24 Cardigan Street Addition and Alteration

Project Specification

24 Cardigan Street, Arrowtown, New Zealand

Project Ref: 2123

Date: 24 August 2026

BC App

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

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1013 DOCUMENT CONTROL

1 DOCUMENT CONTROL

Document Control

1.1 PREPARED BY

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1.2 DOCUMENT DETAILS

Project Name:	24 Cardigan Street Addition and Alteration
Project Number:	2123
File Reference:	2123 BC
Client:	Maurice and Kerry Prendergast
Version:	BC

1.3 AUDIT CONTROL

Date:	24.08.26
Author:	HEAL
Approved by:	HEAL

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1232 INTERPRETATION & DEFINITIONS

1 GENERAL

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

Definitions

1.1 DEFINITIONS

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

1.2 PERSONNEL

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

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

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

1.3 ABBREVIATIONS

The following abbreviations are used throughout the specification:

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

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

1.4 DEFINED WORDS

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

1.5 WORDS IMPORTING PLURAL AND SINGULAR

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

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1232S1 EXPLANATION OF SCHEDULE SECTIONS

1 GENERAL

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

1.1 EXPLANATION OF SCHEDULE SECTIONS

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

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

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

1.2 SCHEDULE SECTIONS

The following Schedule sections are contained within the specification:

1238S1 Schedule of As Built Documentation
1239S1 Schedule of Operation & Maintenance Info
1270S1 Schedule of Samples & Prototypes
1278SR Schedule Of Slip Resistance Testing

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1234 DOCUMENTATION

1 GENERAL

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

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

Building Consent Authority documentation

1.1 BUILDING CONSENT

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

1.2 BUILDING CONSENT COMPLIANCE

It is an offence under the Building Act 2004

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

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

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

1.3 PROJECT PERSONNEL

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

Licensed Building Practitioner documentation

1.4 LICENSED BUILDING PRACTITIONERS

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

Include the following as applicable

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

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Also provide names and contact details of the following

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

1.5 RECORD OF WORK

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

Compliance information

1.6 DOCUMENTATION REQUIRED FOR CODE COMPLIANCE

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

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

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

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

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

1.7 PRODUCER STATEMENTS

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

Residential building contract

1.8 CHECKLIST

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

1.9 DISCLOSURE STATEMENT

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

1.10 BUILDING CONTRACT

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

1.11 DOCUMENTATION REQUIRED ON COMPLETION

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

Information and documentation relating to:

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

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

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Substitutions

1.12 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

1.13 NO SUBSTITUTIONS

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

1.14 PROPOSED SUBSTITUTIONS

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

1.15 NOTIFICATION OF SUBSTITUTIONS

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

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

Plus an assessment of:

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

and if requested:

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

1.16 ACCEPTANCE OF SUBSTITUTIONS

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

Amendments to issued Building Consent

1.17 CONTRACTOR AMENDMENTS TO BUILDING CONSENT

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

The contractor must:

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

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1.18 PRINCIPAL AMENDMENTS TO BUILDING CONSENT

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

The principal will:

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

Manufacturer's documents

1.19 MANUFACTURER'S AND SUPPLIER'S INSTALLATION REQUIREMENTS

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

1.20 CONTRACTOR TO OBTAIN CURRENT DOCUMENTATION

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

1.21 DOCUMENTATION PROVIDED FOR BUILDING CONSENT

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

Branded work sections

1.22 BRANDED PRODUCTS / SYSTEMS

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

1.23 CROSS REFERENCED WORK SECTIONS

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

Care of construction documents

1.24 CONSTRUCTION ISSUE

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

1.25 REVISIONS TO CONSTRUCTION ISSUE

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

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

1.26 RETURN DOCUMENTS ISSUED FOR CONSTRUCTION

On completion of the contract works:

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

The Contract Administrator will advise whether such documents shall be:

- delivered to the Contract Administrator/Owner; or

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

Confidentiality of documents

1.27 CONFIDENTIALITY OF DOCUMENTS

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

2 SELECTIONS

Receipt of construction documents

2.1 DOCUMENT RECEIPT - HARD COPIES

Hard copies of plans, specifications and other documents issued for construction shall be sent to the contractor.

2.2 DOCUMENT RECEIPT - ELECTRONIC DOCUMENTS

Electronic documents issued for construction shall be obtained as an email attachment.

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1238 AS BUILT DOCUMENTATION

1 GENERAL

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

1.1 SCHEDULE SECTION

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

1.2 AS BUILT DOCUMENT REQUIREMENTS

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

As built drawings recording:

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

Records of:

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

1.3 PROVISIONAL AS BUILT DOCUMENTS

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

1.4 AS BUILT DOCUMENT REVIEW

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

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

1.5 COMPLETE AS BUILT DOCUMENTS

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

1.6 AS BUILT DOCUMENTS - ELECTRONIC COPY

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

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

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1238S1 SCHEDULE OF AS BUILT DOCUMENTATION

1 GENERAL

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

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

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

As built documents

1.2 AS BUILT DOCUMENTS

Refer to the following sections:

7421MO Marley Optim DWV Sanitary System

1.3 AS BUILT DOCUMENTS - ADDITIONAL ITEMS

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

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1239 OPERATION & MAINTENANCE

1 GENERAL

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

1.1 SCHEDULE SECTION

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

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

Operation and maintenance documents

1.2 OPERATION AND MAINTENANCE INFORMATION - BUILDING ACT

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

1.3 OPERATION AND MAINTENANCE INFORMATION

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

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

1.4 MAINTENANCE REQUIREMENTS

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

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

1.5 APPLIANCE MANUALS AND OPERATING INSTRUCTIONS

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

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

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1.6 SELECTIONS INFORMATION

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

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

Include brochures and other information included with the items supplied.

1.7 SELECTIONS INFORMATION - SUBSTITUTIONS

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

Documentation format

1.8 O&M DOCUMENTATION FORMAT

Unless otherwise specified in a work section,

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

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

Submission and review

1.9 O&M DOCUMENTATION SUBMISSION & REVIEW

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

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

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

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

The reviewer may advise that:

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

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

Final documentation

1.10 SUBMISSION OF FINAL DOCUMENTATION

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

1.11 FINAL O&M DOCUMENTATION - HARDCOPY

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

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

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

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

1.12 FINAL O&M INFORMATION - ELECTRONIC COPY

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

1.13 REVIEW OF FINAL DOCUMENTATION

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

2 SELECTIONS

O&M Documentation

2.1 FINAL DOCUMENTATION - INFORMATION FOR OPERATION AND MAINTENANCE

Provide a complete electronic copy to the contract administrator.

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

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

2.2 FINAL DOCUMENTATION - OPERATION AND MAINTENANCE MANUALS

Provide a complete electronic copy to the contract administrator.

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

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

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Maintenance contract proposals

2.3 MAINTENANCE CONTRACT PROPOSALS

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

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1239S1 SCHEDULE OF OPERATION & MAINTENANCE INFO

1 GENERAL

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

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

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

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

Information for operation and maintenance

1.2 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the following sections:

4239	Soffit Cladding
4239JH	James Hardie® Soffits
4272C	Craftstone Real Stone Veneer System
4281SL	Sto Stucco Cladding Systems
4311M	Metalcraft Profiled Roofing
4521AR	APL Residential Aluminium Windows & Doors
4610AG	AGP Glazing Residential
6211AW	Ardex Wall Tiling
6221A	ARDEX Floor Tiling Solutions
6700R	Resene Painting General
6734D	Dryden WoodOil Migrating Non-Filming Timber Protector
7123B	Buteline Hot & Cold Water System
7411M	Metalcraft Roofing Rainwater Spouting Systems
7513	Central Heating Systems
7555E	Escea Gas Fires
7556E	Escea Wood Fires
7556W	Rinnai Warmington Solid Fuel Fires

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.

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1240 ESTABLISHMENT

1 GENERAL

This general section relates to site establishment including:

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

Notices and approvals

1.1 STATUTORY OBLIGATIONS

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

1.2 BUILDING CONSENT AUTHORITY AND NETWORK UTILITY APPROVALS

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

1.3 NOTIFY NETWORK UTILITY OPERATORS

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

Inspections

Site preparation

1.4 WORKING AREA

Limited to the designated working areas on the site:

1.5 SITE AND SOIL SURVEYS

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

1.6 GROUND CONDITIONS

Refer to the geotechnical / soils report included with the documentation bundle or stamped consented documents.

Temporary construction

1.7 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.

1.8 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.

1.9 SITE - SAFETY SIGNAGE

Provide hazard board and other safety signage as required.

1.10 SITE - PROJECT SIGN

Obtain approval to, provide and erect a timber framed sign board 1.2m x 800mm. Sign to be, fully painted with vinyl lettering or fully printed, and displaying:

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

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First aid

1.11 FIRST AID EQUIPMENT
Provide first aid equipment.

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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 INCONVENIENCE TO OTHERS

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

1.9 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.

1.10 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.

1.11 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.

1.12 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.

1.13 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.

1.14 SMOKE FREE REQUIREMENTS

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

1.15 RESTRICTIONS

Do not:

- light rubbish fires on the site.
- bring dogs on to or near the site.

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- bring radios/audio players on to the site.

Set-out and tolerances

1.16 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.

1.17 DATUM

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

1.18 SET-OUT

Set out the work to conform with the drawings.

1.19 USE OF SET-OUT INSTRUMENTS

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

1.20 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.

1.21 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

1.22 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.

1.23 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.

1.24 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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1.25 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.

1.26 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.

1.27 MINIMISE DELAYS DUE TO WEATHER

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

Defective or damaged work

1.28 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

1.29 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.

1.30 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.

1.31 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.

1.32 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.

1.33 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

1.34 QUALIFICATIONS GENERALLY

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

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1.35 QUALIFICATIONS WORKERS – RESTRICTED BUILDING WORK

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

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

1.36 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

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

1.37 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

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

1.38 QUALIFICATIONS 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.

1.39 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.

1.40 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

1.41 NEW PRODUCTS

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

1.42 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.

1.43 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.

1.44 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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1.45 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.

1.46 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.

1.47 CONDITION OF PRODUCTS

To be in perfect condition when incorporated into the work.

1.48 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

1.49 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.

1.50 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.

1.51 OTHER SAMPLE REQUIREMENTS

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



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Prototypes

1.52 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.

1.53 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.

1.54 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

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.

Remove protection

1.57 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.



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Completion

1.58 SPECIAL REQUIREMENTS

Refer to individual work sections for any special completion requirements.

1.59 LEAVE WORK

Leave work to the standard required for the following procedures.

1.60 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.

1.61 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.

1.62 COMPLETE ALL SERVICES

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

1.63 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

1.64 SPECIAL REQUIREMENTS

Refer to individual work sections for any special commissioning requirements.

1.65 MOVING PARTS

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

1.66 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.

1.67 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.

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1.68 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

1.69 ADDITIONAL PRACTICAL COMPLETION INFORMATION

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

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

Defects period submissions

1.70 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

1.71 FINAL COMPLETION - SUBMISSIONS

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

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

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1270S1 SCHEDULE OF SAMPLES & PROTOTYPES

1 GENERAL

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

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

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

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

Samples

1.2 SAMPLES

There are no work section requirements.

1.3 SAMPLES - ADDITIONAL ITEMS

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

Prototypes

1.4 PROTOTYPES - REVIEW

There are no work section requirements.

1.5 PROTOTYPES - TESTING

There are no work section requirements.

1.6 PROTOTYPES - ADDITIONAL ITEMS

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



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1278SR SCHEDULE OF SLIP RESISTANCE TESTING

1 GENERAL

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

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

This section includes schedules identifying work sections with:

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

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

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

Slip resistance - surfaces not requiring testing

1.4 SLIP RESISTANCE - SURFACES EXEMPT FROM TESTING

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

6221A ARDEX Floor Tiling Solutions

1.5 SLIP RESISTANCE - PREVIOUSLY TESTED SURFACE

There are no work section requirements.

Slip resistance - surfaces requiring testing

1.6 SLIP RESISTANCE - SURFACES REQUIRING TESTING

There are no work section requirements.

1.7 TEST METHODS & MINIMUM TEST VALUES

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

Test condition:	Minimum test value required:	Test method:
Level access wet	39 SRV	Wet pendulum test method of AS 4586, Appendix A using the Slider 96 rubber.

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

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

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

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

Minimum test value required (COF)	Maximum gradient	Maximum slope in degrees
0.433	1 in 39	1.5°
0.444	1 in 29	2.0°
0.455	1 in 23	2.5°
0.466	1 in 20	3.0°
0.477	1 in 17	3.5°
0.488	1 in 15	4.0°
0.499	1 in 13	4.5°
0.504	1 in 12	4.76°
0.521	1 in 11	5.5°
0.525	1 in 10	5.7°
0.543	1 in 9	6.5°
0.557	1 in 8	7.125°

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1.8 GENERAL REPORTING REQUIREMENTS

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

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

Slip resistance - additional items

1.9 SLIP RESISTANCE - ADDITIONAL ITEMS

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



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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 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

1.2 DOCUMENTS

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

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

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

1.3 QUALIFICATIONS

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

1.4 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 LAMINATED TIMBER

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

2.3 ENGINEERED WOOD

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

Treatment to NZS 3640 and AS/NZS 1604.1.

2.4 TIMBER TRUSSES

To FTMA CoP. Moisture content 16% at supply.

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2.5 WALL DWANGS, NOGS AND BLOCKING

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

2.6 EXTERIOR CAVITY WALL BATTENS - TIMBER - NON-STRUCTURAL

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

2.7 EXTERIOR CAVITY WALL BATTENS - PROPRIETARY - NON-STRUCTURAL

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

Components

2.8 NAILS

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

2.9 SCREWS

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

2.10 BOLTS AND COACH SCREWS

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

2.11 NAIL PLATES

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

2.12 CONNECTORS

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

2.13 CORROSION RISKS

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

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

2.14 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

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3 EXECUTION

3.1 EXECUTION GENERALLY

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

3.2 SEPARATION

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

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

3.3 ATTENDANCE

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

3.4 MOISTURE CONTENT

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

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

3.5 SET-OUT

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

3.6 FRAMING SUB-FLOOR

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

3.7 FRAMING FLOORS

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

3.8 FRAMING WALLS

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

3.9 FRAMING ROOFS

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

3.10 FRAMING CEILINGS

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

3.11 INSTALLING WALL UNDERLAYS

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.12 FIT CAVITY BATTENS

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

3.13 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

4 SELECTIONS

4.1 SUB-FLOOR FRAMING - RADIATA PINE

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

4.2 FLOOR FRAMING - RADIATA PINE

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

4.3 EXTERIOR WALL FRAMING - RADIATA PINE

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

4.4 CAVITY BATTENS

Cavity battens	Species	Grade	Treatment
Timber - Non Structural:	Radiata pine	Merchantable	H3.1

4.5 ROOF FRAMING - RADIATA PINE

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

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3827E ECOPLY® PLYWOOD BRACING SYSTEM

1 GENERAL

This section relates to the use of Ecoply® sheets for structural wall bracing:

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®

Documents

1.2 DOCUMENTS

Documents referred to in this section are:

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

1.3 MANUFACTURER DOCUMENTS

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

Ecoply® Specifications and Installation Guide
Ecoply® Technical Notes.

Manufacturer/supplier contact details

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

Requirements

1.4 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 NO SUBSTITUTIONS

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

Performance

1.6 BRACING SYSTEM

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

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

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

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

Note:

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

2 PRODUCTS

Materials

2.1 ECOPLY® STRUCTURAL PLYWOOD

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

Components

2.2 NAILS

Nail fixing for Ecoply® used as a structural bracing

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

Accessories

2.3 TREATMENT OF SHEET CUTS

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

- Ecoply panels must be stored and handled with care to maintain good condition before use and after installation.
- Store protected from sun, rain and wind that would otherwise bring about rapid changes in temperature and humidity.
- Store sheets stacked flat (not on edge) and support for the sheets must be provided at both ends and middle to avoid distortion. Ensure bearers in packs above are aligned over bearers below (to avoid inducing curves in sheets).
- The stack must be kept dry and clear of ground contact, and placed so that it will not be exposed to mechanical damage.
- To avoid staining, fading and surface checking, the sheets must not be exposed to the

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weather while awaiting installation.
- Store in well-ventilated areas away from sources of heat, flames or sparks.

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

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

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

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

Application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 BOTTOM PLATE FIXING

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

3.6 NAIL FASTENERS TO BRACING ELEMENT

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

3.7 FIXING ECOPLY® STRUCTURAL PLYWOOD SHEETS

Fit and fix to Ecoply Bracing Specification and Installation Guide.

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

3.8 TREATING CUT EDGES

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

3.9 FIXING GIB® PLASTERBOARD SHEETS

Fix Gib® plasterboard sheets to with relevant GIB® literature. Refer to the appropriate Gib® Plasterboard section.

Completion

3.10 PROTECTION

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

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

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4.1 ECOPLY® STRUCTURAL PLYWOOD

Location:	Refer to drawings and bracing calculations
Manufacturer:	Carter Holt Harvey Plywood Ltd
Brand/grade:	Ecoply® DD or better A BOND
Stress grade:	F8
Thickness:	7mm
Treatment:	H3.2 CCA

4.2 BRACING SYSTEMS

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

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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 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

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 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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Pro Clima documents relating to work in this section are:

SOLITEX MENTO® Application Guide 24.06.2025
BRANZ Appraisal 838 (2024)- TESCON EXTORA Sealing Tape
BRANZ Appraisal 855 (2025)- SOLITEX MENTO 3000 Roof and Wall Underlay

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

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	For Pro Clima system

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- 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.

1.5 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

1.6 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.

Requirements

1.7 NO SUBSTITUTIONS

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

1.8 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

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

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

2 PRODUCTS

Roofing underlays

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

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

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

Components

2.2 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.



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Tapes

2.3 WEATHERTIGHT SEALING TAPE

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

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

2.4 SILL TAPE

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

2.5 WEATHERTIGHT JOINERY SEALING TAPE

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

2.6 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.

Accessories

2.7 WIRE NETTING

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

2.8 SAFETY MESH

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

2.9 GUTTER AND UNDER FLASHINGS

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

2.10 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.

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3.4 INSPECTION

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

Preparation

3.5 PREPARATION

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

Application - roofing underlay

3.6 WIRE NETTING

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

3.7 SAFETY MESH

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

3.8 FIX ROOF UNDERLAY - STANDARD METHOD

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

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

3.9 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

3.10 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.

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.proclima.co.nz.
Substitutions are not permitted to the following.

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Materials

4.1 PRO CLIMA SOLITEX MENTO 3000 ROOF & WALL UNDERLAY

Location:	Refer to drawings
Manufacturer:	Pro Clima NZ Limited
Type:	SOLITEX MENTO® 3000 three layer underlay
Jointing & sealing tape:	TESCON EXTORA® weathertight sealing tape
	TESCON EXTOSEAL® sill tape
Adhesive:	ORCON® Classic multi-purpose adhesive



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

1 GENERAL

This section relates to the 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 29.08.2023
BRANZ Appraisal 651 (2024) - Thermakraft Covertek 407 Roof and Wall Underlay - Amended 01.07.2025
BRANZ Appraisal 695 (2023) - Watergate Plus Wall Underlay - Amended 01.07.2025
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 01.07.2025
BRANZ Appraisal 917(2025) - Thermakraft Covertek 403 Roof and Wall Underlay

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BRANZ Appraisal 942 (2022) - OneSeal Multi-fit Pipe and Cable Penetration Seals - Amendment 04.06.2024
BRANZ Appraisal 943 (2021) - Thermakraft Covertek 401 Roof and Wall Underlay - Amended 01.07.2025
BRANZ Appraisal 1000 (2023) - Thermakraft Thermabar 397 Light Diffusing Reflective Underlay - Amended 01.07.2025
BRANZ Appraisal 1029 (2023) - Thermakraft Ausnet Hexagonal Wire Mesh
BRANZ Appraisal 1104 (2020) - Thermathene Orange Concrete Underlay - Amendment 06.09.2024
BRANZ Appraisal 1122 (2026) - Thermaflash Flashing Tape
BRANZ Appraisal 1229 (2023) - Thermakraft Covertek 215 Roof Underlay - Amended 19.06.2025
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 - BRANZ appraised

1.7 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

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.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 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.

Completion

3.6 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 drawings
Manufacturer:	Thermakraft
Brand:	Supercourse 500
Type:	Damp proof course
Width:	To suit

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4171E ECOPLY® BARRIER RIGID AIR BARRIER SYSTEM

1 GENERAL

This section relates to the use of Carter Holt Harvey Plywood Ltd (CHH PLY) Ecoply® Barrier as a rigid wall underlay and air barrier in residential and commercial buildings.

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®

Documents

1.2 DOCUMENTS

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

NZBC B1/AS1	Structure
NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
AS/NZS 1604.3:2012	Preservative-treated wood-based products - Part 3:Plywood
AS/NZS 2269.0	Plywood - structural - specifications
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber Structures Standard
NZS 3604	Timber-framed buildings
BRANZ Technical Paper P21	BRANZ Technical Paper P21 (2010): A wall bracing test and evaluation procedure

1.3 MANUFACTURER DOCUMENTS

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

Ecoply® Structural Rigid Air Barrier - Barrier Specification & Installation Guide
CHHPly Product Technical Statement – Ecoply® Barrier: Rigid Air Barrier
Ecoply® Barrier data sheets
CHHPly Safety Data Sheet - Ecoply® Barrier
Ecoply® Barrier sITe App
Ecoply® Barrier CAD drawings
BRANZ Appraisal 827 (2025) - Ecoply® Barrier Rigid Air Barrier

Manufacturer/supplier contact details

Company:	Carter Holt Harvey Plywood Limited
Web:	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.

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Performance

1.6 BRACING SYSTEM

The Ecoply® Barrier bracing system provides bracing resistance for walls of light timber framed buildings under wind and earthquake loading to NZBC B1 and NZS 3603. Bracing units are derived from BRANZ P21 test method.

- Refer to drawings for brace location, length and type.
- Refer to Ecoply® Structural Rigid Air Barrier - Barrier Specification & Installation Guide for bracing details.
- Refer to table for summary of P21 Ratings for 2.4m high Ecoply® Barrier wall bracing elements:

Brace type	Min. wall length	Lining Requirements	Gib HandiBrac® Hold-Downs	Bus/m Wind	Bus/m EQ
EPB1	0.4m	Ecoply® Barrier one side	Required	80	95
EPB1	0.6m	Ecoply® Barrier one side	Required	95	105
EPB1	1.2m	Ecoply® Barrier one side	Required	120	135
EP2	0.6m	Ecoply® Barrier each side	Required	105	115
EPBS	0.4m	Ecoply® Barrier one side	Not required	60	60
EPBS	0.6m	Ecoply® Barrier one side	Not required	60	65
EPBS	1.2m	Ecoply® Barrier one side	Not required	65	70
EPBS	2.4m	Ecoply® Barrier one side	Not required	80	90
EPBG	0.4m	Ecoply® Barrier one side & 10mm Gib® Standard plasterboard other side	Required	100	115
EPBG	1.2m	Ecoply® Barrier one side & 10mm Gib® Standard plasterboard other side	Required	150*	150*

Note* - Maximum 120 Bus/m for any bracing element on timber framed floor (NZS 3604)
Note:

- Plywood must be connected to both bottom and top plate for bracing.
- GIB Handibrac hold down connections required each end of bracing elements, unless otherwise specified.
- Bracing and other technical information has been specifically tested using Ecoply structural plywood. This information cannot be used with any other plywood brand and bracing data must be sought directly from the specific plywood manufacturer.

