and prepainted 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.

2.8 EXTERIOR CAVITY WALL BATTENS

Minimum H3.1 Radiata pine cavity battens, minimum 20mm thick and 45mm wide to NZBC E2/AS1 or proprietary cavity battens. Refer to relevant section for details.

2.9 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Proprietary aluminium, stainless steel and uPVC profiles with drainage holes/slots to NZBC E2/AS1.

2.10 CLOSURE STRIPS

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

Accessories

2.11 WALL UNDERLAY

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

2.12 SEALANT

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

Store on a level firm base with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets.

Do not drag sheets across each other and other materials. Protect edges and surface finishes from damage. Use soft, flat sole shoes when fixing and for all other work on the roof.

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Inspect the wall framing and supporting structure to ensure that it is complete and fully braced ready for cladding. Ensure that all necessary members are positioned so that flashings can be fastened at both edges through the cladding to the primary structure.

Ensure moisture content is:
Timber framing: 18% maximum
12-16% maximum under traverse flashings

When continuous metal cladding etc. 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.

3.4 SEPARATION

Isolate dissimilar materials (metals and non-metals) 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

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.6 INSTALLATION GENERALLY

Install Roofing Industries profiled metal cladding materials in accordance with NZMRM CoP and Roofing Industries requirements, to form a weather-tight performance for the completed cladding system, including all flashing/cappings and penetrations through the cladding.

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

3.8 SET-OUT FOR HORIZONTAL CLADDING

Set cladding starting from the bottom to horizontal level lines and maintained through the laying process. Set all exposed fixings with vertical string lines. Maintain equal gaps between flashing ends to allow for expansion movement.

3.9 MARKING AND CUTTING

Use ink pen, chalk line or coloured pencil for marking cladding 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.

3.10 FIX SHEETS

Fix sheets in place using the fastening system in accordance with Roofing Industries Profile Technical Summary - fixing chart to suit project wind loadings stated in the general section 1220 PROJECT or in accordance with specific design in accordance with project engineers requirements.

Use only screws as required by Roofing Industries. For timber purlins ensure minimum 30mm embedment and for steel purlins ensure minimum embedment of 3 threads. Paint colour matched fixings and accessories before installation.

3.11 END LAPS

End laps are not permitted, except where specifically detailed.

3.12 THERMAL MOVEMENT

Fix for Thermal Movement to Roofing Industries Profile Technical Summary for Selected Profile.

3.13 INSTALL FLASHINGS

Flash to parapets, roofs and penetrations to detail. Flashings to be installed on timber framing with a moisture content of less than 18%. Where no detail is provided flash to NZMRM CoP recommendations and Roofing Industries and NZBC E2/AS1 requirements. Cut accurately and fix using sealant and rivets to detail and to Roofing Industries requirements to form a weatherproof cover. For visible flashings, plan joints/junction to take account of the aesthetic requirements.

3.14 FLASHING PENETRATIONS

Flash all penetrations through the cladding. 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.

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3.15 USE OF SEALANTS

Select and use sealants only as recommended by Roofing Industries. Apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces.

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

Cladding

4.1 ROOFING INDUSTRIES TRUE OAK™ CORRUGATE METAL CLADDING

Location:	refer to plans (roofing and wall cladding)
BMT/material:	0.55 BMT
Coating system:	Galvanised Steel (unfinished) with applied weather finish
Finish:	Weathered Green Acid Wash
Framing material:	H3.2 Timber Cavity
Pan Fixing:	12-11x55 Class 4 Type 17 Woodteks

4.2 ROOFING INDUSTRIES TRIMRIB® PROFILE METAL CLADDING

Location:	refer to plans (roofing only)
Profile:	Trimrib®(S) single swage
BMT/material:	0.55 MBT
Coating system:	COLORSTEEL® Maxam™
Finish:	Flaxpod
Framing material:	H3.2 Timber Cavity
Pan fixing:	Consult with Roofing Industries

Accessories

4.3 FLASHINGS - GENERALLY

Profile:	refer to plans
BMT/material:	refer to plans
Coating system:	To match adjacent, refer to plans
Finish:	To match adjacent, refer to plans

4.4 FINISHING - WEATHERING GALVANIZING

Product:	Green Acid Replacement Concrete Remover GAR6
Applicatoin:	Apply full strength GAR6 with a low-pressure garden spray liberally to ensure the whole surface has cover to the exposed face of the corrugated cladding. Application time TBC with samples. Rinse the GAR6 with water to remove product Test fillet stacking products - untreated pine & Cavitbat (plastic). Carefully apply to the building with the dull/treated side exposed.
Samples:	Size: 500m long x sheet width 5min of single application time 20mins of single application time 10mins application and then second coat / top up at 10mins
Health and Safety:	Refer to Product and Safety data sheet for GuardIT GAR6. Confirm a task specific health and safety plan.

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Light Reflectivity Value (LRV):	Target less than 30% LRV. USe 'Sandstone Grey' as a reflectivity reference (LRV 27%)

4311NZ COLORSTEEL® ROOFING

1 GENERAL

This section relates to **New Zealand Steel Limited** coated metal steel in a range of colours and grades for roofing material.

1.1 RELATED WORK

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
CoP	Code of Practice for Metal Roofing
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
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
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
CodeMark™ CMNZ70050 ver2	Colorsteel® Dridex®

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

- COLORSTEEL® Installers Guide
- COLORSTEEL® Design Guide
- COLORSTEEL Altimate® Installers Guide
- COLORSTEEL Altimate® Design Guide
- COLORSTEEL Dridex® Design Guide
- COLORSTEEL Dridex® Installers Guide
- COLORSTEEL® Matte Design Guide
- New Zealand steel - Zincalume® Brochure
- COLORSTEEL® - Environmental Categories & Warranty Guide

Manufacturer/supplier contact details

Company:	New Zealand Steel Limited
Web:	www.colorsteel.co.nz
Email:	specifications@colorsteel.co.nz
Telephone:	0800 100523
Rollformer:	Refer to New Zealand Steel website for suppliers available.

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

18 years	For COLORSTEEL® Maxam™ for perforation
50 years	For COLORSTEEL® Maxam™ for paint

Include a copy of the roofing manufacturers maintenance requirements with the warranty.

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	For workmanship

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS - DRIDEX®

Workers to be trained and accredited by New Zealand Steel Limited in the installation of COLORSTEEL Dridex® roofing materials. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.9 NO SUBSTITUTIONS

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

1.10 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.

Performance - Fire

1.11 INTERIOR SURFACE FIRE PROPERTIES - GROUP NUMBER

Zincalume®, COLORSTEEL® Maxam™, COLORSTEEL Altimate® and COLORSTEEL® Maxam™ Dridex® 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 COLORSTEEL® MAXAM™ - STEEL, TYPE AM COATING (ALUMINIUM/ZINC/MAGNESIUM ALLOY), PREPAINTED

Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397, AM150 grade. Pre-finished /pre-painted to AS/NZS 2728 to a Type 6 standard.

Fixings

2.2 FASTENERS GENERALLY

Fixings and fasteners are to be compatible with all materials and have a durability no less than the material being fastened.

2.3 FIXING SCREWS

Screws to AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by roofing profile manufacturer (roll-formers) fixing charts or Specific Engineered Design, and with a minimum Class 4 durability and not less than the material being fixed. Screw lengths must be sufficient to allow 30mm penetration into structural timber or 3 threads penetration through steel structural members. Screw fasteners to be head stamped identifying the manufacturer and class. Refer to SELECTIONS.

2.4 RIVETS

Sealed aluminium, minimum diameter 4.0mm.

Components

2.5 FLASHINGS GENERALLY

To NZBC E2/AS1, 4.0 Flashings.

Formable grade 0.55mm BMT for steel and 0.90mm for aluminium coated to the same standards as the profiled sheets, notched where across profile or provided with a soft edge.

2.6 BOOT FLASHINGS

EPDM proprietary boot flashing designed to weatherproof cylindrical penetrations.

Accessories

2.7 WIRE NETTING AND SAFETY MESH

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.8 UNDERLAY AND REFLECTIVE FOIL

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.9 SEALANT

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

2.10 PROFILE CLOSURES

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

2.11 LAP SEALING TAPE

Closed cell self-adhesive nitrile tape.

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3 EXECUTION

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.
Store on a level firm base with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets.

Do not drag sheets across each other and other materials. Protect edges and surface finishes from damage. Use soft, flat sole shoes when fixing and for all other work on the roof.

Do not use sunscreen containing Zinc Oxide or Titanium Dioxide as it may damage the paint coating in contact.

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Inspect the roof framing and supporting structure to ensure that it is complete and fully braced ready for roofing and free from any misalignments or protrusions that could adversely affect the roofing. Ensure that all necessary members are positioned so that flashings can be fastened at both edges through the roof profile or cladding to the primary structure.

Ensure moisture content is:
Timber framing: 18% maximum
12-16% maximum under traverse flashings

When continuous metal roofing etc. 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.

3.4 WORK SAFE

All installation to be conducted in accordance with WorkSafe Working at Heights recommendations and any site requirements

3.5 SEPARATION

Isolate dissimilar materials (metals and non-metals) in close proximity as necessary by fitting separator strips of compatible inert materials. Prevent wet contact between metals and treated timber and cement based materials.

Application

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 PENETRATIONS AND JUNCTIONS

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

Required work includes the following:

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

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3.8 SET-OUT

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

3.9 MARKING AND CUTTING

Use ink pen, chalk line or coloured pencil for marking roof sheets prior to cutting. Do not use black lead pencils for marking aluminium/zinc coated products. Make all cuts cleanly to a marked straight line, cut by shear only, using nibblers or hand snips. Remove all cutting and drilling debris from the roof.

3.10 FIX SHEETS

Fix sheets in place using the fastening system required by the roofing profile manufacturer (roll-former) for specified profiles, to suit project wind loadings stated in the general section 1220 PROJECT or in accordance with specific design in accordance with project engineers requirements. Use only screws as required by manufacturer. Paint colour matched fixings and accessories before installation. Use setting tools that do not unduly damage the head of the fasteners.

3.11 THERMAL MOVEMENT

Fixing and jointing to conform with the roofing manufacturer's requirements for thermal movement for selected profile.

3.12 END LAPS

End laps in roofing sheets are not permitted, except where specifically detailed.

3.13 STOP ENDS AND DOWNTURNS

Form stop-ends at the upper end of all sheets. Form downturns at the gutter line where the roof pitch is less than 8 degrees using purpose made tools.

3.14 INSTALL FLASHINGS

Flash roof, including to parapets, walls and penetrations to detail. Transverse flashings to be installed on timber framing with a maximum moisture content of 18%. Where no detail is provided flash to NZMRM CoP recommendations and the roofing manufacturer's and NZBC E2/AS1 requirements. Cut accurately and fix using sealant and rivets to detail to form a weatherproof cover. For highly visible flashings, plan joints/junction to take account of the aesthetic requirements.

3.15 FLASHING PENETRATIONS

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

3.16 INSTALL RIDGING

Install ridging by fastening to the purlins through the leading edge of the roofing to manufacturer's requirements.

3.17 FLASHING TERMINATION

Terminate all visible flashing ends to provide a tidy and weathertight finish.

3.18 USE OF SEALANTS

Apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces. Secure joint with rivets at 50mm centres.

Completion

3.19 COMPLETION MATTERS

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

3.20 PROTECT

Protect the completed roof area from mechanical and chemical damage. Provide temporary protection, as required, for material storage, foot traffic and later works such as scaffolding and remove when no longer required.

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4 SELECTIONS

For further details on selections go to www.colorsteel.co.nz and to selected roofing manufacturer's website.
Substitutions are not permitted to the following, unless stated otherwise.

Material - Roofing

4.1 COLORSTEEL® MAXAM™ PROFILED ROOFING

Location:	refer to plans
Manufacturer:	New Zealand Steel
Material:	COLORSTEEL® Maxam™
BMT:	0.55mm
Colour:	Flaxpod
Profile:	Roofing Industries Trimrib
Substrate:	Timber
Fixing:	Fixings / clip fixings to cladding manufacturer's (roll-former's) literature / requirements for selected profile, exposure category and wind zone.

Accessories

4.2 FLASHINGS - AT TRIMRIB LOCATIONS ONLY

Location:	refer to plans
Manufacturer:	New Zealand Steel
BMT/material:	0.55mm aluminium
Coating system:	COLORSTEEL® Maxam™
Coating colour:	Flaxpod, to match adjacent roofing

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4337E ECOPLY® ROOFING & DECKING

1 GENERAL

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

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

CCA	Copper chrome arsenate
PF	Phenol formaldehyde

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10m in height
AS/NZS 1604.3:2012	Preservative-treated wood-based products - Plywood
AS/NZS 2269.0	Plywood - Structural - Specifications

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

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

Manufacturer/supplier contact details

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

Requirements

1.4 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 NO SUBSTITUTIONS

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

2 PRODUCTS

Materials

2.1 ECOPLY® STRUCTURAL SQUARE EDGE PLYWOOD

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

Components

2.2 SCREWS

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

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2.3 ADHESIVE

Refer to SELECTIONS.

2.4 TIMBER PRESERVATIVE TREATMENT

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Timber substrate: 18% maximum moisture content

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install in accordance with Ecoply® Specification and Installation Guide.

3.6 TREAT CUT EDGES

Brush timber preservative onto cut edges and penetration cut outs.

3.7 APPLY ADHESIVE

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

3.8 LAY PLYWOOD SHEETS - SQUARE EDGE

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

3.9 FIX PLYWOOD SHEETS

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

3.10 UNDER MEMBRANE ROOFING

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

Completion

3.11 COMPLETION MATTERS

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

4 SELECTIONS

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

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

4.1 ECOPLY® STRUCTURAL SQUARE EDGE PLYWOOD - MEMBRANE ROOF

Location:	Nuraply 3PM membrane
Manufacturer/supplier:	Carter Holt Harvey Plywood Ltd.
Brand:	Ecoply® Structural Square Edge plywood
Stress grade:	F8/F5
Appearance grade:	CD
Sheet thickness/ID code:	19mm/19-30-7
Size size:	1200mm wide x 2400mm long
Timber treatment:	H3.2 CCA
Timber certification:	Ecoply® can be supplied with FSC certification, contact Carter Holt Harvey Plywood L

4.2 SCREWS - MEMBRANE ROOF

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

4.3 ADHESIVE

Brand/type:	Soudal Gorilla Grip (polyurethane-based adhesive)

4.4 TIMBER PRESERVATIVE TREATMENT

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

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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.

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.

2 PRODUCTS

Materials - Nuraply 3PM two layer system

2.1 NURAPLY WATERPROOFING MEMBRANE, FULLY BONDED BASE LAYER

Nuraply 3PB-SA provides a 3mm thick first layer in two layer applications on plywood, timber or Strandboard. Supplied in 1m wide x 10m long rolls.

2.2 NURAPLY WATERPROOFING MEMBRANE, MINERAL FACE TOP LAYER

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

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Components - general

2.3 MS DETAIL

Liquid waterproofing to provide additional waterproofing protection.

2.4 NURADECK BANDAGE SYSTEM

Liquid applied elastomeric, fibre reinforced waterproofing system.

Accessories

2.5 ADHESIVES

Nuraflux No. 10, water-based adhesive for bonding NURAPLY roofing systems to plywood substrates, to Nuralite specification.

2.6 PRIMER

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

2.7 SEALANT

IKO Stickall Bitumen - high performance bitumen mastic sealant.

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

2.8 ALUMINIUM TAPE

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

2.9 BITUMEN FILLET

Nuralite Triangular.

2.10 OUTLETS

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

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.

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.

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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).

Installation - Nuraply 3PM two layer system

3.13 FIRST LAYER ON PLYWOOD, CROSS LAMINATED TIMBER AND STRANDBOARD

Lay the first Nuraply 3PB-SA layer into Nuraflux NO.10, Nuraflux WB or Nuraflux QD primer to Nuralite requirements, with joints to be welded lapped a minimum of 80mm down the roll edges and 100mm across the roll ends. Lay in order from low points, sumps, through gutters, valleys, eaves, verges main roof and upstands to cover flashings.

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3.14 LAYING AND JOINTING SECOND LAYER - MINERAL FACE

Lay the second Nuraply 3PM layer by heat fusing over the cleaned repaired and Nuraflux QD primed (if necessary) surface of the first layer in the same sequence. Joints in the second layer must not correspond with joints in the first layer. Second layer joints to be welded lap-joints, minimum 80mm wide down roll edges and minimum 100mm wide across roll ends, to the Nuraply 3PM supplier's requirements. Roll junctions must be staggered to avoid 4-layer lap-weld build-up of Nuraply 3PM at corners. Ensure unobstructed drainage flow at outlets.

Testing

3.15 TEST - FLOOD - COLD ROOFS

Flood test gutters and where practical other low pitch and horizontal areas with a minimum 50mm depth of water for 24 hours. Make good any lack of water tightness when the surface is completely dry. Repeat water test process after making any necessary repairs.

Conditions - completion

3.16 ACCESS BOARDS

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

3.17 FOOT TRAFFIC

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

3.18 ACCEPTANCE

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

3.19 SUBSEQUENT WORK

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

Completion

3.20 COMPLETION MATTERS

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

4 SELECTIONS

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

Nuraply 3PM two layer system

4.1 NURAPLY 3PM TWO LAYER SYSTEM ON PLYWOOD, CROSS LAMINATED TIMBER AND STRANDBOARD

Location:	refer to plan
Supplier:	Nuralite
Substrate:	Plywood
Substrate adhesion:	Nuraflux 10, Nuraflux QD or Nuraflux WB
First layer:	Nuraply 3PB-SA
Second layer:	Nuraply 3PM
Colour:	Slate

Accessories

4.2 NURAPLY ACCESSORIES

Location:	refer to plan
Supplier:	Nuralite
Type:	PE75x200AL 220x75mm aluminium scupper

4511 EXTERIOR TIMBER WINDOWS & DOORS

1 GENERAL

This section relates to the supply and installation of:

- exterior timber windows
- exterior door frames and doors
- generally unglazed

1.1 RELATED WORK

Refer to glazing sections for glazing

Refer to painting sections for finishes

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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 E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F4/AS1	Safety from falling
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
NZBC H1/VM1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/VM2	Energy efficiency for buildings greater than 300m²
AS/NZS 1170.2:2011	Structural design actions - Wind actions
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
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

1.4 MANUFACTURER'S DOCUMENTS

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

- Quote
- Shop Drawings

Copies of the above literature are available from ThermaDura Ltd

Web:	https://www.thermadura.co.nz/
Email:	info@thermadura.co.nz
Telephone:	03 489 7538

1.5 ABBREVIATIONS AND TERMS

SLS	Serviceability limit state
ULS	Ultimate limit state

Warranties

1.6 WARRANTY

Provide warranty for:

5 years for door

Provide the warranty in the standard form in the general section 1237WA WARRANTY AGREEMENT.

Refer to the general section 1237 WARRANTIES for additional requirements.

Performance

1.7 PERFORMANCE - STRUCTURAL/WEATHER-TIGHTNESS

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

1.8 THERMAL PERFORMANCE - WINDOWS & GLAZED DOORS, HOUSING ONLY

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

1.9 THERMAL PERFORMANCE - WINDOWS & DOORS

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

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

Refer to SELECTIONS for construction R-values.

Performance to NZS 4211

1.10 CERTIFICATION

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

1.11 PERFORMANCE - WINDOWS AND DOORS

To NZS 4211,including:

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

Refer to SELECTIONS.