Quality control and assurance

2 PRODUCTS

Materials

2.1 ECOPLY® BARRIER PLYWOOD

Ecoply® Barrier sheet, 7mm thick, 1197mm wide and 2440 and 2745mm long structural plywood. Manufactured from radiata pine to AS/NZS 2269. H3.2 CCA treated to E2/AS1 and AS/NZS 1604.3 requirements. Beige polyester powder coated on front face and four edges. Sheets marked Ecoply® Barrier.

Components

2.2 NAILS

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

Fixing method:	Minimum nail type:	Zone:

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Hand driven	50 x 2.8mm (flat head or round head) hot-dip galvanized or better	B & C zones
Power driven Paslode Pneumatic Cladding Coil Nailer	Paslode Impulse 50 x 2.8mm hot-dip galvanized ring round head drive B20557 or better	B & C zones
Hand driven	50 x 2.8mm (flat head or round head) annular grooved stainless steel	D Zone

2.3 SEALING TAPE

Ecoply® Barrier Sealing Tape, 60mm x 30m tape for vertical sheet joints, grey colour. PP fleece carrier paper, siliconized release paper.

2.4 SILL TAPE

Ecoply® Barrier Sill Tape, 150mm x 20m and 200mm x 20m, black colour. Butyl rubber (with PE film) carrier paper, siliconized foil release paper.

2.5 FRAME SEALING TAPE

Ecoply® Barrier Frame Sealing Tape, 150mm x 30m and 200mm x 30m, grey colour. PP fleece carrier paper, siliconized release paper.

2.6 BRACING HOLD-DOWN CONNECTORS

Gib HandiBrac® hold-down brackets manufactured by Mitek™ NZ complete with mechanical fastener with a minimum 15kN uplift capacity for concrete floors and 150 x 12mm dia. galvanized coach screw for timber floors.

2.7 BRUSH ON TREATMENT

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

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

Kiln dried verified structural grade timber, minimum SG8. Framing sizes and set outs to NZS 3604 (or be specially designed to NZS 3603) with studs at 600mm maximum centres, nogs at 1350mm maximum centres. Treatment to NZBC B2/AS1 and NZS 3602.

Ensure all Ecoply® Barrier sheet edges and joints will be fully supported by being fastened to framing. The minimum framing width for fixing Ecoply Barrier is 45mm at each Ecoply® Barrier sheet joint.

Application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 APPLICATION - GENERAL

Apply products to Carter Holt Harvey Plywood Limited requirements, refer to Ecoply® Structural Rigid Air Barrier - Barrier Specification & Installation Guide.

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3.6 TREAT CUTS

Treat cut ends with brush on timber preservative treatment.

3.7 FIXING ECOPLY® BARRIER SHEETS

Position Ecoply® Barrier sheets with the water-resistant powder coat film facing outwards with the long side of the sheet orientated vertically to framing members. Allow 2-3mm expansion gap between vertical sheet edges. Place any cut sheet ends at the top with the sealed sheet end at the bottom. Cover all other cuts and penetrations with Ecoply® Barrier Sealing tape. Sheets to overhang the bottom plate, joist or bearer by a minimum of 25mm.

3.8 FASTENERS - STANDARD NAILING PATTERN

Nail 7mm minimum from sheet edges at 150mm centres around perimeter of each sheet or part sheet, and 300mm centres within sheet body up to and including Very High wind zone, or 150mm centres within sheet body in Extra High wind zone. Finish fastener heads flush with the panel surface.

3.9 FIXING TO RESIST UPLIFT

For 4.7kN fixing of top plate to studs modify standard nailing pattern, nail sheet edge to top plate at 75mm centres, 20mm from the sheet edge and complete the remainder of the sheet fastening as per Ecoply® Barrier Specification.

3.10 LINTEL CONNECTION FOR UPLIFT

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

3.11 TAPE- GENERAL

Apply pressure to seal the Ecoply® tapes with minimal wrinkles in accordance with the Ecoply Barrier Specification and Installation Guide.

3.12 VERTICAL ECOPLY® BARRIER SHEET JOINTS - WALL PLANE

Ensure panels are clean, centre Ecoply® Barrier Sealing Tape over vertical joints in accordance with the Ecoply Barrier Specification and Installation Guide.

3.13 VERTICAL ECOPLY® BARRIER SHEET JOINTS - CORNERS

Ensure panels are clean, centre Ecoply® Barrier Sealing Tape over external and internal wall corners in accordance with the Ecoply Barrier Specification and Installation Guide.

3.14 HORIZONTAL SHEET JOINT - FACE SEAL

Face seal horizontal joints with Ecoply® Barrier 150mm Sealing Tape in accordance with the Ecoply Barrier Specification and Installation Guide. Provide a 5mm expansion gap between plywood sheets.

3.15 TAPE SPLICES & JOINTS

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

3.16 WINDOW & DOOR OPENINGS

Apply Ecoply® Barrier Sill Tape to cover the bottom of the opening and Ecoply® Barrier Frame Sealing Tape to the vertical trimmer stud and lintel, reinforce corners at each end of the lintel with 100m strip of Ecoply® Barrier 150m Frame Sealing Tape. Apply tapes in accordance with the Ecoply Barrier Specification and Installation Guide.

3.17 PENETRATIONS

Apply Ecoply® Barrier Sill Tape to flash to Ecoply® Barrier plywood sheet, provide 100mm minimum cover to sheet. Bandage around pipes with Ecoply® Barrier Frame Sealing Tape with 25mm minimum width of cover to pipe. Apply in accordance with the Ecoply Barrier Specification and Installation Guide.

Service penetrations may also be sealed using Pro Clima® Kaflex Cable sealing Grommets or Roflex Pipe Sealing Grommets. Ensure all Pro Clima® Installation instructions are followed.



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3.18 BRACING SYSTEM - CONCRETE FLOORS

Use Gib HandiBrac® hold-down connections at each end of bracing element as required. In external walls position Gib HandiBrac® to the internal edge of the bottom plate. Refer to the installation instructions supplied with connectors for correct bolt types to be used for concrete floors. Within the length the bracing element fix bottom plates to the requirements of NZS 3604.

3.19 BRACING SYSTEM - TIMBER FLOORS

Use Gib HandiBrac® hold-down connections at each end of bracing element as required. In external walls position Gib HandiBrac® in the centre of the perimeter joist or bearer. Refer to the installation instructions supplied with connectors for correct bolt types to be used for timber floors. Within the length the bracing element fix bottom plate to the requirements of NZS 3604.

3.20 FLASHINGS

Apply Ecoply® Barrier Frame Sealing Tape to metal flashings in accordance with the Ecoply Barrier Specification and Installation Guide.

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

4.1 ECOPLY RADIATA PINE CERTIFIED SUSTAINABLE TIMBER

Product:	Ecoply® Barrier Plywood
Certification type:	FSC
Timber species:	Pinus Radiata
Origin:	New Zealand
Claim:	FSC Mix

4.2 ECOPLY® BARRIER PLYWOOD

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

4.3 ECOPLY® BARRIER BRACING

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

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4239 SOFFIT CLADDING

1 GENERAL

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

- Western Red Cedar Soffit Lining

Documents

1.1 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
AS/NZS 2269.0	Plywood - structural - Specifications
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3617	Profiles of weatherboards, fascia boards and flooring
NZS 4251.1	Solid plastering: Cement plasters for walls, ceilings and soffits

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

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

R & K

Warranties

Requirements

1.3 QUALIFICATIONS

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

1.4 HEALTH AND SAFETY

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

1.5 NO SUBSTITUTIONS

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

1.6 INFORMATION FOR OPERATION AND MAINTENANCE

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

Provide this information prior to practical completion.

2 PRODUCTS

Timber board soffit cladding

2.1 TONGUE AND GROOVE TIMBER BOARD SARKING

Tongue and groove timber board profile as detailed, in long lengths with species and grading to the requirements of NZS 3602, table 2, Requirements for wood-based building components to achieve a 15-year durability performance. Select appearance grades to NZS 3631 requirements.



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Timber board soffit cladding fasteners

2.2 NAILS - GALVANIZED

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

2.3 NAILS - STAINLESS STEEL

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

2.4 SCREWS - STAINLESS STEEL

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

Timber profiles

2.5 TIMBER TRIM

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

3 EXECUTION

Conditions

3.1 HANDLING

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

3.2 SUBSTRATE

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

3.3 MOISTURE CONTENT TIMBER BOARD

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

3.4 PENETRATIONS

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

Install timber board soffit cladding

3.5 FIXING TONGUE AND GROOVE SARKING

Using full length sarking as soffit cladding.

3.6 SCARF JOINTS

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

3.7 FIXING, PAINT FINISH

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

3.8 FIXING, CLEAR FINISH

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

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Install timber profiles

3.9 EXECUTION

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

3.10 TIMBER TRIM

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

3.11 NAILING, PAINT FINISH

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

3.12 NAILING, CLEAR FINISH

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

Completion

3.13 COMPLETION MATTERS

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

4 SELECTIONS

Timber Board soffit cladding

4.1 TONGUE AND GROOVE TIMBER BOARD

Profile:	R&K 87 (134.5 x 9.5mm)
Species:	Western Red Cedar
Treatment:	DA
Fixing:	Concealed
Finish:	Stained using Drydens Wood Oil

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4239JH JAMES HARDIE® SOFFITS

1 GENERAL

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

- James Hardie® Villaboard™ Soffit Lining

Documents

1.1 ABBREVIATIONS AND DEFINITIONS

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

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 1170.2:2011	Structural design actions - Wind actions
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3604	Timber-framed buildings

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

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

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For lining product and accessories

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

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1.6 NO SUBSTITUTIONS

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

1.7 INFORMATION FOR OPERATION AND MAINTENANCE

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

James Hardie® Eaves and Soffit Care and Maintenance

Performance

1.8 PERFORMANCE - UP TO AND INCLUDING VERY HIGH WIND ZONE

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

2 PRODUCTS

Materials

2.1 VILLABOARD™ SOFFIT LINING

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

Components

2.2 FASTENER TYPE

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

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

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

Components - Villaboard™ Soffit Lining

2.3 POLYPROPYLENE TAPE

Polypropylene tape, 30mm minimum width.

2.4 CONTROL JOINT

Refer to SELECTIONS.

2.5 HARDIE™ DRIVE SCREW

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

2.6 VILLADRIVE SCREW

Villadrive Screw, 30mm x 6g, Class 3

2.7 FIBREZIP® SCREW

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

2.8 HARDIE™ FLEX NAILS

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

2.9 BASE COMPOUND

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

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Components - General

2.10 FLEXIBLE JOINT SEALANT
Refer to SELECTIONS.

3 EXECUTION

Conditions

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

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

3.3 PRE-INSTALLATION REQUIREMENTS
Check work previously carried out and confirm it is of the required standard for this part of the work.
Moisture content timber framing: 18% maximum

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

Application - general

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

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

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

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

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

3.10 BUTT JOINT
Paint sheet edges prior to installation.

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

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

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

3.14 FINISHING OVER DRIVEN FASTENERS
Fill over driven fasteners with Hardie™ Base Coat to the required level of finish.

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3.15 PAINTING

Refer to painting section/s for protective coating system.

Completion

3.16 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 VILLABOARD™ SOFFIT LINING - SQUARE EDGE

Location:	Refer to drawings
Brand/type:	James Hardie® Villaboard™ Soffit Lining
Edge:	Square edge
Thickness/size:	6mm
Joint:	Butt joint with 30mm polypropylene or flashing tape with 1mm max between sheets
Fixing method:	Screw and adhesive
Fixing Type:	Hardie Drive Screw, 316 ss, 30mm x 7g
Adhesive:	Sikaflex
Finish:	Paint finish

Painting

4.2 PAINTING

Refer to painting section/s for details.



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4272C CRAFTSTONE REAL STONE VENEER SYSTEM

1 GENERAL

This section relates to the supply and installation of Craftstone Real Stone Veneer System as a non-structural natural stone veneer cladding.

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:

EPS	Expanded Polystyrene
GSM	Grams per Square Metre
ICF	Insulated Concrete Formwork
PIR	Polyisocyanurate
PVC	Polyvinyl Chloride
RAB	Rigid Air Barrier

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 2908.2	Cellulose-cement products - Flat sheets
NASH Building Envelope Solutions	2019 Light Steel Framed Buildings
NASH N-11	House Insulation Guide
NASH Standard Part 2	May 2019 Light Steel Framed Buildings

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Craftstone Real Stone Veneer System Technical Manual (June 2022)
Craftstone Real Stone Veneer System Technical Manual Addendum for Steel Framing (August 2024)
Craftstone FCB Technical Manual (April 2022)
Craftstone Real Stone Veneer System Detail Drawings
BRANZ Appraisal 793 (2025) - Craftstone Real Stone Veneer Systems

Manufacturer/supplier contact details

Company:	Petros Holdings Ltd
Trading as:	Craftstone New Zealand
Web:	www.craftstone.co.nz
Email:	sales@craftstone.co.nz
Telephone:	09 447 3918 or 0800 63 88 99

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For material components of Craftstone 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 practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

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1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer warranty:

5 years	For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Installers to be approved installers and registered members of Petros Holdings Ltd installer's network. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

1.8 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:

Craftstone Real Stone Veneer System Technical Manual - Page 15

Provide this information prior to practical completion.

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Producer Statement - Construction (PS3) from the installer/applicator
- Other information required by the BCA in the Building Consent Approval documents

Compliance information

1.10 COMPLIANCE - BRANZ APPRAISAL

The Craftstone Real Stone Veneer System has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 793.

2 PRODUCTS

Materials

2.1 CRAFTSTONE SELECT- REAL STONE INDIVIDUAL PIECES

Craftstone Select - Real Stone Veneer, individual pieces of natural stone cut and shaped to be flat on the back with a natural rough face. Random sizes with a 20mm to 30mm nominal thickness, 60 kg/m² approximate weight. Can be dry stacked, pointed, colour blended or bagged finished. 90° corner option available.

Refer to SELECTIONS.

2.2 FIBRE CEMENT SUBSTRATE

Craftstone FCB - a 9mm thick fibre cement autoclaved sheet produced on a "flow on" process, unsanded with square edge detail, to AS/NZS 2908.2. Sheets sizes available 1200mm wide x 2400mm/ 2700mm/ 3000mm long. Refer to SELECTIONS.

Framing Type:	Fixings:
Timber Framing	Craftstone FCB 304 stainless steel screws, 65mm x 10g with T17 tip.
Steel Framing	50mm x 10g class 3 countersunk "ZOG D" screws

2.3 CAVITY BATTEN - TIMBER

Cavity batten system comprised of:

- Radiata pine battens, minimum H3.1, 45mm x 18mm, with height to match framing studs
- 40mm x 2.5mm hot-dipped galvanized flat head nails.

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Refer to appropriate cavity batten system section for specific requirements.

Components

2.4 STONE VENEER ANCHOR

Craftstone anchor, a proprietary 304 stainless steel anchor, 80mm long x 20mm wide, pre-punched with 5mm holes for 304 stainless steel 65mm x 12g hex head self-drilling screws.

2.5 SEALER

Craftstone Penetrating Sealer, a penetrating silane/siloxane sealer to prevent moisture absorption into masonry and fibre cement substrates. Applied by roller, brush or spray-pack, supplied as ready-to-use or as a liquid concentrate to be diluted with water.

2.6 PRIMER AND JOINT WATERPROOFING TAPE

Adhesive Spray Primer, a specialised primer applied to fibre cement sheet joints and external corners, prior to application of Craftstone Butyl Tape, a flexible mortar adhesive-compatible waterproofing tape. Tape supplied in two sizes:

- 70mm wide x 20m long for sheet joints
- 150mm wide x 20m long for external corners.

2.7 BEDDING RENDER

Mineral Plaster Technology (MPT) Bondcoat is a factory mixed, non-acrylic adhesive render, used as a bedding coat for reinforcing mesh.

2.8 REINFORCING MESH

4 x 4mm, 160gsm alkali-resistant fibreglass mesh.

2.9 MORTAR ADHESIVE

Craftbond Mortar Adhesive is a factory mixed, crack resistant, adhesive mortar with a high flexural-strength ratio for use as an adhesive coating for all concrete, masonry, fibre cement, AAC concrete and polystyrene substrates. Supplied in bags and mixed on site with water and Petralastic Mortar Additive. Cures to a medium grey colour and can be tinted with dispersed oxide.

2.10 MORTAR ADDITIVE

Petralastic Mortar Additive is a carboxylated styrene butadiene rubber solution which improves water resistance, increases flexural strength and increases resistance to freeze/thaw degradation of the mortar adhesive in colder climates.

2.11 TINTING MORTAR

Craftstone Mortar Tint colours are a dispersed liquid oxide, formulated to be diluted with clean water to achieve the selected colour. Refer to SELECTIONS.

2.12 PVC FORMWORK ADHESIVES

Sabrebond SMP-60, a UV resistant silane modified polymer adhesive and Bostik High Tack H785, a moisture resistant, neutral curing hybrid adhesive.

2.13 ALUMINIUM JAMB FLASHINGS

32mm x 20mm x 1.6mm aluminium angle jamb flashing. Can be powder coated to match joinery.

2.14 PVC FLASHING AND FINISHING TRIMS

Craftstone range of UV resistant PVC flashings, cavity vent strips, trims and sealant support accessories. Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Provide dry under cover storage for Craftstone Real Stone Veneer materials, components and accessories. Store liquids in frost free conditions out of direct sunlight. Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

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3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Timber substrate: 24% maximum moisture content
Concrete substrate: 70% maximum relative humidity

3.4 PENETRATIONS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the Craftstone Real Stone Veneer. 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 by main contractor
- stone veneer neatly finished off to all sides of openings
- installation of flashings (those required to be installed prior to installation of penetrating elements).

The weathertightness of penetrations through the cladding and junctions are the responsibility of the main contractor.

Installation/application

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.6 INSTALLATION GENERALLY

Install Craftstone Real Stone Veneer in accordance with Craftstone Real Stone Veneer System Technical Manual.

3.7 COLOUR MIXING - INDIVIDUAL STONES

Check all stone delivered to site for colour variation, prior to commencing work. Ensure stones are thoroughly blended from several cartons to ensure an even colour spread throughout the work. Avoid using identical shapes next to each other, avoid long horizontal and vertical lines between stones and use small stones next to large stones.

Installation/application - with fibre cement substrate

3.8 INSTALL FIBRE CEMENT SUBSTRATE

Install Craftstone FCB boards in accordance with Craftstone FCB Technical Manual. Screw fix boards into framing at 150mm centres. Clean board surface with a stiff brush or broom to remove dust or any other contaminants which may impede adhesion of mortar.

3.9 APPLY SEALER

Apply a single, liberal coating of Craftstone Penetrating Sealer with roller, brush or spray-pack. Coat all exposed board including joint recesses and the bottom sheet edge.

3.10 APPLY SPRAY ADHESIVE AND BUTYL TAPE

Apply Spray Adhesive to all areas where Craftstone Butyl Taped joints are to be installed and allow to dry to a tack stage. Then apply 70mm Butyl Tape to flat sheet joints, and 150mm Butyl Tape to internal and external corners. Roll or press firmly into place as the adhesive sets. Ensure the adhesive spray is also applied to the surface of underlying tape wherever they overlap, such as horizontal/vertical junctions, or where tape continuations begin.

3.11 INSTALL WINDOW FLASHINGS

Set mechanical sill and jamb flashings into place with fibreglass reinforced mesh embedded in a layer of Craftbond.

3.12 SET UP TEMPORARY TIMBER SUPPORTS

Set up temporary timber supports for the bottom course.

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3.13 INSTALL ANCHORS

Mark out framing lines and fix stainless steel Craftstone anchors to studs with 65mm x 12g hex head self-drilling screws at 300mm centres vertically on studs. Position anchors horizontally wherever possible. Where RAB is used in place of flexible wall underlay, increase the screw fixing length to allow for the correct penetration into the studs.

3.14 PREPARE STONE VENEER

Thoroughly wash the back of the stone to remove any residual dust or contaminants which may inhibit the adhesive bond. Craftstone veneers can be cut with any masonry blade attached to a suitable stone saw, angle grinder or tile saw etc. Use a wet saw to avoid the spread of harmful silica dust.

3.15 APPLY MORTAR ADHESIVE & INSTALL STONE

Mix Craftbond Mortar adhesive at a ratio of 1kg of Petralastic and 3 litres of clean water to each 20kg bag, using a mixing drill and whisk, and allow to hydrate for 4-5 minutes before lightly remixing. Do not make up more than can be used within 1 hour. Tint with Craftstone Mortar Tint where necessary.

Press Craftbond under the anchor wings, then apply a scratch coat of mortar adhesive across the surrounding area, covering all the area where stone is about to be applied, but limited to an area which can be covered with stone within a 5 - 10 minute period, to ensure a wet-to-wet bond between the mortar on the stone and the mortar on the substrate. Work this approx. 2mm layer into the surface of the fibre cement board using a steel trowel.

Using the same method and taking care that the mortar does not contaminate the surface of the stone, apply a scratch coat of Craftbond to the rear of the entire surface of the stone that is about to be applied, scratching the mortar into the surface of the stone to ensure a strong bond. Then ‘butter’ the back of the stone with 10-12mm of Craftbond and press the stone into place over the prepared substrate, while moving the stone from side to side slightly to ensure a strong bubble-free bond. Ensure a mortar tail of appropriate thickness is remaining after stone installation so the next bedding application can be blended for continuity.

Install bottom course and corner stones first and then fill the spaces in between with appropriate random or cut pieces. Mark the wall with chalk line at suitable intervals to assist with straight and level placement of the stones.

3.16 JOINERY AND METER BOXES

Ensure electrical cables do not come into contact with cladding substrate. Support cable immediately behind the board by passing through a hole drilled in framing member. Where required, fit a meter box flashing option in accordance with Craftstone Real Stone Veneer System Details. Allow a minimum 5mm drainage and ventilation gap between the top of the head flashing and bottom edge of the stone.

Control joints

3.17 CONTROL JOINTS

The Craftstone real stone veneer system requires control joints at a minimum of 5.4m horizontally or vertically. Where stone crosses control or construction joints, finger joint stonework at the intersection of the joint by applying mortar to the longest side of the stone only, allowing the remainder to float across the joint, using an approximate ratio of 75% mortared, to 25% floating. Craftstone Select individual stone installations would require specific selection of stones of suitable length to achieve this.

If using, install pre-meshed PVC control joint according to manufacturer's instructions.

Note: Control and expansion joints in the substrate are to be in accordance with substrate manufacturer's requirements.

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Completion & Commissioning

3.18 SEAL STONES AND PANELS

Following a minimum of overnight curing, wash the completed stonework thoroughly, allow it to dry and then coat liberally with Craftstone Penetrating Sealer.

3.19 ROUTINE CLEANING

Use fresh water with mild detergent and a light brush to clean the stone. Clean mortar splashes or overflows off the stone face once the mortar is partially dry (after approx. 30 minutes). Do not water blast or use acids or bleaches.

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

Materials

4.1 CRAFTSTONE SELECT - INDIVIDUAL STONES

Location:	Refer to drawings
Supplier:	Petros Holdings Ltd
Brand/type:	Craftstone Select - Individual Pieces
Thickness:	20mm - 30mm nominal
Weight:	Up to 60kg/m²
Installation:	TBC by owner
Colour:	TBC by owner
Mortar tint:	TBC by owner

4.2 CRAFTSTONE FCB SUBSTRATE

Location:	Refer to drawings
Supplier:	Petros Holdings Ltd
Brand/type:	Craftstone FCB Fibre Cement Substrate
Size:	Sheets to suit
Thickness:	9mm

4.3 FLASHINGS & FINISHING TRIMS

Location:	Refer to drawings
Supplier:	Petros Holdings Ltd

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4281SL STO STUCCO CLADDING SYSTEMS

1 GENERAL

This section relates to Stoanz Ltd **Sto** exterior render systems, applied by hand, or pump over:

- **StoLite Stucco** Cladding System: on fibre cement backing board on a cavity.
- **StoStucco** Cladding System: **Sto** Stainless Steel lath on a cavity.

Stoanz Ltd products must be installed by a Sto Registered Contractor.

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:

AISI	The American Iron and Steel Institute
LRV	Light reflectance value
MPNZA	Master Painters New Zealand Association

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
WorkSafe:	Guidelines for the provision of facilities and general safety in the construction industry

Health and Safety at Work Act 2015

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents related to this section are:

Stoanz Ltd documents relating to work in this section are:

- Sto Specification SS-306SL StoLite Stucco System
- Sto Specification SS-306SLR StoLite Stucco System - Reclad
- Sto Specification SS-808 StoStucco Render System
- Sto Specification SS-808R Sto Stucco Render System - Reclad
- Sto Specification SS-806 StoStucco Roughcast System
- StoLite installation details
- StoStucco installation details
- Sto Technical Data Sheets
- BRANZ Appraisal 468 (2024) - StoLite Stucco Cladding System
- BRANZ Appraisal 605 - StoStucco Plaster Cavity System
- BRANZ DC1182 - Durability Testing of the Sto Flexyl Waterproofing Membrane
- BRANZ STO812-V2 - Comparative small hard body impact tests
- BRANZ FH4007 - Cone Calorimeter Test on Sto Stucco Plaster System over Stainless Steel Lath
- BRANZ FH4064 - Cone Calorimeter Test on Sto Lite Cladding System

Materials and execution to Stoanz Ltd specification except where varied by this specification and supported by architectural detailing.

Copies of the above literature are available from:

Company:	**Stoanz Ltd**
Web:	www.sto.co.nz
Email:	info@sto.co.nz
Telephone:	0-4-801 7794

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

The StoLite Stucco Cladding System & StoStucco Render System	15 years
StoArmat Render System:	20 years

- 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.
Warrant this part of the work under normal environmental and use conditions against failure of materials and execution. The Sto Contractor must complete the Sto Quality Assurance Schedule, Sto Contractor PS3 form and Workmanship Guarantee.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

The StoLite Stucco Cladding System & StoStucco Render System	5 years
StoArmat Render System:	10 years

- 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.
Warrant this part of the work under normal environmental and use conditions against failure of materials and execution. The Sto Contractor must complete the Sto Quality Assurance Schedule, Sto Contractor PS3 form and Workmanship Guarantee.

1.6 MAINTENANCE - SERVICING

StoService Assurance is a comprehensive guide to maintaining the cladding with service inspections carried out every 2.5 years by the Sto Contractor to ensure the exterior building elements are cleaned and are performing in accordance with the Sto Material Warranty and Sto Contractor Guarantee requirements.

Requirements

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Use only Sto Registered Contractors to apply the Sto render systems. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Sto render system.

1.9 PROTECTION OF NEW RENDER

Provide protection systems as required by the manufacturer to protect fresh or uncured render from adverse weather conditions.

1.10 INSPECTIONS

Allow to inspect the whole of the work at each stage. Determine a programme for inspections including notification when each part and stage of the work is ready for inspection prior to the work commencing.

If requested permit representatives of StoanzLtd to inspect the work in progress and to take samples of their products from site. Refer Sto product manual.

1.11 INFORMATION FOR OPERATION AND MAINTENANCE

Provide Sto Service Assurance Maintenance documents with the Sto Warranty upon practical completion of the contract for issuing to the building owner.

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1.12 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety at Work Act 2015 and WorkSafe: Guidelines for the provision of facilities and general safety in the construction industry.

If the elimination or isolation of potential hazards and risks is not possible then minimise hazards and risks in this work on site by using the proper equipment and techniques as required in the Health and Safety at Work Act and Worksafe. Supply protective clothing and equipment. Notify employees and others on site of the hazards and risks, and put into place procedures for dealing with emergencies. Obtain from Stoanz Ltd the material safety data sheets (MSDS) for each product to be used. Keep material safety data sheets on site and comply with the required safety procedures.

1.13 PRODUCER STATEMENT

Provide the producer statement from the Sto Contractor in a form meeting the requirements of the Building Consent Authority.

Compliance information

1.14 DURABILITY

The work covered by this part of the specification has been designed and constructed to meet the NZBC durability requirement of 15 years with a serviceable life in excess of 30 years when maintained. Refer to the following:

BRANZ Appraisal 468 - Sto Lite Cladding System
BRANZ Appraisal 605 - StoStucco Plaster Cavity System

1.15 INFORMATION FOR OPERATION AND MAINTENANCE

Provide ongoing maintenance instructions required to meet the performance requirements of the NZBC B2/AS1.

Performance

1.16 PERFORMANCE

Accept responsibility for the structural and weather-tight performance of the exterior render application.

1.17 TESTS

Refer to MANUFACTURER/SUPPLIER DOCUMENTS for details of BRANZ test results.

2 PRODUCTS

Materials

StoLite Cladding System on Fibre Cement Sheet Substrate

2.1 LEVELLITE BASECOAT RENDER

Lightweight cement basecoat render in a bag. The material contains mineral aggregates water retention agents, adhesive compounds, EPS beads and other additives to form a straight, solid basecoat render.

2.2 STOARMAT MESHED REINFORCEMENT RENDER

Synthetic reinforcement render in a pail with a calibration grain. A white non cement flexible meshing render containing organic fillers and fibres bound in a polymer dispersion to form a malleable crack resistant intermediate render with excellent adhesion qualities.

2.3 STO MESH

Alkali-resistant 165g/m² fibreglass mesh in 50 metre rolls.

2.4 STOLIT K & MP COLOURED FINISHING RENDERS

Six different synthetic coloured finishing renders (as selected) in a pail. Containing organic aggregates and fibres bound in a polymer dispersion with enhancement agents and colouring pigments. Refer to SELECTIONS for texture and colour.

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2.5 STOCOLOR FACADE PAINT

Coloured facade paint, with natural looking matt finish, hard, durable coating with excellent resistance to weathering. Select acrylic, heat-reflective or mineral options. Refer to SELECTIONS for paint and colour.

2.6 S PROTECT SC EASY CLEAN

Clear, invisible Silane sealer for ease of cleaning and added protection against staining of coloured sponge finishes (Note: where a clear coating is required contact Stoanz Ltd).

Accessories

2.7 FLASHINGS

Head jamb sill and any other required flashings made from powder coated aluminium, stainless steel or uPVC for both recessed and faced fixed timber, aluminium and uPVC joinery to NZBC E2/AS1, 4.0 Flashings and masonry construction requirements.

2.8 STO FLASHINGS AND COMPONENTRY

Sto uPVC flashings for weatherproofing the cladding at transitions, junctions and terminations.

2.9 STO CONTROL JOINTS

Sto 8mm or 12mm uPVC control joint, including 12mm for inter-storey joints.

2.10 SEALANT

BRANZ appraised modified silicone (MS) sealant compatible with uPVC.

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 RENDERING CONDITIONS

Carry out rendering in accordance with the project and Sto specification and details under conditions which will not adversely affect the finished work.

Application

3.3 PREPARE SURFACE

Before rendering is commenced, remove any surface contaminants, e.g. dust, debris, oils, greases, retarders and loose material. Treat any adhesion impairing surfaces, paint from already painted surfaces, and loose material. Leave the surface dust free and clean. Make good any defects in the background which may adversely affect the quality of the render coating.

3.4 IRREGULARITIES

Ensure any damaged fibre cement sheet or lath is replaced and that the required number of fixings have been used.

3.5 FLASHING AND DETAILING

Comply with the Sto CAD flashing details. Penetrations such as fixing brackets, pergolas, roofs and pipes shall be adequately flashed and waterproofed prior to render application. Carry out to the required standard of execution to ensure water does not penetrate the exterior facade when complete.

3.6 PENETRATIONS

All penetrations such as waste pipes, plumbing piping and electrical wiring in uPVC conduits must be installed with a minimum 5° downward slope, through the Sto render system, and be sealed using a double application of MS sealant at the backing/basecoat render and again at the mesh coat.

3.7 CONTROL JOINT LAYOUT AND DETAILING

Before commencing work confirm the layout of control joints and other visual detailing of the finished work.

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3.8 CONTROL AND INTER-STOREY JOINTS

Where shown on the drawings and to Stoanz Ltd requirements, insert vertical Sto flexible uPVC control joints aligned with the base sheet set out at maximum 5.4m centres for StoLite and at 8.0m centres for StoStucco. Reflect exposed control joints through the render.

Form horizontal inter-storey joints in the StoLite System at all inter-storey transitions or every 5.4m on continuous studs (excluding gables - maximum 7.0m). Horizontal drained junctions are required at the third storey or at 7.0m in accordance with NZBC E2/AS1, paragraph 9.1.8.4(b).

On StoStucco, horizontal inter-storey junctions are only required when unseasoned timber joists are used. Where dry seasoned joists, LVL's or proprietary joists are used, a drained inter-storey junction is required at the third storey or at 7.0m in accordance with NZBC E2/AS1, paragraph 9.1.8.4(b).

Form vertical control joints using a proprietary Sto uPVC 8mm control joint, and inter-storey control joints using a proprietary Sto uPVC 12mm control joint. Drained joints shall be formed using a NZBC E2/AS1 compliant metal flashing as per the Sto CAD details.

3.9 FINISHING

Refer to SELECTIONS for type and colour.

StoLite Cladding System

3.10 FIBRE CEMENT SHEET SUBSTRATE

Ensure the main contractor and the sub trades are aware of their responsibilities relating to the required provision of weather tight details at all junctions, penetrations and transitions including any blockings required for support (see www.sto.co.nz for details).

Do not commence work until openings and apertures have been cut, joinery, pipes, fixtures, fixing pads and plugs, brackets and wiring conduits have been installed, and flashings and other preparations are complete.

All defects in the substrate must be rectified prior to application of the render coatings. Ensure that substrates and adjoining surfaces are, after the preparation called for in this section, of the required standard by Stoanz Ltd.

3.11 INSTALL UPVC FLASHINGS AND CLIP ON FOOT TRAYS.

Install all StoLite uPVC ClipOn foot trays and joinery flashings to fibre cement sheets and joinery. Glue into position with construction adhesive prior to render application commencing. All fixings and installation of the Sto uPVC joinery flashings, ClipOn foot trays, finishing edges and profiles to be in accordance with the Stoanz Ltd details.

3.12 STO RENDER APPLICATION

Sto pre-meshed UPVC corner beads to be installed on corners and edges as required, set in the basecoat and reinforce with the StoArmat mesh coat unless stainless steel corner angles are being used.

3.13 STO JOINTING MESH APPLICATION

Mesh all joints in the fibre cement sheets with 150mm wide Sto adhesive mesh before the basecoat render is applied.

3.14 BASECOAT RENDER

To clean dry backing boards, set polystyrene screed guides as required, stainless steel corners, StoLite uPVC ClipOn foot trays, joinery uPVC jamb and sill flashings and drip edges as required and allow to set. Apply the LevelLite basecoat render at nominal 8mm thickness and close off wet render with an h shaped rule. Allow to set up and cut back the LevelLite with a feathered straight edge to achieve a level plane surface free of hollows and deviations. Apply enough LevelLite render to achieve a finished coat thickness of 8mm after screeding.

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3.15 REINFORCEMENT MESH COAT RENDER

Apply over the dry basecoat render one coat of StoArmat reinforcement render at approximate thickness of 2mm. While the render is still wet, lightly embed Sto mesh, ensuring adjacent drops of mesh are overlapped by a minimum of 75mm and the mesh is encapsulated into the render. Allow to dry and apply one further coat of StoArmat at an approximate thickness of 1.5mm (minimum total thickness of 2.5mm). Once dry remove any slight ridging with a Sto rasp.

3.16 SEALANT INSTALLATION

After the completion of the StoArmat mesh coat, all junctions between the joinery and around penetrations, flashings and other similar details to be sealed with a minimum 6mm bead of MS sealant.

3.17 FINISHING RENDER

Apply selected Stolit K or MP coloured finishing render with a steel trowel gauging to the thickness of the aggregate size and finish with a plastic float to the requisite pattern. Apply Stolit MP or MP Natural in two coats and finish with a float and judicial use of a damp sponge.

3.18 PAINT OR SEALER COAT

Apply one coat of StoColor matt facade paint (two coats required for StoColor X-black) tinted to the selected colour, on Stolit K render or S-Protect SC easy clean sealer on Stolit MP finishes.

Completion

3.19 CLEANING

Remove debris, unused materials and elements from the site relating to render system application. Replace damaged, cracked or marked elements. Leave the whole of this work to the required standard.

3.20 FINAL INSPECTION

Arrange for a final inspection of the entire finished cladding by the project assessor immediately after completion of the wall cladding work and make good any defects or subsequent damage immediately.

4 SELECTIONS

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

4.1 STOLITE CLADDING SYSTEM

Location:	Refer to drawings
Substrate:	6mm fibre cement backing sheet
Base coat:	LevelLite basecoat render
Mesh coat:	StoArmat mesh coat reinforcement render
Finishing renders:	Stolit K
Paint:	Sto Maxicryl
Sealer:	Stolit MP
Paint coats:	One
Colour:	TBC by owners

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4311M METALCRAFT PROFILED ROOFING

1 GENERAL

This section relates to the supply and fixing of Metalcraft Roofing Ltd profiled roofing complete with accessories.

It includes:

- Corrugated roofing profil

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

Documents

1.3 DOCUMENTS

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

BPS	Building Product Specifications
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC G12/AS1	Water supplies
AS/NZS 1170.2:2011	Structural design actions - Wind actions
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - performance requirements
AS 3566	Self-drilling screws for the building and construction industries
NZS 3604	Timber-framed buildings
AS 4256.3	Plastic roof and wall cladding materials, Glass fibre reinforced polyester
ISO 5660.1	Reaction to fire tests - heat release, smoke production and mass loss rate. Part 1 Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction to fire tests - heat release, smoke production and mass loss rate. Part 2 Smoke production rate (dynamic measurement)
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Metalcraft Roofing Corrugate product literature
Metalcraft Roofing Building Product Information Sheet
COLORSTEEL® Maintenance Recommendations

Manufacturer/supplier contact details

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

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER - METALCRAFT ROOFING

Provide a material manufacturer/supplier warranty:

20 years	for failure of coating adhesion
20 years	for weatherproofing by material penetration

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	for installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 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 specified system, or associated components and products.

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:

- COLORSTEEL® Maintenance Recommendations

Provide this information prior to practical completion.

Compliance information

1.11 COMPLIANCE - PROPOSED ALTERNATIVE SOLUTION

Metalcraft Roofing trough roofing profiles Metdek 500 and Metdek 855 are presented as an alternative solution for:

NZBC Clause E2-External moisture

Performance:	E2.3.1 Roofs must shed precipitated moisture.
	E2.3.2 Roofs must prevent the penetration of water that could cause undue dampness, damage to building elements, or both.

Proposed alternative solution is supported by:

- Metalcraft Roofing Ltd standard details and installation guidelines
- NZMRM CoP incorporates trough sections up to 250mm between crests
- In-service history and previously accepted Alternative Solution

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Performance

1.12 DESIGN PARAMETERS WIND - NON SPECIFIC DESIGN

The design wind pressures are to NZS 3604, table 5.4.

Refer to general section 1220 PROJECT for details.

1.13 DRINKING WATER

Roofing for collecting potable water to NZBC G12/AS1.

2 PRODUCTS

Materials

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

Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397. Prefinished /prepainted to AS/NZS 2728.

Fixings

2.2 FASTENERS GENERALLY

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

2.3 FIXING SCREWS

To AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by Metalcraft Roofing and with a durability not less than the material being fixed. 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 0.55 BMT or 0.75 BMT for steel and 0.90 BMT for aluminium. Flashings coated to the same standard as the roofing sheets, notched where across profile or provided with a soft edge. Refer to SELECTIONS.

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 cure silicone or MS polymer sealant.

2.10 CLOSURE STRIPS

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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



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3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Moisture content timber:	18% maximum

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.

Installation/application

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.6 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.

3.7 END LAPS

End laps are not recommended.

3.8 THERMAL MOVEMENT

Provide for thermal expansion to NZMRM CoP.

3.9 FIXING GENERALLY

Install and fix in accordance with NZBC E2/AS1, NZMRM CoP, and Metalcraft Roofing required fixing patterns and details for each area of the roof. Paint colour matched fixings and accessories before installation.

3.10 MARKING AND CUTTING

Use ink pen, chalk line or coloured pencil for marking roof sheets prior to cutting. Do not use lead pencil for marking Zincalume® and Colorsteel®. Cut by shear only, using nibblers or hand snips. Remove all cutting and drilling debris from the roof.

3.11 FIXING SHEETS

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

Timber purlins:	Screw minimum 35mm embedment into structure
Steel purlins:	Screw minimum 3 threads beyond drill point

3.12 STOP ENDS AND DOWNTURNS

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

3.13 INSTALL FLASHINGS

Flash roof to parapets, walls and penetrations to detail. Where no detail is provided, flash to NZBC E2/AS1, NZMRM CoP, and Metalcraft Roofing details. Cut accurately and fix using sealant and rivets to detail and to Metalcraft Roofing requirements to form a weatherproof cover. For visible flashings, plan joints/junction to take account of the aesthetic requirements.

3.14 USE OF SEALANTS

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

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3.15 FLASHING PENETRATIONS

Flash all penetrations through the roof. Fit proprietary boot flashings to Metalcraft Roofing requirements, with other penetrations flashed as detailed and to provide a weathertight installation. Ensure that flashings are set to avoid any ponding of water.

Completion & Commissioning

3.16 COMPLETION MATTERS

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

4 SELECTIONS

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

Roofing - corrugate profile

4.1 METALCRAFT - CORRUGATE PROFILE ROOFING

Location:	Refer to drawings
Supplier:	Metalcraft Roofing Ltd
Profile:	Corrugate
Dimensions:	Sheet width 851mm, cover 760mm, rib height 18mm
Roof pitch:	Refer to drawings
BMT/material:	0.55mm steel
Coating system:	Colorsteel Maxam
Coating colour:	TBC by owner
Purlin material:	Timber
Fixings:	Refer to drawing

Accessories

4.2 FLASHINGS - GENERALLY

Profile:	Refer to drawings
BMT/material:	0.55mm
Coating system:	To match roofing
Paint colour:	To match roofing

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4337IP IPL NZ PLYWOOD - ROOFING

1 GENERAL

This section relates to the supply and installation of International Panel and Lumber (West Coast) Ltd plywood as a substrate for roofing.

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

Documents

1.2 DOCUMENTS

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

BPS	Building Product Specifications
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10m in height
AS/NZS 1604.3: 2012	Specification for preservative treatment - Plywood
AS/NZS 2269.0	Plywood - Structural

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
IPL Plywood Roofing BPIR
IPL Plywood Roofing Brochure

Manufacturer/supplier contact details

Company:	International Panel and Lumber (West Coast) Ltd
Trading as:	IPL Plywood
Web:	www.iplply.nz
Email:	sales@iplply.nz
Telephone:	0800 650 801

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 IPL PLYWOOD - SQUARE EDGE

Phenol-formaldehyde resin bonded NZ Pinus Radiata veneer plywood panels manufactured to AS/NZS 2269.0 with appearance grade CD. Trimmed square in 1200mm wide x 2400mm long panels, 17mm thick at stress grade F8 and 19mm thick at stress grade F11. H3.2 CCA treated to AS/NZS 1604.3:2012. Refer to SELECTIONS

Components

2.2 NAILS

Refer to SELECTIONS.

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2.3 SCREWS

Refer to SELECTIONS.

2.4 TIMBER PRESERVATIVE

Concentrated fungicidal timber preservative treatment. 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 TREAT CUT EDGES

Brush timber preservative onto cut edges and penetration cut outs.

Installation - non membrane roof

Installation - membrane roof

3.6 INSTALLATION GENERALLY

Install IPL Plywood in accordance with NZBC E2/AS1, 8.5 Membrane roofs and decks.

3.7 LAY PLYWOOD PANELS - MEMBRANE ROOF

Provide a 5mm radius chamfer to external edges where the membrane is to be wrapped over. Orient plywood panels with C grade face up in a brick-bond pattern with face grain at right-angles to main supports. Lay panels continuous over minimum two spans in square, true alignment and plane. Provide 3mm expansion gap between all panel edges. Fully support all panel edges.

3.8 FIX PLYWOOD PANELS - MEMBRANE ROOF

To NZBC E2/AS1, 8.5 Membrane roofs and decks. Screw fix panels at 150mm centres to perimeter of panels and at 200mm centres elsewhere. Maintain 10mm clearances to panel edges and finish fastener heads flush with panel surface. Fix internal corner fillets.

Completion & Commissioning

3.9 COMPLETION MATTERS

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

4 SELECTIONS

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

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Materials

4.1 IPL PLYWOOD - SQUARE EDGE - MEMBRANE ROOF SUBSTRATE

Location:	Refer to drawings
Supplier:	International Panel and Lumber (West Coast) Ltd
Brand:	IPL Membrane Roofing Plywood
Stress grade/thickness:	F8, 17mm
Appearance grade:	CD
Panel size:	1200mm wide x 2400mm long
Timber treatment:	H3.2 CCA
Panel edge:	Square edge
Fixings:	10g x 50mm stainless steel countersunk head screw
Timber certification:	FSC Cert

Components



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4422NT NURAPLY TPO ROOF & DECK MEMBRANE

1 GENERAL

This section relates to Nuralite Group Limited Nuraply TPO Roof and Deck Membrane installed as a single ply external waterproof covering with associated components & accessories.
It includes;

- Nuratherm, insulated roof system with Nuraply TPO Fleece-Back, mechanically fixed or fully adhered, over Nuratherm insulation installed over concrete, plywood, strandboard (for roofs only), cross laminated timber or metal tray deck substrates.
- Nuraply TPO Smooth or Fleece-Back, mechanically fixed or fully adhered 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 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:

TPO	Thermoplastic polyolefin

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 2122.1	Combustion characteristics of plastics - Determination of flame propagation - Surface ignition of vertically orientated specimens of cellular plastics
AS/NZS 2269.0	Plywood - Structural - Specifications
NZS 3604	Timber-framed buildings
ASTM D6878	Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing

Codemark certificate CMNZ70166 version 0 - Nuraply TPO Waterproofing membrane

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Nuraply TPO Technical information

Manufacturer/supplier contact details

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

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years	For Nuraply TPO membrane
20 years	For Nuraply TPO fleece backed membrane

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the

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standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	For Nuraply TPO membrane system installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 NO SUBSTITUTIONS

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

1.8 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

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

Compliance Information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -
- Applicators' approval certificate from the distributor
- Distributor warranty
- Installers' / applicators' warranty
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents.

1.10 COMPLIANCE - CODEMARK CERTIFICATE

Nuraply TPO waterproofing membrane meets the requirements of the NZBC when used within the Conditions and Limitations of certificate CMNZ70166

Performance - general

1.11 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed Nuraply TPO roofing system, including all penetrations through the roof decking 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:
- NuraplyTPO roofing applicator
- Nuralite representative
- Contractor
- Principal
- Principal's consultant(s)

1.12 AS APPROVED

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

Performance - wind

1.13 WIND ZONE DESIGN PARAMETERS – LOW TO HIGH

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

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Performance - Nuratherm Insulated roof system

1.14 DURABILITY

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

1.15 ENERGY EFFICIENCY

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

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

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

1.16 FIRE SAFETY

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

2 PRODUCTS

Materials - Nuraply TPO single layer system

2.1 NURAPLY TPO FLEECE-BACK MEMBRANE

Nuraply TPO Fleece-Back Membrane, a reinforced TPO roofing and waterproofing membrane, with factory applied polyester fleece backing, to ASTM D6878. Refer to SELECTIONS.