Performance - Wind (design by contractor)

1.12 WIND - NON SPECIFIC DESIGN

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

Refer to SELECTIONS for wind zone.

2 PRODUCTS

Materials - general

2.1 EXTERIOR TIMBER

Solid timber to NZS 3602 to profiles detailed. Moisture content 16% ex factory.

2.2 EXTERIOR FACINGS AND SCRIBERS

Treated H3.1 unless durable heart wood, to profiles detailed/scheduled.

2.3 GLASS

Refer to glazing sections for glass type and thickness. To NZS 4223.3.

2.4 PANELS
Refer to SELECTIONS for type.

2.5 INTERIOR TIMBER
To NZS 3602. Moisture content 10-14%.

Materials - doorsets

2.6 STANDARD DOORSETS, SIDE HUNG DOOR
Frames to profile as detailed and dimensioned.

Components

2.7 FLASHINGS GENERALLY
Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

2.8 WINDOW AND DOOR FURNITURE
Refer to 5521 HARDWARE for type.

2.9 METAL FASTENINGS
Galvanized steel or non-corrodible metal.

2.10 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.

2.11 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.

2.12 HINGES
Size and gauge to carry door size and weight. Refer to SELECTIONS for type, size and material.

Finish

2.13 PRIMER
Alkyd wood primer 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, and 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 in the factory with doors hung, provision for furniture made, finishes applied and fully operable.

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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.

3.8 CONFIRM PREPARATION OF EXTERIOR WALL OPENINGS

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

Required preparatory work includes the following:

- wall underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames to NZBC E2/AS1, 9.1.4 Wall underlays to wall openings.
- claddings neatly finished off to all sides of openings
- installation of flashings (those which are required to be installed prior to frames).

Assembly

3.9 FABRICATION GENERALLY

Manufacture and fabricate frames, doors and sashes as detailed. Install hinges, stays and running gear as scheduled.

3.10 HINGES

Fit hinges to doors to support the door size and weight

3 hinges	Doors up to 2.2 metres
4 hinges	Doors 2.2 - 2.6 metres
5 hinges	Doors 2.6 - 5.0 metres

Fit minimum 2 hinges per window sash

3.11 FACTORY FINISHING

Before delivery to site:

- Prime assemblies scheduled for paint finish with an alkyd wood primer.
- Prime rebates and concealed faces of beads of assemblies scheduled for clear finish with an alkyd wood primer.
- Brace square and provide protection to assemblies during delivery to site. Where factory glazed, indicate the presence of transparent glasses with whiting, tape or signs compatible with the glass type.

3.12 ON SITE FINISHING

Before installation:

- Prime assemblies scheduled for paint finish not already primed with an alkyd wood primer.
- Prime all rebates and concealed faces of beads of assemblies scheduled for clear finish with an alkyd wood primer.
- Re-prime/seal any subsequently cut edge.
- Refer to painting section/s for finishing.

Installation - frames

3.13 FIXING FRAMES

Fit flashings to frame and framing as required. 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 facings, scribers, draught-stopping and sealants.

3.14 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.

3.15 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.

3.16 EXTERNAL DOOR AND WINDOW FRAMES AND SASHES

Fabricate as detailed. Jamb, head and sill liners as detailed. Wedge and rigidly fix in place without distortion, plumb, and true to line and face, complete with full length sill tray, jamb and cap flashings and with all doors and sashes operating freely. Fit hardware.

3.17 INSTALL FLASHINGS

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

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

Except where window/door frames are recessed, ensure that head flashings over-sail jamb facings by 15mm at each end. Refer to 4821 FLASHINGS section for supply and installation.

3.18 COMPLETE AIR SEAL

To NZBC E2/AS1, 9.1.5 Air seals. Form an air-tight seal by means of proprietary expanding foam, compressible foam strips, or sealants used with backing rods. Ensure that in combination with the internal linings a complete air seal is created.

3.19 FIX HARDWARE

Fix all sash hardware and furniture as scheduled.

Installation - doorsets

3.20 PROPRIETARY ELEMENTS

Fix in accordance with the door manufacturer's requirements.

3.21 INSTALLATION GENERALLY

Frames finished to match the width of lined walls. Wedge frames into opening and nail through into the studs. 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.

Installation - standard doorsets

3.22 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.

3.23 BOTTOM CLEARANCE

With inward opening doors, ensure clearance over internal floor coverings by set of sill.

3.24 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.

3.25 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.

3.26 MANIFESTATIONS

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

3.27 INSTALL FURNITURE

Install latches, locks and door furniture as scheduled.

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3.28 CHECK

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

Completion

3.29 ROUTINE CLEANING

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

3.30 DEFECTIVE OR DAMAGED WORK

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

3.31 PROTECTION

Provide the following temporary protection of the finished work:

as necessary

4 SELECTIONS

Performance - thermal

4.1 THERMAL PERFORMANCE - VERTICAL WINDOWS & DOORS

Window /Door Number:	Construction R-value:
D01	min. R1.0

Performance - Wind (design by contractor)

4.2 WIND - NON SPECIFIC DESIGN

Building wind zone: H (refer to NZS 3604, table 5.4)

Joinery frames

4.3 CERTIFIED SUSTAINABLE TIMBER

Product:	Entry Door
Certification type:	FSC
Timber species:	Spotted Gum
Origin:	Reclaimed
Claim:	FSC Recycled

4.4 EXTERIOR TIMBER FRAME

Location:	refer to plan
Timber species:	Spotted Gum
Grade:	Dressed face, premium clears
Treatment:	Clear penetrating oil - clear natural timber colour
Finish:	natural

4.5 STANDARD DOORSETS, SIDE HUNG DOOR

Door type:	Inward Swinging
Door leaf dimensions:	refer to plan
Door finish:	Spotted Gum
Frame material and finish:	To match adjacent Spotted Gum Cladding
Hinge type and finish:	Stainless Steel
Wall type and thickness:	refer to plan

4.6 HINGES, DOORS

Type:	Square edge with bearings and fix pin
Size:	100mm
Pin:	Fixed pin
Material:	Stainless steel

4.7 FLASHINGS

Material/type:	refer to plan
Pattern:	Formed to suit details provided

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4541 PVC-U WINDOWS & DOORS

1 GENERAL

This section relates to the fabrication, supply and installation of window and door systems constructed from PVC-U and includes:

- windows and doors
- hardware and furniture
- flashings and sealants
- operating systems

1.1 RELATED WORK

Refer to 4610 for GLAZING RESIDENTIAL

1.2 ABBREVIATIONS

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

SLS	Serviceability limit state
ULS	Ultimate limit state
WGANZ	Window & Glass Association NZ

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F4/AS1	Safety from falling
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
NZBC H1/VM1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/VM2	Energy efficiency for buildings greater than 300m²
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
NZS 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
EN 513	Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors. Determination of the resistance to artificial weathering
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
EN 12608	Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors. Classification, requirements and test methods
BRANZ BU 636	Protecting Glass From Damage

Window & Glass Association NZ (WGANZ) documents:

Window Installation Guide	Guide to Window Installation as described in E2/AS1

US Federal Specification:

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

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1.4 MANUFACTURER'S DOCUMENTS

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

- Shop Drawings

Copies of the above literature are available from Lewis Windows:

Web:	http://www.lewiswindows.co.nz/
Email:	andrew@lewiswindows.co.nz
Telephone:	03 214 4505

Warranty

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a fabricator warranty:

10 years:	For fabrication
2 years:	For hardware

- Provide this warranty on the fabricator standard form.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer warranty:

2 years: For installation

- Provide this warranty on the installer/standard form.

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

Requirements

1.7 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 description:	Joinery Profile Section: with Aluskin clip and Aludec/Woodec finish.
Sample type:	Portable sample for review
Number:	2
Location:	off-site
Supporting documentation:	Shop Drawings
Reviewer:	Contract administrator Alki Owner
Time for review:	10 working days
Review criteria:	Appearance

1.8 SHOP DRAWINGS

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

Provide shop drawings to show the general arrangement including, but not be limited to: Construction details (minimum scale 1:5) showing the interface between joinery elements and the building structure including: -

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

And where required the following: -

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

Where requested provide the following additional information

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

Submit shop drawings for review to Alki.

10 working days (at least) before fabrication is planned to commence, provide shop drawings for review.
Complete shop drawing review before commencing fabrication and/or installation.

1.9 QUALIFICATIONS

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

1.10 CERTIFICATION

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

Performance

1.11 STRUCTURAL/WEATHER-TIGHTNESS

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

1.12 PERFORMANCE - WINDOWS AND DOORS

To NZS 4211, including:

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

Refer to SELECTIONS.

1.13 THERMAL PERFORMANCE - WINDOWS & GLAZED DOORS, HOUSING ONLY

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

1.14 THERMAL PERFORMANCE - WINDOWS & DOORS

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

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

Refer to SELECTIONS for construction R-values.

Performance - Wind (design by contractor)

1.15 DESIGN PARAMETERS - NON SPECIFIC DESIGN

Design the installation to the wind zone parameters of NZS 3604, table 5.1.

Refer to SELECTIONS for wind zone.

2 PRODUCTS

2.1 WINDOWS

Refer to SELECTIONS for type and finish.

2.2 DOORS

Refer to SELECTIONS for type and finish.

Materials

2.3 PVC-U EXTRUSIONS

PVC-U extrusions made of weather-proofed, impact modified material to EN12608 and EN513 for severe climates with the addition of a required minimum Rutile Titanium Dioxide content of 8phr.

2.4 FRAME REINFORCEMENT

Hot dip galvanized steel reinforcement sections inserted where required by manufacturer.

2.5 GLASS

Refer to the glazing section for glass types and installation.

Reveals

2.6 REVEALS - PVC

Prefinished thermoplastic PVC reveals grooved for wall linings.

Flashings

2.7 FLASHINGS GENERALLY

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

Components - for cavity systems

2.8 STANDARD CAVITY CLOSER

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

2.9 SUPPORT BAR

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

Components

2.10 FIXINGS

Ensure all fixings and bracketing are compatible with PVC-U. 316 stainless steel fixings as prescribed by the manufacturer.

2.11 GLAZING GASKETS AND WEATHERSEALS

Dual compression gaskets extruded from EPDM.

2.12 WINDOW 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 window manufacturer's standard range. Key alike all lockable window hardware able to be keyed alike.

2.13 DOOR HARDWARE

Locks, bolts, door rollers, door restrictors, hinges and other hardware as scheduled. Refer to SELECTIONS for type and finish. Where hardware is not scheduled, use hardware from door manufacturer's standard range. Key alike all door locks able to be keyed alike.

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2.14 SAFETY STAYS

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

2.15 WEATHERING/INSTALLATION SEALANT

Building sealant used in accordance with manufacturer's instructions for weather sealing glass to glass joints complying with US Federal Specification TT-S-001543A, or a one-part polyurethane medium modulus (± 25% movement) to US Federal Specification TT-S-00230C.

2.16 FOAM TAPE

Foam tape to NZBC E2/AS1, paragraph 9.1.9.9.

Finishes

2.17 LAMINATE

Laminate applied to exterior, interior or both surfaces.

3 EXECUTION

3.1 CONFIRM

Confirm framed openings on site for dimension, plumb and straightness prior to fabrication of the windows, and doors.

Assembly

3.2 FABRICATION

Fabricate frames with reinforcement as required and welded joints. Install glazing, hinges, stays and running gear as required and scheduled. Temporarily secure all opening elements for transportation. Execute all fabrication work in accordance with the requirements of NZS 4211.

3.3 HARDWARE GENERALLY

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

3.4 SAFETY STAYS

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

Conditions

3.5 DO NOT DELIVER

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

3.6 AVOID DISTORTION

Avoid distortion of elements during transit, storage and handling.

3.7 UNLOAD WINDOW JOINERY

Unload, handle and store elements in accordance with fabricator's requirements.

3.8 UNLOAD DOOR JOINERY

Unload, handle and store elements in accordance with fabricator's requirements.

3.9 PREVENT DAMAGE

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

3.10 PROTECTIVE COVERINGS

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

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3.11 ADDITIONAL PROTECTION

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

Installation

3.12 CONFIRM PREPARATION OF WALL OPENINGS

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

Required preparatory work includes the following:

- wall underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames to NZBC E2/AS1, 9.1.4 Wall underlays to wall openings.
- Full height 20mm jamb battens to NZBC E2/AS1, Figure 9.1.9.4: General window and door opening for direct fixed (direct fix only)
- claddings neatly finished off to all sides of openings.
- installation of flashings (those which are required to be installed prior to frames).
- application of waterproof sealer to all door and window sills in concrete floor or concrete sill situations. To door sills only, apply a suitable membrane over the sealer.

3.13 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.

3.14 FIX FRAMES

Fix frames rigidly in place without distortion, to manufacturer's details and WGANZ Window Installation Guide, plumb, true to line and face, weathertight and with all opening sashes and doors operating freely.

3.15 INSTALLATION CAVITY CONSTRUCTION

Install to WGANZ Window Installation Guide and the fabricators details and drawings including WGANZ sill support bars.

For thresholds with support bars fixed through membranes, pre-fill support bar screw holes with silicone sealant to NZBC E2/AS1, Figure 8.5.6.1D: Junctions with walls for membrane.

3.16 INSTALL FLASHINGS

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

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

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

3.17 COMPLETE AIR SEAL

To NZBC E2/AS1, 9.1.5 Air seals. Form an air-tight seal by means of a proprietary expanding foam or sealants used with PEF backing rods, applied between the window / door reveal and structural framing to a depth of 10 - 20mm, to provide a continuous air tight seal to the perimeter of the window or door.

Application - sealants

3.18 SEAL FRAMES ON SITE

Seal frames to each other and to adjoining structure and finishes, all as required by the window and sealant manufacturer and to make the installation weathertight. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.

3.19 PREPARE JOINTS

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

3.20 BACK UP

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

3.21 SEALANT FINISH

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

Cleaning

3.22 REMOVE TRADE DEBRIS

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

3.23 CLEANING GENERALLY

Clean with soft, clean cloths and clean water. Finish with a clean squeegee. Do not use abrasive or alkaline materials.

3.24 TRADE CLEAN

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

Completion

3.25 REPLACE

Replace damaged, cracked or marked elements.

3.26 PROTECTIVE COVERINGS

Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades. Remove protection on completion.

3.27 REPLACE

Replace damaged, cracked or marked elements.

3.28 CONFIRM

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

3.29 SAFETY

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

4 SELECTIONS

Substitutions are not permitted to the following selections.

4.1 NOMINATED FABRICATOR

The nominated fabricators for this section of work are;

Company:	NK Windows
Contact:	ThermalEdge Licensee (Lewis WIndows)
Telephone:	0800 425 849

4.2 SUPPLY AND INSTALLATION

Supply and installation of the specified PVC-U joinery system by the following:

Supply only:	By fabricator
Supply and installation:	By fabricator
Installation only:	By main contractor

Performance

4.3 THERMAL PERFORMANCE - VERTICAL WINDOWS & DOORS

Window /Door Number:	Construction R-value:
All	min. R1.0

Performance - Wind (design by contractor)

4.4 DESIGN PARAMETERS - NON SPECIFIC DESIGN

Building wind zone	H (refer to NZS 3604, table 5.1)

Windows and doors

4.5 PVC-U WINDOWS

Brand:	NK Windows
Model:	Refer to window and door schedule
Type:	Refer to window and door schedule
Colour:	Refer to window and door schedule
Glazing:	Refer to the appropriate glazing section/s

4.6 PVC-U DOORS

Brand:	NK Windows
Model:	Refer to window and door schedule
Type:	Refer to window and door schedule
Colour:	Refer to window and door schedule
Glazing:	Refer to appropriate glazing section/s

Components

4.7 HARDWARE

	Brand/style	**Material/finish**
Sash fasteners:	tbc	Brushed Stainless Steel
Door furniture:	tbc	Brushed Stainless Steel

Accessories

4.8 WEATHERING/INSTALLATION SEALANTS

Brand/type:	refer to plans

4.9 FLASHINGS

Material/type:	Powder coated aluminium
Pattern:	Formed to suit details provided
Colour:	refer to plans

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4610 GLAZING RESIDENTIAL

1 GENERAL

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

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

1.1 RELATED WORK

Refer to 4541 for UPVC WINDOWS AND DOORS

1.2 DEFINITIONS

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

The following abbreviations apply specifically to this section:

PVB	Polyvinyl Butyral
CIP	Cast in place

Documents

1.3 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
NZBC F4/AS1	Safety from falling
NZBC F9/AS1	Means of restricting access to residential pools
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
NZBC H1/VM1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/VM2	Energy efficiency for buildings greater than 300m²
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
NZS 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.Supp1	Glazing in buildings - Supplement 1 to NZS 4223.1:2008 and NZS 4223.4:2008
NZS 4223.2	Glazing in buildings - Insulating glass units
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live action
AS/NZS 2208	Safety glazing materials in buildings
AS/NZS 4666	Insulating glass units
BRANZ BU 636	Protecting Glass From Damage

1.4 MANUFACTURER'S DOCUMENTS

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

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

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

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

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10 years: for toughened glass

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

Performance

1.6 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 LAMINATED GLASS

Grade A Safety Glass to AS/NZS 2208 with PVB or CIP resin interlayer.

2.2 TOUGHENED GLASS

Grade A Safety Glass to AS/NZS 2208.

Heat soaked toughened glass to NZS 4223.1, Appendix E required for critical areas.
Refer to SELECTIONS.

2.3 INSULATING GLASS UNITS (IGU'S)

To AS/NZS 4666, NZS 4223.2 and the IGU Manufacturers Association (IGUMA) requirements.

Marking to NZS 4223.2 as modified by NZBC B2/AS1, 3.4.3 Insulating glass units.
Refer to SELECTIONS for specified surfaces of the IGU.
Surface numbering order for glass panes in an IGU are #1, #2, #3, and #4 as follows:
- Surface #1 - outer face of exterior pane
- Surface #2 - cavity face of the exterior pane
- Surface #3 - cavity face of the interior pane
- Surface #4 - outer face of the interior pane

Materials, screens

2.4 GLASS SCREENS SHOWER & BATH

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

Components, timber glazing

2.5 PUTTY, TIMBER FRAME

Linseed oil base glazing putty. Not to be used with laminated or IGUs.

2.6 SPRIGS

Diamond metal pieces to retain glass in timber sashes and frames.

2.7 GLAZING TAPE

Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes for bead glazing. For internal use only.

2.8 GASKETS

PVC or Santoprene to window manufacturers' requirements.

2.9 SETTING BLOCKS

Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes. Use with bead glazing and for IGUs.

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3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

To NZS 4223.1, NZS 4223.3, NZS 4223.4. All external glazing to be wind and watertight on completion.

3.2 DELIVERY

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

3.3 GLASS CONDITION

All glass to have undamaged edges and surfaces.

3.4 GLASS THICKNESS

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

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

3.5 REBATE DIMENSIONS

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

3.6 JOINTING, PUTTY AND SEALING MATERIAL COMPATIBILITY

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

Conditions - human impact safety requirements

3.7 SAFETY GLAZING, GENERAL REQUIREMENTS

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

3.8 SAFETY GLAZING MATERIAL

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

3.9 CONTAINMENT

Edge cover to comply with NZS 4223.1, Section 4 Glazing, table 5. Otherwise to NZS 4223.3, 2.3 Edge cover.

Assembly

3.10 WORKING OF GLASS

All working of glass as required in NZS 4223.1.