Materials - Nuratherm insulated roof system with Nuraply TPO

2.2 INSULATION BOARD

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

2.3 TAPERED INSULATION BOARDS

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

2.4 VAPOUR BARRIER

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

2.5 NURAPLY TPO FLEECE-BACK MEMBRANE

Nuraply TPO Fleece-Back Membrane, a reinforced TPO roofing and waterproofing membrane, with factory applied polyester fleece backing, to ASTM D6878. Refer to SELECTIONS.

Components

2.6 PRIMER - SOLVENT BASED

50/50 mixture of solvent and Nuraply TPO Bonding Adhesive, a solvent based rubberised contact adhesive to bond the membrane.

2.7 NURAPLY TPO MEMBRANE BONDING ADHESIVE - SOLVENT BASED

Nuraply TPO Bonding Adhesive, a solvent based rubberised contact adhesive to bond the membrane.

2.8 NURAPLY TPO SOLVENT

Nuraply TPO Solvent is used to cut back Nuraply TPO Adhesive for use as a primer and for cleaning of equipment.

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Components - Nuratherm insulated roof system with Nuraply TPO

2.9 MECHANICAL FIXING - FASTENERS AND PLATES FOR INSULATION PANELS

Nuratherm IKO Fix Screws and Flange system.

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

2.10 PRIMER - FOR VAPOUR BARRIER

Nuraflux QD primer for substrate preparation prior to bonding Nuraply ALU vapour barrier to concrete, timber and metal deck substrates.

2.11 NURATHERM ADHESIVE

Nurabond Hi Foaming & Low Foaming PU adhesive, a permanent elastic high-performance moisture-cured single part polyurethane adhesive with high foaming capacity for bonding Nuratherm insulation boards to vapour control layer and with low foaming capacity for bonding Nuratherm insulation boards to each other.

2.12 EXPANDING FOAM

Soudal Gorilla Nailpower fire rated expanding foam for filling gaps in insulation layer.

Accessories

2.13 NURAPLY TPO DETAIL MEMBRANE

Nuraply TPO Detail Membrane easily forms flashings around corners and penetrations. Specifically designed for use in areas that cannot be properly detailed with TPO field membrane.

2.14 NURAPLY TPO PRE-FORMED CORNERS

NuraplyTPO pre-formed non-reinforced internal and external corners and T joint patches, used for detailing internal/external and 3-way lap joints.

2.15 NURAPLY TPO SEALANT

Nuraply TPO Sealant is an approved sealant compatible with Nuraply TPO and other accessories.

2.16 NURAPLY TPO MEMBRANE CLEANER

Nuraply Membrane Cleaner is used for lap preparation and removing marks from the membrane surface.

2.17 NURAPLY TPO PVC BOND BREAKER TAPE

Nuraply TPO PVC Bond Breaker Tape is a pressure sensitive, self-adhesive 36mm wide bond breaker tape used as venting grid tape

2.18 NURAPLY TPO DRAIN

Nuraply TPO Drains are a selected range of clamp ring drains in varying size and configurations.

2.19 NURAPLY TPO PRE-LINED SCUPPER

Nuraply TPO Pre-Lined Scupper is designed to be recessed into the substrate. 200mm high x 75mm high x 380mm long.

2.20 NURAPLY TPO SCUPPER OVERFLOW

Nuraply Aluminium Scupper Overflow is designed to be recessed into the substrate. 200mm high x 75mm wide x 300mm long.

2.21 NURAPLY TERMINATION BARS

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

2.22 NURAPLY DIVERTERS

Nuraply Aluminium Diverters used for diverting water into a gutter at roof/wall intersections. Left and right hand configurations.

2.23 NURAPLY TPO PEEL AND STICK REINFORCED PERIMETER STRIP

Nuraply TPO Peel and Stick Reinforced Perimeter Strip is a reinforced TPO membrane with a factory applied peel and stick adhesive tape on the outer face. 152mm wide x 30.48metres long.



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2.24 NURAPLY TPO COVER TAPE

Nuraply TPO Cover Tape is a non-reinforced TPO detailing tape with a peel and stick adhesive backing. 152mm or 250mm wide x 30.48metres long.

2.25 NURAPLY TPO BUTYL TAPE

Nuraply Butyl Tape is 1mm thick, single sided butyl tape with a polypropylene fleece face. Designed to bond permanently to most surfaces including TPO.

2.26 ALUMINIUM TAPE

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

2.27 ELECTRONIC LEAK DETECTION - CONDUCTIVE TAPE

Nuralite Electronic Leak Test Tape, 50mm wide self-adhesive conductive tape.

2.28 ELECTRONIC LEAK DETECTION - EARTHING PLATE

Nuralite Electronic Leak Test Earthing Plate with earthing cable.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 GENERALLY

Work and materials to Nuralite installation instructions and NZBC E2/AS1.

3.4 WEATHER

Lay Nuraply TPO membrane in fair weather, with ambient air temperature no less than 5°C.

3.5 INSTALLATION SEQUENCE

Install Nuraply TPO 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 TPO membrane on the same day they are laid or ensure that the base is kept covered and dry until Nuraply TPO membrane is laid. Seal exposed Nuraply TPO 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 fixing of vents and outlets to levels, is complete and properly constructed to enable the system to work as intended. This work and the substrate to be smooth, clean, dry and stable.

3.7 ACCEPTANCE OF SUBSTRATE

Confirm that the substrate complies with Codemark CMNZ70166 for the relevant substrates and Nuralite documents, including sumps, outlets and projections, and ensure work is of the required standard.

Confirm the moisture content of substrates:

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

Confirm constructed falls:

Roofs and decks:	1:80 minimum

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Gutters: 1:100 minimum

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.

3.9 RIGID AIR BARRIER (RAB)

Fibre cement or Gypsum where they are placed behind cladding only.

Application - laying on plywood, cross laminated timber, strandboard and concrete

3.10 POSITION MEMBRANE

Position Nuraply TPO membrane over acceptable substrate and fold membrane back to expose half of the underside.

3.11 APPLY ADHESIVE (ADHESIVE FIX)

Apply bonding adhesive to the exposed underside of the membrane and to the corresponding substrate. Apply using a plastic core, medium nap paint roller, at a coverage rate of 1.5m² per litre, per finished surface (includes coverage on both membrane and substrate).

3.12 INSTALL MEMBRANE SHEETS (ADHESIVE FIX)

Allow bonding adhesive to dry tacky and roll the coated Nuraply TPO membrane onto the coated substrate. Brush down the bonded section of Nuraply TPO membrane immediately with a soft bristle broom. Fold back the un-bonded half of the sheet and repeat procedure.

3.13 LAP JOINTS ADHERED MEMBRANE AND HOT-AIR WELD (ADHESIVE FIX)

Allow for overlapping membrane edges a minimum of 75mm to provide for a minimum 40mm hot-air weld.

3.14 HOT-AIR WELD

Hot-air weld the adjoining Nuraply TPO membrane sheets with an automatic hot-air welding machine or using hand welding techniques.

3.15 PENETRATIONS

Form and finish up-stands, down-turns, penetrations, sumps and vents to conform with Nuralite details.

3.16 PENETRATIONS AND JUNCTIONS

Check that adjoining walls and parapets are prepared ready for the installation of the Nuraply TPO membrane.

Note: Ensure that no penetrations will occur until after the Nuraply TPO membrane has been laid.

Application - Nuratherm insulated roof system with Nuraply TPO

3.17 LAY VAPOUR BARRIER

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

3.18 LAY NURATHERM INSULATION

Ensure that sheets have been stretcher bond laid to falls, are rigid, with joints flush upstands filleted, no lumps or hollows, smooth, clean, dry and free of debris.

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

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



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When using tapered boards to create the fall, layout needs to be carefully considered before commencing so that there is positive drainage to all outlets.

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

3.19 APPLY ELECTRONIC LEAK DETECTION SYSTEM

Apply 50mm wide strips of Nuralite Electronic Leak Test Tape centred over every Nuratherm insulation board join. Install Nuralite Electronic Leak Test Earthing Plates to the surface of Nuratherm insulation boards at a rate of 1 per 500m2 roof area. Run and connect earthing cable through a dedicated Goose Neck cable duct in accordance with Nuralite installation details.

3.20 POSITION MEMBRANE

Position Nuraply TPO membrane over acceptable substrate and fold membrane back to expose half of the underside.

3.21 APPLY ADHESIVE (ADHESIVE FIX)

Apply bonding adhesive to the exposed underside of the membrane and to the corresponding substrate. Apply using a plastic core, medium nap paint roller, at a coverage rate of 1.5m² per litre per finished surface (includes coverage on both membrane and substrate).

3.22 INSTALL MEMBRANE SHEETS (ADHESIVE FIX)

Allow bonding adhesive to dry tacky and roll the coated Nuraply TPO membrane onto the coated substrate. Brush down the bonded section of Nuraply TPO membrane immediately with a soft bristle broom. Fold back the un-bonded half of the sheet and repeat procedure.

3.23 LAP JOINTS ADHERED MEMBRANE AND HOT-AIR WELD (ADHESIVE FIX)

Allow for overlapping membrane edges a minimum of 75mm to provide for a minimum 40mm hot-air weld.

3.24 HOT AIR WELD

Hot-air weld the adjoining Nuraply TPO membrane sheets with an automatic hot-air welding machine or using hand welding techniques.

3.25 PENETRATIONS

Form and finish upstands, downturns, penetrations, sumps and vents to conform with Nuralite required details.

3.26 PENETRATIONS AND JUNCTIONS

Check that adjoining walls and parapets are prepared ready for the installation of the Nuraply TPO membrane. Note: Ensure that no penetrations will occur until after the Nuraply TPO membrane has been laid.

Testing

3.27 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.

3.28 TEST - ELECTRONIC LEAK DETECTION - WARM ROOFS

Carry out leak detection testing on warm roofs using Nuralite Electronic Leak Detection system upon completion of membrane installation and prior to any covering. Make good any lack of water tightness when the surface is completely dry. Depending on conditions, repeat a total or localised test process after making repairs.

Finishing

3.29 FOOT TRAFFIC

Keep foot traffic to a minimum after laying the Nuraply TPO membrane. Lay protection at all traffic concentration points.

3.30 ACCESS BOARDS

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

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3.31 ACCEPTANCE

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

3.32 SUBSEQUENT WORK

Make good any covering that has been 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

3.33 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 TPO Fleece-back Membrane

4.1 NURAPLY TPO FLEECE-BACK MEMBRANE - FULL ADHESIVE FIX

Location:	Refer to drawings
Substrate:	Treated roofing plywood, refer to drawings
Supplier:	Nuralite
Membrane:	Nuraply TPO Fleece-Back Membrane
Thickness:	1.5mm
Colour:	Grey
Finish:	Smooth
Adhesive:	Nuraply TPO Membrane Bonding Adhesive

Nuratherm insulated roof system with Nuraply TPO Fleece-back Membrane

4.2 NURATHERM INSULATED ROOF SYSTEM ON TIMBER SUBSTRATES WITH NURAPLY TPO FLEECE-BACK MEMBRANE - ADHESIVE FIX

Location:	Refer to drawings
Supplier:	Nuralite
Substrate:	Treated roofing plywood, refer to drawings
Substrate adhesion:	Nuraflux QD
Vapour barrier:	Nuraply ALU
Insulation layer:	IKO Nuratherm ALU insulation board
Thickness:	Varies + Tapered, refer to drawings
R-value:	Refer to drawings
Fixings:	IKO Fix fasteners - fixing pattern to suit wind loading (for fixing insulation board to substrate)
Membrane:	Nuraply TPO Fleece-Back Membrane
Thickness:	1.5mm
Colour:	Grey
Finish:	Smooth
Adhesive:	Nuraply TPO Membrane Bonding Adhesive

Materials - detail membrane

4.3 NURAPLY TPO DETAIL MEMBRANE

Location:	Refer to drawings
Supplier:	Nuralite
Description:	Nuraply TPO Detail membrane
Size:	1.5mm thick x 1524m long x 610mm wide
Colour:	Grey

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Accessories

4.4 NURAPLY TPO MATERIAL ACCESSORIES

Location:	Refer to drawings
Supplier:	Nuralite
Type:	TPO Pre-lined Scupper overflow TPO Diverter TPO Termination bars

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4521AR APL RESIDENTIAL ALUMINIUM WINDOWS & DOORS

1 GENERAL

This section relates to the fabrication, supply, and installation of APL Window Solutions residential window and door 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:

WGANZ	Window & Glass Association NZ
PQAS	Powder Coating Quality Assurance System

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F4/AS1	Safety from falling
NZBC G4/AS1	Ventilation of buildings
NZBC H1/AS1	Energy efficiency for all housing and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
NZBC H1/VM1	Energy efficiency for all housing and buildings up to 300m²
NZBC H1/VM2	Energy efficiency for buildings greater than 300m²
AS/NZS 1734	Aluminium and aluminium alloys - Flat sheet, coiled sheet and plate
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
BS EN 673	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
AAMA 2603	Voluntary specification, performance requirements, and test procedures for pigmented organic coatings on aluminium extrusions and panels (with coil coating appendix)
AAMA 2604	Voluntary specification, performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels
AAMA 2605	Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminium extrusions and panels
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

Window & Glass Association NZ (WGANZ) documents:

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

US Federal Specification:

TT-S-001543A	Sealing compound, silicone rubber base (for caulking, sealing and glazing in buildings and other structures)
TT-S-00230C	Sealing compound, elastomeric type, single component (for caulking, sealing and glazing in buildings and other structures)
CodeMark™ CMNZ10033 ver2	APL Metro Series ThermalHEART® with Centrafix™ Windows and Doors.

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

APL Window Solutions	Specifier Guide
APL Window Solutions	Metro Series ThermalHEART® with Centrafix™ System Guide (Version 08/23a)
APL Window Solutions	Windows and Doors for Residential Purposes BPIR
APL Window Solutions	Windows and Doors for Residential Purposes - Thermally Insulated BPIR
APL Window Solutions	Entrance Door Overview
APL Window Solutions	Testing of APL new window and installation to EM9 test method

BRANZ Appraisal 1188 (2023) - APL Metro Series ThermalHEART® with Centrafix™ Windows and Doors - Amended 2 May 2024
BRANZ Appraisal 1259 (2024) - APL ThermalHEART+® Window and Door Systems - Amended 2 May 2024

Manufacturer/supplier contact details

Company:	Architectural Profiles Ltd.
Trading as:	APL Window Solutions
Web:	www.altherm.co.nz www.firstwindows.co.nz www.vantage.co.nz www.aplnz.co.nz
Email:	apl.techinfo@aplnz.co.nz altherm.techinfo@aplnz.co.nz firstwindows.techinfo@aplnz.co.nz vantage.techinfo@aplnz.co.nz
Telephone::	07 849 8888

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years:	For materials including hardware and componentry
12 years:	For AGP glass

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years:	For installation

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

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- 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 DESIGN PARAMETERS - WIND

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

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

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

Provide this information prior to practical completion.

1.10 MARKING - EXTERNAL WINDOWS / DOORS

Each window claimed by the manufacturer to be complaint with NZS 4211 to be labelled on the frame to NZS 4211.

Compliance Information

1.11 COMPLIANCE - BRANZ APPRAISAL

APL ThermalHEART+® Window and Door Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 1259.

Performance

1.12 EXTERNAL WINDOW PERFORMANCE

APL Window Solutions windows and doors have been tested to NZS 4211 and the requirements of BPS, 4.4.1 Structural and weathertightness provisions.

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.

2 PRODUCTS

2.1 WINDOWS

Refer to SELECTIONS.

2.2 DOORS

Refer to SELECTIONS.

Materials

2.3 ALUMINIUM EXTRUSIONS

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

2.4 ALUMINIUM SHEET AND STRIP

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

Alloy designation: 5251 - H16 or 5005 - H16

2.5 STAINLESS STEEL SHEET AND STRIP

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

2.6 GLASS

Refer to the glazing section for glass types and installation.

Reveals

2.7 REVEALS - TIMBER PAINTED

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

2.8 REVEALS - ALUMINIUM

Aluminium reveals fitted to frame via thermal break.

2.9 REVEALS - PVC

Prefinished thermoplastic PVC reveals grooved for wall linings.

Flashings

2.10 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 installation - cavity systems

2.11 STANDARD CAVITY CLOSER

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

2.12 SUPPORT BAR

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

Components

2.13 GLAZING GASKETS

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

2.14 HARDWARE AND FURNITURE

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

2.15 SAFETY STAYS

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

2.16 FIXING BRACKETS

Designed by manufacturer to specific design.

2.17 WEATHERING/INSTALLATION SEALANT

Building sealant used in accordance with manufacturer's instructions for weather sealing aluminium frames to the cladding, complying with US Federal Specification TT-S-001543A, or a one-part polyurethane moisture curing, elastic joint sealant of medium modulus (± 25% movement) to US Federal Specification TT-S-00230C.

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Finishes

2.18 DURATEC POWDER COATED ALUMINIUM

High-performance polyester powder coating in accordance with WGANZ PQAS and AAMA 2604. Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install in accordance with manufacturer's shop drawings and installation instructions.

Fabrication

3.6 FABRICATION

Fabricate frames as detailed on shop drawings. Install glazing, hinges, stays and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

3.7 TIMBER REVEALS

Before fixing to aluminium frames, ensure that timber reveals which are being painted have been primed on all surfaces. Securely fix reveals through aluminium fin.

3.8 HARDWARE GENERALLY

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

3.9 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.

3.10 PASSIVE VENTILATION

Factory fit all required and scheduled passive ventilation systems to NZBC G4/AS1, paragraph 2.2.2.5, NZS 4303 and manufacturer's requirements.

Installation - windows and doors

3.11 SUPPLY OF FIXINGS

Use only fixings and fastenings recommended by the manufacturer of the component being fixed.

3.12 EXPOSED FIXINGS AND FASTENINGS

Fixings and fastenings exposed to the weather to be aluminium, or Type 304 stainless steel.

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3.13 PROTECTED FIXINGS AND FASTENINGS

Fixings and fastenings not exposed to the weather may be hot-dip galvanized steel with a coating weight of 610 g/m² complying with AS/NZS 4680.

3.14 CORROSION PROTECTION

Before fixing, apply suitable barriers of bituminous coatings, stops or underlays between dissimilar metals in contact, or between aluminium in contact with concrete.

3.15 INSTALLATION FIXING

To NZBC E2/AS1, paragraph 9.1.9.10. Fix windows/doors through reveal to frame with a pair of 75 x 3.15mm minimum galvanised jolt head nails or a pair of 8 gauge x 65mm minimum stainless steel screws. Fix at a maximum of 450 centres along all reveals and a maximum of 150mm from reveal ends. Ensure fixings do not penetrate metal flashings.

Install packers between reveals and framing at fixing points, except at the head.

3.16 INSTALLATION CAVITY CONSTRUCTION

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

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

3.17 INSTALL FLASHINGS

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

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

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

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 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.

3.19 FIX HARDWARE

Fix all sash and door hardware and furniture as scheduled.

Application - jointing and sealing

3.20 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.. In very high and extra high or greater wind zones, seal between the window head and the head flashing. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.

3.21 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.

3.22 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.

3.23 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.

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3.24 IN-SITU TOUCH-UP TO POWDER COATED ALUMINIUM

In situ touch-up of polyester or fluoropolymer coated aluminium is only permitted to minor surface scratching. Otherwise replace all damaged material.

3.25 SAFETY

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

Completion & Commissioning

3.26 COMPLETION MATTERS

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

4 SELECTIONS

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

4.1 SUPPLY AND INSTALLATION

Supply and installation of the specified APL aluminium joinery.

Supply:	By fabricator
Installation:	By main contractor

Performance

Finishes - Powder Coating

4.2 DURATEC - POWDER COATING FINISH

Type:	Polyester organic powder coating
System integrity:	25 Years
Colour:	To be confirmed by owner
Finish:	To be confirmed by owner

Glazing

4.3 GLASS

Type/thickness:	Refer to 4610AG AGP GLAZING RESIDENTIAL for type and thickness.

Window and door system - Metro Series THERMALHEART+®

4.4 APL METRO SERIES THERMALHEART+ FIXED WINDOW

Type: APL Metro Series THERMALHEART+®

4.5 APL METRO SERIES THERMALHEART+ AWNING WINDOW

Type: APL Metro Series THERMALHEART+®

4.6 APL METRO SERIES THERMALHEART+ CASEMENT WINDOW

Type: APL Metro Series THERMALHEART+®

4.7 APL METRO SERIES THERMALHEART+ SLIDING DOOR

Type: APL Metro Series THERMALHEART+®

4.8 APL METRO SERIES THERMALHEART+ HINGED DOOR

Type: APL Metro Series THERMALHEART+®

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4554VS VELUX OPENING & FIXED SKYLIGHTS

1 GENERAL

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

- operating systems
- accessories
- proprietary flashings

Documents

1.1 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
NZBC H1/VM1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/VM2	Energy efficiency for buildings greater than 300m²
AS/NZS 2208	Safety glazing materials in buildings
NZS 3604	Timber-framed buildings
NZS 4223.4	Code of practice for glazing in buildings - Wind, dead, snow and live actions
BS EN 673	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
ISO 10077-1	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - General
ISO 10077-2	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Numerical method for frames
AAMA 2605	Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix)
CodeMark™ CMNZ10008 ver02	Velux Skylights
CodeMark™ CMNZ10009 ver02	Velux Roof Windows

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

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

Current Sales Brochure and product datasheets
Installation instructions for VS/VSE/VSS Skylight
Custom flashing guide (over 15º pitch)
Velux Skylights H1 Compliance Table
Velux Verified R-values for New Zealand
(Technical Manual - Velux Skylights and the Technical Manual - Velux Roof Windows.)
BRANZ Appraisal 968 (2023) - Velux Skylights
BRANZ Appraisal 969 (2023) - Velux Roof Windows

Manufacturer/supplier contact details

Company:	**VELUX New Zealand Limited**
Web:	www.velux.co.nz
Email:	info@velux.co.nz
Telephone:	0800 650 445

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Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years:	For VELUX Skylights, Roof Windows, insulated glazing units and flashings
1 year:	For VELUX accessories (motorised units, controls, rods, blinds, insect screens)

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

10 years	For installation of VELUX Skylights

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS

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

1.6 NO SUBSTITUTIONS

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

Compliance

1.7 COMPLIANCE - CODEMARK CERTIFICATE CMNZ10008

Velux Skylights meets the requirements of the NZBC when used within the conditions and limitations of their CodeMark Certificate of Conformity CMNZ10008.

1.8 COMPLIANCE - CODEMARK CERTIFICATE CMNZ10009

Velux Roof Windows meet the requirements of the NZBC when used within the conditions and limitations of their CodeMark Certificate of Conformity CMNZ10009.

1.9 COMPLIANCE - BRANZ APPRAISAL 968

Velux Skylights have been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of their BRANZ Appraisal 968.

1.10 COMPLIANCE - BRANZ APPRAISAL 969

Velux Roof Windows have been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of their BRANZ Appraisal 969.

Performance

1.11 THERMAL PERFORMANCE - SKYLIGHTS

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

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

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Refer to SELECTIONS for Construction R-values.

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

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

2 PRODUCTS

Skylights

2.1 SKYLIGHTS

VELUX Skylights; to CodeMark™ CMNZ10008, either top hinged with INTEGRA motorised control (electric opening VSE or solar opening VSS), or manual opening VS, or fixed FS skylight.

For roof pitches between 15° to 90°.
Manufactured from high quality treated timber, prefinished frame and sash in white, semi-gloss paint. External cappings manufactured from aluminium profile with Kynar 500 PVDF coating to AAMA 2605. Refer to SELECTIONS for type, finish and accessories.

2.2 LOW PITCH SKYLIGHTS

VELUX Low Pitch Skylights; to CodeMark™ CMNZ10008, either top hinged with INTEGRA motorised control solar opening VCS, or manual opening VCM, or fixed FCM skylight.