3.11 EDGE WORK AND BEVELLING

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

3.12 SURFACE TREATMENT

Refer to SELECTIONS/drawings for finish.

3.13 SURFACE CUTTING

Refer to SELECTIONS/drawings for finish.

3.14 INSTALL SAFETY GLASS

To NZS 4223.3.

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Application - timber glazing

3.15 PREPARE REBATES

Ensure all rebates and grooves are clean, dry and unobstructed at time of priming, sealing and glazing.

3.16 PREPARE TIMBER SURROUNDS

Ensure that all rebates have been primed with a primer suitable for this purpose and applied to the requirements of the painting section/s.

3.17 PREPARE TIMBER BEADS

Before fixing ensure that timber beads are sealed and painted to match the timber surround.

3.18 LOCATE BLOCKS

Centralise the glass in the rebate opening using setting, location and spacer blocks as required in NZS 4223.1, Section 4 Glazing, to prevent movement of glass in the rebate and cushion the effect of wind loading on the sealing system.

3.19 INSTALL PUTTY FRONTING

Back putty to give a bedding of not less than 1mm to 2mm between the glass and the back of the rebate when the glass has been pressed back. Strip off squeezed out putty at a positive angle. Fix glass to wooden surrounds with diamond points or sprigs at maximum 460mm centres. Fix glass to metal surrounds with spring clips or pins provided by the sash manufacturers. Apply putty to the face to form a triangular fillet stopping 1-2 mm below sight line. Finish putty smooth and true to line and face and with a light brushing.

Leave all windows and doors closed until putty has set sufficiently to prevent glass displacement.

Prime putty fronting once surface has skinned - normally within 10 - 15 days of completion of glazing, but this can be reduced with special XHP putty.

3.20 BEAD GLAZING, PREFORMED STRIPS

Apply the preformed tape to the rebate upstand with securely formed (or sealed) butt joints at corners. Place setting blocks, offer the glass and press back against the tape centralised in the opening and apply the second tape. Press the beads against and compressing the tapes and fix true to line and face sufficiently rigid to prevent flexing or movement. Trim off excess strip.

If a capping bead is required clean and paint the timber surface and when dry apply sealant capping between bead and glass and tool to a smooth camber.

3.21 BEAD GLAZING, NON SETTING COMPOUNDS

Apply compound to the rebate. Push setting blocks into place with distance pieces against the rebate upstand before offering the glass to the surround on setting blocks, centralised in the opening and pushed back into the glazing compound. Fill all voids with compound and apply more compound before setting distance pieces in it opposite the distance pieces already in place. Bed the beads to the glass and rebate and fix true to line and face sufficiently rigid to prevent flexing or movement. Finish compound off at an angle both sides of the glass.

3.22 INSTALLING INSULATING GLASS UNITS

Refer to the glazing manufacturer's requirements and before glazing ensure that the materials forming the opening are strong enough to accept the weight, the rebates are the correct size and prepared to receive the units to AS/NZS 4666. Fit setting and location blocks and bead glaze units using a compatible sealant to NZS 4666 section 3 Glazing, and to the glazing manufacturer's requirements.

3.23 INSTALLING REFLECTIVE AND COATED GLASS

In addition to the type of glazing specified refer to the requirements of the glass manufacturer and ensure that the rebate dimensions, clearances and edge cover are sufficient to allow for the movement created by the particular solar glass being used. Check thermal stability for the particular location and ensure any sealant or compound is compatible with the coating.

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Application miscellaneous

3.24 INSTALL GLASS SHOWER & BATH SCREENS

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

Finishing

3.25 SAFETY

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

Completion

3.26 TRADE CLEAN

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

3.27 REPLACE

Replace damaged, cracked or marked glass.

3.28 LEAVE

Leave work to the standard required by following procedures.

3.29 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

Performance - wind

4.1 WIND ZONE - NON-SPECIFIC DESIGN

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

Glass by type

4.2 INSULATING GLASS UNITS (IGU'S)

Location:	Refer to window and door schedule
Brand/type:	NK Windows
Glass type:	Glass thickness and spacers to be determined by NK Windows for suitability, Triple Glazed Units
Coated surfaces:	Low-E coating, panes 2 and 5
Space gas:	Argon gas

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4710T TERRA LANA 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 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.

1.2 ABBREVIATIONS

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 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
AS/NZS 60598 Part 2.2	Luminaires Particular requirements – Recessed luminaires
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
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] - Terra Lana 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.

2.3 WALL SERVICE CAVITY INSULATION

Terra Lana Wall 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.

2.4 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.

Components

2.5 WIRE NETTING

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

2.6 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.

Accessories

2.7 BARRIERS/GUARDS

A proprietary barrier manufactured and tested to AS/NZS 5110. Consisting of a rigid non-combustible, electrically non-conductive material.

2.8 INSTALLER/APPLICATOR TOOLS

Terra Lana proprietary set-down joist clips for 100mm thick segments, proprietary stapler, proprietary cutting clamp.

3 EXECUTION

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 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.

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).

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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 ROOF BATTEN INSULATION - FOR SKILLION AND TRUSS ROOFS

After fixing ceiling battens, and the ceiling insulation is installed between rafters or truss bottom chords. Friction-fit **Terra Lana** roof batten insulation between the battens, below rafter/truss bottom chords. Slightly oversize by 15 to 20mm and staple at 300mm centres for friction fit to framing and other batting. Install strapping/netting to support roof batten insulation before installing ceiling linings. 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

3.9 FIT WALL INSULATION

Friction fit **Terra Lana** Wall Insulation 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.

3.10 FIT DRAINED CAVITY WALL INSULATION

Friction fit **Terra Lana** Wall Insulation with a controlled nominal thickness. Fix intermediate restraints in accordance with NZBC E2/AS1. Refer to SELECTIONS for options.

3.11 RETROFIT EXTERNAL WALL INSULATION

Retrofit **Terra Lana** Wall Insulation at least 20 mm thinner than the framing. In external timber-framed walls without a wall underlay, or with direct-fixed claddings. Leave a gap of at least 20 mm between the insulation and the wall cladding. Staple horizontal straps to the sides of the wall studs at 300 mm centres maximum before the insulation is installed. Refer to SELECTIONS for options.

Application - components

3.12 LAY WIRE NETTING - UNDER RAFTERS/JOISTS / PURLINS

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

3.13 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 and 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.terralana.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

4.1 TERRA LANA CEILING SERVICE CAVITY INSULATION

Location:	Ceiling Service Cavity
Brand:	**Terra Lana Ceiling Service Cavity Insulation**
R-Value:	R2.4
Dimensions:	90mm x 560mm x 1.2m
Colour:	Grey

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4.2 TERRA LANA SKILLION/TRUSS ROOF INSULATION

Location:	Roof
Brand:	**Terra Lana Skillion/Truss Roof Insulation**
R-Value:	R7.2
Dimensions:	290mm x 570mm x 1.2m
Colour:	Grey

4.3 TERRA LANA WALL SERVICE CAVITY INSULATION

Location:	External Walls (service cavity)
Brand:	**Terra Lana Wall Service Cavity Insulation**
R-Value:	R1.2
Dimensions (mm thick x mm width x m length):	45mm x 570mm x 5.0m
Colour:	Grey

4.4 TERRA LANA WALL INSULATION - 140MM STUDS

Location:	External Walls
Brand:	**Terra Lana Wall Insulation**
R-Value:	R3.6
Dimensions:	140mm x 360mm x 1.2m
Colour:	Grey

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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 the appropriate roofing section for roof flashings.

Refer to the appropriate window and door section for window and door flashings.

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.

1.7 PROTOTYPES - REVIEW

Refer to the general section 1270 CONSTRUCTION for details of how prototypes will be reviewed and how instructions to proceed will be given. For flashings where there are no specific details or drawings, provide full size prototypes of the flashings to integrate components into the weathertight system. Co-ordinate with the trades affected by the installation. Provide the prototype flashings to the contract administrator for review.

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2 PRODUCTS

2.1 FLASHING MATERIALS

Acceptable materials for flashings are described in NZBC E2/AS1, 4.0 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.

2.5 JOINTS - SOLDER

Eutectic solder of 60% tin/40% lead using a suitable proprietary flux.

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.

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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.

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 JOINTING - SOLDER

Solder joints in galvanized steel and non-ferrous metals when specified with lead/tin solder. Clean joint ensuring it is dry and free of grease immediately prior to applying a proprietary flux. Lap the flashing 25mm in the direction of the water flow and fasten the lap with rivets or screws at 50mm centres. Completely sweat the joint to avoid leaving any flux residue. Wash down the joint to remove any trace of flux.

3.12 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

3.13 PROTECT

Protect new work from damage.

3.14 REPLACE

Replace all damaged or marked elements.

3.15 LEAVE

Leave work to the standard required for following procedures.

3.16 REMOVE

Remove debris, unused materials and elements from the site.

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4 SELECTIONS

4.1 0.55 BMT GALVANISED STEEL FLASHING

Location:	All locations visible and adjacent to LMA Timber or Galvanised Steel (i.e. fenestration flashing, corner flashings, barge flashings)
BMT/Material:	0.55 BMT Unfinished Galvanised Steel
Finish:	Pre-weather flashing to match Galvanised Steel roofing and cladding. Refer to section 44241RI Roofing Industries Profiled Metal Cladding for specification.

4.2 0.55 BMT PREFINISHED ALUMINIUM FLASHING

Location:	All locations ***not*** visible, and at locations adjacent to Colorsteel Maxam roofing and Nuraply membrane gutter. (i.e. trussed roof area ridge flashing at trimrib, corner flashings behind rainscreen/cladding)
BMT/Material:	0.55 BMT aluminium
Finish:	COLORSTEEL® Maxam™
Colour:	Flaxpod

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4910 METALWORK

1 GENERAL

This section relates to the fabrication, delivery, specialist coating and installation of interior and exterior metal items:
It includes:

- Interior stair and stair frames, balustrades, handrails, ladders, screens, louvres, skirting, sheet metal decorative and specialist finishes, hoods, cowls, bench tops, sinks and tubs and similar items.
- exterior wall and door cladding systems, structural items, column and beam cladding, screens, grilles, louvres, fins and other external features, stairs, handrails, balustrades, ladders, canopies, signs and signage, street furniture, flues and cowlings, decorative and specialised sheet finishes, wire mesh and expanded metal sheet finishes and associated fasteners and hardware.

1.1 RELATED WORK

Refer to 4241RI for ROOFING INDUSTRIES PROFILED METAL CLADDING

1.2 DOCUMENTS

Documents referred to in this section are:

NZS/BS 1387	Screwed and socketed steel tubes and tubulars and for plain end steel tubes suitable for welding or screwing to BS 21 pipe threads
AS/NZS 1554.1	Structural steel welding - Welding of steel structures
AS/NZS 1554.6	Structural steel welding: Welding stainless steel for structural purposes
AS 1566	Copper and copper alloys - Rolled flat products
AS/NZS 1567	Copper and copper alloys - Wrought rods, bars and sections
AS 1572	Copper and copper alloys - Seamless tubes for engineering purposes
AS/NZS 1594	Hot-rolled steel flat products
AS 1627.4	Metal finishing - Preparation and pretreatment of surfaces - Abrasive blast cleaning
AS/NZS 1665	Welding of aluminium structures
AS/NZS 1734	Aluminium and aluminium alloys - flat sheets, coiled sheet and plate
AS/NZS 1865	Aluminium and aluminium alloys - Drawn wire, rod, bar and strip
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
AS/NZS 1867	Aluminium and aluminium alloys - Drawn tubes
AS/NZS 2312.3	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings - Part 3: Thermal metal spray coatings
AS/NZS 3679.1	Structural steel - Hot rolled bars and sections
AS/NZS 3750.9	Paints for steel structures - Organic zinc-rich primer
AS/NZS 3750.15	Paints for steel structures - Inorganic zinc silicate paint
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
AS/NZS 4792	Hot-dip galvanized (zinc) coatings on ferrous hollow sections, applied by a continuous or a specialized process
BS 6497	Powder organic coatings for application and stoving to hot-dip galvanized hot-rolled steel sections and pre-formed steel sheet
BS EN 1011.3	Welding. Recommendations for welding of metallic materials. Arc welding of stainless steel
GANZ:	Galvanizing Association of New Zealand - After-Fabrication Hot Dip Galvanizing. A practical reference for designers, specifiers, engineers, consultants, manufacturers and users

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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Requirements

1.4 QUALIFICATIONS

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

1.5 HOT WORK - FIRE SAFETY

Refer to section 1270 CONSTRUCTION

1.6 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: Provide 100mm x 100mm sample size for appearance.

1.7 SHOP DRAWINGS

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

Submit shop drawings for review to Alki + Contractor

10 working days (at least) before fabrication is planned to commence, provide shop drawings for review.

- Complete shop drawing review before commencing fabrication.

2 PRODUCTS

Fabricated items

2.1 ITEMS

Refer to SELECTIONS.

Materials

2.2 STEEL COIL, SHEET, PLATE, BARS, ANGLES CHANNELS AND TUBE

To comply with the following:

- Hot-rolled steel bars and sections to AS/NZS 3679.1.
- Hot -rolled sheet/coil to AS/NZS 1594.
- Medium gauge black steel pipe to NZS/BS 1387, with plain ends.
- Medium gauge galvanized steel pipe to NZS/BS 1387 with plain ends, complete with galvanized and bolted couplings.

Components

2.3 BOLTS

Brass, bronze, steel or stainless steel, selecting type and size to suit the work and its location.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE AND HANDLING

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

Take delivery of materials and goods and store on site and protect from damage.
Protect finished surfaces, edges and corners from damage.
Move/handle goods in accordance with manufacturer's requirements.
Reject and replace goods that are damaged or will not provide the required finish.

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3.2 PRE-INSTALLATION REQUIREMENTS

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

3.3 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.

Fabrication - general

3.4 CORNERS

Unless specified or detailed otherwise, mitre junctions of identical sections.

3.5 HOLES

Form without distortion of surrounding metal.

3.6 CLEANING

Remove all burrs and sharp arrises which would be visible after fixing, or a hazard to the user.

3.7 BONDING

Prepare surfaces of metals to receive adhesives by degreasing and abrading mechanically or chemically. Use adhesives in accordance with the manufacturer's requirements. Form bond under pressure.

3.8 RIVETED JOINTS

Draw riveted joints tightly together, with rivets closed to completely fill holes.

3.9 MECHANICAL JOINTS

Ensure mechanical joints are tight with no visible gaps.

3.10 MECHANICAL JOINTS, ELEMENTS

Bed in mastic all mechanical joints of elements which will be located externally, including all mating surfaces, cleats and other fixings.

3.11 MECHANICAL JOINTS, CLEATS

Unless specified otherwise connect cleats to frames with countersunk screws where they will be visible after the component has been fixed and where raised heads would interfere with any moving part.

Fabrication - welding

3.12 PREPARATION FOR WELDING

Remove grease, dirt, moisture and oxide from edges to be welded. Remove scale and residue from arc and power cutting by machining or hand grinding. Ensure accurate fit using clamps and jigs where practical. Use tack welds for temporary attachment where jigging is not practical.

3.13 WELD QUALITY

Make joints with parent and weld metal fully fused throughout with no inclusions, holes, porosity or cracks. Prevent weld spatter falling on surfaces of materials which will be self finished and visible in completed work. Ensure complete removal of flux residues and slag. Butt welds which will be visible in completed work to be ground smooth and flush with adjacent surfaces.

3.14 WELDING STEEL

By one of the following methods:

- gas welding
- metal-arc welding to AS/NZS 1554.1 for mild steel
- seam welding
- other methods subject to approval.

3.15 WELDING GALVANIZED STEEL

When welding already Galvanized steel either:

- remove coating locally and carry out a standard weld
- leave coating and adjust welding technique to those recommended in GANZ After-Fabrication Hot Dip Galvanizing document. (Among other things, this will generally mean a slower

welding speed.)
Final weld shall meet all the standards and requirements of a standard weld.

Fabrication - sheet products

3.16 FABRICATE SHEET PRODUCTS

Fabricate and assemble in a workshop wherever practicable.

3.17 MARK OUT

Mark out the work accurately, square and true to line allowing for correct radius folds and laps to give the dimensions required for neat, close fits when in place. Use marking methods that do not damage, deface or cause future corrosive attack to the sheet metal being worked.

3.18 CUT SHEETS

Cut sheets by mechanical methods leaving edges true to line, square, smooth and free from all burrs.

3.19 FORMING

Use mechanical methods wherever possible and form and fold sheets square and true to line and face free of all deformation and defects. Minimise cold-working and stress build-up and their effects by limiting the amount of working and avoiding sharp radius bends (minimum 1 x sheet thickness).

3.20 PRE-ASSEMBLE

Pre-assemble in the workshop and match mark elements being assembled or erected on site. Do not strain, twist, bend or open such elements to force them into the correct position while assembling or erecting.

Separation

3.21 SEPARATION

Isolate copper, brass and bronze from all other metals. Isolate dissimilar materials (metal and non-metal) in close proximity as necessary by painting the surfaces or fitting separator strips. Place isolators between metals and treated timber and cement-based materials.

Polishing and coating

3.22 PREPARATION FOR COATINGS

Before applying coatings remove welding slag, weld spatter, anti-splatter compounds, paints, grease, flux, rust, burrs and sharp arrises. Make good defects which would show after application of coating. Remove burrs and sharp arrises which would be visible after fixing, or which could be a hazard to the user. Finish surfaces smooth.

3.23 GALVANIZING

After fabrication, completely remove surface contaminants and hot-dip galvanize to AS/NZS 4680 (fabricated articles) and AS/NZS 4792 (hollow sections).

Repair damage

3.24 REPAIR WELD DAMAGED GALVANIZING

Remove welding slag, power tool clean, grind off all burrs and sharp arrises, all repairs to AS/NZS 4680, 8.4 **Site repair**:

- Small repairs:- Colour matched zinc rich paint.
- Large repairs:- With approval, colour matched zinc rich paint or other agreed option.

Handling

3.25 HANDLING

Avoid distortion of elements during transit, storage and handling. Prevent pre-finished surfaces rubbing together, and any contact with mud, plaster or cement. Keep protective coverings dry.

3.26 SUBSTRATE

Ensure location and substrate is ready to receive the fabricated metalwork elements.

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Installation

3.27 INSTALL ITEMS

Locate fixings accurately and use in accordance with the metalwork manufacturer's requirements. Fix to comply with the specified standards and installation details, including bedding compounds and sealants, and with work plumb, level and true to line.

3.28 MOVING PARTS

When assembled, moving parts to move freely and without binding.