For roof pitches between 0° to 15º (and can be installed in roofs up to 60° pitch).
Manufactured from white uPVC internal frame and sash with extruded gaskets. External cappings manufactured from aluminium profile with Kynar 500 PVDF coating to AAMA 2605. Refer to SELECTIONS for type, finish and accessories.

Components

2.3 FIXINGS

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

2.4 GLAZING - ALL SKYLIGHTS

VELUX proprietary insulated double-glazing unit, factory fitted. Unit comprises an inner pane of laminated glass, and outer pane of toughened safety glass with NEAT™ photo-catalytic coating to exterior face. Inside face of outer pane coated with Low-E³ coating. Cavity filled with Argon gas.

2.5 GLAZING - ROOF WINDOWS - DOUBLE GLAZED

VELUX proprietary insulated double-glazing unit, factory fitted. Unit comprises an inner pane of laminated glass, and outer pane of toughened safety glass with NEAT™ photo-catalytic coating to exterior face. Inside face of outer pane coated with Low-E³ coating. Cavity filled with Argon gas.

2.6 GLAZING - ROOF WINDOWS - TRIPLE GLAZED

VELUX proprietary insulated triple-glazing unit, factory fitted. Unit comprises an inner pane of laminated glass, a heat strengthened middle pane and outer pane of toughened safety glass with NEAT™ photo-catalytic coating to exterior face. Inside face of outer pane coated with Low-E³ coating. Cavities filled with Argon gas.

2.7 HARDWARE

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

2.8 MOTORISED OPENING DEVICES - INTEGRA MODELS VSS/VSE/VCS

Units have integrated motorised control unit, transformer, rain sensor (for automatic closing of skylight) and radio frequency wireless remote control keypad.

INTEGRA model VSE has electric mains power, models VSS and VCS have solar panel and battery for solar powered operation.

2.9 FLASHINGS FOR MODELS FS/VS/VSE/VSS/GGU

For roof pitches between 15º to 90º.

VELUX proprietary flashing solutions to VELUX instructions.
For installations in trapezoidal profile metal and metal tile roofing, contact VELUX for additional instructions.

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Custom made flashings in accordance with NZBC E2/AS1. Refer to section 4821 FLASHINGS for details. Contact VELUX for correct trim frame requirements.
Refer to SELECTIONS for type.

Accessories

2.10 INSTALLATION ACCESSORIES

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

2.11 INTERNAL BLINDS AND SCREENS

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

Insect screens are pre-fitted to all models (except FS, FCM and GGU), and can be removed for cleaning.
Refer to SELECTIONS for type, operation and control hardware.

Finishes

2.12 FINISH

VELUX proprietary finishes.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE AND HANDLING

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

3.2 PRE-INSTALLATION REQUIREMENTS

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

Refer to VELUX at www.velux.co.nz for installation details.

3.3 EXECUTION GENERALLY

Check that the preparation of the opening is to NZBC E2/AS1, 8.4.12 Roof penetrations.

3.4 HARDWARE GENERALLY

Factory fit all required and scheduled hardware.

3.5 RETAIN PROTECTIVE COVERINGS

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

Installation

3.6 GENERALLY

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

3.7 INSTALL UNITS

Install and fix the Skylight or Roof Window strictly in accordance with the manufacturer's installation instructions, CodeMark™ CMNZ10008 with the Technical Manual - Velux Skylights andCodeMark™ CMNZ10009 with the Technical Manual - Velux Roof Windows.

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Repack any thermal insulation around rough openings where disturbed by the installation to maintain continuity of thermal barriers.
When using VELUX flashings (EDW, EDL, EKW) with VELUX Skylights and Roof Windows, install as detailed by VELUX to make the installation completely weatherproof. Refer to VELUX at www.velux.co.nz for installation instructions.
If using custom flashings, ensure curb/upstand height and flashing meet NZBC E2/AS1 upstand height and flashing requirements. Contact VELUX for additional information.

3.8 ACCESSORIES AND OPERATING SYSTEMS

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

Completion

3.9 CLEAN FRAMES AND GLAZING

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

3.10 CONFIRM

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

4 SELECTIONS

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

Performance

Skylights

4.1 VELUX VSS INTEGRA SKYLIGHT - MOTORISED OPENING, SOLAR

Location:	Refer to drawings
Brand:	VELUX
Model:	VSS INTEGRA Opening (Solar)
Type/size:	Refer to drawings

Low pitch skylights

4.2 VELUX VCS INTEGRA LOW PITCH SKYLIGHT - MOTORISED OPENING, SOLAR

Location:	Refer to drawings
Brand:	VELUX
Model:	VCS INTEGRA Low Pitch Opening (Solar)
Type/size:	Refer to drawings

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4610AG AGP® GLAZING RESIDENTIAL

1 GENERAL

This section relates to the supply and fixing of **AGP®** glass products for use with APL Window Solutions external and internal joinery in residential type buildings and includes:

- Window and door glazing

This **AGP** section is to be read in conjunction with **APL Window Solutions** branded sections

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:

IGU	Insulating Glass Units
PVB	Polyvinyl Butyral
uPVC	Unplasticised polyvinyl chloride

Documents

1.2 DOCUMENTS

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

NZBC B1/AS1	Structural provisions for buildings
NZBC B2/AS1	Durability provisions for building elements
NZBC F2/AS1	Hazardous building materials
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/VM1	Energy efficiency for buildings greater than 300m²
AS/NZS 1170.2:2011	Structural design actions - Wind actions
AS/NZS 2208	Safety glazing materials in buildings
AS/NZS 4667	Quality requirements for cut and processed glass
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
BPS	Building Product Specifications

1.3 MANUFACTURER'S DOCUMENTS

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

- Product notes and manufacturing limitations
- Care and maintenance of your AGP glass
- Condensation guide
- AGP Glass handling, storage & transportation guide
- Guide to visual quality of residential glass and insulating glass units (IGUs)
- Insulating glass unit (IGU) warranty

Manufacturer/supplier contact details

Company:	AGP
Web:	www.agpl.co.nz
Email:	technical@agpl.co.nz
Telephone:	07 849 8880

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

12 years:	For insulating glass units (IGUs)
12 years:	For float glass
12 years:	For toughened glass
12 years:	For laminated glass

- 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 supply.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 NO SUBSTITUTIONS

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

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

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:

- Care and maintenance of your AGP glass
- Condensation guide

Provide this information prior to practical completion.

Compliance information

1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

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

Performance

1.9 THERMAL STRESS ANALYSIS

For non-heat treated glass obtain a thermal stress analysis for tinted, reflective and other solar control vision glass including IGU's for review before placing final order.

1.10 THERMAL PERFORMANCE - EXTERNAL GLAZING

Provide external glazing to comply with H1 Energy efficiency requirements of NZBC H1/AS1 and NZBC H1/VM1.

Refer to RELATED WORK sections for Construction R-values for complete windows / glazed doors / curtain walls and/or skylights including glazing.

Performance – Wind (design by contractor)

1.11 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR

Design the installation to the manufacturer requirements and as appropriate for the project wind design parameters. Refer to SELECTIONS.



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Quality control and assurance

2 PRODUCTS

Materials, windows and doors

2.1 CLEAR FLOAT GLASS

Clear ordinary transparent float glass for general window/door glazing application. Thickness to NZS 4223.1, NZS 4223.Supp1, NZS 4223.3 and NZS 4223.4.

2.2 OBSCURE GLASS

Translucent rolled glass, sand-blasted or acid etched on one surface for a decorative finish.

2.3 LAMINATED GLASS

Grade A safety glass to AS/NZS 2208 with PVB interlayer.

2.4 TOUGHENED GLASS

Grade A safety glass to NZBC F2/AS1 and AS/NZS 2208.

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

2.5 TINTED FLOAT GLASS

Body tinted float glass. Thickness to NZS 4223.1 and NZS 4223.Supp 1, NZS 4223.3 and NZS 4223.4.

2.6 REFLECTIVE AND COATED FLOAT GLASS

Coated float glass incorporating both solar and thermal insulation properties, or coated float glass with thermal insulation properties only.

2.7 INSULATING GLASS UNITS (IGU'S)

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

- Surface #1 - outer face of exterior pane
- Surface #2 - cavity face of the exterior pane
- Surface #3 - cavity face of the interior pane
- Surface #4 - outer face of the interior pane

Components, aluminium and uPVC glazing

2.8 GLAZING TAPE AND GASKETS

Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes selected to suit the glazing detail to window manufacturers' requirements.

2.9 SETTING BLOCKS

APL Window and Door Systems setting blocks consisting of PE, PP or PA material selected to suit the frame and panel type.

3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

To NZS 4223.1, NZS 4223.2, NZS 4223.3 as modified by BPS paragraph 4.4.1.4, and NZS 4223.4.
Interface between external glazing and other elements to be wind and watertight on completion.

3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products, and to the AGP Glass handling, storage & transportation guide.

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3.3 ROUTINE MATTERS

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

3.4 PRE-INSTALLATION REQUIREMENTS

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

3.5 GLASS CONDITION

All glass to have undamaged edges and surfaces in accordance with AS/NZS 4667.

3.6 GLASS THICKNESS

Whether stated in a glazing schedule or not, confirm glass thicknesses to NZS 4223.1, NZS 4223.3, NZS 4223.4. 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.

3.7 REBATE DIMENSIONS

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

Conditions - human impact safety requirements

3.8 SAFETY GLAZING, GENERAL REQUIREMENTS

Glazing of doors, side panels, low level and window seat glazing, bathrooms, stairwell landings and similar locations, to NZS 4223.3 as modified by BPS paragraph 4.4.1.4, for thickness and maximum areas of safety glass.

3.9 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.

3.10 CONTAINMENT

Edge cover to comply with NZS 4223.1, Section 4 Glazing, table 5. Otherwise to NZS 4223.3, 2.3 Edge cover.

Assembly

3.11 WORKING OF GLASS

All working of glass as required in NZS 4223.1.

3.12 EDGE WORK

Edge work other than a clean cut. Refer to SELECTIONS/drawings for type.

Installation/application

3.13 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.
Refer to AS/NZS 4667 and NZS 4223.1 for glass and glazing.

3.14 INSTALL SAFETY GLASS

To NZS 4223.3.

3.15 INSTALLING INSULATING GLASS UNITS

Refer to the APL branded window 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 the manufacturers requirements. Fit setting and location blocks and bead glaze units using a compatible sealant.

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3.16 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 control glass being used. Check thermal stability for the particular location and ensure any sealant or compound is compatible with the coating.

Application aluminium

3.17 INSTALL GLASS TO ALUMINIUM FRAMES

Install glass to NZS 4223.1.

- Bead glaze to Section 4 Glazing.
- Channel glaze to Section 4 Glazing, and Section 5 for Framed, Unframed, Partly Framed Glass Assemblies.

Application uPVC

3.18 INSTALL GLASS TO uPVC FRAMES

Install glass to NZS 4223.1.

- Bead glaze to Section 4 Glazing.
- Channel glaze to Section 4 Glazing, and Section 5 for Framed, Unframed, Partly Framed Glass Assemblies.

Finishing

3.19 SAFETY

Indicate the presence of transparent glass for the remainder of the construction period, with whiting, tape or signs compatible with the glass type.

3.20 MANIFESTATIONS

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

Completion & Commissioning

3.21 COMPLETION MATTERS

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

4 SELECTIONS

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

Performance - wind

4.1 WIND ZONE - NON-SPECIFIC DESIGN

Refer to general section 1220 PROJECT for design wind pressures.

Glass by type

4.2 AGP SOLUX-E® - LOW E THERMAL AND SOLAR CONTROL IGU

Location:	All IGUs
Brand/type:	AGP SOLUX-E®
Outer glass type:	Clear
Coated surface:	#2
Outer glass thickness:	4mm
Spacer width:	16mm
Spacer type:	ATS-Architectural Thermal Spacer®
Space gas:	Argon
Inner glass type:	Clear
Inner glass thickness:	4mm

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4710P PINK® BATTS® THERMAL & ACOUSTIC INSULATION

1 GENERAL

This section relates to Comfortech Building Performance Solutions® Pink® Batts® thermal and acoustic insulation materials for walls, floors, ceilings and roofs.

1.1 RELATED WORK

Refer to 4161 UNDERLAYS, FOIL AND DPC for wire netting, wall underlays and roofing underlays.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BIB	Building Insulation Blanket
IIC	Impact Insulation Class
STC	Sound Transmission Class

Documents

1.3 DOCUMENTS

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

NZBC G6/VM1	Airborne and impact sound
NZS/AS 1530.1	Methods for fire tests on building materials, components and structures - Combustibility test for materials
AS/NZS 3000	Electrical installations (Known as the Australian/ New Zealand Wiring Rules)
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
AS/NZS 4859.1	Thermal insulation materials for buildings - General criteria and technical provisions
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

Comfortech H1 Overview
Comfortech Pink® Batts® Insulation - Safety Data Sheet
Comfortech Pink® Batts® Thermal Solutions - Product Guide (May 2025)
Comfortech Pink® Batts® Ceiling Product & Insulation Guide (June 2025)
Comfortech Pink® Batts® Skillion Roof Insulation Product & Installation Guide (Jan 2025)
Comfortech Pink® Batts® Wall Insulation Product & Installation Guide (Jan 2025)
Comfortech Pink® Batts® SnugFloor® Insulation Product & Installation Guide (Jan 2025)
Comfortech Pink® Batts® BIB Product & Installation Guide (July 2025)
Comfortech Pink® Superbatts® Thermal Solutions - Installation Guide (Jan 2025)
Comfortech Pink® Batts® Silencer® Acoustic Installation Instructions
Comfortech Pink® Batts® Silencer® Wall & Midfloor Data Sheet
Comfortech Pink® Batts® Insulation Product Warranty
BRANZ Appraisal 238 (2023) - Pink® Batts® Insulation - Amended 23 February 2026
BRANZ Appraisal 632 (2023) - Pink® Batts® SnugFloor® Insulation - Amended 12 August 2024
BRANZ Appraisal 767 (2023) - Pink® Batts® Skillion Roof Insulation - Amended 21 January 2026

Manufacturer/supplier contact details

Company:	Tasman Insulation NZ Ltd
Trading as:	Comfortech Building Performance Solutions®
Web:	www.pinkbatts.co.nz
Telephone:	0800 746 522

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

50 years	For Pink® Batts® insulation products

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year	For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

1.9 SOUND CONTROL SITE TEST

Site test each sound rated element to NZBC G6/VM1 for compliance with specified sound transmission loss, using a nominated acoustic consultant. Rectify any element that does not meet the specified STC/IIC figure.

Compliance information

1.10 COMPLIANCE - BRANZ APPRAISAL 238

Pink® Batts® Insulation has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 238.

Performance

1.11 FIRE PROPERTIES - NON COMBUSTIBLE

Pink® Batts® insulation products are classified as non-combustible when tested to NZS/AS 1530.1 and achieve a Group Number of 1-S.

2 PRODUCTS

Materials - thermal insulation

2.1 PINK® BATTS® THERMAL INSULATION BATTS

Bio-soluble fibrous glass wool slabs manufactured from minimum 80% recycled window glass and bonded with thermosetting resin to AS/NZS 4859.1. Coloured Pink for identification. Available in a range of R-values, sizes and thicknesses. Refer to SELECTIONS.

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Materials - acoustic insulation

2.2 PINK® BATTS® SILENCER® ACOUSTIC INSULATION BATTS

Bio-soluble fibrous glass wool slab manufactured from minimum 80% recycled window glass and bonded with thermosetting resin. Coloured Grey for identification. Available in a range of R-values, sizes and thicknesses. Refer to SELECTIONS.

Components

2.3 WIRE NETTING

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

2.4 PLASTIC STRAPPING TAPES

Proprietary plastic strapping tape.

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 - general

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALL INSULATION - GENERALLY

Install insulation in a dry protected environment. Lay, fit and fix insulation without gaps, tucks, folds and over compaction to Pink® Batts® installation requirements and to NZS 4246 for all housing and buildings up to 300m². Allow insulation to re-loft/relax prior to installation. Do not cover vents. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath. Use insulation offcuts to fill small gaps between framing.

3.6 INSULATION CLEARANCES

Provide insulation clearances to NZS 4246 and for recessed luminaires AS/NZS 3000, 4.5.3.2. Where allowed by these standards provide insulation clearances to product manufacturer's stated clearances. Secure insulation in place so clearances are maintained and use guards/barriers , if required, where insulation is not secured.

3.7 LAY WIRE NETTING - UNDER JOISTS / PURLINS

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

3.8 LAY WIRE NETTING - OVER PURLINS

Lay at right angles across the purlins with enough slack to allow insulation to retain its nominal thickness between. Tie edges of netting together with galvanized wire clips.

3.9 LAY PLASTIC STRAPPING TAPE

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

3.10 PREPARATION INSULATION

Before installation, gently agitate the insulation by shaking or bouncing to assist recovery to the nominal thickness stated on the product label. Maintain the insulation in a dry state.

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3.11 CUTTING INSULATION TO SIZE

Tear insulation by hand or cut with an insulation saw/knife, sharp scissors, or with sharp wide-blade knife. Cut slightly oversized for snug friction fit.

Installation - thermal insulation

3.12 INSTALL PINK® BATTS® TIMBER WALL INSULATION

Friction fit insulation slabs between framing.

3.13 INSTALL PINK® BATTS® INTERIOR SECONDARY WALL INSULATION LAYER

Co-ordinate with the installation of battens to fit a secondary wall insulation layer. Friction fit insulation slabs between battens.

3.14 INSTALL PINK® BATTS® CEILING INSULATION

Friction fit insulation slabs between framing. Install to the midpoint of the top plate. Maintain a 25mm gap clearance between the insulation slabs and roof underlay.

3.15 INSTALL PINK® SUPERBATTS® CEILING INSULATION - SINGLE LAYER INSTALLATION

Notch out the underside of the first slab to the same size as the truss cord. Friction fit slabs between truss framing with notch fit over truss bottom chord. Butt up adjacent slab under slight compression. Install to the midpoint of the top plate. Maintain a 25mm gap clearance between the insulation slabs and roof underlay.

3.16 INSTALL PINK® SUPERBATTS® CEILING INSULATION - DOUBLE LAYER INSTALLATION

Lay upper layer slabs over truss bottom chord perpendicular to chord. From underneath, friction fit the lower layer slabs between the truss bottom chords. Install to the midpoint of the top plate. Maintain a 25mm gap clearance between the insulation slabs and roof underlay.

Installation - acoustic insulation

3.17 INSTALL PINK® BATTS® SILENCER® WALL INSULATION

Friction fit insulation slabs between framing when lining on one side is installed. Maintain full thickness of the slabs over the whole of the installation.

3.18 INSTALL PINK® BATTS® SILENCER® MIDFLOOR INSULATION

Friction fit insulation slabs between framing. Maintain full thickness of the slabs over the whole of the installation.

Completion

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

Materials - thermal insulation

4.1 PINK® BATTS® TIMBER WALL INSULATION

Location: Refer to drawings

4.2 PINK® BATTS® CEILING INSULATION

Location: Refer to drawings

Materials - acoustic insulation

4.3 PINK® BATTS® SILENCER® WALL INSULATION

Location: Refer to drawings
Brand/Type: Pink® Batts® Silencer® Wall

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4.4 PINK® BATTS® SILENCER® MIDFLOOR INSULATION

Location:	Refer to drawings
Brand/Type:	Pink® Batts® Silencer® MidFloor
System IIC:	32
Nominal stabilised thickness:	150mm
Batt size:	1140mm x 432mm

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4711FK COMFORTECH™ KINGSPAN KOOLTHERM® SOFFIT & FRAMING BOARDS

1 GENERAL

This section relates to the supply and installation of Kingspan Kooltherm® products by Comfortech Building Performance Solutions™ providing thermal insulation for concrete soffits and behind wall lining and framed walls.

It includes:

- Kooltherm® K7 Pitched Roof Board
- Kooltherm® K10 G2 Soffit Board
- Kooltherm® K12 Framing Board
- and associated componentry necessary to complete the installation.

1.1 ABBREVIATIONS AND DEFINITIONS

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

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
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 3000	Electrical installations (Known as the Australian/New Zealand Wiring Rules)
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
AS/NZS 4859.1	Thermal insulation materials for buildings - General criteria and technical provisions
BS EN ISO 9001:2008	Quality management systems - Requirements
AS ISO 9705	Fire tests - Full scale room test for surface products
CodeMark™ CM20099 ver4	Kooltherm K12 Framing Board

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Kooltherm® K7 Pitched Roof Board Product Data Sheet
Kooltherm® K7 Pitched Roof Board Installation Guide
Kooltherm® K10 G2 Soffit Board Product Data Sheet
Kooltherm® K10 G2 Soffit Board Installation Guide
Kooltherm® K12 Framing Board Product Data Sheet (Oct 2025)
Kooltherm® K12 Framing Board Installation Guide (Apr 2025)

Manufacturer/supplier contact details

Company:	Tasman Insulation New Zealand Ltd
Trading as:	Comfortech Building Performance Solutions™
Web:	www.comfortech.co.nz
Email:	info@comfortech.co.nz
Telephone:	0800 45 4000

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:



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10 years For Kooltherm® 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 practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS GENERAL

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 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.

1.7 NO SUBSTITUTIONS

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

Compliance information

1.8 COMPLIANCE - CODEMARK CERTIFICATE

Kooltherm® K12 Framing Board meets the requirements of the NZBC when used within the Conditions and Limitations of its CodeMark Certificate of Conformity CM20099.

Performance

1.9 SURFACE FIRE PROPERTIES FOR LININGS

Group Number to NZBC C/AS2, Table 4.3. Kooltherm® K10 G2 Soffit Board achieve Group Number 2 - S, tested to AS ISO 9705.

2 PRODUCTS

Materials

2.1 KOOLTHERM K10 G2 SOFFIT BOARDS

Kingspan Kooltherm® K10 G2 Soffit Board, a high performance, fibre-free rigid thermoset phenolic insulation core, sandwiched between an upper tissue based facing and a lower facing of reflective aluminium foil autoadhesively bonded to the insulation core during manufacture. Complies with AS/NZS 4859.1. Manufactured under quality control systems approved to BS EN ISO 9001:2008. Supplied in a 2400mm x 1200mm board and available in a range of thicknesses and R-values. Refer to SELECTIONS.

2.2 KOOLTHERM K12 FRAMING BOARDS

Kingspan Kooltherm® K12 Framing Board, a high performance, fibre-free rigid thermoset phenolic insulation, faced on both sides with a low emissivity composite foil autoadhesively bonded to the insulation during manufacture. Complies with AS/NZS 4859.1. Manufactured under quality control systems approved to BS EN ISO 9001:2008. Supplied in a 2400mm x 1200mm board and available in a range of thicknesses and R-values. Refer to SELECTIONS.

Components

2.3 FASTENERS

Fasteners to suit the application and in accordance with Kooltherm® Installation Guides.

2.4 JOINT TAPE - K7 PITCHED ROOF BOARDS

Self-adhering construction grade tape to suit the application to Kingspan Kooltherm® K7 Pitched Roof Board joints, such as Thermakraft Premium Joining Tape, Thermakraft Thermaflash Flashing Tape or similar.

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2.5 JOINT TAPE - K10 G2 SOFFIT BOARDS

Kingspan Air-Cell Insulation Tape, silver reinforced aluminium foil tape, 96mm wide.

2.6 JOINT TAPE - K12 FRAMING BOARDS

Self-adhering construction grade tape to suit the application to Kingspan Kooltherm® K12 Framing Board joints, such as Kingspan AIR-CELL Insulation Tape, Thermakraft Premium Joining Tape, Thermakraft Thermaflash Flashing Tape or similar.

2.7 TIMBER BATTENS

Timber battens, type and size to suit the application. Refer to SELECTIONS.