Completion

3.29 ROUTINE CLEANING

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

3.30 DEFECTIVE OR DAMAGED WORK

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

3.31 PROTECTION

Provide the following temporary protection of the finished work:

as necessary

4 SELECTIONS

Fabricated items

4.1 STEEL ITEMS

Location/item:	entry canopy, refer to plans + details
Manufacturer:	tbc
Profile:	refer to plan
Thickness:	10mm
Dimensions:	refer to plan
Finish:	Unfinished galvanised steel, with acid wash to match adjacent cladding

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5122PL PLYTECH PANELS RESIDENTIAL LININGS

1 GENERAL

This section relates to the supply and fixing of Plytech Panels plywood and non-plywood sheets used for interior linings and for specialist panelling. Plywood panels are also installed as bracing (as lining or under lining).
It includes:
- Pre-finished plywood
- Un-finished plywood
- Non-plywood panels

1.1 RELATED WORK

Refer to 5511PT PLYTECH PANELS CABINETRY & JOINERY for panels in cabinetry & joinery.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FSC	Forest Stewardship Council
MDF	Medium Density Fibreboard
PEFC	Programme for the Endorsement of Forest Certification

Documents

1.3 DOCUMENTS

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

BPS	Building Product Specifications
NZBC B1/AS1	Structural provisions for buildings
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
AS/NZS 2269.0	Plywood - Structural - Specifications
AS/NZS 2270	Plywood and block-board for interior use
NZS 3604	Timber-framed buildings
ISO 5660.1	Reaction to Fire Tests - Heat Release Smoke Production and Mass Loss Rate Part 1: Heat Release Rate (Cone Calorimeter Method)
BS EN 635	Plywood. Classification by surface appearance.
BS EN 636	Plywood. Specifications

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Handling & Cleaning Recommendations
Product Datasheet
Fire Testing Certificate

Manufacturer/supplier contact details

Company:	Big River Group Ltd.
Trading as:	Plytech Panels
Web:	www.plytech.co.nz
Email:	sales@plytech.co.nz
Telephone:	0800 900 905 (09 573 5016)

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Refer to Plytech Panels Terms & Conditions of Trade for material warranty details and conditions.

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- Provide this warranty on Plytech Panels standard form.
- Commence the warranty from the date of Practical Completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer warranty:

2 years For installation

- Provide this warranty on the installer standard form.
- Commence the warranty from the date of Practical Completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Provide maintenance documentation in accordance with Plytech Handling & Cleaning Recommendations as necessary for the Principal to maintain the works. Provide documentation no later than the date of Practical Completion or the date on which the Principal takes occupation of the works.

Quality control and assurance

1.10 INSPECTIONS

Give sufficient notice so that inspection may be made of the following, before installation;

- Pre-assembled fittings/cabinetry fabricated and ready to be delivered to site.
- Site-assembled fittings/cabinetry on site ready for installation.
- Areas of the building prepared to receive fittings/cabinetry.

2 PRODUCTS

Materials - unfinished plywood

2.1 PLYTECH PANELS ARMOURPANEL BLACKBUTT

Manufactured from Australian eucalypt hardwood, Armourpanel is engineered for strength, durability and stability, suitable for high-traffic areas. Supplied in sheet sizes of 2400mm x 1200mm and 1800mm x 1200mm in various thicknesses. Refer to SELECTIONS.

Components

2.2 PANEL PINS

Refer to the panel manufacturer's requirements and use 30mm, 40mm and 50mm plated panel pins for interior linings.

Accessories

2.3 PANEL JOINTERS

Run to profiles as detailed. Treated H1.2.

2.4 ADHESIVES - GENERALLY

Use only multi-purpose water or solvent based wallboard adhesives as required by the panel manufacturer.

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2.5 ADHESIVES - SOUDAL PRODUCTS

Refer to 4811SG SOUDAL GORILLA SEALANTS & ADHESIVES for fixing options for wall linings.

Finishes - timber veneer panels

2.6 LIGHT DUTY COATING SYSTEM

Single pack, clear or pigmented nitro-cellulose or pre-catalysed lacquer.

2.7 MEDIUM DUTY COATING SYSTEM

Two pack, clear or pigmented acid catalysed coating.

2.8 HEAVY DUTY COATING SYSTEM

Two pack, clear or pigmented polyurethane coating.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 FRAMING AND/OR SUBSTRATE

To NZS 3604 and the plywood manufacturer's requirements

Maximum moisture content: 16 %.

Application - general

3.4 SUPPORT

Fully support all edges and joints, except where tongue and groove is used.

3.5 SITE MEASURE

Site check and confirm dimensions before wall linings are cut and fixed. Verify positions of electric power outlets, wiring to light fittings included in joinery fixtures, water supplies and waste pipe locations.

3.6 SHRINKAGE & EXPANSION

Arrange jointing and fixing so that shrinkage in any part and direction does not impair the strength or appearance of the finished work or damage the adjoining work.

Allow a 2-3mm gap at edges of linings for sheet expansion and 2-3mm at each sheet joint. In areas with an expected high level of internal moisture, allow a gap of 4 - 6mm every 1.2 metres.

3.7 UNFINISHED PANEL PREPARATION

Plytech recommend applying one coat minimum of the selected coating system before installation. This will slightly raise the grain of certain plywood species and then require a light sand. When fixing using panel pins, this first coat will also help when filler is applied into the panel pin holes, creating a barrier for the filler to sit on.

When lining ceiling or hard to access areas, it is recommended that more than first coat be applied before installation. Once installed the final coat can be applied.

Application - linings

3.8 FIXING GENERALLY

A combination of panel pins, gluing and nailing or screwing.

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3.9 FIT AND FIX PLYWOOD SHEETS

Fit and fix as detailed to the plywood manufacturer's requirements with sheets and trim in plumb, true alignment, face and grain.

3.10 APPLY ADHESIVES - SOUDAL PRODUCTS

Refer to 4811SG SOUDAL GORILLA SEALANTS & ADHESIVES for fixing options for wall linings.

Application - specialty panels

3.11 SELECTION

Review run-matched plywood sheets before acceptance.

3.12 TRIMS

Review beads and moulds before acceptance.

3.13 FIXING

Select timber for match or uniformity or symmetry of colour or grain of adjacent pieces. Finish to same standard on all faces. Generally, conceal all fixings but confirm the technique proposed to be used - gluing, panel pins, screwing or a combination. Align exposed fixings horizontally and vertically.

3.14 PANELLING

Select and match all adjacent pieces. Generally, the exposed multi-ply edge will receive a clear finish as a design feature. Where not using the multi-ply edge as a design feature, clash exposed edges of panels with matching edge tapes and finishes. Fit and fix with sheets and trim all in plumb, level, true alignment, face and grain.

Completion

3.15 COMPLETION MATTERS

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

4 SELECTIONS

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

4.1 PLYTECH PANELS CERTIFIED SUSTAINABLE TIMBER

Product:	Plytech Panels plywood products
Certification type:	FSC
Timber species:	Refer to Plytech Panels
Origin:	Refer to Plytech Panels
Claim:	Refer to Plytech Panels

Materials - unfinished plywood

4.2 PLYTECH PANELS ARMOURPANEL BLACKBUTT

Location:	Interiors, to confirm with client
Supplier:	Plytech Panels
Grade/brand:	Armourpanel Blackbutt
Sheet thickness:	15mm
Panel size:	2400mm x 1200mm

Finishing - timber veneer panels

4.3 COATING SYSTEM

Manufacturer:	The Natural Paint Co.
Brand/code:	Pure Interior Oil
Duty:	Optional: The Natural Paint Co. Hard Floor Oil (Matt/Satin), for areas where higher durability is desired.
Colour:	Clear, with Matt Sheen

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Components

4.4 FIXINGS

Lining:	refer to plan
Fixing type/finish:	panel pins (with adhesive)
Centres:	max 300mm

Accessories

4.5 ADHESIVE - SOUDAL PRODUCTS

Refer to 4811SG SOUDAL GORILLA SEALANTS & ADHESIVES for fixing options for wall linings.

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5231HS HALLMARK CAVITY SLIDER & STANDARD DOORS

1 GENERAL

This section relates to the supply and installation of **Hallmark Group** range of standard and cavity slider doors for interior use.

1.1 RELATED WORK

Refer to relevant painting sections for finishes

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

MDF	Medium density fibreboard

Documents

1.3 DOCUMENTS

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

AS/NZS 1170.1	Structural design actions - Permanent, imposed and other actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3610	Specification for profiles of mouldings and joinery
AS 3715	Metal finishing - Thermoset powder coatings for architectural application of aluminium and aluminium alloys
NZS 4223.3	Glazing in buildings - Human impact safety requirements
BS 6510	Steel-framed windows and glazed doors

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Hallmark Architectural Collection brochure
Hallmark Cavity Slider & Sliding Doors brochure
Hallmark Cavity Slider T-Guide info sheet
Hallmark CavZero® info sheet
Hallmark Classic Collection brochure
Hallmark door construction brochure
Hallmark interior doors warranty
Hallmark MDF flush panel specification sheet
Hallmark Milano Collection brochure
Hallmark pre-finished doors brochure
Hallmark timber veneer doors brochure
Hallmark Vogue Collection brochure
Hallmark Ultimate Cavity Slider Door data sheet

Manufacturer/supplier contact details

Company:	Hallmark Group Ltd
Web:	www.hallmarkgroup.co.nz & www.cavityslider.co.nz
Email:	sales@hallmarkgroup.co.nz
Telephone:	0800 846 237

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years	For Hallmark Group Interior Standard & Cavity Slider Doors up to 2600mm high x 1600mm wide.

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT).
- Refer to the Hallmark Interior Doors Standard Warranty for all warranty terms and conditions. The warranty applies to the bow, warp, twist or cup of doors however it will only be considered a defect when the bow, warp, twist or cup exceeds ± 7mm.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

2 PRODUCTS

Materials - Hallmark standard door & cavity slider door panels

2.1 HOLLOW CORE DOORS

Hallmarks hollow core doors are manufactured with timber frame & if required lock blocks, core of a cardboard honeycomb cell and selected door skin material in a range of thicknesses and finishes, glued under compression to the frame and core to form the door leaf. Available with steel box inserts to 2 vertical sides, for cavity sliders or if required. Refer to SELECTIONS for details.

Materials - Hallmark standard door & cavity slider door panel finishes

2.2 HALLMARK TIMBER VENEER TO MDF PANEL DOOR

Hallmark timber veneer doors are available in hollow core, polystyrene core or solid core options, with moisture resistant MDF skins with solid timber clashing. Available in a range of New Zealand native or exotic veneers. Vision panels are available with solid timber beading. Refer to Hallmark Timber Veneer Doors and Architectural Collection for standard ranges. Refer to SELECTIONS for details.

Materials - frames

2.3 FRAMES - TIMBER

To NZS 3602. Moisture content approximately 10-14%. To profile as detailed and dimensioned, including stops.

2.4 TIMBER PROFILES, FACINGS, SCRIBERS AND ARCHITRAVES

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

Components - cavity slider / wall mounted surface slider

2.5 HALLMARK CLASSIC WHEEL CARRIAGE SYSTEM

Hallmark Classic wheel carriage system, screw fastened to top of the door, with a quick release system, allowing the door to be easily removed from the track. 80kg or 120kg options.

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2.6 HALLMARK SMOOTH GLIDE TRACK & T-GUIDE

Hallmark high grade extruded aluminium head track and T-Guide to suit single or double cavity slider configurations and either 90mm or 140mm wide walls.

2.7 HALLMARK SOFT CLOSE UNITS

Hallmark Soft Close units are available for all Hallmark cavity slider configurations with Soft Close and/or Soft Open functions. Units are designed to suit a range of door weights from 15kg to 80kg.

2.8 HALLMARK ALUMINIUM CAVITY SLIDER FRAMING REINFORCEMENT SYSTEM

Hallmark aluminium cavity slider framing system with one cell, two cell or three cell sections and a range of steel reinforcement inserts for extra wide or extra high units.

Solid plywood cavity panels are also available to create a solid cavity walls to allow for fixings into the walls. Available either single sided or double sided.

Components - generally

2.9 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.

2.10 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.

2.11 DOOR HINGES

Number, size and gauge to carry door size and weight. Generally:

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

2.12 DOOR HARDWARE

Refer to SELECTIONS for door furniture & hardware.

Finishes

2.13 PAINT FINISH / CLEAR FINISH

Refer to relevant paint finish for on-site finishes.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

3.4 GENERALLY

Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.5 CHECK ALL OPENINGS

To NZS 3604. Check all openings on site for size and standard of execution before installing door frames. For cavity sliders, refer to www.cavityslider.co.nz for calculating framing trim size.

Assembly

3.6 FABRICATION - STANDARD DOORS

Fabricate doors and frames in the Hallmark Group factory as detailed and specified, with provision for lock block placement and size. Doors are suppled pre-hung in frames, unless requested otherwise. Fit Hallmark Group hinges to doors of appropriate type to support the door size and weight. Provide temporary bracing and protection for transport.

3.7 FABRICATE DOORS - CAVITY SLIDERS

Fabricate cavity slider body and doors in the Hallmark Group factory as detailed and specified, with provision for lock block placement and size. Provide temporary bracing and protection for transport.

Installation - generally

3.8 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements. Installation tolerances of cavities sliders subject to earthquake design to comply with AS/NZS 1170.1 or NZS 1170.5.

3.9 FIXING FRAMES - STANDARD

Fit to frame as required. Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion. Fit architraves, if required.

3.10 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.

3.11 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.

3.12 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.

3.13 PROPRIETARY ELEMENTS

Fix in accordance with Hallmark Group requirements.

Application - Doors Standard

3.14 INSTALLATION - STANDARD DOORS

Wedge frames into opening and fix through into the wall framing. Locate all wedges and fixing at hinge positions and opposite, with one fixing in the vicinity of the lock.

3.15 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.

Application - Doors Cavity Sliders

3.16 INSTALLATION - CAVITY BODY

Install and fix cavity slider body to the framed wall opening in accordance to Hallmark instructions and requirements. Ensure fixed rigidly in place, plumb, level and true to line and face without distortion. After lining installation, fit selected frames and if required architraves.

3.17 INSTALL CAVITY SLIDER - WITH CLASSIC WHEEL CARRIAGE SYSTEM

Install cavity slider on classic wheel carriage system in accordance with Hallmark installation instruction videos, available on www.cavityslider.co.nz or by scanning QR code on Hallmark cavity slider door.

Ensure door is straight & true and correct size for pocket. Install carriage brackets to top of door using the supplied screws into the pre-drilled holes. Insert carriage into head track, remove jamb spreader & ensure frame is square and cavity is perfectly aligned. Place back door bracket into the carriage and slide door onto floor T-guide and into cavity pocket followed by the leading edge bracket into carriage.

Adjust hanging bolts to ensure door is square, level & true to line, with correct bottom clearance. Once complete lock door in place with carriage head nut. Install opening head trims and install head rail end cap. Check leaf is centred in pocket, adjust base T-guide as required.

3.18 REMOVE CAVITY SLIDER

Remove doors from the sliding track to paint all six sides for finishing and if necessary to protect them. Store safely and near completion refit them, all without any damage.

Application - Finishing

3.19 FINISHING

Refer to appropriate PAINTING section(s) for selection of paint and preparation requirements. All two faces and all four edges of doors (including lock holes and check outs) must be sealed and coated within four days of arriving on site.

3.20 INSTALL FURNITURE

Install latches, locks and door furniture as scheduled. Check and adjust operation of all doors.

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.hallmarkgroup.co.nz & www.cavityslider.co.nz. Substitutions are not permitted to the following, unless stated otherwise.

Hallmark Standard Doors

4.1 HALLMARK STANDARD DOOR - TIMBER VENEER TO MDF PANEL DOOR

Location:	refer to plans
Door type:	refer to schedule
Door size:	varies
Door thickness:	38mm
Door Pane/finish:	Hallmark Timber Veneer Doors - MDF / Contact Hallmark for other timber veneer options.
Vision Panels:	None
Jamb type/finish:	tbc
Configuration:	refer to schedule
Leaf edge:	tbc
Hardware:	tbc

5511PT PLYTECH PANELS JOINERY & CABINETRY

1 GENERAL

This section relates to the supply and installation of custom joinery fittings and cabinetwork, purpose made in a factory and fitted on site, incorporating Plytech Panels range of cabinetry panel products. It includes:
- Pre-finished plywood
- Un-finished plywood
- Non-plywood
- Associated components and accessories necessary to complete the cabinetry installation.

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FSC	Forest Stewardship Council
HPL	High Pressure Laminate
MDF	Medium Density Fibreboard
PEFC	Programme for the Endorsement of Forest Certification

1.2 RELATED WORK

Refer to 4811SG SOUDAL GORILLA SEALANTS & ADHESIVES for fixing options for wall linings

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/AS2	Protection from fire for buildings other than risk group SH
AS/NZS 4386.1	Domestic kitchen assemblies - Kitchen units
AS/NZS 4386.2	Domestic kitchen assemblies - Installation
ISO 5660.1	Reaction to Fire Tests - Heat Release Smoke Production and Mass Loss Rate Part 1: Heat Release Rate (Cone Calorimeter Method)
BS EN 635	Plywood - Classification by surface appearance.
BS EN 636	Plywood - Specifications
EN 13501	Fire classification of construction products and building elements

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Handling & Cleaning Recommendations
Product sheet
Fire Testing Certificate

Manufacturer/supplier contact details:

Company:	Big River Group Ltd.
Trading as:	Plytech Panels
Web:	www.plytech.co.nz
Email:	sales@plytech.co.nz
Telephone:	0800 900 905 (09 573 5016)

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Refer to Plytech Panels Terms & Conditions of Trade for material warranty details and conditions.

- Provide this warranty on Plytech Panels standard form.

- Commence the warranty from the date of Practical Completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer warranty:

2 years For installation

- Provide this warranty on the installer standard form.
- Commence the warranty from the date of Practical Completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications..

1.8 NO SUBSTITUTIONS

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

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Provide maintenance documentation in accordance with Plytech Handling & Cleaning Recommendations as necessary for the Principal to maintain the works. Provide documentation no later than the date of Practical Completion or the date on which the Principal takes occupation of the works.

Quality control and assurance

1.10 INSPECTIONS

Give sufficient notice so that inspection may be made of the following, before installation;

- Pre-assembled cabinetry/fittings fabricated and ready to be delivered to site.
- Site-assembled cabinetry/fittings on site ready for installation.
- Areas of the building prepared to receive the cabinetry/fittings.

2 PRODUCTS

Materials - pre-finished plywood

2.1 PLYTECH PANELS CREATE HPL

Latvian Birch plywood finished both faces with a smooth through-colour, matt-finish, 1.0mm HPL with anti-fingerprint and properties, manufactured to EN 636-2 (humid conditions). Supplied as 2440mm x 1220mm x 18mm (13 ply) & 24mm (17 ply). Available in range of colours. Refer to SELECTIONS.

Components

2.2 CARCASE CONNECTORS

One-piece steel, straight deep-cut thread, fibre board screws with press fit plastic trim cap.

2.3 CARCASE FASTENERS

Knock down type centric sphere zinc alloy connectors with connecting bolts, sleeves and dowels, to suit each particular fastening location.

2.4 BUTT HINGES

Butt, broad butt, flush butt or overlay steel or brass, to suit the location, or as detailed.

2.5 CONCEALED HINGES

All-metal zinc alloy with automatic spring and screw-fixed. Door stops of plastic foam with self-adhesive backs, or plastic buttons clear or coloured to match unit.

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2.6 GLASS DOOR HINGES

All-metal zinc alloy body and metal/plastic glass cup, with automatic spring, screw-fixed and with matching door pulls.

2.7 FLAP HINGES

All-metal, flush-fitted and screw-fixed with no gap when the flap is down.

2.8 FLAP STAY

All-metal, slide/folding and screw fixed.

2.9 DRAWER RUNNERS

Under mounted type, precision running ball-mounted full extension, bright steel finish system.

Accessories

2.10 ADHESIVES - GENERALLY

As approved by the manufacturer for the cabinetry product or pre-finished cabinetry product joint being used.

2.11 ADHESIVES - SOUDAL PRODUCTS

Refer to 4811SG SOUDAL GORILLA SEALANTS & ADHESIVES for fixing options for wall linings.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 JOINERY FIXTURES GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs). Take responsibility for the completed joinery fixtures including fittings included within fixtures and the on-site installation.

3.4 DOMESTIC KITCHEN ASSEMBLIES

Unless otherwise specified / detailed, domestic kitchens to be constructed to AS/NZS 4386.1 and installed to AS/NZS 4386.2

3.5 SITE MEASURE

Site check and confirm dimensions after wall linings have been fixed. Verify positions of electric power outlets, wiring to light fittings included in joinery fixtures, water supplies and waste pipe locations.

3.6 SHRINKAGE

Arrange jointing and fixing so that shrinkage in any part and direction does not impair the strength or appearance of the finished work or damage the adjoining work.

3.7 TOLERANCES

Provide reasonable tolerances at connections between the joinery fittings and the building fabric so that any irregularities are adequately compensated for in the site fixing.

3.8 PLYTECH TIMBER VENEER PANELS

Select timber for match or uniformity or symmetry of colour or grain of adjacent pieces. Finish to same standard on all faces.

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3.9 PLYTECH PANEL PRODUCTS

Select and match all adjacent pieces. Generally the exposed multi-ply edge will receive a clear finish as a design feature. Where not using the multi-ply edge as a design feature, clash exposed edges of panels with matching edge tapes and finishes.

Conditions - site

3.10 TRANSIT

Load, transport and unload fittings without distortion or damage and keep covered to protect from the weather.

3.11 DELIVERY

Deliver fittings to the site only when floor, wall and ceiling surfaces are in place and the fittings can be immediately placed in their final location.

Assembly

3.12 MACHINING

Carry out machining within the practices required for the particular Plytech panel product being used. Machine drill holes, cut recesses and form joints ready for assembly to the componentry manufacturer's requirements. Ensure work is accurate, square and true to line.

3.13 MAKE CUT OUTS FOR APPLIANCES AND FITTINGS

Obtain fitting templates from the appliances and other fittings to be installed within cabinetry and bench tops. Ensure appliances and fittings can be installed with the required tolerances and clearances. Where bench tops are being provided, provide templates and confirm dimensions to others.

3.14 ASSEMBLY

Carry out gluing, dowelling, and other operations necessary for the proper assembly of the fittings as detailed with fixings concealed unless detailed otherwise. Scribe fit adjustable shelves with 4 shelf pins to each and with force-fit pin holes at 50mm maximum centres in solid cheeks. Construct drawers using groove mounting runners, fit them with 3mm clearance into drawer space. Hang doors on concealed hinges with 115 degree openings except where detailed for 170 degrees.

3.15 GLUE JOINTS

Use glue joints where provision for shrinkage is not required. Cross-tongue or otherwise reinforce. Surfaces in contact to have an even sawn or planed finish and be free of contamination. Mix, apply and set to the glue manufacturer's requirements with adequate pressure applied to ensure intimate contact that will be maintained while the glue sets.

Application

3.16 FIXING ON SITE

- Scribe fit and conceal fix rigidly in place square, level, plumb and true to line and face as detailed and to the required standard.
- Assemble fittings on-site if brought in sections.
- Fit counter and bench tops and upstands.
- Complete with moveable parts in place and freely moving in their proper range.

Applications - linings

3.17 FIXING GENERALLY

A combination of panel pins, gluing and nailing or screwing.

3.18 FIT AND FIX PLYWOOD SHEETS

Fit and fix as detailed to the plywood manufacturer's requirements with sheets and trim in plumb, true alignment, face and grain.

3.19 APPLY ADHESIVES - SOUDAL PRODUCTS

Refer to 4811SG SOUDAL GORILLA SEALANTS & ADHESIVES for fixing options for wall linings.

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3.20 PROTECT

Protect finished surfaces from damage, particularly bench tops.

Completion

3.21 COMPLETION MATTERS

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

3.22 PROTECTION

Provide the following temporary protection of the finished work:

as necessary

4 SELECTIONS

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

4.1 PLYTECH CERTIFIED SUSTAINABLE TIMBER

Product:	Plytech Panels plywood products
Certification type:	PEFC
Timber species:	Refer to Plytech Panels
Origin:	Refer to Plytech Panels
Claim:	Refer to Plytech Panels

Materials - pre-finished plywood

4.2 PLYTECH PANELS CREATE HPL

Location:	tbc
Supplier:	Plytech Panels
Brand:	Create HPL
Sheet thickness:	18mm
Sheet size:	2400mm x 1220mm
Colour:	Kea
Finish:	Smooth, matt HPL

Components

4.3 CARCASE CONNECTORS

Manufacturer:	tbc
Finish:	tbc
Cap colour:	tbc

4.4 CARCASE FASTENERS

Manufacturer:	tbc
Product name:	tbc

4.5 BUTT HINGES

Manufacturer:	tbc
Series/size:	tbc
Finish:	tbc

4.6 CONCEALED HINGES

Manufacturer:	tbc
Product name:	tbc

4.7 GLASS DOOR HINGES

Manufacturer: tbc
Product name: tbc
Decorative cap: tbc
Finish: tbc

4.8 FLAP HINGES

Manufacturer: tbc
Product name: tbc
Finish: tbc

4.9 FLAP STAY

Manufacturer: tbc
Product name: tbc
Finish: tbc

4.10 DRAWER RUNNERS

Manufacturer: tbc
Product name: tbc

Accessories

4.11 ADHESIVE - SOUDAL PRODUCTS

Refer to 4811SG SOUDAL GORILLA SEALANTS & ADHESIVES for fixing options for wall linings.

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6141 GROUND, SEALED OR POLISHED CONCRETE

1 GENERAL

This section relates to the provision of a high quality concrete finish to new or existing concrete surfaces incorporating mixed design aggregates and plain concrete.
It includes:

- plain polish
- grind and seal
- grind and polish

1.1 RELATED WORK

Refer to 3155MR for MAXRAFT FLOOR SYSTEM.

Refer to appropriate concrete section(s) for mix design and placement.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following definitions apply specifically to this section:

Plain polish:	The concrete is mechanically ground just enough to clean it (virtually no aggregate exposed) and clear sealed.
Grind:	The concrete is mechanically ground to expose aggregate
Grind and seal:	The concrete is mechanically ground and clear sealed.
Grind and polish:	The concrete is mechanically ground, then hardened, then polished, then sealed and finally burnished.

Documents

1.3 DOCUMENTS

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

NZBC D1/AS1	Access Routes
NZS 3114	Specification for concrete surface finishes

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work: Refer to 3155MR for MAXRAFT FLOOR SYSTEM

Requirements

1.5 QUALIFICATIONS

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

1.6 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 description:	Provide a sample of specified finishes, 1000mm x 1000mm minimum size. Install by the personnel who will perform the work
Sample type:	Fixed sample for review
Number:	1
Location:	on site
Supporting documentation:	Description of methods used to support review
Reviewer:	Client Alki Architecture and Design
Time for review:	10 working days
Review criteria:	Appearance, Texture, Colour, Grind, Surface Finish

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1.7 TECHNIQUE DISCUSSION - CONCRETE PLACEMENT

Advise the concrete placer of the areas scheduled for ground/polished finishes. Ensure the placed concrete to be ground is not overworked resulting excess sand /cement pasts at the concrete surface

1.8 TECHNIQUE DISCUSSION AND FINISH STANDARD

Before commencing work, arrange a meeting to confirm the method of carrying out the work. Select an area on site, grind and finish the selected area to achieve the agreed finish. When agreement is reached, this then becomes the finish standard for the balance of the work.

Performance - Slip resistance

1.9 SLIP RESISTANCE - SURFACES EXEMPT FROM TESTING

Walking surfaces comply with NZBC D1/AS1, Table 2 for slip resistance requirements and are exempt testing.

2 PRODUCTS

2.1 PENETRATING SEALER

Refer to SELECTIONS.

2.2 SURFACE SEALER

Refer to SELECTIONS.

2.3 GROUT

Cement base slurry grout.

3 EXECUTION

Conditions

3.1 CONFIRM CONCRETE SURFACE

Confirm concrete surface is of the required standard for the concrete polishing and finishing processes. Do not proceed if placed concrete is not capable of delivering the specified finish. Seek written direction as to what action is required.

3.2 PLACING THE CONCRETE

Place concrete with light vibrate only, do not over vibrate. The concrete pavement or floor must be to NZS 3114, a Class U3 finish. Very light power float (1 or 2 light passes).

3.3 PROTECTION

Cover glass, anodised aluminium and other surfaces to protect from damage that is caused from cementitious dust.

Application - grind and polish

3.4 GRIND TYPE - GRIND AND POLISH

For type and depth of grind refer to SELECTIONS.

3.5 FIRST GRIND - GRIND AND POLISH

For new slabs grind 7 -10 days minimum after placing the concrete. Grind the floor to expose the aggregate using a 20/40 grit steel bonded diamond. Aggregate should be consistent over the surface.

3.6 APPLY DENSIFIER - GRIND AND POLISH

Apply selected densifier to manufacturer's requirements.

3.7 SECOND GRIND - GRIND AND POLISH

When the building is appropriately enclosed, linings completed before fittings, fixtures and skirtings are installed, grind the residue off the floor and start polishing the surface using a 50 grit resin bonded diamond, progressing by approximately doubling the grit each pass up to 800 to 3000 grit resin bonded diamond, depending on gloss level required. Refer to SELECTIONS for gloss levels.

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3.8 APPLY CONCRETE SEALER - GRIND AND POLISH

Apply selected concrete penetrating sealer to manufacturer's requirements.

3.9 BURNISH

Burnish to remove final residue and polish with purpose made pad.

Application - holes and cuts

3.10 GROUT HOLES

Grout slurry the air holes left in the concrete surface. Polish to remove grout within 24 hours of application using a 120 grit diamond.

3.11 GROUTING CONCRETE CUTS

Grout construction cuts and decorative cuts. Polish to remove excess grout within 24 hours of application using a 120 grit diamond.

Protect slab

3.12 PROTECT SURFACE AFTER FIRST GRIND

Fully cover and protect from damage after the first grind and once the building is enclosed. Ensure material allows the floor to breath and is non-staining.

3.13 PROTECT FINISHED POLISHED CONCRETE

Protect floor from damage. Provide protection by laying breathable, non staining sheet material for the period between completion of polishing and completion of the contract works.

Completion

3.14 LEAVE

Leave work to the standard required by following procedures.

3.15 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

Grind and polish

4.1 GRIND AND POLISH CONCRETE

Location:	refer to finish plan, sheet A501
Time first grind:	7 to 10 days after concrete placement
Finish:	Plain polish (Natural Finish, no aggregate exposure)
Sealer:	Penetrating sealer and Densifier.
IMPORTANT:	Confirm intended aesthetic with concrete contractor. Provide a sample before work proceeds. Verify grit, trowel, sealer, densifier and acid etch products with contractor and client.

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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

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.

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 plans
Supplier:	tbc
Type:	Ceramic or Porcelain
Bond pattern:	tbc

Tiled Internal Walls

4.2 MAPEI INTERNAL WALL TILING SYSTEM OVER PLASTERBOARD - WET AREA

Location:	refer to plans
Supplier:	MBP (NZ) Ltd.
Substrate:	Magnum Board
Levelling mortar:	Nivorapid & Latex Plus
Primer:	Eco Prim Grip Plus
WPM:	Mapelastic Aquadefense
Adhesive:	Keraflex Maxi S1 Zero
Grout:	Ultracolor Plus
Grout colour:	Refer to MBP (NZ) Ltd. for colour range

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Components

4.3 MAPEI WATERPROOFING DETAILING & REINFORCEMENT

Location:	refer to plans
Supplier:	MBP (NZ) Ltd.
Edges/expansion joints:	Mapeband SA Tape
Penetrations:	Mapeband SA Gasket
Reinforcement:	Mapetex Sel Reinforcing Fabric

Accessories

4.4 TRIMS

Location:	refer to plans
Supplier:	tbc
Type:	Tile trim, Edge strip, Corner profile
Material:	Stainless steel

4.5 MOVEMENT JOINT - BACKING ROD & SEALANT

Location:	refer to plans
Type:	Closed cell polyethylene foam
Diameter:	Diameter to be 25-30% greater than joint width
Sealant:	Mapesil AC & PRIMER FD (acetic silicone)
Sealant colour:	Refer to MBP (NZ) Ltd. for colour range

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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 - slip resistance

1.12 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

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 UC LEVELLER
Cement-based, self-levelling compound for thicknesses from 3mm to 70mm.

2.6 MAPECEM
Cement-based, rapid setting hydraulic binder for shrinkage-compensated screeds.

2.7 MAPECEM PRONTO
Cement-based, pre-mixed, rapid setting shrinkage compensated screed.

2.8 TOPCEM
Cement-based, hydraulic binder for shrinkage-compensated screeds.

2.9 PLANICRETE
Synthetic-rubber latex additive for use with cement based screeds and adhesives to improve mechanical and adhesive characteristics.

Primers

2.10 PRIMER 3296
Acrylic polymer based primer in water dispersion for porous substrates.

2.11 ECO PRIM T PLUS
Acrylic resin primer in water dispersion.

2.12 ECO PRIM GRIP PLUS
One component synthetic resin primer in water dispersion.

2.13 PLANISEAL MR
Two component water based epoxy primer/barrier hydrostatic resistant coating.

Waterproofing membrane

2.14 MAPEGUM WPS
One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Grey colour.

2.15 MAPELASTIC AQUADEFENSE
One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Light blue colour.

2.16 MAPELASTIC SMART
Two component flexible cementitious liquid waterproofing membrane.

Adhesives

2.17 GRANIRAPID
Two component, cementitious adhesive with synthetic rubber latex. Classified C2FS1 to ISO 13007.1.

2.18 KERAQUICK MAXI S1
Cementitious adhesive. Suitable for application in layers up to 15mm thick. Classified C2FTS1 to ISO 13007.1.

2.19 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.

2.20 KERABOND PLUS & ISOLASTIC
Cementitious adhesive with elastic polymer water dispersion. Classified C2TS2 to ISO 13007.1.

2.21 KERALASTIC T
Two component, polyurethane adhesive. Classified R2T to ISO 13007.1.

2.22 KERAFLEX MAXI S1 ZERO
Cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.23 KERAPOXY ADHESIVE
Two component epoxy adhesive. Classified R2T to ISO 13007.1.

2.24 ADESILEX P10 & ISOLASTIC FOR MOSAICS
Two component cementitious adhesive with elastic polymer water dispersion. Classified C2TES1 to ISO 13007.1.

2.25 ULTRALITE S1 FLEX ZERO
One component cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.26 ULTRALITE S2 T FLEX
One component thixotropic cement and synthetic resin based adhesive. Classified C2ES2 to ISO 13007.1.

Grouts

2.27 ULTRACOLOR PLUS
Cement-based, polymer-modified grout for joints from 2mm to 10mm, with water repellent DropEffect and anti-mould with BioBlock technologies.

2.28 KERAPOXY
Two component, chemical resistant epoxy grout for joints 3mm to 10mm wide. Classified RG to ISO 13007.3.

2.29 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

2.30 MAPEBAND SA TAPE
Alkali resistant butyl self-adhesive waterproofing tape, 100mm wide roll.

2.31 MAPEBAND SA GASKET
Alkali resistant butyl self-adhesive waterproofing gasket, 370mm x 370mm square.

2.32 MAPEBAND EASY TAPE
Alkali resistant rubber waterproofing tape with a non-woven fabric face and back, 130mm wide roll.

2.33 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.

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2.34 MAPENET 150 REINFORCING MESH
Alkali-resistant fiberglass reinforcing mesh.

2.35 MAPETEX SEL REINFORCING FABRIC
Alkali resistant non-woven polypropylene reinforcing and anti-fracture fabric.

Components - anti-fracture membrane

2.36 MAPEGUARD 2 ANTI-FRACTURE MEMBRANE
1mm thick, semi-rigid reinforced fabric, self-adhesive, crack isolation membrane for in plane cracks up to 10mm wide.

Components - cleaning

2.37 ULTRACARE KERANET EASY
Acid-based, pre-mixed general tile and grout cleaner.

2.38 ULTRACARE KERAPOXY CLEANER
Concentrated liquid detergent for removing epoxy grout.

Accessories

2.39 UNDERTILE HEATING
Proprietary electric undertile heating system complete with thermostat/controller.
Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for undertile heating.

2.40 TRIMS
Tile trim, edge strips, floor finish divider strips and weather bars. Available in aluminium, brass and stainless steel. Refer to SELECTIONS.

2.41 MOVEMENT JOINT - ANGLE
Metal or PVC angle. Refer to SELECTIONS.

2.42 MOVEMENT JOINT - INSERT
Polyurethane or neoprene insert. Refer to SELECTIONS.

2.43 MOVEMENT JOINT - SILICONE SEALANT
One part, flexible silicone sealant, Mapesil AC for acetic cure or Mapesil LM for neutral cure. Refer to SELECTIONS.

2.44 MOVEMENT JOINT - POLYURETHANE SEALANT
Mapeflex PU40, one part flexible thixotropic polyurethane based sealant. Refer to SELECTIONS.

2.45 MOVEMENT JOINT - BACKING ROD
Polyethylene foam (PEF) backing rod. Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS
Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

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

3.3 PRE-INSTALLATION REQUIREMENTS
Check work previously carried out and confirm it is of the required standard for this part of the work.

Moisture content concrete: 75% maximum relative humidity, minimum 28 day cured

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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 ANTI-FRACTURE MEMBRANE

When applied primer is clear in colour and tacky, lay Mapeguard 2 membrane over the prepared substrate. Peel back film of self-adhesive underside of membrane in short sections and roll over with a weighted roller to bond the membrane to the substrate.

3.9 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.

3.10 INSTALL UNDERTILE HEATING

Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for installation of undertile heating.

3.11 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.

3.12 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.

3.13 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.

3.14 APPLY ADHESIVE

Mix adhesive to Mapei instructions. Spread adhesive over prepared surface with a notched trowel to Mapei recommended bed thickness.

3.15 INSTALL TRIM

Press trim into wet adhesive.

3.16 INSTALL MOVEMENT JOINT ANGLE

Press angle into wet adhesive.

3.17 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.

3.18 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.

3.19 INSTALL MOVEMENT JOINT INSERT

Place insert between movement joint angles.

3.20 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

3.21 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 TILES

Location:	refer to plans
Class:	2
Type:	Ceramic or Procelain Tile, tbc
	Refer Mapei Product Technical Data Sheets for product compatibility with concrete stone tile (e.g. terrazzo), moisture sensitive natural stone and glass mosaics

Tiled internal floors

4.2 MAPEI INTERNAL TILING SYSTEM OVER CONCRETE FLOOR - HEATED WET AREA

Location:	Shower, refer to plan
Supplier:	MBP (NZ) Ltd.
Substrate:	Concrete
Heating system:	Refer Undertile Heating section
Levelling:	Mapecem Pronto
Primer:	Planiseal MR (suitable for damp/green concrete)
WPM:	Mapegum WPS
Adhesive:	Keraflex Maxi S1 Zero
Grout:	Ultracolor Plus
Grout colour:	Refer to MBP (NZ) Ltd. for colour range

Components

4.3 MAPEI WATERPROOFING DETAILING & REINFORCEMENT

Location:	Shower, refre to plan
Supplier:	MBP (NZ) Ltd.
Edges/expansion joints:	Mapeband Easy Tape
Penetrations:	Mapeband Easy Gasket
Reinforcement:	Mapetex Sel Reinforcing Fabric

Accessories

4.4 TRIMS

Location:	Shower, refer to plan
Supplier:	tbc
Type:	Floor finish divider strip, Tile trim
Material:	Stainless steel

4.5 MOVEMENT JOINT - BACKING ROD & SEALANT

Location:	Shower, refer to plan
Type:	Closed cell polyethylene foam
Diameter:	Diameter to be 25-30% greater than joint width
Sealant:	Mapesil AC & PRIMER FD (acetic silicone)
Sealant colour:	Refer to MBP (NZ) L

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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

1.1 RELATED WORK

-

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
AS/NZS 2270	Plywood and blockboard for interior use
AS/NZS 2455.1	Textile floor coverings - Installation practice - General
BPS	Building Product Specifications

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Warranties

1.4 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.