2.8 STEEL FURRING CHANNEL SYSTEM

Proprietary galvanized steel furring channel system. Refer to SELECTIONS.

2.9 PU FOAM

Expanding closed cell PU foam. 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. Do not proceed until unsatisfactory conditions has been corrected.

Installation - generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALL INSULATION - GENERAL

Lay, install, fit and fix insulation without gaps, tucks, folds and over compaction to NZBC H1/AS1 or AS2 and Kooltherm® Installation Guides. For all housing and buildings up to 300m², install in accordance to NZS 4246 sections 5 Walls, 6 Ceilings & Roofs, 7 Underfloor - Suspended Framed Floors and 10 Concrete Slab-on-Ground Insulation, for residential light timber or steel framed buildings. Do not cover vents. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath.

3.6 INSULATION BOARD - CUTTING

Cut Kooltherm® board by using a fine toothed saw or by scoring with a sharp knife, snapping the board over a straight edge and then cutting the facing on the other side. Ensure joints are close-butted to maintain continuity of insulation.

3.7 PENETRATIONS

Where services such as pipes, plumbing, wiring and the like penetrate through boards cut holes in Kooltherm® boards and notch around penetration without gaps or undesirable compression at edges. Seal penetration to the sealants manufacturer requirements.

3.8 ELECTRICAL WIRING

Take caution when working around electrical wiring. Fit Kooltherm® boards behind or in front of electrical wiring without gaps or undesirable compression at edges. Where required recess the back of boards to accommodate electrical wiring, leave excess insulation to minimise thermal weaknesses.



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3.9 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

Installation - Kooltherm® K10 G2 Soffit Board

3.10 INSTALL TIMBER BATTENS

Install timber battens to ceiling oriented parallel to long board edges, centred on panel joints and spaced at 600mm maximum centres. Fix to fastener manufacturer's requirements.

3.11 INSTALL STEEL FURRING CHANNELS

Install furring channels to manufacturer's requirements oriented parallel to long board edges, centred on panel joints and spaced at 600mm maximum centres.

3.12 INSTALL INSULATION

Install boards in staggered or square pattern. Fix to fastener manufacturer's requirements with minimum 11 fasteners per board providing 4 fasteners along the board's long edges and 3 fasteners along the centre (offset from edge fasteners). Leave min 50mm and max 150mm clearance to the board's edges, evenly distribute fasteners over the board.

3.13 INSTALL INSULATION - AROUND FIRE COLLARS

Install Kooltherm® K10 G2 Soffit Board around fire collars to Kooltherm® Installation Guide, and as follows:

- Fit Kooltherm® K10 G2 Soffit Board tight around the fire collar. This helps to reduce the effects of thermal bridging through the slab.
- Do not cover the face of the fire collar with board - the front face of the collar needs to be exposed to activate in a fire situation.

Installation - Kooltherm® K12 Framing Board

3.14 INSTALL INSULATION - BETWEEN STEEL/TIMBER STUDS

Fix stop battens to sides of studs where required to stop insulation boards from moving within stud cavity. Friction fit insulation boards between studs, butt tightly leaving no gaps. Fill all gaps with expanding closed cell PU foam and trim flush.

3.15 INSTALL INSULATION - OVER STEEL/TIMBER STUDS

Install framing boards to external surface of frame structure ensuring vertical board joints coincide with vertical members. Ensure boards are lightly butted for continuity of insulation. Use large headed galvanized clout nails or screws as temporary fixings prior to the secondary support batten being fitted.

Sealing of insulation board joints and exposed edges

3.16 SEAL BOARD JOINTS AND EXPOSED EDGES

Where specified (refer to SELECTIONS) seal insulation board joints and edges with tape. Clean insulation boards from dust and contaminates with a dry cloth. Apply tape to manufacturers requirements centred over board joints and exposed edges removing liner 300mm - 600mm at a time and firmly pressing down without stretching or pulling tape. Secure tape by firmly wiping from centre out using a plastic squeegee. Cut tape using knife or scissors.

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

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Materials

4.1 KOOLTHERM K10 G2 SOFFIT BOARDS

Location:	Refer to drawigns
Manufacturer:	Kingspan Insulation NZ Ltd
Supplier:	Comfortech Building Performance Solutions™
Brand/type:	Kooltherm® K10 G2 Soffit Board
Board size:	2400mm x 1200mm
Thickness:	Varies, refer to drawings
Product R-value:	As stated on drawings
Joint taping:	Required

4.2 KINGSPAN KOOLTHERM K12 FRAMING BOARDS

Location:	Refer to drawings
Manufacturer:	Kingspan Insulation NZ Ltd
Supplier:	Comfortech Building Performance Solutions™
Brand/type:	Kooltherm® K12 Framing Board
Board size:	2400mm x 1200mm
Thickness:	Varies, refer to drawings
Product R-value:	As stated on drawings
Joint taping:	Required

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5111H JAMES HARDIE® FIBRE CEMENT SHEET LININGS

1 GENERAL

This section relates to the supply and installation of **James Hardie®** Villaboard™ Lining and Hardie™ Groove Lining for:

- internal wall linings
- ceiling linings

Documents

1.1 DOCUMENTS

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

BPS	Building Product Specifications
NZBC C/AS2	Protection from fire for buildings other than risk group SH
AS/NZS 2589	Gypsum linings - Application and finishing
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in buildings

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

James Hardie® documents relating to this part of the work:

Villaboard™ Lining
Hardie™ Groove Lining
Fire and Acoustic Design Manual by James Hardie, May 2025
BRANZ Appraisal 1285 (2025) - James Hardie Fire And Acoustic Wall Systems - Amended 16 June 2026

Manufacturer/supplier contact details

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

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

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

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.4 NO SUBSTITUTIONS

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

1.5 SAFE WORKING

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

1.6 COMPLIANCE

Fibre cement sheets to AS/NZS 2908.2.

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2 PRODUCTS

Materials

2.1 PLAIN FIBRE CEMENT SHEET LININGS

James Hardie® Villaboard™ Lining manufactured from treated cellulose fibre, portland cement, sand and water. Cured by high pressure autoclaving and manufactured to AS/NZS 2908.2. Sealed on the face.

Components

2.2 BATTENS, TIMBER

Minimum 45mm wide, 35mm deep timber with depth suitable for length of fasteners used.

2.3 PACKERS

3 - 4mm timber packers.

2.4 NAILS

6mm and 9mm linings:	40mm x 2.8mm galvanized flathead Hardie™ Flex nails
Over Gypsum plasterboard:	50mm x 2.8mm galvanized flathead Hardie™ Flex nails

2.5 SCREWS FOR POWER SCREW GUN DRIVING

Timber framing

6mm and 9mm linings:	Villadrive 6 gauge x 30mm self embedding screws or Hardie™ Drive self embedding stainless steel screws
Steel framing:	Steel 8 gauge x 32mm self embedding screws

2.6 WALL BOARD ADHESIVE

Polyurethane wallboard adhesive. Refer to James Hardie® product installation manual.

Accessories

2.7 CONTROL JOINTS SECTION

45mm x 10mm shaped PVC control joint or Rondo P35 jointer.

2.8 EXTERNAL CORNER SECTIONS

30mm x 30mm x 1.2mm PVC angle.

2.9 POLYETHYLENE TAPE

Self adhesive polyethylene for behind expressed joints and expressed control joints.

2.10 JOINT REINFORCING TAPE

52mm wide perforated paper tape.

2.11 BEDDING COMPOUND

Hardie™ Base Coat compound powder.

2.12 FINISHING COMPOUND

Hardie™ Top Coat premixed.

2.13 SEALANT

Silicone or polyurethane sealant. Refer to the James Hardie® installation manual.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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 MOISTURE CONTENT

Maximum moisture content of timber framing to NZS 3602.

3.4 PROTECT

Protect joinery, fittings and finishes already in place from water staining or damage from lining installation.

3.5 BUILDING

Ensure building is weatherproof before lining work commences.

3.6 STORAGE

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

3.7 HANDLING

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

3.8 SUBSTRATE

Do not commence work until the substrate is of the standard required by the relevant manufacturer's technical literature for the specified finish; plumb, level and in true alignment. Maximum moisture content of timber framing to NZS 3602.

Application

3.9 FIXING WITH BUTT JOINTS

Cut sheet using the appropriate method for the specified finish. Prepare and fix square edged sheets in accordance with James Hardie Installation Manual. Include flexible sealant in wet areas.

Joint width: 1 - 2mm

3.10 PROVIDE VERTICAL CONTROL JOINTS

Provide vertical control joints at 7.2 metre centres maximum for general application and 4.2 metres centres maximum for tiled applications. Provide acoustic sealant in walls having an acoustic rating.

3.11 PROVIDE HORIZONTAL CONTROL JOINTS

Provide horizontal control joints at 7.2 metres centres maximum for general application and 4.2 metre centres maximum for tiled applications.

3.12 PROVIDE EXTERNAL CORNER ANGLE

Provide perforated PVC external corner angle or paper faced rigid spine corner mould to external corners.

3.13 INTERNAL CORNERS

When used in tiling applications provide a Lumberlock Stud saver to framed internal corner prior to fixing of Villaboard™ Lining.

Provide perforated PVC corner mould, or paper faced rigid spine corner mould or solid blocking to internal corners.

3.14 FORMING HOLES

Required holes accurately formed and cut to James Hardie® requirements.

3.15 SILICONE JOINTS

Provide polyethylene tape behind joints finished with flexible sealant.

Levels of Finish

Refer to AS/NZS 2589.
Refer to SELECTIONS/drawings for required levels of finish.



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3.16 LEVEL 0, 1 and 2 FINISHES

Refer to James Hardie® installation manual.

3.17 LEVEL 3 FINISH

Application:	For use in areas which are to receive heavy or medium texture (spray or hand applied) finishes or where heavy paper wall coverings are to be applied as the final decoration.
Jointing/setting:	Joints and corner joints will be set with Hardie™ Base Coat reinforced with perforated paper tape and Hardie™ Top Coat.
Finish:	This level of finish must be sufficiently smooth to accept vinyl, tiles or textured coatings without blemishes.

3.18 LEVEL 4 FINISH

Application:	This is generally the accepted level of finish for domestic construction. It is used where light textures or wall coverings and smooth textured finishes and satin/flat/low sheen paints are illuminated by non-critical lighting.
Jointing/setting:	Refer to flush jointing recommendations on page 11 James Hardie® Villaboard™ Lining installation manual.
Finish:	For use where light-texture coatings or wallpaper or other lightweight wall coverings are to be applied. For painted finishes in non-critical lighting areas flat and low-sheen textured paints are to be applied. Gloss and semi-gloss paints are not generally suitable over this level of finish as any minor blemish will show under critical light. The weight, texture and sheen level or wall coverings applied over this level of finish must be carefully evaluated. Joints and fasteners must be adequately concealed if the wallcovering material is lightweight, contains limited pattern, has a gloss finish, or any combination of these features is present. Unbacked vinyl wall coverings are not suitable over this level of finish.

3.19 LEVEL 5 FINISH

Application:	This level of finish is for use where gloss or semi-gloss paints are specified or where critical lighting conditions occur on satin, flat or low sheet paints.
Jointing/setting:	Typically all joints and corner joints will have tape embedded in Hardie™ Base Coat applied over all joints, angles, fastener heads and accessories. A thin skim coat of Hardie™ Top Coat must be applied to the entire surface to be plastered. The surface must be finished smooth and free of tool marks and ridges and special care must be taken with the application of the finishing compound to achieve a smooth, true surface suitable for these critical finishes.
Finish:	This level of finish is for use where gloss, semi-gloss, low-sheen or non-textured paints are specified or where critical lighting conditions occur.

Completion & Commissioning

3.20 COMPLETION MATTERS

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

4 SELECTIONS

Linings

4.1 JAMES HARDIE® VILLABOARD™ LINING

Location:	Ensuites, Bathroom
Type:	James Hardie® Villaboard™ Lining
Thickness:	9mm
Fixing method:	Screw and adhesive



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4.2 FIXING BUTT JOINTS

Location: Ensuites, Bathroom
Fasteners: Villadrive 6 gauge x 30mm self embedding screw



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5113G GIB® PLASTERBOARD LININGS

1 GENERAL

This section relates to the supply, fixing and jointing of GIB® plasterboard linings and accessories to timber and steel framed walls and ceilings to form:

- standard systems
- superior finish quality systems
- bracing systems
- wet area systems

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

AWCINZ	Association of Wall and Ceiling Industries New Zealand

Documents

1.2 DOCUMENTS

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

NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
NZS 3604	Timber-framed buildings
ISO 5660.1	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 1: Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 2: Smoke production rate (dynamic measurement)
BRANZ Technical Paper P21	BRANZ Technical Paper P21: A wall bracing test and evaluation procedure (2010)

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

GIB® Site Guide (April 2024)
GIB® Noise Control Systems (September 2017)
GIB® Wet Area Systems (February 2021)
GIB Toughline® Aqua (July 2018)
GIB Ezybrace® Systems (August 2016)
GIB Ezybrace® Bracing Design Software
GIB Ezybrace® Bracing Supplement Document (December 2016)
GIB Ezybrace® for Light Steel Frame Systems (March 2017)
GIBFix® Framing System (August 2016)
GIB Rondo® Metal Batten System (September 2024)
GIB® Goldline™ Platinum Tape-on Trims
GIB® UltraFlex high impact corner mould
GIB® Tough Systems (November 2014)
BRANZ Appraisal 289 (2024) GIB® Fire Rated Systems
BRANZ Appraisal 394 (2025) GIB® Noise Control Systems
BRANZ Appraisal 427 (2021) GIB® Wet Area Systems
BRANZ Appraisal 928 (2021) GIB EzyBrace® Systems

Manufacturer/supplier contact details

Company:	Winstone Wallboards

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Web: www.gib.co.nz
Telephone: 0800 100 442

Requirements

1.4 NO SUBSTITUTIONS

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

1.5 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 INSPECTIONS AND ACCEPTANCE

Allow for inspection of the finished plasterboard surface:

- before applying sealer and
- before applying finish coatings or decorative papers,

so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

Compliance

1.7 COMPLIANCE - BRANZ APPRAISAL 427

GIB® Wet Area Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 427.

1.8 COMPLIANCE - BRANZ APPRAISAL 928

GIB EzyBrace® Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 928.

Performance

1.9 BRACING REQUIREMENTS

Braced wall systems to NZS 3604 when tested to BRANZ Technical Paper P21, using:

- GIB Ezybrace® Systems and/or GIB Ezybrace® Bracing Design Software
- GIB Ezybrace® Bracing Supplement Document
- GIB Ezybrace® for Steel Frame Housing (NASH) Software (to NASH Residential and Low-Rise Steel Framing Part 1 2010 Design Criteria)

Refer to drawings for location and type.

2 PRODUCTS

Materials

2.1 GIB® PLASTERBOARD

Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to AS/NZS 2588. Refer to SELECTIONS for location, type, thickness and finish.

GIB® Standard plasterboard
GIB Wideline® plasterboard
GIB Ultraline® high quality surface plasterboard
GIB Fyreline® fire resistant plasterboard
GIB Braceline® & GIB® Noiseline® dual purpose wall bracing & noise control plasterboard
GIB Aqualine® wet area plasterboard
GIB Toughline®
GIB Toughline® Aqua
GIB Curveline® plasterboard for forming tight curves.

Components

2.2 CEILING BATTENS

GIB® Rondo® metal ceiling battens, batten joiners and perimeter channel.

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2.3 SCREWS

GIB® Grabber® drywall type screws as follows:

Grabber® type	Used for fixing:
High Thread	GIB Ezybrace® or Standard systems to timber
Self Tapping	Standard systems to light gauge steel or timber
Dual Thread Screws	GIBFix®, GIB Ezybrace®, or Standard systems, to light gauge steel or timber
Wafer Head Needle Tip	Light gauge metal to timber not directly under plasterboard
Pancake Head Drill Tip	Light gauge metal to light gauge metal directly under plasterboard

Refer to GIB® requirements for appropriate details.

2.4 TAPE ON TRIMS AND EDGES

GIB® Goldline™ tape-on trims

GIB® UltraFlex® high impact corner mould
GIB® Levelline® Tape on Trim

2.5 METAL ANGLE TRIMS

GIB® galvanized steel slim angle trims.

2.6 CONTROL JOINTS

GIB® Rondo® P35 control joints.

GIB® Goldline™ tape-on trims
GIB® plastic W-profile control joints.

Accessories

2.7 ADHESIVE

Timber frame and/or steel frame:

GIBFix® One ultra low VOC water based wallboard adhesive
GIBFix® All-Bond solvent based wallboard adhesive

2.8 JOINTING COMPOUND

Bedding compound:	GIB Tradeset®, GIB Lite Blue®, GIB MaxSet®, GIB ProMix® All Purpose, GIB Plus 4®
Finishing compound:	GIB ProMix® All Purpose, GIB® Trade Finish®, GIB® Trade Finish® Lite, GIB ProMix® Lite, GIB® U-Mix, GIB Plus 4®, GIB Trade Finish® Multi
Cove:	GIB-Cove® Bond

2.9 JOINTING TAPE

GIB® jointing tape.

2.10 GAP FILLER

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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



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3.3 LEVELS OF PLASTERBOARD FINISH

Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in AS/NZS 2589.

3.4 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

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

Framing substrates shall be in accordance to AS/NZS 2589, GIB® Site Guide and GIB X-Block® Radiation Shielding Systems literature.

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

Timber framing:	18% maximum for fixing plasterboard to timber (8-12% recommended for fixing plasterboard to timber framing if air conditioning and/or central heating are to be installed)

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

3.5 PRE-INSTALLATION REQUIREMENTS - STEEL FRAMING

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

Framing substrates shall be in accordance to AS/NZS 2589, GIB® Site Guide and GIB X-Block® Radiation Shielding Systems requirement. Refer to GIB® Site Guide.

3.6 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE

Before commencing work, agree in writing upon the surface finish assessment procedure towards ensuring that the quality of finish expectations are reasonable and are subsequently obtained and acceptable.

Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the specified plasterboard Level of Finish has been achieved.

"Levels of plasterboard finish" is a tool for specifying the required quality of finish when installing and flush stopping GIB® plasterboard **prior** to the application of a range of decorative finishes under various lighting conditions. Refer to **AS/NZS** 2589.

3.7 PROTECTION

Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB® Site Guide.

Application

3.8 INSTALL CEILING BATTENS

Install to GIB® Rondo® Ceiling Batten Systems requirements.

3.9 LINING WALLS AND CEILINGS GENERALLY

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

3.10 BOARD ORIENTATION

Minimise joints by careful sheet layout using the largest sheet sizes possible, and generally fixing horizontally. Where part sheets are required for various stud heights they should be positioned so the cut sheet is as low as possible to keep joints below eye level.

3.11 FORM WET AREA SYSTEMS

Form to GIB Aqualine® Wet Area Systems requirements.

3.12 FORM BRACING SYSTEMS

Form bracing systems to:

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- GIB Ezybrace® Systems.

3.13 FORM CONTROL JOINTS

Form control joints to GIB® Site Guide requirements.

3.14 INSTALL TAPE-ON TRIMS

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

Finishing

3.15 FINISHING GENERALLY

To GIB® Site Guide and AS/NZS 2589.

Completion & Commissioning

3.16 COMPLETION MATTERS

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

4 SELECTIONS

Plasterboard

4.1 GIB® STANDARD SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to drawings	GIB® Standard plasterboard	10mm	Level 5
Refer to drawings	GIB® Standard plasterboard	13mm	Level 5
Refer to drawings	GIB Ultraline® plasterboard	10mm	Level 5
Refer to drawings	GIB Ultraline® plasterboard	13mm	Level 5

4.2 GIB® WATER RESISTANT SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to drawings	GIB Aqualine® plasterboard	10mm	Level 5
Refer to drawings	GIB Aqualine® plasterboard	13mm	Level 5
Refer to drawings	GIB Toughline® Aqua	13mm	Level 5

4.3 GIB® STANDARD SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to drawings	GIB® Standard plasterboard	13mm	Level 5
Refer to drawings	GIB Ultraline® plasterboard	13mm	Level 5

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4.4 GIB® WATER RESISTANT SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to drawings	GIB Aqualine® plasterboard	13mm	Level 5
Refer to drawings	GIB Toughline® Aqua	13mm	Level 5

4.5 GIB® BRACING SYSTEMS

Refer to:

- GIB Ezybrace® Systems

For bracing element location refer to drawn documentation.

Accessories

4.6 GIB® RONDO® CEILING BATTENS

Location: Refer to drawings
Brand/type: GIB® Rondo® Ceiling battens
Batten type: Gib Rondo 310 or 308 as stated in drawings
Clip type: Refer to drawings

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6211AW ARDEX WALL TILING

1 GENERAL

This section relates to the supply and installation of ARDEX New Zealand Ltd internal and external wall tiling systems.

It includes:

- Primers
- Waterproofing systems
- Adhesives
- Sealants
- Grouts

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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
WMAI CoP	Code of Practice for Internal Wet Area Membrane Systems
Codemark™ CMNZ70189 ver0	Ardex WPM 715 and WPM 1000

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
ARDEX Tiling and Substrate Preparation Systems (October 2023)
ARDEX Product Technical Data Sheets
ARDEX Technical Tiling Systems Bulletins
ARDEX Product Building Product Information Sheets
ARDEX Tiling General Care information sheet
BRANZ Appraisal 472 (2022) - ARDEX Undertile Internal Liquid Waterproofing Membranes - Amended 24 May 2024
BRANZ Appraisal 473 (2022) - ARDEX Undertile External Liquid Waterproofing Membranes - Amended 24 May 2024
BRANZ Appraisal 727 (2023) - ARDEX Undertile Sheet Membrane (WPM 750 and WPM 1000)

Manufacturer/supplier contact details

Company:	ARDEX New Zealand Ltd
Web:	www.ardex.co.nz
Email:	info@ardexnz.com
Telephone:	0800 227339

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Warranties

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 QUALIFICATIONS WORKERS - MANUFACTURER / SUPPLIER REQUIREMENTS

Waterproofing applicators to be approved by ARDEX New Zealand. Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

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

Provide this information prior to practical completion.

Compliance information

1.9 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.

1.10 COMPLIANCE - BRANZ APPRAISAL 472

ARDEX Undertile Internal Liquid Waterproofing Membranes has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 472.

2 PRODUCTS

Materials - patching compound

2.1 ARDEX A 46

Rapid setting and drying, slump free cement-based mortar.

Materials - substrate preparation

2.2 ARDEX MULTIPRIME

One part, water-based primer for porous substrates.

2.3 ARDEX P 9

One part, water-based primer for non-porous substrates.

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Materials - waterproofing

2.4 ARDEX WPM 002
Two component, fibre reinforced, acrylic polymer, liquid waterproofing membrane.

2.5 ARDEX WPM 155 RAPID
One component, polyurethane-acrylic, fast drying, liquid waterproofing membrane.

2.6 ARDEX WPM 750
Fleece-lined, synthetic rubber sheet membrane, 0.75mm thick, 1.4m wide x 20m long rolls.

Materials - adhesives

2.7 ARDEX X 17
Flexible, polymer modified, cement-based adhesive, formulated with non-slumping mastic type properties. Classified C2TES1 to ISO 13007.1.

2.8 ARDEX X 18
Flexible, polymer fortified, fibre reinforced, cement-based adhesive, formulated with non-slumping mastic type properties. Classified C2TES1 to ISO 13007.1.

2.9 ARDEX X 77
Fibre reinforced, polymer modified adhesive. Classified C2FTES1 to ISO 13007.1.

Materials - grout

2.10 ARDEX FG 8
Fine sanded, cement-based, standard grout for joints 1mm to 8mm wide. Classified CG2W to ISO 13007.3.

2.11 ARDEX FS-DD
Non-sanded, cement-based grout for joints 1mm to 4mm wide. Classified CG1 to ISO 13007.3.

2.12 ARDEX EG 15
Three part stain and chemical resistant epoxy grout for joints 1.5mm to 15mm wide. Classified RG to ISO 13007.3.