1.5 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

1.6 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

1.8 NO SUBSTITUTIONS

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

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2 PRODUCTS

Materials

2.1 UNDERLAY

To AS/NZS 2455.1 Soft underlay and underlays manufacturer's requirements.

Refer to SELECTIONS for product selection.

2.2 CARPET

To AS/NZS 2455.1 Textile floor coverings.

Refer to SELECTIONS for product selection.

Components

2.3 BINDER BARS

Anodised aluminium section with fluted face.

2.4 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

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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.

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.

3.12 PREPARING NEW WOOD PRODUCT FLOOR

To be level, sanded smooth and dry with loose material and dust removed.

Application - carpet laying

3.13 INSTALLATION, UNDERLAY

Installation to underlay manufacturer's requirements. Lay at right angles to the carpet direction.

3.14 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.

3.15 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

3.16 PROTECTION

Provide the following temporary protection of the finished work:

Refer to the general section 1270 CONSTRUCTION for removal as part of final clean.

3.17 SPECIAL PROTECTION

Self Adhesive carpet protective film: Temporary self-adhesive carpet protective film

3.18 COMPLETION MATTERS

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

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4 SELECTIONS

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

Materials

4.1 UNDERLAY

Location	Brand	Type/thickness/weight
refer to plan	tbc	tbc

4.2 CARPET

Location	Brand/type/weight/code	Installation method
refer to plan	tbc	tbc

Accessories

4.3 DIVIDER STRIPS

Brand/material: Transition Trim, Angle
Dimension: 22mm x 30mm
Finish: Stainless Steel or Anodised Aluminium

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6700R RESENE PAINTING GENERAL

1 GENERAL

This section relates to the general matters related to **Resene** painting work.

1.1 RELATED WORK

Refer to 6721R RESENE PAINTING INTERIOR

Refer to 6711R RESENE PAINTING EXTERIOR
Refer to 6721RE RESENE ENVIRONMENTAL PAINTING INTERIOR
Refer to 6711RE RESENE ENVIRONMENTAL PAINTING EXTERIOR

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

MPNZA	Master Painters New Zealand Association Inc.
SIPDS	Surface Information & Preparation Data Sheets

Documents

1.3 DOCUMENTS

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

Health and Safety at Work Act

AS/NZS 5131	Structural steelwork - Fabrication and erection
AS/NZS ISO 9001	Quality management systems - Requirements
MPNZA	Health and Safety Programme

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Resene	Surface Information & Preparation Data Sheets (SIPDS) (hard copy or at www.resene.co.nz)
Resene	Product Data Sheets (hard copy or at www.resene.co.nz)
Resene	Putting your safety first

Copies of the above literature are available from **Resene**
Telephone: 0800 RESENE (0800 737 363)

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal conditions of use against failure referring to the **Resene** Promise of Quality in the **Resene** One-Line specifications and product data manual.

Requirements

This painting specification is written based on information available at the time of writing.

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Resene** coating system, or associated components and products. Do not combine paints from different manufacturers in a paint system.

If in the applicator's own expertise and judgement an amendment to this specification is required, or where a substrate preparation, or required painting system is not covered in this specification, this shall be brought to the attention of the contract administrator and any amendment agreed before work proceeds any further.

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1.7 QUALIFICATIONS

Painters to be experienced competent workers, familiar with the materials and the techniques specified and with the **Resene** coating systems and be members of the Master Painters New Zealand Association Inc.

The applicator is to have the necessary skill, experience and equipment to undertake the work. The applicator remains responsible for ensuring proper completion of the work.

Painters to be selected from the **Resene** Eco Decorator programme. The **Resene** Eco Decorator programme is designed to recognise a nationwide network of environmentally responsible, quality focussed painting contractors.
Refer to www.resene.co.nz/ecodecorator.htm for a list of Eco Decorators in your area.

1.8 SAMPLES

Refer to the general section 1270 CONSTRUCTION for details of how samples will be reviewed and how instructions to proceed will be given. Provide the following samples for review

	Sample A
Sample description:	Paint Colour
Sample type:	Portable sample for review
Number:	as required
Reviewer:	Owner
Time for review:	10 working days
Review criteria:	Colour

1.9 PRIOR TO WORK COMMENCING

Before any work commences painters should verify, with Architects or specifying authority, that their paint matches a previously supplied standard card or panel. Differently coloured paints will vary in price, opacity and durability. **Resene** normally only specify two coats of colour but with certain colours, such as yellows and oranges, three coats may be needed. Refer to SELECTIONS for location and type.

1.10 INFORMATION FOR OPERATION AND MAINTENANCE

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

Maintenance guide for **Resene** paint finishes www.resene.co.nz/comn/services/maintenance.htm.

Provide this information prior to practical completion.

1.11 HEALTH AND SAFETY

Refer to and comply with the requirements of the Health and Safety at Work Act 2015 including the obligation to:

- Eliminate hazards and if hazards cannot be eliminated or isolated, then minimise the hazards in this work by using the proper equipment and techniques as required by the MPNZA Health and Safety Programme.
- Supply protective clothing and equipment.
- Inform the contractor as well as the employees and others on site of those hazards and put in place procedures for dealing with emergencies.

1.12 SAFETY DATA SHEETS

Obtain from **Resene** (phone 0800 RESENE, or www.resene.co.nz) the safety data sheet for each product used and comply with the required safety procedures. Keep sheets on site.

Performance

1.13 RESENE INSPECTION

Permit representatives of **Resene** to inspect the work in progress and to take samples of their products from site if requested. **Resene** will take care when inspecting the work, but does not accept any responsibility for the proper completion of the work before or after such inspection.

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1.14 INSPECTION OF THE WORK

Inspection of the whole of the work at each of the stages set out in SELECTIONS may be made. Agree on a programme that will facilitate such inspection, including notification when each part and stage of the work is ready for inspection.

2 PRODUCTS

Materials

2.1 MATERIALS GENERALLY

Do not combine paints from different manufacturers in a paint system.

Use only **Resene** products (which are guaranteed for consistency and performance under AS/NZS ISO 9001 and APAS) prepared, mixed and applied as directed in the **Resene** One-Line Specifications and Product Data Manual. This specification has been written using where practical and available both low/no VOC.

2.2 DARK COLOURS

Darker colours in areas of high sun exposure place significant stress on the coating and substrate. **Resene 'CoolColour'** technology reduces heat absorption of a wide range of colours. Contact your local **Resene** Representative or visit www.resene.co.nz for more information or visit www.resene.co.nz/coolcolour. View a list of **Resene** colours that can be made using **Resene CoolColour** technology at www.resene.co.nz/colourlibrary.

2.3 THINNERS/ADDITIVES

Use only if and when expressly directed by **Resene** for their particular product in a particular application. Always wear gloves when handling any solvents including turpentine as harmful chemicals may be absorbed into the body through the skin.

Accessories

2.4 ACCESSORIES

Contact your local **Resene ColorShop** for a full range of accessories and usage advice.

3 EXECUTION

Conditions

3.1 EXECUTION

To conform to required trade practice, which shall be deemed to include those methods, practices and techniques contained in the AS/NZS 2311.

3.2 TREATED SURFACES

Where surfaces have been treated with preservatives or fire retardants, check with the treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance. If they are not compatible, obtain instructions before proceeding.

3.3 BACK PAINTING

Co-ordinate with cladding and/or lining installer as to who will do the work and timing.

Exterior
For exterior cladding and trim that require on site finishing, paint the back and exposed bottom edges at the base of the cladding (generally, bottom plate overhang and horizontal flashings) to the manufacturer's requirements, but at least to 150mm up from base. Coating to match front finish, generally apply 2 coats or 1 coat if pre-primed.
Refer to appropriate exterior paint sections SELECTION clauses for claddings to be back painted.

Interior
For lining and trim that require on site finishing and/or back painting (usually wet areas), paint the back and exposed bottom edges at the base of the lining, to the manufacturer's requirements, but at least to 150mm up from base. Coating to match front finish, generally apply 2 coats or 1 coat if pre-primed, or if no front finish, seal to manufacturer's requirements.

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Refer to appropriate interior paint sections SELECTION clauses for linings to be back painted.

3.4 ANCILLARY SURFACES

The descriptions of areas in schedules and elsewhere are of necessity simplified. Coat ancillary exposed surfaces to match similar or adjacent materials or areas, except where a fair-faced natural finish is required or items are completely prefinished. In cases of doubt obtain written instructions before proceeding.

3.5 HARDWARE

Do not paint hinges or hardware that cannot be removed. Before commencing work carefully remove hardware, fixtures and fittings, set aside where they cannot be damaged or misplaced and replace on completion. Refer to SELECTIONS for hardware, fixtures and fittings for removal.

3.6 PROTECTION

Supply, lay and fix drop sheets, coverings and masking necessary to protect adjoining, fixtures, fittings and spaces from paint drops, spots, spray and damage.

Application - preparatory work

3.7 SURFACE PREPARATION

Refer to the **Resene** Surface Information & Preparation Data Sheets (SIPDS) and product data manual for surface preparation sheets (or obtain them by phoning 0800 RESENE, or at www.resene.co.nz) listed in the materials systems schedule clauses. Carry out the preparatory work required by them for each of the substrates.

3.8 SHARP EDGES, CRACKS AND HOLES

Remove and/or repair sharp edges, cracks and holes if present, as outlined in the preamble of the **Resene** One-Line specifications and product data manual.

Elastomeric sealants, if used, should not be painted. The paint film will not match the flexibility of the sealant and may severely limit its effectiveness.

3.9 REMEDIAL WORK

If any substrate or surface, that even with the preparation work called for in this section, cannot be brought up to a standard that will allow painting or clear finishing of the required standard then do not proceed until remedial work is carried out.

3.10 GAP FILLING

Make good cracks, holes, indented and damaged surfaces. Use suitable gap fillers to match the surface being prepared. Any special priming requirements of the fillers must be satisfied. Allow to dry or set before sanding back level with the surface. Prime or seal timber before using putty.

Exterior and wet areas: Use only Portland cement base or water-insoluble organic base gap fillers.

3.11 OFF-SITE WORK

Carry out this work under cover in a suitable environment with suitable lighting. Store items, both before and after coating, in a clean, dry area protected from the weather and mechanical damage, properly stacked and spaced to allow air circulation and to prevent sticking. Specific instructions for transport to site to avoid damage to the factory applied paint system may be required particularly for metallic top coat paints.

3.12 PRIMING JOINERY

Pre-treat any cut surfaces of preservative treated timber before priming. Ensure L.O.S.P treated joinery has dried sufficiently to lose solvent odour. Pre-treat bare timber with **Resene TimberLock** (see Data Sheet D48) to improve the durability of subsequent coats.

Liberally coat end grain, allow to soak in and then recoat.

3.13 CONCEALED JOINERY SURFACES

Where off-site coatings are specified they must be applied to surfaces including those concealed when incorporated into the building.

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3.14 CONCEALED METAL SURFACES

Apply primer to suit the coating system to surfaces which will be concealed when incorporated into the building.

3.15 EXTERNAL DOORS

Prime or seal and paint bottom edges before hanging.

3.16 BEAD GLAZING

Stained, varnished, or painted joinery to have the first two coats of a suitable primer and one undercoat, applied to rebates and beads before glazing.

3.17 PUTTY FRONTING - LINSEED GLAZING PUTTIES

According to the putty manufacturer's instructions allow putty to set, then prime with **Resene Wood Primer** (see Data Sheet D40) or **Resene Enamel Undercoat** (see Data Sheet D44). Fully protect the putty by completing the **Resene** coating system as soon as it is sufficiently firm.

Glazing putties not based on linseed oil to be over coated according to the putty manufacturer’s instruction.

Application - generally

3.18 PAINTING GENERALLY

Comply with the **Resene** SIPDS Surface Information & Preparation Data Sheets or **Resene** One-Line specifications and product data manual data sheets and the additional requirements of this work section.

Ensure large wall areas that require more than one container of paint per coat, have enough paint boxed (mixed) together to complete the final coat. This will not apply if a single factory batch of paint, rather than shop tinted paint, is applied.

3.19 MIXING

Although generally supplied ready to use, all paints must be thoroughly mixed to lift any settled pigment and ensure the paint is homogeneous.

3.20 ENVIRONMENT

Defer painting of exterior surfaces until weather conditions are favourable - warm dry days without frost or heavy dews. Avoid painting in direct sunlight any surfaces that absorb heat excessively. As far as possible apply paint in the temperature range 15°C to 25°C. If temperatures fall outside the range of 10°C and 35°C do not paint unless paints with the necessary temperature tolerance have been specified. **Resene Hot Weather Additive** can be added to most **Resene** waterborne top coats to extend open time when application is undertaken at elevated temperatures or conditions that will cause rapid loss of water from the applied wet film. Do not apply solvent borne paint if moisture is present on the surface.

3.21 SEQUENCE OF OPERATIONS

Painting work to generally follow the following sequences:

- Back painting and pre-installation painting, then post-installation exposed-face painting
- Complete surface preparation before commencing painting.
- Apply primers, sealers, stains, undercoats, paints and clear coatings in the sequences laid down by **Resene**.
- Allow the full drying time between coats laid down by **Resene**.
- Do not expose primers, undercoats and intermediate coats beyond **Resene** recommendations before applying the next coat.
- Finish broad areas before painting trim.
- Ensure batch numbers of tins are matched for whole areas.
- Internally, paint ceilings before walls and walls before joinery, trim and other items.

3.22 APPLICATION

Select brush, roller, or pad and apply coatings to the requirements of **Resene** to obtain a smooth, even coating of the specified thickness, uniform gloss and colour.

3.23 LIGHTLY SAND

Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. A more thorough sanding to provide a mechanical key for the new paint system may be required depending upon the condition or age of the existing paint system..

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3.24 DEFECTIVE WORK

Correct defective work immediately and recoat as required, following precisely the **Resene** system being applied. The same applies to transportation damage to site of factory painted items.

3.25 EACH COAT

Each coat of paint and the completed paint system to have the following qualities and properties:

- Uniform finish, colour, texture, sheen and hiding power and the proper number of coats applied.
- No blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, significant brush marks, ladder marks and blistering.
- Proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application.

Completion

3.26 CLEAN

Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at the completion of the building works. Clean glass inside and out to a shining finish. Use the **Resene Washwise** on site 'paint equipment clean-up water' reclamation system to minimise the environmental impact of cleaning paint application tools.

3.27 LEAVE

Leave the whole of this work uniform in gloss and colour, of correct thickness, free from painting defects, clean and unmarked and to the standard required by following procedures.

3.28 REMOVE

Remove drop sheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.

3.29 REPLACE

Replace hardware without damage to it or the adjoining surface and leave hardware properly fitted and in working order.

3.30 DISPOSAL OF PAINTS AND THINNERS

Note: The use and disposal of paint and thinners represents a significant environmental hazard.

Ensure all paint and thinners are disposed of in the following manner:

- When requested hand over part used paint containers to client for maintenance touch ups.
- Recycle leftover paint at a **Resene ColorShop** as part of the **Resene "Paintwise programme"**. Contact your local **Resene ColorShop** for details or view information online at www.resene.co.nz/paintwise.htm.
- Donate left over paint to local community groups.
- Solvent based paints, paint thinners, turpentine, mineral spirits and solvents require special disposal procedures. Do not pour down sewer or stormwater drains, sinks or into the ground. If they cannot be recycled they must be disposed of in a refuse dump licensed to take toxic waste.

3.31 MAINTENANCE

Good maintenance of coating systems involves a routine of regular cleaning as well as regular inspections. Regular inspections of the coating systems are recommended to identify breakdown, accidental damage to or undesirable deterioration of the paint.

Wash down of exterior coatings should be undertaken on an annual basis using **Resene Paint Prep** and **Housewash** (see Data Sheet D812).

Refer the **Resene** Caring for your paint finish brochure and the **Resene** website, www.resene.co.nz/comn/services/maintenance.htm.

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4 SELECTIONS

4.1 SELECTIONS

Refer to 6711R RESENE PAINTING EXTERIOR and 6721R RESENE PAINTING INTERIOR for selections.
Refer to 6711RE RESENE ENVIRONMENTAL PAINTING EXTERIOR and 6721RE RESENE ENVIRONMENTAL PAINTING INTERIOR for selections.

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6711R RESENE PAINTING EXTERIOR

1 GENERAL

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

Related work

1.1 RELATED WORK

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

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

Requirements

1.2 SAMPLES

Refer to the general section 1270 CONSTRUCTION for details of how samples will be reviewed and how instructions to proceed will be given. Provide the following samples for review:

	Samples
Sample description:	Paint sample on substrate
Sample type:	Portable sample for review
Number:	as required
Location:	on-site
Reviewer:	Owner
Time for review:	10 working days
Review criteria:	Colour

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.

4.1 BACK PAINTING SCHEDULE

Paint 2 coats (including any pre-prime) to match exposed face coating.

Cladding type	Extent of back painting
Soffits (if desired)	Bottom edge & 150mm up

4.2 HARDWARE

Hardware for removal:	tbc

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Resene exterior paint systems

Exterior timber - new

4.3 RESENE NEW EXTERIOR TIMBER, PLYWOOD, WEATHERBOARDS - UNPRIMED

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

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6721R RESENE PAINTING INTERIOR

1 GENERAL

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

Related work

1.1 RELATED WORK

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

Refer to 6711R RESENE PAINTING EXTERIOR for exterior paint systems.

Requirements

1.2 SAMPLES

Refer to the general section 1270 CONSTRUCTION for details of how samples will be reviewed and how instructions to proceed will be given. Provide the following samples for review:

	Samples
Sample description:	Paint Finish + Colour
Sample type:	Portable sample for review
Number:	as required
Location:	on-site
Reviewer:	Owner
Time for review:	10 working days
Review criteria:	Colour and Appearance

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

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

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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 Acrylic
3rd coat:	Resene Ceiling Paint D305, Waterborne Flat Acrylic

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7120 HOT & COLD WATER SYSTEM

1 GENERAL

This section relates to piped potable water supply systems from the network utility supply authority water main to designated points and appliances, the installation of hot water heating appliances, distributing piped hot water to other appliances, and the installation of valves.

1.1 RELATED WORK

Refer to 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 systems - Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications
AS/NZS 2845.1	Water supply - Backflow prevention devices - Materials, design and performance requirements
AS 2845.3	Water supply - Backflow prevention devices - Field testing and maintenance
AS/NZS 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

1.3 MANUFACTURER DOCUMENTS

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

- Shop drawings and Warranty

Copies of the above literature are available from Heat Central Wanaka

Web:	www.centralheating.co.nz
Email:	info@centralheating.co.nz
Telephone:	08003571233

Warranties

1.4 WARRANTY

Provide warranty for:

2 years:	For the supply and installation of the plumbing system and fixtures

- Provide the warranty in the standard form in the general section 1237WA WARRANTY AGREEMENT.
- Commence the warranty from the date of practical completion of the contract works.