Materials - additives

2.13 ARDEX E 90
Synthetic dispersion additive for use with ARDEX cement-based adhesives, to increase bond strength, elasticity and water resistance.

2.14 ARDEX ABALASTIC
Liquid polymer additive for use with cement-based adhesive to improve adhesion, water resistance and flexibility.

2.15 ARDEX GROUT BOOSTER
Water-based synthetic polymer grout additive for use with cement-based grouts to improve adhesion strength, flexibility and abrasion resistance.

Components

2.16 ARDEX ST TAPE
Uncured, self-adhesive butyl tape, fleece lined one side.

2.17 ARDEX CA 750 CONTACT ADHESIVE
Water-based contact adhesive.

2.18 ARDEX CA 20 P PLUS CONSTRUCTION ADHESIVE
One part, flexible, silane modified polymer adhesive.

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2.19 TRIMS

Tile trims and edge strips. Available in aluminium, brass and stainless steel. Refer to SELECTIONS.

2.20 MOVEMENT JOINT - ANGLE

Metal or PVC angle. Refer to SELECTIONS.

2.21 MOVEMENT JOINT - INSERT

Polyurethane or neoprene insert. Refer to SELECTIONS.

2.22 MOVEMENT JOINT - SEALANT

One part, flexible acetic or neutral cure silicone sealant for joints 1mm to 30mm. Refer to SELECTIONS.

2.23 MOVEMENT JOINT - BACKING ROD

Polyethylene foam (PEF) backing rod. Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Moisture content concrete:	75% maximum relative humidity, minimum 28 day cured

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 APPLICATION GENERALLY

To AS 3958.1, ARDEX New Zealand Ltd instructions, and to WMAI CoP recommendations.
Surfaces to be clean, sound and free of dust, oil, grease, curing compounds or release agents.

Installation - patching compound

3.6 APPLY PATCHING COMPOUND

Mix patching compound to ARDEX instructions. Trowel onto prepared substrate to required thickness.

Installation - substrate preparation

3.7 APPLY PRIMER

Sponge, brush or roll primer liberally over entire substrate.

Installation - waterproofing

3.8 APPLY ARDEX LIQUID WPM

Reinforce corners and penetrations with ARDEX ST TAPE. Mix waterproofing components to ARDEX instructions. Brush or roll on liquid waterproofing membrane over prepared substrate. Apply two coats to achieve required minimum total dry film thickness to ARDEX product technical data sheet.

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3.9 APPLY ARDEX SHEET WPM

Lay sheet membrane allowing for 50mm overlap with adjacent sheet. Working in rows lengthwise, fold back half of the width of the membrane sheet. Brush ARDEX contact adhesive to substrate and underside of membrane, avoiding the 50mm overlap. Unfold the membrane and press onto the substrate. Heat weld the 50mm overlapped membranes together.

Installation - adhesive

3.10 TILE SETTING OUT

Confirm the layout and bond pattern. Cut tiles to tile manufacturer's recommendations. Provide joint widths to the tile manufacturer's instructions.

3.11 MOVEMENT JOINTS GENERAL

Provide movement joints to AS 3958.1:

Depth:	Movement joints to go right through the tile and bed to the background.
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.

3.12 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.
Remove a tile periodically during installation to check for correct adhesive coverage. Do not fix tiles over skinned adhesive.

3.13 APPLY ADHESIVE

Mix adhesive to ARDEX instructions. Spread adhesive over prepared substrate with a notched trowel to ARDEX recommended bed thickness.

3.14 INSTALL TRIM

Press trim into wet adhesive.

3.15 INSTALL MOVEMENT JOINT ANGLE

Press angle into wet adhesive.

3.16 LAY TILES

Firmly press tiles into the adhesive bed for full contact between tile and adhesive with no voids. Butter the back of tiles with ribbed or keyed underside before laying into adhesive bed by spreading a thin layer of adhesive on the back of the tile. Remove surplus adhesive from tile surfaces before adhesive sets.

Installation - grout

3.17 APPLY GROUT

Mix grout to ARDEX instructions. Work grout into joints with a rubber trowel. Allow the grout to firm up in the joint before wiping tile surface with a damp, dense sponge.

Installation - movement joint

3.18 INSTALL MOVEMENT JOINT INSERT

Place insert between movement joint angles.

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3.19 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

3.20 COMPLETION MATTERS

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

4 SELECTIONS

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

4.1 TILES

Location:	Refer to ID drawings
Supplier:	Refer to owner
Type:	Ceramic
Bond pattern:	Refer to ID

ARDEX Tiled Internal Walls

4.2 ARDEX INTERNAL WALL TILING SYSTEM OVER FIBRE CEMENT SHEET

Location:	Refer to ID drawings
Substrate:	Fibre cement sheet
Primer:	Ardex Multiprime
Adhesive:	Ardex X18
Grout:	Ardex FS-DD
Grout colour:	Refer to ID

4.3 ARDEX INTERNAL WET AREA WALL TILING SYSTEM OVER FIBRE CEMENT SHEET

Location:	Refer to ID drawings
Substrate:	Fibre cement sheet
Primer:	Ardex Multiprime
WPM:	Ardex WPM 155 Rapid
Adhesive:	Ardex X18
Grout:	Ardex FS-DD
Grout colour:	Refer to ID

Components

4.4 TRIMS

Location:	Refer to drawings
Supplier:	B.A.T
Type:	Refer to drawings
Material:	Aluminium

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6221A ARDEX FLOOR TILING SOLUTIONS

1 GENERAL

This section relates to the supply and installation of ARDEX New Zealand internal and external floor tiling systems.

It includes:

- Acoustic underlays
- Levelling screeds
- Primers
- Waterproofing systems
- Adhesives
- Sealants
- Grouts

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

CFC	Compressed fibre cement
PVC	Polyvinyl chloride
WMAI	Waterproofing Membrane Association (NZ) Incorporated
WPM	Waterproofing membrane

Documents

1.2 DOCUMENTS

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

NZBC D1/AS1	Access routes
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC E3/AS1	Internal moisture
NZBC G3/AS1	Food preparation and prevention of contamination
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
ISO 13007.1	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for adhesives
ISO 13007.3	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for grouts
NZS 4121	Design for access and mobility - Buildings and associated facilities
WMAI CoP	Code of Practice for Internal Wet Area Membrane Systems
Codemark™ CMNZ70189 ver0	Ardex WPM 715 and WPM 1000

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

ARDEX Tiling and Substrate Preparation Systems (October 2023)
ARDEX Product Technical Data Sheets
ARDEX Technical Tiling Systems Bulletins
ARDEX Product Building Product Information Sheets
ARDEX Tiling General Care information sheet
BRANZ Appraisal 472 (2022) - ARDEX Undertile Internal Liquid Waterproofing Membranes - Amended 24 May 2024
BRANZ Appraisal 473 (2022) - ARDEX Undertile External Liquid Waterproofing Membranes - Amended 24 May 2024
BRANZ Appraisal 727 (2023) - ARDEX Undertile Sheet Membrane (WPM 750 and WPM 1000)

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BRANZ Appraisal 925 (2024) - ARDEX WPM 1000 External Deck Membrane

Manufacturer/supplier contact details
Company: ARDEX New Zealand Ltd
Web: www.ardex.co.nz
Email: info@ardexnz.com
Telephone: 0800 227339

Warranties

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS WORKERS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Waterproofing applicators to be trained by ARDEX New Zealand. Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

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

- ARDEX Tiling General Care

Provide this information prior to practical completion.

Compliance information

1.9 COMPLIANCE - BRANZ APPRAISAL 472

ARDEX Undertile Internal Liquid Waterproofing Membrane has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 472.

1.10 COMPLIANCE - BRANZ APPRAISAL 727

ARDEX Undertile Sheet Membrane (WPM 750 and WPM 1000) has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 727.

Performance - Slip resistance

1.11 SLIP RESISTANCE - SURFACES EXEMPT FROM TESTING

Walking surfaces comply with NZBC D1/AS1, Table 2 for slip resistance requirements and are exempt from testing.

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2 PRODUCTS

Materials - underlay

2.1 FLOORING UNDERLAY
Fibre cement board to AS/NZS 2908.2 manufactured from cellulose fibre, Portland cement, sand and water, or glass-mat gypsum board manufactured from gypsum core with coated fiberglass mat facing.

2.2 ARDEX DS 70 ACOUSTIC UNDERLAY
Recycled rubber drainage mat, 5mm thick, 1.2m wide x 9.1m long roll.

Materials - levelling screeds

2.3 ARDEX LQ 92
Cement-based, polymer modified, self-smoothing levelling compound.

2.4 ARDEX K 60
Two part, self-levelling latex compound.

2.5 ARDEX K 301
Cement-based levelling compound.

2.6 ARDEX A 46
Rapid setting and drying, slump free cement-based mortar.

2.7 ARDEX K 65
One part, fibre reinforced, polymer modified levelling compound.

2.8 ARDEX K 900 BF
Cement-based levelling compound.

2.9 ARDEX A 38 SCREED
Rapid-set, cement screed for use with ARDEX Gravel Mix and Engineered Sand aggregate.

2.10 ARDEX A 48 SCREED
Premixed, rapid-set, cement and aggregate screed.

Materials - substrate preparation

2.11 ARDEX MULTIPRIME
One part, water-based primer for porous substrates.

2.12 ARDEX P 9
One part, water-based primer for non-porous substrates.

2.13 ARDEX P 51
One part water-based, primer, pre-coat, and bonding agent for porous substrates.

2.14 ARDEX WPM 300 MOISTURE BARRIER
Two-component, water-based, epoxy polyamide membrane/barrier hydrostatic pressure resistant coating.

Materials - waterproofing

2.15 ARDEX WPM 001
One component, fibre reinforced, acrylic polymer, liquid waterproofing membrane.

2.16 ARDEX WPM 002
Two component, fibre reinforced, acrylic polymer, liquid waterproofing membrane.

2.17 ARDEX WPM 155 RAPID
One component, polyurethane-acrylic, fast drying, liquid waterproofing membrane.

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2.18 ARDEX WPM 750

Fleece-lined, synthetic rubber sheet membrane, 0.75mm thick, 1.4m wide x 20m long rolls.

Materials - adhesives

2.19 ARDEX X 17

Flexible, polymer modified, cement-based adhesive, formulated with non-slumping mastic type properties. Classified C2TES1 to ISO 13007.1.

2.20 ARDEX X 18

Flexible, polymer fortified, fibre reinforced, cement-based adhesive, formulated with non-slumping mastic type properties. Classified C2TES1 to ISO 13007.1

2.21 ARDEX X 77

Fibre reinforced, polymer modified adhesive. Classified C2FTES1 to ISO 13007.1.

2.22 ARDEX X 56

Highly-flexible and fast setting polymer modified adhesive. Classified C1ES2 to ISO 13007.1.

2.23 ARDEX OPTIMA

Highly-flexible, two part adhesive with high initial grab qualities. Classified C2TS2 to ISO 13007.1.

2.24 ARDEX X 10 GREY

Flexible, polymer fortified, cement-based adhesive, formulated with non-slumping mastic type properties. Classified C1TES1 to ISO 13007.1.

2.25 ARDEX S28 NEU

Fibre reinforced, rapid hardening, cement-based adhesive. Classified C2FTES1 to ISO 13007.1.

2.26 ARDEX QUICKBOND

Quick setting polymer modified adhesive. Classified C2FT to ISO 13007.1.

2.27 ARDEX WA 100

Two part epoxy adhesive. Classified R2T to ISO 13007.1.

Materials - grouts

2.28 ARDEX FG 8

Fine sanded, cement-based standard grout for joints 1mm to 8mm wide. Classified CG2W to ISO 13007.3.

2.29 ARDEX FS-DD

Non-sanded, cement-based grout for joints 1mm to 4mm wide. Classified CG1 to ISO 13007.3.

2.30 ARDEX EG 15

Three part stain and chemical resistant epoxy grout for joints 1.5mm to 15mm wide. Classified RG to ISO 13007.3.

Materials - additives

2.31 ARDEX ABALASTIC

Liquid polymer additive for use with cement-based adhesive to improve adhesion, water resistance and flexibility.

2.32 ARDEX GROUT BOOSTER

Water-based, synthetic polymer grout additive for use with cement-based grouts to improve adhesion strength, flexibility and abrasion resistance.

Undertile heating

2.33 UNDERTILE HEATING

Refer to appropriate underfloor heating section for electric heating systems under tiles.



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Components

2.34 ARDEX ST TAPE
Uncured, self-adhesive butyl tape, fleece lined one side.

2.35 ARDEX CA 750 CONTACT ADHESIVE
Water-based contact adhesive.

2.36 TRIMS
Tile trim, edge strips, floor finish divider strips and weather bars. Available in aluminium, brass and stainless steel. Refer to SELECTIONS.

2.37 MOVEMENT JOINT - ANGLE
Metal or PVC angle. Refer to SELECTIONS.

2.38 MOVEMENT JOINT - INSERT
Polyurethane or neoprene insert. Refer to SELECTIONS.

2.39 MOVEMENT JOINT - SEALANT
One part, flexible acetic or neutral cure silicone sealant. Refer to SELECTIONS.

2.40 MOVEMENT JOINT - BACKING ROD
Polyethylene foam (PEF) backing rod. Refer to SELECTIONS.

3 EXECUTION

Conditions

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

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

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

Moisture content concrete:	75% maximum relative humidity, minimum 28 day cured
Moisture content plywood:	18% maximum
Moisture content particleboard:	16% maximum

Installation/application

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

3.5 APPLICATION GENERALLY
To AS 3958.1, ARDEX New Zealand Ltd instructions, and to WMAI CoP recommendations.
Surfaces to be clean, sound and free of dust, oil, grease, curing compounds or release agents.

3.6 APPLY LEVELLING SCREED
Mix levelling screed to ARDEX instructions. Trowel onto prepared substrate to required thickness and fall, where required:

1:40 minimum	deck acting as a roof to NZBC E2/AS1
1:40 minimum	accessible showers to NZBC G1/AS1
1:50 minimum	shower bases to NZBC E3/AS1
1:50 minimum	shower bases for people with disabilities to NZS 4121
1:50 minimum	food processing areas (e.g. commercial kitchens) to G3/AS1
1:50 maximum	cross fall for outdoor accessways in public areas to NZS 4121

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3.7 FLOORING UNDERLAY

Lay and fix flooring underlay to the manufacturer's instructions. Fill gaps between sheets and corners with a neutral cure silicone sealant.

3.8 ARDEX DS 70 ACOUSTIC UNDERLAY

Temporarily fasten ARDEX PERIMETER ISOLATION STRIP along base of wall to entire perimeter of floor with masking tape. Lay ARDEX DS 70 over primed substrate, perpendicular to the subsequent installation of finished floor covering. Butted edges of adjacent underlay. Working in rows lengthwise, fold back half of the underlay width and trowel on ARDEX AF 180 MS flooring adhesive. Unfold the underlay and press into adhesive. Fill gaps between underlay and between wall and underlay with ARDEX ST.

Trim ARDEX PERIMETER ISOLATION STRIP flush with the finished floor covering when installed.

3.9 APPLY ARDEX WPM 300 MOISTURE BARRIER

Spray fine mist of water over substrate. Spread barrier evenly over entire substrate with a stiff nylon broom. Apply second coat with a long nap roller.

3.10 APPLY PRIMER

Sponge, brush or roll primer liberally over entire substrate.

3.11 APPLY ARDEX LIQUID WPM

Reinforce corners and penetrations with ARDEX ST TAPE. Mix waterproofing components to ARDEX instructions. Brush or roll on liquid waterproofing membrane over prepared substrate. Apply two coats to achieve required minimum total dry film thickness to ARDEX product technical data sheet.

3.12 APPLY ARDEX SHEET WPM

Lay sheet membrane allowing for 50mm overlap with adjacent sheet. Working in rows lengthwise, fold back half of the width of the membrane sheet. Brush ARDEX contact adhesive to substrate and underside of membrane, avoiding the 50mm overlap. Unfold the membrane and press onto the substrate. Heat weld the 50mm overlapped membranes together.

3.13 INSTALL UNDERTILE HEATING

Refer to appropriate underfloor heating section for electric heating system under tiles.

3.14 SETTING OUT

Confirm tile layout and bond pattern. Cut tiles to tile manufacturer's recommendations. Lay tiles level, maintaining falls to drainage where required (e.g. floor wastes). Provide joint widths to the tile manufacturer's recommendations.

3.15 MOVEMENT JOINTS GENERAL

Provide movement joints to AS 3958.1:

Depth:	Movement joints to go right through the tile and bed to the background.
Width:	6mm
Locations:	At walls, columns, nibs, hobs and similar.
	Around sanitary fixtures.
	Around fixtures interrupting the tile surface (e.g. at junctions with joinery fixtures, window/door frames, and built in cupboards).
	At changes in substrate.
Large areas:	Provide joints at not less than 4.5 metres spacing in both directions for internal floors.
	Provide joints at not less than 3.5 metres spacing in both directions for external floors.
	Provide joints over existing joints in the substrate.

3.16 ADHESIVE APPLICATION GENERAL

For general floor tiling, use a 10mm x 10mm x 10mm notched trowel.

For large format tiles, use a 12mm x 12mm x 12mm notched trowel.
For mosaics, use a 4.5mm x 4.5mm x 4.5mm notched trowel.

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Remove a tile periodically during installation to check for correct adhesive coverage. Do not fix tiles over skinned adhesive.

3.17 APPLY ADHESIVE

Mix adhesive to ARDEX instructions. Spread adhesive over prepared surface with a notched trowel to ARDEX recommended bed thickness.

3.18 INSTALL TRIM

Press trim into wet adhesive.

3.19 INSTALL MOVEMENT JOINT ANGLE

Press angle into wet adhesive.

3.20 LAY TILES

Firmly press tiles into the adhesive bed for full contact between tile and adhesive with no voids. Butter the back of tiles with ribbed or keyed underside before laying into adhesive bed by spreading a thin layer of adhesive on the back of the tile. Remove surplus adhesive from tile surfaces before adhesive sets.

3.21 APPLY GROUT

Mix grout to ARDEX instructions. Work grout into joints with a rubber trowel. Allow the grout to firm up in the joint before wiping tile surface with a damp, dense sponge.

3.22 INSTALL MOVEMENT JOINT INSERT

Place insert between movement joint angles.

3.23 INSTALL MOVEMENT JOINT BACKING ROD

Place PEF backing rod into movement gaps. Apply a continuous bead of silicone sealant over PEF backing rod.

Completion & Commissioning

3.24 COMPLETION MATTERS

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

4 SELECTIONS

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

4.1 TILES

Location:	Refer to ID drawings
Supplier:	Refer to owners
Type:	Ceramic
Class:	TBC
Bond pattern:	TBC

ARDEX Tiled Internal Floors

4.2 ARDEX INTERNAL TILING SYSTEM OVER CONCRETE FLOOR

Location:	Refer to ID drawings
Substrate:	Concrete
Levelling:	Ardex A38 Screed if required
Primer:	Ardex Multiprime
Adhesive:	Ardex X18
Grout:	Ardex FS-DD
Grout colour:	Refer to ID

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4.3 ARDEX INTERNAL TILING SYSTEM OVER CONCRETE FLOOR - HEATED

Location:	Refer to ID drawings
Substrate:	Concrete
Heating system:	Refer Undertile Heating section,
Levelling:	Ardex LQ92 if required
Primer:	Ardex Multiprime
Adhesive:	Ardex X18
Grout:	Ardex FS-DD
Grout colour:	Refer to ID

4.4 ARDEX INTERNAL TILING SYSTEM OVER CONCRETE FLOOR - WET AREA

Location:	Refer to ID drawings
Substrate:	Concrete
Levelling:	Ardex LQ92 if required
Primer:	Ardex Multiprime
WPM:	WPM 155 Rapid
Adhesive:	Ardex X18
Grout:	Ardex FS-DD
Grout colour:	Refer to ID

4.5 ARDEX INTERNAL TILING OVER TIMBER SHEET FLOORING

Location:	Refer to ID drawings
Substrate:	Treated Plywood
Levelling:	Ardex K 60 if required
Primer:	ARDEX P 9
Adhesive:	Ardex Optima
Grout:	Ardex FS-DD
Grout colour:	Refer to ID

4.6 ARDEX INTERNAL TILING SYSTEM OVER TIMBER SHEET FLOORING - WET AREA

Location:	Refer to drawings
Substrate:	Treated Plywood
Levelling:	Ardex K 60 if required
Primer:	ARDEX P 9
WPM:	Ardex WPM 155 Rapid
Adhesive:	Ardex X18
Grout:	Ardex FS-DD
Grout colour:	Refer to ID

Components

4.7 TRIMS

Location:	Refer to drawings
Supplier:	B.A.T
Type:	Refer to drawings
Material:	Aluminium

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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 carpet

Documents

1.1 DOCUMENTS

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

NZBC C/AS2	Protection from fire for buildings other than risk group SH
AS/NZS 2270	Plywood and blockboard for interior use
AS/NZS 2455.1	Textile floor coverings - Installation practice - General
BPS	Building Product Specifications

Warranties

1.2 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

1 year: For materials

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.3 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year: For execution

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.4 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

1.6 NO SUBSTITUTIONS

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

2 PRODUCTS

Materials

2.1 UNDERLAY

To AS/NZS 2455.1 Soft underlay and underlays manufacturer's requirements.

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Refer to SELECTIONS for product selection.

2.2 CARPET

To AS/NZS 2455.1 Textile floor coverings.

Refer to SELECTIONS for product selection.

Components

2.3 BINDER BARS

Anodised aluminium section with fluted face.

2.4 DIVIDER STRIPS

Hardwood strips 20mm x 15mm or as specified. Refer to SELECTIONS for type and size.

2.5 EDGE GRIPPER

Timber/plywood to AS/NZS 2270 with steel grippers to carpet manufacturer's requirements, constructed of sufficient pins and nails so as to withstand a minimum stretching force of 6580N over a 1220 mm length.

Accessories

2.6 TAPE

To carpet manufacturer's requirements.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

Handle carpet on flat dollies using carpet cradles, with probes on fork- lifts and without sharp bending or folding. Store carpet in flat bins with a maximum height of three rows. Keep dry. Protect from damage.

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Ensure all fittings and fixtures around which the carpet is to be scribed are in place. Carry out such additional preparatory work as required in bringing the substrate to suitable condition.

Confirm moisture content of substrate in accordance with AS/NZS 2455.1. Appendix B Do not commence laying carpet until readings for the whole area are within acceptable levels as follows:

Moisture Content:	Timber substrate - 8 -12% for air conditioned buildings - 10 -14% for intermittently heated buildings - 12 -16% for unheated buildings
	Concrete substrate 75%RH

3.4 BEFORE COMMENCING WORK

Ensure that the building is enclosed, wet work complete, doors hung and lockable, finishes and trim complete, and good lighting available, before starting work.

3.5 TEMPERATURE

Acclimatise carpet to a room temperature above 15°C through the whole of the installation.

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3.6 PROTECTION

Protect adjoining work surfaces and finishes during the carpet installation.

3.7 TAPE

Tape for binding and seaming using type and width required by the carpet manufacturer to suit the specified carpet and the standard of performance required.

3.8 LAYING GENERALLY

Carry out the whole of the work to AS/NZS 2455.1 and to the flooring manufacturer's requirements.

3.9 LAYOUT

Plan the general layout so that:

- seams run lengthways
- traffic runs along the seam
- light from windows is not across the seam
- pile faces away from the light source.