Requirements

1.5 QUALIFICATIONS

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

1.6 INFORMATION FOR OPERATION AND MAINTENANCE

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

all

Provide this information prior to practical completion.

1.7 HOT WATER TEMPERATURES

To NZBC G12/AS1, 6.14

Storage water heaters to store water at not less than 60ºC.

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

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

- 45ºC - for early child hood centres, schools, elderly facilities, hospitals, psychiatric or disabled institutions.
- 50ºC - for personal hygiene fixtures in all other buildings.

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

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

This clause excludes boiling units.

1.8 QUALITY CONTROL SYSTEM - LEAD FREE

If requested, by the contract administrator or consenting authority, provide test reports from IANZ or equivalent accredited testing facility confirming products that contain copper alloy and are used in contact with potable water for human consumption are lead free.

Performance

1.9 TESTING - TO NZBC G12/AS1

Test to NZBC G12/AS1, 7.6, Watertightness, for hot and cold water.

- Test to a pressure of1500 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 POLYBUTYLENE PIPE

To NZBC G12/AS1, 2 Materials. Polybutylene tubing to AS/NZS 2642.1, AS/NZS 2642.2 and AS/NZS 2642.3 complete with fitings and accessories brand-matched . Protect from sunlight.

2.2 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.

2.3 WATER METER

To the requirements of the network utility operator.

2.4 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.

2.5 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 and NZBC G12/AS1, table 2, Selection of Backflow Protection and table 2A Containment Backflow Protection

2.6 TEMPERING VALVE

Tempering valve to NZS 4617 or AS 4032.2 to NZBC G12/AS1.

Materials - Hot water heating appliances

2.7 HEAT PUMP WATER HEATER - SPLIT SYSTEM

Heat pump water heating system, with insulated storage cylinder and separate compressor/condenser/evaporator, complete with required fittings. With flow and return pipe work for water between cylinder and heat pump. Insulated exposed flow and return pipe work.

Components

2.8 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.

2.9 PROTECTIVE TAPE

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

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3 EXECUTION

3.1 EXECUTION GENERALLY

Generally carry out the whole of this work and tests to NZBC G12/AS1 or AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3.

3.2 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress.

Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.

3.3 CORE HOLES AND SLEEVES

Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.

3.4 CONCEAL

Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

3.5 CORROSION

Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

3.6 THERMAL MOVEMENT

Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

3.7 PIPE SIZE

Flow rates to each outlet to be no less than those given in AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in NZBC G12/AS1, table 4, Tempering valve and nominal pipe diameters.

3.8 ELECTROLYTIC ACTION

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

3.9 EXCAVATE

Excavate for the water main to a firm, even trench base in straight runs. Allow to backfill.

Application - Jointing

3.10 JOINTING COPPER PIPE

Braze pipe, fit alloy compression fittings, crox type joints and seal ring compression joints to NZBC G12/AS1 and AS 4809.

3.11 JOINTING POLYBUTYLENE PIPE

Aluminium clamped, seal ring compression or push fit "O" ring seal jointing to pipe system manufacturer's requirements.

3.12 JOINTING POLYETHYLENE PIPE

Seal ring compression joints and electrofusion to NZBC G12/AS1 and AS/NZS 2033.

Application - Pipework installation

3.13 WATER SUPPLY CONNECTION

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

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3.14 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.

3.15 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 G12/AS1.

3.16 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.

3.17 IN-LINE FILTER

Install an in-line filter immediately adjacent to the main isolating valve at the point of entry to the building, in an accessible position to allow for easy cleaning.

Application - Hot water systems

3.18 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 4607 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, section 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 HEAT PUMP WATER HEATER - SPLIT SYSTEM

Install complete with the necessary fittings and pipe work, to the manufacturer's installation instructions.

3.22 INSTALL STORAGE HOT WATER CYLINDER OVERFLOW TRAY

Install drained overflow tray to storage hot water cylinder to NZBC G12/AS1.

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.

3.24 PENETRATIONS

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

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Installation - Valves

3.25 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.

3.26 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.

3.27 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

3.28 LABEL

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

3.29 CLEAN IN-LINE FILTER

Clean all in-line filters on completion of works.

3.30 REPLACE

Replace damaged or marked elements.

3.31 LEAVE

Leave work to the standard required by following procedures.

3.32 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

Water main

4.1 POLYETHYLENE WATER MAIN

Size:	tbc

Pipework

4.2 PIPE

Manufacturer:	tbc
Brand:	tbc
Nominal bore:	tbc
Wall thickness:	tbc

4.3 PIPE INSULATION

Brand:	tbc
Material:	refer to plan
Wall thickness:	refer to plan
Finish:	refer to plan

Hot water systems

4.4 HEAT PUMP WATER HEATER - SPLIT SYSTEM

Brand:	as specified by supplier
Model:	as specified by supplier
Location cylinder:	refer to plans
Location heat pump:	refer to plans

Valves and accessories

4.5 MAIN ISOLATING VALVE

Location: tbc
Brand/type: tbc

4.6 FLOOR/ZONE ISOLATING VALVES

Location: tbc
Brand/type: tbc

4.7 APPLIANCE ISOLATING VALVES - CONCEALED

Appliance: tbc
Brand/type: tbc

4.8 APPLIANCE ISOLATING VALVES - EXPOSED

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

4.9 TEMPERING VALVE

Location: tbc
Brand/type: tbc

4.10 BACKFLOW PREVENTION DEVICE

Location: tbc
Brand/type: tbc

4.11 IN-LINE FILTER

Location: tbc
Brand/type: tbc

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7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES

1 GENERAL

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

1.1 RELATED WORK

Refer to 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

1.3 MANUFACTURER DOCUMENTS

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

varies	For sanitary fixtures tapware and accessories, refer to specific product warranty

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years	For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 QUALIFICATIONS WORKERS – INDUSTRY QUALIFICATION REQUIREMENTS

Workers or supervisors of work are required to be a Certifying Plumber under the Plumbers, Gasfitters and Drainlayers Act 2006. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

1.9 NO SUBSTITUTIONS

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

1.10 INFORMATION FOR OPERATION AND MAINTENANCE

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

- all products and systems installed

Provide this information prior to practical completion

1.11 QUALITY CONTROL SYSTEM - LEAD FREE

If requested, by the contract administrator or consenting authority, provide test reports from IANZ or equivalent accredited testing facility confirming products that contain copper alloy and are used in contact with potable water for human consumption are lead free.

2 PRODUCTS

2.1 SANITARY FIXTURES

Refer to SELECTIONS for product selection.

2.2 TAPWARE

Refer to SELECTIONS for product selection.

2.3 SANITARY APPLIANCES

Refer to SELECTIONS for product selection.

2.4 SANITARY ACCESSORIES

Refer to SELECTIONS for product selection.

2.5 ELECTRICAL SANITARY ACCESSORIES

Refer to SELECTIONS for product selection.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Ensure water supply and drainage pipework match the requirements of selected fixtures without force or distortion.

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 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.

3.6 INSTALLATION SANITARY FIXTURES

Carry out preparatory and assembly work, including connections to supply and drainage services and the application of all required slurries/bedding and sealants in sequence.

Fit the sanitary fixture in position, plumb, level, flush and rigid without stressing the attachment points of the component. Fixings to be corrosive resistant.

Seal between all sanitary fixtures and floors, wall linings, fixtures and the tops they are in, the tops and wall linings, to NZBC E3/AS1, 3.2. Fixtures include toilets, urinals, baths, basins, tubs, sinks. Tops include, vanities, bath surrounds, sink benches, etc, and their upstands. Form joint or seal between shower bases or urinals and impervious wall linings to NZBC E3/AS1, 3.3.

3.7 INSTALLING URINALS - WATERLESS

Ensure discharge will not go through metal pipework/drains. Install the cartridge in each unit, charge with fluid and test for proper operation.

3.8 INSTALLING SPA BATHS

Connect up interconnected discharge jets to supply, connect waste and overflow to drainage services. Fit electric motor and pump so as to prevent vibration and noise.

3.9 INSTALLING SHOWER OR BATH DOOR AND SCREEN

To NZS 4223.3 and to the product manufacturer's requirements. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating.

3.10 INSTALLATION TAPWARE

In accordance with the manufacturer's requirements. Maintain safe water temperatures to comply with NZBC G12/AS1, 6.14 Safe water temperatures.

3.11 SEAL SHOWER TAPWARE

Seal shower wall lining penetrations such as shower head, shower hose, mixer, taps etc to NZBC E3/AS1, Fig. 6.

3.12 SANITARY APPLIANCES

Install and provide all required connections to sanitary appliances in accordance with manufacturers requirements.

3.13 EARTHING OR EQUIPOTENTIAL BONDING METALLIC FIXTURES

Before enclosing, co-ordinate with electrician to provide for equipotential bonding to metallic water pipes and metallic sanitary fixtures using an earth bonding conductor to requirements of NZBC G12/AS1, 9.0 Equipotential bonding and/or AS/NZS 3000, 5.6 Equipotential bonding.

Application - sanitary accessories

3.14 INSTALLING ACCESSORIES

Fit specified fittings firmly in place, all plumb and level.

Locate at heights and/or locations shown on the drawings, or as required to comply with NZBC G1/AS1. For any dimension not shown or known, request direction before proceeding

3.15 CUTTING AND FITTING

Where cutting and fitting of the substrate is necessary for installing any unit, carry out this work before the painting or finishing of that surface. Remove any hardware when required for painting, placing it in the packaging or carton originally supplied and returning it to the secure store until ready for re-installation.

3.16 INSTALLING UNITS

Install each unit in accordance with the proprietary fixture manufacturer's requirements, using the templates and tools supplied or recommended by them. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating. Do not make any modifications to supplied units.

Completion & Commissioning

3.17 COMPLETION MATTERS

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

4 SELECTIONS

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

4.1 SANITARY FITTING SCHEDULE

Supplier:	ABI Interiors
Finish:	Brushed Nickel
Product:	Client to confirm selections

7411RI ROOFING INDUSTRIES METAL RAINWATER SYSTEMS

1 GENERAL

This section relates to Roofing Industries metal rainwater disposal systems in various metal substrates.
It includes:

- spouting
- downpipes
- fascias

1.1 RELATED WORK

Refer to 4311RI ROOFING INDUSTRIES PROFILED METAL ROOFING for profiled metal 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:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc

Documents

1.3 DOCUMENTS

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

NZBC E1/AS1	Surface Water: 4.0 Downpipes, 5.0 Roof gutters
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 2728	Prefinished/pre-painted sheet metal products for interior/exterior building applications - Performance requirements
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
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:

Roofing Industries, Ezi-Flo Rainwater Systems - brochure

Manufacturer/supplier contact details

Company:	Roofing Industries Ltd
Web:	www.roof.co.nz
Email:	techinfo@roof.co.nz
Telephone:	0800 844 822

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

0 years:	For acid washed galvanised steel

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

3 years: For workmanship

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

Performance

1.9 DESIGN - NZBC E1/AS1

Layout, falls and capacity of spouting to falls and the size and position of downpipes to comply with NZBC E1/AS1. Refer to NZMRM CoP recommendations, sections 5.5, Gutters and 5.7, Downpipes.

2 PRODUCTS

Materials

2.1 STEEL - GALVANIZED, UNPAINTED

Formability steel sheet, G300 for spouting, fascia and downpipes, coated to AS 1397.

Products

2.2 TRADITIONAL SPOUTING

Ezi-Flo™ traditional spouting systems complete with stop-ends, matching brackets and screws. Available in a range of profiles, sizes, metal substrates and finishes, refer to SELECTIONS.

2.3 DOWNPIPES

Ezi-Flo™ round and rectangular downpipe systems, complete with accessories and brackets. Available in a range of sizes, metal substrates and finishes, refer to SELECTIONS.

2.4 RAINWATER HEADS

Ezi-Flo™ Rainwater heads, custom manufactured. Refer to SELECTIONS for size, metal substrates and finishes, refer to SELECTIONS

Components

2.5 FASTENERS GENERALLY

Fixings and fasteners are to be compatible with all materials, the environment and meeting the requirements of the NZ Building Code.

2.6 RIVETS

Minimum diameter 4.0mm sealed rivets. For coated steel and aluminium materials, use aluminium rivets and for copper materials use copper rivets.

2.7 DROPPERS

Material to match spouting, sized to fit inside the downpipe.

2.8 BRACKETS

Material to match the spouting, downpipe or fascia. Refer to SELECTIONS for type.

2.9 SNOW STRAPS

Type AM (aluminium/zinc/magnesium alloy) steel snows straps coated to AS 1397. Prepainted to AS/NZS 2728 to match gutter. Refer to SELECTIONS.

2.10 SEALANT

Neutral cure silicone or MS Polymer sealant.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE AND HANDLING

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

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 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.

Check that fascias, barges or cladding are level and true to line and face and will allow work of the required standard without distortion to the product alignment. Do not proceed until they are up to standard.

3.4 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.

3.5 THERMAL MOVEMENT

Make adequate provision in the fixing and jointing of the spouting for thermal movement in the length of the spouting. NZMRM CoP recommends that gutters with internal sliding clip or external gutter brackets, maximum lengths should be restricted to 25m for steel and 12m for copper or aluminium.

Application - general

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 INSTALLATION GENERALLY

Install Ezi-Flo™ rainwater systems in accordance with to Roofing Industries requirements and NZMRM CoP recommendations, where not otherwise specified. Ensure a 10mm gap is left between spouting ends and wall cladding and that any overflow from spouting and or overflows direct water to the outside of the building.

3.8 INSTALL STEEL SPOUTING/GUTTERS

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 spouting less than 180mm wide and 600mm centres maximum for spouting 180-300mm wide. . Install brackets close to all stop ends, at both ends of sumps and rainheads.

In areas where snow fall is possible the centres should be 600mm maximum and snow straps fitted and this also applies for High and Extra High wind loads. Cut out neatly for and fit the pre-formed downpipe dropper and seal/solder and rivet around the joint. All installation to NZMRM CoP recommendations section 5.4, Gutters.

3.9 INSTALL STEEL DOWNPIPES

Form downpipes complete with offsets and shoes as needed with all joints lapped and sealed as required. Screw fix with matching pipe clips to rigidly stand plumb to the wall, and discharging into the stormwater gully or pipe inlet. All installation to NZMRM CoP recommendations section 5.7,Outlets & Downpipes.

3.10 INSTALL RAINWATER HEADS

Install Ezi-Flo™ rainwater heads where required to NZMRM CoP, clause 5.6.1 Rainwater Heads and to NZBC E2/AS1, Figure 8.5.4.1B: Rainwater head and scupper opening in membrane.

3.11 INSTALL OUTLETS AND OVERFLOWS

Install outlets and overflows where required to NZMRM CoP, clauses 5.6.3 Overflows and section 5.7, Outlets & Downpipes.

Completion & Commissioning

3.12 TEST

Test the completed rainwater disposal system with water to ensure spouting / gutters are laid to correct falls, that both spouting / gutters and downpipes are unobstructed and that no ponding occurs in spouting/gutter.

3.13 REMOVE STRIPPABLE FILM

If rainwater system components are supplied with strippable film, remove film from any underlaps whilst installing and remove strippable film entirely upon completion prior to UV making it difficult to remove.

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

Products

4.1 ROOFING INDUSTRIES - EZI-FLO™ TRADITIONAL SPOUTING

Location:	refer to plans
Manufacturer:	Roofing Industries
Profile:	Ezi-Flo™ 150 Half Round Gutter
Area:	8835mm²
BMT/Material:	0.55mm Galvanised Steel
Coating system:	Unpainted galvanised steel, finish to match cladding
Brackets:	½ Round, unpainted galvanised steel, finish to match cladding
Fixings:	Fixings to suite application.

4.2 ROOFING INDUSTRIES - EZI-FLO™ CUSTOM RAINWATER HEADS

Location:	Refer to roof plan and elevations
Manufacturer:	Roofing Industries
Profile:	refer to detail
BMT/Material:	0.55mm Galvanised Steel
Coating system:	Unpainted galvanised steel, finish to match cladding

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4.3 ROOFING INDUSTRIES - EZI-FLO™ ROUND DOWNPIPES

Location:	Refer to roof plan and elevations
Manufacturer:	Roofing Industries
Downpipe:	Ezi-Flo™ Round - 80mm internal diameter
BMT/Material:	0.55mm Galvanised Steel
Coating system:	Unpainted galvanised steel, finish to match cladding
Brackets:	80mm Downpipe Clip (35mm standoff), unpainted galvanised steel, finish to match cladding

Accessories

4.4 ROOFING INDUSTRIES - SNOW STRAPS

Location:	At gutters
Manufacturer:	Roofing Industries
Material:	Galvanised Steel
Coating system:	Unpainted galvanised steel, finish to match cladding

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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.

1.6 NO SUBSTITUTIONS

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

1.7 PIPEWORK LAYOUTS

to be supplied by drainlayer

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

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

- As-built drainage plan

Provide this information prior to practical completion.

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Installer's warranty
- Producer Statement - Construction from the installer
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.10 TESTING

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC G13/AS1, 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.

Components - flanges

2.2 LEAK CONTROL FLANGE

Allproof Leak Control Flange with features as follows:

- PVC leak control flange to suit 50mm to 100mm pipe sizes
- Construction cap available
- Flange has locating lugs for floor waste grate, allowing sub-tile moisture to escape through DWV pipe system
- Outlet range includes 50mm, 50mm/90°outlet, 65mm, 80mm and 100mm pipe size
- Grates - 18 options available

Refer to SELECTIONS for options.

2.3 TILERITE

Allproof Tilerite PVC floor waste flange with features as follows:

- Base flange fits inside 80mm and 100mm pipe riser
- Threaded clamp ring and cyclone spigot
- Vinyl / waterproofing membrane clamped using 3 x stainless steel screws and clamp ring

- Height adjustable grate with threaded spigot
- Grates - square and round options
- Product options - 80mm and 100mm pipe sizes

Refer to SELECTIONS for options.

Component - floor waste gully

2.4 FLOOR WASTE GULLY

Allproof Floor Waste Gully with features as follows:

- Injection moulded PVC floor waste gullys / traps
- Product options - 80x50mm, 80x65mm, 100x50mm and 100x65mm

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.

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.

Installation - components

3.12 INSTALL GRATE, FLANGE AND FLOOR WASTE GULLY COMPONENTS

Install grate, flange and floor waste gully components in accordance with Allproof interior floor waste system brochure and installation guide.

Completion

3.13 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.

3.14 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

3.15 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:	Shower, refer to plan
Manufacturer:	Allproof Industries
Channel size:	80mm wide x 1500mm long, verify clearance on site at bathroom 80mm wide x 2000mm long, verify clearance on site at ensuite
Channel finish:	Stainless Steel (standard)
Grate:	Tile Insert
Flange type:	VF80 leak control flange
Floor waste gully:	80x50mm standard
Product code:	Refer to Allproof Industries interior floor waste system brochure and technical details

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7692 STIEBEL ELTRON VENTILATION

1 GENERAL

1.1 STIEBEL ELTRON
Refer to Stiebel Eltron drawings and specifications

2 PRODUCTS

2.1 STEIBEL ELTRON
Refer to Stiebel Eltron drawings and specifications

3 EXECUTION

3.1 STEIBEL ELTRON
Refer to Stiebel Eltron drawings and specifications

4 SELECTIONS

4.1 STIEBEL ELTRON
Refer to Stiebel Eltron drawings and specifications

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7701PC PDL & CLIPSAL ELECTRICAL

1 GENERAL

This section relates to the wiring for **Schneider Electric** domestic and small scale commercial installations, including:

- power
- lighting
- electrical automation
- Phone / Data / TV Wiring (VDI Systems)
- security system
- complete with componentry
- electrically-powered fittings

1.1 RELATED WORK

Refer to 7120 for HOT AND COLD WATER SYSTEMS.

Refer to 7692 for STIEBEL ELTRON VENTILATION

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

AFDD	Arc Fault Detection Device
ELV	extra low voltage
GLS	general lighting service
IP	international (ingress) protection classification
NUO	Network Utility Operator
PCB	printed circuit board
PIR	passive infrared
SIA	security integration architecture
TPS	tough plastic sheathed
TCF	Telecommunications Carriers' Forum

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
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 premises - Design, installation, commissioning and maintenance
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3008.1.2	Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions
AS/NZS 3100	Approval and test specification - general requirements for electrical equipment
AS/NZS 3112	Approval and test specification - Plugs and socket-outlets
AS/NZS 3133	Approval and test specification - Air-break switches
AS/NZS 3190	Approval and test specification - Residual current devices (current-operated earth - leakage devices)

AS/NZS 3439.3	Low - voltage switchgear and controlgear assemblies - Particular requirements for low - voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
NZS 4961	Electric cables - Polymeric insulated - For distribution and service applications
AS/NZS 5000.2	Electric cables - Polymeric insulated - For working voltages up to and including 450/750 V
AS/NZS 60335.1	Household and similar electrical appliances - Safety - General requirements
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance.
AS/NZS 61008.1	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - General rules
AS/NZS 61009.1	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - General rules
AS/NZS 61439.3	AS/NZS 61439.3 Low-voltage switchgear and controlgear assemblies - Part 3: Distribution boards intended to be operated by ordinary persons (DBO).
AS/NZS 11801.1	Information technology - Generic cabling for customer premises - General requirements (ISO/IEC 11801-1:2017, MOD)
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 (Reprint as at 21 January 2019).

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

PDL	PDL Iconic Series
PDL	PDL Iconic Styl Series
PDL	PDL 600 series
PDL	PDL Iconic Essence Series
PDL	PDL Pro Series
PDL	Electrical Solutions Guide
PDL & Clipsal	Catalogue and Price Guide
Clipsal	Solis Series
Clipsal	Solis T Series

Manufacturer/supplier contact details

Company:	**Schneider Electric New Zealand Ltd**
Web:	www.pdl.co.nz www.clipsal.com www.schneider-electric.co.nz
Email:	sales@nz.schneider-electric.com
Telephone:	0800 741 303

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

1 year	Warranty applies to materials under normal environmental and use conditions against failure of materials and execution

Refer to SENZ standard terms and conditions of supply for further 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 COMPLY

Comply with the Electricity (Safety) Regulations (2010), AS/NZS 3000, AS/NZS 3008.1.2 and TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services for listed and prescribed work and with the utility network operator requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Carry out work under the supervision of an electrical licensed supervisor.

1.8 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

Workers and supervisors to be appropriately qualified to applicable legislative requirements.

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.9 PDL SELECTIONS - FITTINGS AND HARDWARE

Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.

1.10 SAFETY OF INSTALLATION - DESIGN BY ELECTRICIAN

Before installation work commences provide a Certified Design. The Certified Design is to comply with the Electricity (Safety) Regulations (2010), regulations 58. It must be signed by the designer of the installation.

1.11 ELECTRICAL CERTIFICATE OF COMPLIANCE

Supply a certificate of compliance (CoC) to the owner, and if required the NUO, as required by the Electricity (Safety) Regulations 2010, prior to connection.

- Arrange for the NUO to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.
- Arrange for an inspector to inspect high-risk electrical work as required by Regulation 70.

1.12 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010, Reg 74A, to the owner and when required the BCA. To be provided no later than 20 working days after connection and prior to Practical Completion.

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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 connected load, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.0mm² 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
Range 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 or surface mount boards manufactured to AS/NZS 3439.3, or AS/NZS 61439.3, and installed in accordance with AS/NZS 3000. Manufactured from engineering grade resin with a glow wire rating of 850°C, complete with neutral and earth busbars, and insulated comb phase bar. Distribution boards to have 20% spare capacity for future additions and alterations.

2.5 CIRCUIT PROTECTION

General requirements including main switch 63A or 100A. Residual current protection 30mA, ensure RCDs meet Type A and comply with AS/NZS 61008.1, AS/NZS 61009.1, or AS/NZS 3190. MCB breaking capacity to be determined for each installation. Generally, 4.5kA is used for residential applications.

2.6 WALL BOXES

Single grid size or equivalent to be manufactured from either plastic or metal, with 2 or more gang sizes to be manufactured in metal.

2.7 SWITCH UNITS - PERSON WITH DISABILITIES

In addition to clause SWITCH UNITS above, units shall comply with NZBC G9/AS1, 2.0.1.b) and d).

2.8 SWITCH UNITS - PDL ICONIC SERIES / ICONIC STYL / ICONIC ESSENCE

Single pole switches to be 10 Amp minimum rated, double pole or intermediate to be 10 Amp minimum rated. All switches to be 230 Volt AC flush-plate units. Refer to drawings/schedules for number of switches per unit, dimmer units, LED (indicator or toggle) units, locator units and 2 way units.

2.9 SWITCHED SOCKET UNITS

10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters and manufactured to AS/NZS 3133, AS/NZS 3100, and AS/NZS 3112, single or multi gang as detailed.
For mounting height and orientation, refer to SELECTIONS.

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2.10 SURGE PROTECTION

Protection for the homes appliances with medium surge protection devices fitted to the switchboard. For variable electronic equipment fit fine surge protection to switched socket outlets.

2.11 CEILING ROSES

White plastic mounting base with screwed cover, manufactured to AS/NZS 3113. Terminal type. Suspended fittings to have sheathed round flexible cord to AS/NZS 3008.1.2. Refer to SELECTIONS.

2.12 DATA WIRING

To AS/NZS 11801.1.

2.13 TV CABLING

75 Ohm co-axial TV cable with television socket outlet.

2.14 TV AERIAL

Aerial suitable for both VHF and UHF reception of all local free-to-air broadcast channels.

2.15 SUSPENDED FITTING CHORD

Suspended fittings to have sheathed round flexible cord to AS/NZS 3008.1.2. Refer to SELECTIONS.

2.16 LIGHT FITTINGS

Install LED fittings – dimmable where desired. Ensure control gear is suitable for dimming if this is required.

2.17 RECESSED LIGHT FITTINGS - RESIDENTIAL

Residential recessed light fittings to AS/NZS 3000, 4.5.2.3.5:

- Existing fittings or retrofit situations, fittings maybe unmarked.
- New fittings can only be labelled - CA 80, CA 90, CA 135, IC, IC-F, & IC-4.

Refer to clause INSULATION & GENERAL CLEARANCES for clearances from insulation and other elements.

2.18 OUTDOOR SWITCHES & SOCKETS

Using materials with superior UV protection, impact strength, and addition chemical resistance when compared with interior polycarbonate fittings. Weather protected, switches and sockets to IP56 minimum. Sockets fitted with safety shutters behind socket pins, and all products able to be padlocked off or on.

2.19 OUTDOOR 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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation

3.4 MAIN SUPPLY

Lay underground mains to the network utility operator requirements. Excavate trench, install cable and marker tape and backfill.

3.5 METER BOX

Fit to meter box manufacturer and network utility operator requirements where detailed. Recess into external wall in sheltered area and flashed to weatherproof to NZBC E2/AS1, Figure 9.1.8.3B: General meterbox and similar penetrations. Arrange for meter installation inspection and connection.

3.6 DISTRIBUTION BOARD

Fit to board manufacturer requirements where detailed and to AS/NZS 3000. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

3.7 CIRCUIT PROTECTION

Install MCBs at distribution board to AS/NZS 3000 to protect each final sub circuit.

3.8 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

3.9 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's 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

3.10 MAIN EARTH

Provide a plastic toby box or uPVC tube to contain and protect the earth pin. Fix the connecting earth wiring closely and securely against wall surfaces.

3.11 ARC FAULT DETECTION DEVICE (AFDD)

To AS/NZS 3000 clause 2.9, AFDD on all final sub-circuits not exceeding 20A.

3.12 EARTH LEAKAGE PROTECTION

RCD protection installed to AS/NZS 3000.

3.13 RCD - RESIDENTIAL INSTALLATIONS

Install 30mA RCD protection at the switchboard for all final sub circuits to control outlets and lighting except for fixed or stationary cooking equipment, to AS/NZS 3000.

3.14 RCD-AFDD COMBINED - RESIDENTIAL INSTALLATIONS

Install a 30mA RCD - AFDD combined device (RCD Type II) at the switchboard for all final sub circuits not exceeding 20A, to control and protect outlets and lighting to AS/NZS 3000, (2018, 2.6 & 2.9). Protect over 20A to 32A final sub circuits with separate RCD and to AS/NZS 3000.

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3.15 RCD - NON-RESIDENTIAL INSTALLATIONS

Install 30mA RCD Type II protection at the switchboard to suit location and use, to AS/NZS 3000.

3.16 RCD - AFDD COMBINED - NON-RESIDENTIAL INSTALLATIONS

Install a 30mA RCD - AFDD combined device (RCD Type II) at the switchboard for all final sub-circuits not exceeding 20A, to suit location and use, to AS/NZS 3000, (2018, 2.6 & 2.9). Protect over 20A to 32A final sub-circuits with separate RCD and to AS/NZS 3000.

3.17 HIGH RISK AREA INSTALLATIONS

Use fixed wired RCD protected socket outlets to 30mA or 10mA in areas that may represent increased risk of electric shock to the user:

- Areas frequented by infants (AS/NZS 3000 recommends 10mA)
- Wet areas: bathrooms, laundries, kitchens
- Near pools and water features
- Where intended for use with cleaning equipment
- Hand held tools subject to movement in use, i.e. workshops, garages

3.18 SET-OUT

Unless specifically detailed, the position of outlets and equipment shown on drawings is indicative of requirements. Study documents and site conditions to ensure no conflict with other services or features will arise. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

3.19 CABLING

Install wiring systems to AS/NZS 3000.

Adhere to this standard at all times to all requirements.

Basic requirements or recommendations:
All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.

3.20 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.

3.21 WALL BOXES

Flush mounted in cavity construction and selected as appropriate to fit products to be mounted. Fix vertically mounted wall boxes to studs. Fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

3.22 SWITCH AND SOCKET UNITS

Fit all switch units and socket units to the manufacturer requirements with heights and mounting directions as indicated in SELECTIONS.

3.23 SWITCH AND SOCKET UNITS - FOR PERSON WITH DISABILITIES

Fit all switch units and socket units to the manufacturer requirements with heights (& mounting direction) and location to NZBC G9/AS1 and SELECTIONS.

3.24 ISOLATING SWITCHES

Locate isolating switches in agreed positions when not specifically shown on the drawings.

3.25 LIGHT FITTINGS

Install light fittings in locations and at heights detailed, and in accordance with the fitting manufacturer requirements.

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3.26 INSULATION & GENERAL CLEARANCES

Some electrical and mechanical services, and equipment may need to have a gap to insulation and some building elements. The gaps should be to the NZS 4246 based tables below or to the equipment manufacturers requirements if they require larger gaps. Smaller gaps to manufacturers requirements can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings).

Installed gap not to be more than 50mm bigger than the required gap.

The following tables are subject to:
- The requirements of NZS 4246 for insulation.
- The insulation is exposed to the source of heat or equipment etc.
- Insulation, has passed the needle flame test to AS/NZS 60695.11.5 and/or is non-combustible.
- Gaps to hot surfaces may have to be increased with non-compliant insulation and plastic/polymeric type insulation (EPS, XPS, PIR, etc), check with insulation manufacturer.
- Gaps to hot surfaces may be able to be reduced with non-combustible insulation, check with equipment manufacturer.
- "Secure insulation" if required means, glue, mechanical fix, or provide fixed barriers at gap edge of insulation to hold in place. Rigid or semi rigid insulation may only need a firm friction fit (secure loose pieces).
- Loose fill insulation will require fixed barriers to NZS 4246 to maintain gaps.

3.27 LIGHT FITTINGS TO INSULATION

Type of fitting	Minimum insulation clearance	Comments
Recessed, marked NON-IC, or unmarked	100mm (increase if over 100W)	To NZS 4246. NON-IC fittings and new or old unmarked & unknown fittings, and/or insulation. Insulation to be secured.
Recessed, CA 80, CA 90, or CA 135.	Abut fittings	To NZS 4246. Do not cover the fittings.
Recessed, IC, IC-F, or IC-4.	Abut & cover fittings.	To NZS 4246. Ensure insulation complies.
Recessed, marked Do-Not-Cover	Manufacturer clearances	To NZS 4246. Do not cover the fittings.
Independent control gear	Place on top of insulation & 50mm from fittings	To NZS 4246. If not on top allow 50mm clearance to insulation, do not cover. Includes, transformers, ballasts & drivers etc.
Surface fittings not exposed to insulation	Nil	To NZS 4246. Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings.
Surface fittings & exposed insulation	200mm	To NZS 4246. This is exposed insulation to any part of the exposed fitting & bulb/tube (e.g. exposed light in an unlined basement). Insulation to be secured.

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3.28 RECESSED LIGHT FITTINGS TO COMBUSTIBLE BUILDING ELEMENTS

Type of recessed fitting	Minimum building element clearance**	Comments
Marked NON-IC, or unmarked, ≤100W	100mm, vertical & horizontal	To AS/NZS 3000:2018
Marked NON-IC, or unmarked, >100W	200mm, vertical & horizontal	To AS/NZS 3000:2018
CA 80, CA 90 or CA 135	100mm, vertical & horizontal	To AS/NZS 3000:2018
IC, IC-F or IC-4	100mm, horizontal NA, vertical	To AS/NZS 3000:2018 To be NA vertical, fitting must be covered by insulation. If not covered use 100mm clearance.
Marked Do-Not-Cover	100mm, vertical & horizontal	To AS/NZS 3000:2018. Manufacturer clearances if greater than 100mm

**Combustible building elements exclude metal elements, but include timber framing or other timber based elements, and normal linings etc. Highly flammable materials & those likely to melt will need more clearance.

3.29 INBUILT RECESSED HOT APPLIANCES TO INSULATION

Appliance	Minimum insulation clearance	Comments
Electrical heaters	Manufacturer clearances	To NZS 4246.
Electrical heaters	100mm	Manufacturer clearances not known. To NZS 4246. Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.
Heat producing appliances & equipment	Manufacturer clearances	To NZS 4246.
Heat producing appliances & equipment	50mm	Manufacturers clearances not known. To NZS 4246. Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.

Note - Appliances and equipment excludes cables, junction boxes, light switches & power sockets etc

3.30 EXTRACTS, VENTS & ROOF UNDERLAY TO INSULATION

Appliance	Minimum insulation clearance	Comments
Ducted fan motors	50mm	To NZS 4246. Includes ducted rangehoods, extractors etc. Applies to the motor unit and electrical enclosures (not the ducts).
Ducted fan ducts	Abut	To NZS 4246. Excludes motor unit and electrical enclosures.
Unducted fan motors usually discharging to ceiling space	200mm	To NZS 4246. Includes unducted, rangehoods, extractors etc, discharging into roof space. To prevent debris falling into motor. Clearance may be able to be reduced, by providing a fixed barrier around the vent.
Roofing material/underlay	25mm	To NZS 4246. Maintain clearance from underside of roofing or flexible roofing underlay, to prevent wicking.

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3.31 DATA WIRING

Install data wiring to outlet positions shown on the drawings. Install in conduit for outlets on masonry surface.

3.32 TV AERIAL AND CABLING

Fix aerial, run cabling concealed below the roof and fit outlets where shown on the electrical drawings. Ensure the system is suitable for high quality reception of all VHF and UHF channels - Sky TV installation practices minimum. Cable penetrations through the cladding to be weatherproofed to comply with NZBC E2/AS1.

3.33 SURGE PROTECTION

Install surge protection devices to manufacturer requirements and in accordance with AS/NZS 3000. When fitting medium protection at the switchboard, protect the device by a dedicated MCB.

3.34 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire fittings and equipment to individual fittings and equipment manufacturer requirements. Refer to the drawings for required layouts and locations for equipment. Refer to SELECTIONS for schedules of fittings.

3.35 OUTDOOR/EXTERIOR SERVICES

Install all wiring systems in accordance with section 3 of AS/NZS 3000.

Adhere to this standard at all times to all requirements.

Basic requirements or recommendations:
Provide circuits and connections for exterior installations, including ELV 12/24 Volt path lighting and electronic irrigation systems. Refer to drawings for connection points. Where underground, ensure appropriate protection, such as thickness of sheathing, conduit, depth of cabling, and proximity to other services.

Use the appropriate rated fittings for power control and power supply. Weather protected switches to IP56. Install to manufacturer specifications using recommended fittings and sealants to maintain the products integrity.

Earth leakage protection to be provided for in areas where there is increased risk to human safety in the form of either RCDs at the distribution board, or socket outlet. RCDs are recommended for visible awareness of protection.

Refer to SELECTIONS.

Completion & Commissioning

3.36 COMPLETION MATTERS

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

- Leave installation operating correctly, with equipment clean and all lamps operational.

3.37 COMPLETION - TESTS & CERTIFICATION

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

3.38 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

4 SELECTIONS

For further details on selections go to www.pdl.co.nz, www.clipsal.com, www.schneider-electric.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 METER BOX

Location:	refer to drawings
Brand / type:	PDL Superboard

4.2 PDL DISTRIBUTION BOARD

Location:	refer to drawings
Brand / type:	PDL Superboard
MCB:	Resi9
RCCB:	Resi9
RCBO:	Resi9
Surge protectors:	Resi9
Modular contactors:	Schneider Electric
Main switch:	Resi9
Timers:	Schneider Electric
AFDD:	Resi9

Interior outlets - PDL

4.3 PDL INTERIOR OUTLETS - ICONIC SERIES

Location:	refer to drawings
Switch / socket outlets	PDL Iconic Series
Coverplate colour:	tbc
Switch - Height to centre of unit:	1050mm above FFL
Socket - height to centre of unit:	400mm above FFL, or 150mm above bench top.
Orientation:	Horizontal
Smart Home items:	tbc
Accessories:	labelled rocker switches.

Exterior switches and sockets - PDL

4.4 PDL EXTERIOR SWITCHES AND SOCKETS

Weatherproof socket outlets:	PDL WP / 56 series; Clipsal - WS Range
Timer switch:	PDL WP / 56 series
Weatherproof switch:	PDL WP / 56 series; Clipsal WS Range
Daylight switch:	PDL WP / 56 series
Weather protection rating (IP):	IP55

Light fittings

4.5 PDL EXTERNAL LIGHT FITTINGS

Wall lights:	tbc
Bulkhead lights:	tbc
Weather protection rating (IP):	IP55

4.6 INTERNAL LIGHT FITTINGS

Pendant lights:	tbc
Pendant cord:	tbc
Ceiling lights:	tbc
Wall lights:	tbc
Spotlights:	tbc
LED Downlights:	tbc

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Electrical appliances

4.7 ELECTRICAL APPLIANCES

Oven:	tbc
Cook top:	tbc
Range hood:	tbc
Dishwasher:	tbc
Fridge/Freezer:	tbc
Washer:	tbc
Dryer:	tbc