Application - general / substrate preparation

3.10 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.11 PREPARING NEW CONCRETE FLOOR

To be level, smooth, clean, cured and dry. Remove loose material and dust.

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 SPECIAL PROTECTION

Self Adhesive carpet protective film to the entire carpeted area.

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.

Materials

4.1 UNDERLAY

Location	Brand	Type/thickness/weight
Refer to drawings	TBC	7-10mm

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4.2 CARPET

Location	Brand/type /weight/code	Installation method
Refer to drawings	To be confirmed by owner	Stretch in method using gripper rods and underlay

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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 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.

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

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

Maintenance guide for **Resene** paint finishes www.resene.co.nz/comn/services/maintenance.htm.

Provide this information prior to practical completion.

1.10 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.

1.11 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

1.12 RESENE INSPECTION

Permit representatives of **Resene** to inspect the work in progress and to take samples of their products from site if requested. **Resene** will take care when inspecting the work, but does not accept any responsibility for the proper completion of the work before or after such inspection.

1.13 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.

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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.
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.

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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.

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.

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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..

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

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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.

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.

Requirements

2 PRODUCTS

Materials

2.1 PRODUCTS
Refer to 6700R RESENE PAINTING GENERAL for product clauses.

3 EXECUTION

Conditions

3.1 EXECUTION
Refer to 6700R RESENE PAINTING GENERAL for execution clauses.

4 SELECTIONS

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

Resene exterior paint systems

Exterior fibre cement cladding - new

4.1 RESENE NEW EXTERIOR FIBRE CEMENT SOFFITS

Surface Prep:	Resene SIPDS No3 and Spec Sheet 3: 4/1
1st coat:	Resene Concrete Primer D405, Acrylic Concrete Primer
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.

Requirements

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

4.2 RESENE NEW INTERIOR PLASTERBOARD, WALLS - WET AREAS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1A: 1/1
Fire rating:	Group 1-S. Test Report 7-593235-CO
1st coat:	Resene Waterborne Sureseal D42a, Waterborne Pigmented Sealer
2nd coat:	Resene SpaceCote Low Sheen Kitchen & Bathroom D311K Waterborne Enamel
3rd coat:	Resene SpaceCote Low Sheen Kitchen & Bathroom D311K Waterborne Enamel

4.3 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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4.4 RESENE NEW INTERIOR PLASTERBOARD, CEILINGS - WET AREAS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1A: 1/1
Fire rating:	Group 1-S, Test Report 7-593235-CO
1st coat:	Resene Waterborne Sureseal D42a, Waterborne Pigmented Sealer
2nd coat:	Resene SpaceCote Flat Kitchen & Bathroom D314K, Waterborne Enamel
3rd coat:	Resene SpaceCote Flat Kitchen & Bathroom D314K, Waterborne Enamel

Interior timber - new

4.5 RESENE NEW INTERIOR TIMBER DOORS, JOINERY, SKIRTING

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 9/1
1st coat:	Resene Quick Dry D45, Waterborne Acrylic Primer Undercoat
2nd coat:	Resene Lustacryl D310, Semi-Gloss Waterborne Enamel
3rd coat:	Resene Lustacryl D310, Semi-Gloss Waterborne Enamel

4.6 RESENE NEW INTERIOR TIMBER DOORS, JOINERY, SKIRTING - CLEAR COAT

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

4.7 RESENE NEW INTERIOR TIMBER DOORS, JOINERY, SKIRTING - STAIN

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 10/1
1st coat:	Resene Colorwood D50a, Waterborne Natural Wood stain
2nd coat:	Resene Aquaclear Satin D59, Waterborne Urethane Varnish
3rd coat:	Resene Aquaclear Satin D59, Waterborne Urethane Varnish
4th coat:	Resene Aquaclear Satin D59, Waterborne Urethane Varnish

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6734D DRYDEN WOODOIL MIGRATING NON-FILMING TIMBER PROTECTOR

1 GENERAL

This section relates to the protection of unpainted timber and various timber product surfaces with the application of **Dryden WoodOil** timber protector.
It includes;

- **Dryden WoodOil** exterior timber coating
- **Dryden WoodOil** interior timber coating

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:

LOSP	Light Organic Solvent Preservative
MPNZA	Master Painters New Zealand Association Inc.

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 2311	Guide to the painting of buildings
Health and Safety at Work Act 2015	
WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry
WorkSafe	Guidelines for the management of lead-based paint
MPNZA	Health and Safety Programme

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Dryden WoodOil Data Sheet
Dryden WoodOil Cleaning and Maintenance Guide
Dryden WoodOil SDS Sheet
Dryden ColourTone SDS Sheet

Manufacturer/supplier contact details

Company:	**Dryden**
Web:	www.dryden.co.nz
Email:	info@dryden.co.nz
Telephone:	0800 379 336

Requirements

1.4 QUALIFICATIONS

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

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Dryden WoodOil timber protector, components and associated products listed in this section.

1.6 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety at Work Act 2015 and WorkSafe: Guidelines for the provision of facilities and general safety in the construction industry. If the elimination or isolation of potential hazards is not possible then minimise hazards in this work on site by using the proper equipment and techniques as required in the MPNZA Health and Safety Programme. Supply protective clothing and equipment. Inform the employees and others on site of the hazards and put in place procedures for dealing with emergencies.

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Refer to WorkSafe: Guidelines for the management of lead-based paint for the required procedures and precautions when:

- treating/removing lead-based paint
- burning off paint
- sanding off paint
- using solvent based paint removers.

1.7 SAFETY DATA SHEET (SDS)

Obtain from **Dryden** a product material Safety Data Sheet for each product used. Keep sheets on site and comply with the required safety procedures.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Provide two copies of all relevant Dryden WoodOil maintenance information on completion of the work.

1.9 HARVESTING RAINWATER

Rainwater that comes into contact with timber coated with Dryden WoodOil is not suitable for drinking.

Performance

1.10 INSPECTION OF WORK

Inspection of the whole of the work at each of the stages scheduled may be made. Agree a programme that will facilitate such inspection or reporting, who and how inspections or reporting will be done, including reporting or notification when each part and stage of the work is ready for inspection.

This programme and /or inspection must include documentation showing Dryden WoodOil coating methods, application rates and coating dates.

2 PRODUCTS

Materials

2.1 TIMBER COATING

Dryden WoodOil is a water-repellent, non-filming, timber protector. It is a true migrating oil with added water repellents and a fungicide to assist in keeping the timber dimensionally stable. Dryden WoodOil's water-repelling properties prevent the absorption of water deep into the timber, reducing excessive warping, cupping, and splitting of timber, thus extending the service life of those timbers.

2.2 COLOUR TONING

Dryden WoodOil with Dryden ColourTone added is a water-repellent, non-filming, timber protector with added colour.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE AND HANDLING

Protect materials during transit. Check materials on delivery for condition. Reject and replace damaged materials. Refer to project specification for correct Dryden ColourTone. Check colour and mix prior to works being carried out.

3.2 CONDITIONS FOR WORK

Factory and building site pre-coating application should be completed in a suitable environment, with adequate lighting, ventilation and with the air temperatures between 12°C and 25°C, humidity <75%.

Check surfaces are clean and dry. Do not carry out coatings when the substrate moisture content exceeds 18%. Fillet stack timber on the back face in a well vented, cool and dry area free from sub-trade contamination. Dryden WoodOil strongly recommends that timber products be factory oiled prior to delivery.

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3.3 EXECUTION

To conform to the best trade practice which shall be deemed to include those methods, practices and techniques to AS/NZS 2311, MPNZA Health and Safety Programme and the WorkSafe publication: "Guidelines for the provision of facilities and general safety in the construction industry." Comply with Dryden WoodOil requirements and any additional requirements in this specification.

3.4 PREPARE

Prepare surfaces as per Dryden WoodOil Data Sheet and Dryden WoodOil Cleaning and Maintenance Guide.

3.5 PRE-STAINED SURFACES

Degraded stains and polyurethane surfaces must be stripped back to bare timber prior to application of Dryden WoodOil. Refer to stripper manufacturer's Technical Data Sheets

3.6 RESTORATION & REFURBISHMENT OF TIMBER SURFACES

Restore timber prior to coating Dryden WoodOil. Clean with Dryden SurfaceCleaner or cosmetic clean with Dryden LiquidTimberClean, as per Dryden WoodOil Cleaning and Maintenance Guide (strong wash) requirements.

3.7 GENERAL MAINTENANCE RE-COATING

Check surfaces previously coated with Dryden WoodOil are cleaned back as per the Dryden WoodOil Cleaning and Maintenance Guide (soft wash) before re-coating.

3.8 BRUSH DOWN

Brush down surfaces immediately before application, to remove dust, dirt and loose material.

3.9 COMPATIBILITY

Check that materials are as required by Dryden WoodOil for the particular surface and conditions of exposure, and that they are compatible with each other. Refer to NZBC E2/AS1, Table C.1.1.1A: Material selection, Table C.1.1.1B: Compatibility of materials in contact, and Table C.1.1.1C: Compatibility of materials subject to run-off. Refer to the manufacturer's Technical Data Sheets.

3.10 TREATED SURFACES

Check that surfaces that have been treated with preservatives or fire retardants are compatible with the coating material. Refer to the manufacturer's Technical Data Sheets before proceeding.

Chemically Treated Timber:
LOSP treated timber must NOT be coated until the chemicals & solvents in the treatment process have evaporated from the timber, refer supplied LOSP timber manufacturer’s Data Sheet.
H1-H6 Hazard treatment coded timbers are Dryden WoodOil compatible as long as they do not offer water repellence. Refer to the timber manufacturer’s Data Sheet.

3.11 PRE-COATING TIMBER

Prior to fixing, a first coat must be applied to all faces and cut ends, to provide an envelope seal.

Note: All exterior timber cut ends must be coated prior to fixing with the same product and colour that was used to pre-coat the timber.

3.12 HARDWARE

Do not coat hinges or hardware that cannot be removed. Carefully remove hardware, fixtures and fittings before commencing work. Should product accidently come in contact with hardware clean off immediately. Refer to SELECTIONS for hardware, fixtures and fittings for removal. Refer to manufacturer’s Data Sheet.

3.13 PROTECTION

Use drop sheets, coverings and masking necessary to protect adjoining surfaces, fixtures and fittings from Dryden WoodOil damage.

3.14 COLOUR

Prior to starting, check Dryden ColourTone colour supplied against specification documents and colour samples.

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Application - preparatory work

3.15 SEQUENCE OF OPERATIONS

Coating work to generally follow the sequence below:

- Protect timbers on site away from contaminants and environmental grime.
- Complete all surface preparation before commencing coating including sanding dressed timber.
- For projects that require more than one pail of the same colour, box all pails together to ensure a consistent colour is achieved.
- On site first coat; pre-coated timber must be racked or laid out on back face, off ground in a clean well-vented location for 24 hours at 12°C - 25°C, humidity <75%, to allow Dryden WoodOil to migrate in, free from sub-trade contamination.
- Coat boards full length linearly (do not stop mid-section) and complete individual walls or boards at one time, using good coating practices.
- Coat all cut ends prior to fixing.
- When timber has been factory-coated or site pre-coated, ensure all cut ends are coated during fixing.
- Apply primers, sealers and clear coatings in the sequences specified by Dryden and applied as per manufacturer's Technical Data Sheets.
- New build second coat; 30-90 days once fixed, allow applicable coverage rates and wet look should be gone by next day (Restoration 2nd coat; 3-6 months).
- Clean up over-spray or accidental spillage on unwanted surfaces.
- Protect new work from damage from contaminant-type sitework not complete.

3.16 MOISTURE CONTENT

Do not apply to exposed timber if rain is expected within 6-8 hours of application. Dryden WoodOil should only be applied to dry timbers (ideal conditions is dry weather).

- Timber moisture content must not exceed 18%.

Chemically Treated Timber:
LOSP treated timber must NOT be coated until the chemicals & solvents in the treatment process have evaporated from the timber, refer supplied LOSP timber manufacturer’s Data Sheet.
H1-H6 Hazard treatment coded timbers are compatible with Dryden WoodOil as long as they do not offer water repellence. Refer to the timber manufacturer’s Data Sheet.

3.17 PREPARING DRESSED TIMBER

Dressed timber must be sanded to remove mill glaze prior to application of first coat for better migration into the timber.

Timber should be free from raised or woolly grain, planing burrs or other machining defects.

Dressed Interior Timber:
Work through the grades of sandpaper up to 240 grit, sanding linearly along the boards until the desired affect is achieved.

Dressed Exterior Timber:
Dressed timber surfaces must be sanded linearly along the timber grain using up to 180 grit paper until desired affect is achieved.

3.18 PREPARING BANDSAWN TIMBER

Thoroughly brush along the direction of the grain to remove dust, loose timber fibres and debris. After brushing, turn over timber and knock several times to ensure all loose fibres fall off.

3.19 SUBSTRATE STANDARD

If any substrate or surface cannot be brought up to the standard that will allow the coating to perform as specified, then do not proceed until remedial work has been carried out.

3.20 SEALANTS AND ADHESIVES

Dryden recommend allowing a minimum migration period of 7 days before applying any adhesives or sealants. This ensures that Dryden WoodOil has migrated well into the timber. Ensure the timber is clean and free of dust or dirt and use an appropriate primer as recommended by the manufacturer.

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Refer to sealant & adhesive manufacturer data sheets for technical requirements and warranty information.

Application - generally

3.21 TOOLS / APPLICATION

Dryden recommend using a Speedbrush (Commercial size) for an even distribution of Dryden WoodOil. Apply Dryden WoodOil at the recommended coverage rates. Use a trade quality 50mm paint brush for trimming into negative joints and dressed rebates.

3.22 INITIAL COATS - PRE-COATED ON SITE

Dryden recommend that one coat of Dryden WoodOil is applied to all four sides of the cladding / timbers prior to fixing.

On site, coated timber must be racked or laid out on back face, off ground in a clean well-vented location for 24 hours at 12°C - 25°C, humidity <75%, to allow Dryden WoodOil to migrate in, free from sub-trade contamination.
Any gloss or wet look must be gone prior to fillet stacking face to face.
Stacked timber must be protected and covered from rain, environmental grime, concrete or cement dust, metal filings and site contaminants. All coated timber must be stored off the ground when not fixed.
When timber has been coated on site, ensure all cut ends are coated during fixing.

3.23 INITIAL COATS - FACTORY PRE-COATED

First coat of Dryden WoodOil applied as a factory pre-coat spray application to seal timber profiles prior to delivery.

Ensure any gloss or wet look is gone prior to handling and fixing the timber.
Protect timbers from environmental conditions while not fixed.
Check cut ends are coated prior to fixing.
Apply a second coat of Dryden WoodOil between 30-90 days after fixing timbers.

3.24 SECOND COAT - NEW BUILD

Apply second coat of Dryden WoodOil between 30-90 days after fixing timbers.

3.25 COVERAGE RATES

In most situations, when applied at the correct coverage rate, Dryden WoodOil will lose its gloss/wet look from the face of timber within 24 hours of application.

Dryden WoodOil coverage rates and coating times may vary due to seasonal temperature, timber porosity, moisture content, timber type and from previous coats applied.

Dryden recommend to apply at the following rates:

Bandsawn Timber	8-10m² (low density) per litre
Dressed Timber	10-12m² (low density) per litre
Hardwood Timber	12-14m² (high density) per litre
Bandsawn Plywood	6-8m² per litre
Restored Timbers	6-8m² (low density) per litre

Dryden WoodOil coverage rates are approximate only and may need to be adjusted at times, to match the timber and the timbers ability to accept migration of Dryden WoodOil.

3.26 RUBBER AND BUTYL SURFACES

Dryden WoodOil can affect rubber adhesives and butyl surfaces if not washed/wiped off soon after contact. Dryden WoodOil applied to wooden shingles does not usually affect the butyl underlay. It is accepted that most of the industry now use non-rubber based glues. To verify, enquiries should be made with the manufacturer. If coating around butyl surfaces, ensure all surrounding surfaces are kept protected and clean during and after application of Dryden WoodOil.

3.27 PREVENTING CROSS DIFFUSION

When absorbent materials need to be attached to timber coated with Dryden WoodOil, ‘stripe’ the mating surfaces or edges with recommended coats of a compatible primer as recommended by the manufacturer, to prevent cross diffusion into the porous substrate.

Dryden recommend, regardless of manufacturer’s system being used, that all data sheets are read and followed, for their technical requirements and warranties.

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3.28 JOINERY

Timber frames and sashes can be factory pre-coated using Dryden WoodOil. Dryden WoodOil can be applied again after installation has been completed, but not within 30-90 days of the first coat.

Dryden recommend allowing a minimum migration period of 7 days before fixing glass. A prep clean & primer sealer is recommended to be applied directly to Dryden WoodOil coated timber before using putty or similar.
If using putty or similar, apply the recommended primer to coated timber, according to manufacturer's specifications prior to glazing.
Refer to manufacturer's data sheets and specification for primers and procedures.

Completion

3.29 UNIFORM COLOUR APPLICATION

As Dryden WoodOil with a Dryden ColourTone added migrates into the timber away from the surface, fullness of the colour chosen will develop highlighting the timbers natural colour and grains. The final finished colour will also be influenced by the timber type, colour, grain and product application.

Leave the whole of this work uniform in colour, applied to the correct coverage rates, free from defects, clean and unmarked and to the standard required by following procedures.

3.30 CLEAN UP

Clean up with mineral turpentine or hot water and detergent for spray equipment, brushes and clothes. These also help with over-spray or accidental spillage on unwanted surfaces such as windows.

Use a wiping rag on smooth surfaces and a brush on rough surfaces.

3.31 REMOVE

Remove drop sheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged.

Dispose of all materials safely. Do not pour unused Dryden WoodOil down drains. Unwanted Dryden WoodOil should be brushed out on newspaper or absorbed with sawdust, then disposed of via waste collection. Disposal of empty paint containers via domestic recycling programs may differ between local authorities. Comply with local council disposal methods.
For more information on responsible disposal of paint and packaging visit painttakeback.co.nz.

3.32 REPLACE HARDWARE

Replace hardware without damage to it or the adjoining surface. Leave properly fitted and in working order.

3.33 PROTECT

Protect new work from damage. Take all relevant precautions to protect timbers from site work, dust, dirt, aggregate concrete wash, concrete cutting, metal grinding, water blasting, paint splatter, etc.

4 SELECTIONS

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

New exterior timber

4.1 DRYDEN WOODOIL - EXTERIOR TIMBER COATING

Brand/product:	**Dryden WoodOil**
ColourTone:	TBC by owner
Timber type:	Western red cedar
Number of coats:	2 coat system
First coat:	Factory coated, or site applied
Second coat:	30-90 days, once timber is fixed

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Interior timber

4.2 DRYDEN WOODOIL - INTERIOR TIMBER COATING

Brand/product:	**Dryden WoodOil**
ColourTone:	TBC by owner
Timber type:	Western red cedar
Number of coats:	1-2 coat system
First coat:	Factory coated, or site applied
Second coat:	Can be applied only if deeper colour is required, 30-90 days once timber is fixed



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7123B BUTELINE HOT & COLD WATER SYSTEM

1 GENERAL

This section relates to the **New Zealand manufactured Buteline** Hot and Cold Water System, from the network utility supply authority water main to designated points and appliances, the installation of hot water heating appliances, distributing piped hot water and the installation of isolating valves.

- **Buteline** Lilac tubing distribution of reclaimed / recycled non portable water supply.
- **Buteline** Green tubing distribution of rainwater supply

1.1 RELATED WORK

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for tapware supply.

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 G4/AS1	Ventilation of buildings
NZBC G11/AS1	Gas as an energy source
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
AS 2345	Dezincafication resistance of copper alloys
AS/NZS 2642.1	Polybutylene pipe fittings - Polybutylene (PB) pipe extrusion compounds
AS/NZS 2642.2	Polybutylene pipe fittings - Polybutylene (PB) pipe for hot and cold water applications
AS/NZS 2642.3	Polybutylene pipe fittings - Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications
AS/NZS 2845.1	Water supply - Backflow prevention devices - Materials, design and performance requirements
AS/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
AS 4032.2	Water supply - Valves for the control of heated water supply temperatures - Tempering valves and end-of-line temperature actuated devices
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/NZS 5601.1	Gas installations - general installations
NZS 7602	Polyethylene pipe (Type 5) for cold water services

Gas (Safety and Measurement) Regulations 2010
Plumbers, Gasfitters and Drainlayers Act 2006

1.3 MANUFACTURER DOCUMENTS

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

MBIE (DBH) Certificate of Accreditation 94/005B **Buteline** Polybutylene Pipe System
Buteline Plumbers technical and installation manual

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Copies of the above literature are available from **Buteline**
Web: www.buteline.com
Email: paul.carrington@buteline.com
Telephone: 0-9-273 5800
Facsimile: 0-9-273 5808

Warranties

1.4 WARRANTY

Warrant this work under normal environmental and use conditions against failure of materials and execution.

Warranty period: 2 years

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

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a **Buteline** materials warranty in the suppliers standard form.

Warranty period: 25 years

Requirements

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Buteline** product or component, or associated **Buteline** products, components or accessories.

1.7 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Registered 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.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

1.9 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.

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1.10 QUALITY CONTROL SYSTEM - LEAD FREE

If requested, by the contract administrator or consenting authority, provide test reports from IANZ or equivalent accredited testing facility confirming products that contain copper alloy and are used in contact with potable water for human consumption are lead free.

Performance

1.11 TESTING

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed.

Slowly fill service pipes with water to exclude air. Test to either NZBC G12/AS1, 7.6.1a, 1500 kpa for period not less than 15 minutes or to AS/NZS 3500.1 as modified to NZBC G12/AS3,, section 17.3.1 Hydrostatic test, 1500 kpa for period not less than 30 minutes. Ensure there is no measurable loss of pressure. 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 POLYBUTENE-1 PIPE

Buteline Polybutene-1 tubing to AS/NZS 2642.1, AS/NZS 2642.2 and AS/NZS 2642.3 complete with fittings and accessories brand-matched with 50 year durability to NZBC B2/AS1, Table C.1.1.1 and NZBC G12/AS1, table1, with **MBIE (DBH) Certificate of Accreditation 94/005B** for both residential and commercial applications.

2.2 DE-ZINCIFICATION RESISTANT WATER SUPPLY SYSTEM COMPONENTS

All copper alloy components to comply with G12/AS1 clause 2.2.3 and AS 2345.

2.3 ADJUSTABLE WALL ELBOW

Buteline Bute-1 adjustable wall elbow with 4 way fixing clamp.

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: Water supplies.

2.5 INSULATION

Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements, NZS 4305 and AS/NZS 3500.4.

2.6 TEMPERING VALVE

Tempering valve to NZS 4617 or AS 4032.2 to NZBC G12/AS1.

2.7 HOT WATER SAFETY SYSTEM

Buteline AquaFuse hot water safety monitor to NZS 4617 to NZBC G12/AS1 and manufacturer requirements.

Materials - hot water heating appliances

2.8 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

To NZS 4305, NZS 4606.1, NZS 4606.2 and NZS 4606.3, electric thermal storage cylinder, insulated and complete with required fittings.

Components

2.9 JOINTING COMPONENTS

Buteline manufactured jointing components made from either premium grade custom thermo polymer or DR Brass designed for use with **Buteline** Polybutene-1 pipe.

2.10 PROTECTIVE TAPE

Plasticised PVC tape or similar for protection of jointing components for underground installations.

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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 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 THERMAL MOVEMENT

Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs. Sleeve through concrete or steel penetrations.

3.6 PIPE SIZE

Flow rates to each outlet to be no less than those given in NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures, with pipe size as determined in NZBC G12/AS1, table 4, Tempering valve and nominal pipe diameters.

3.7 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.

Application - jointing

3.8 JOINTING POLYBUTENE-1 PIPE

Aluminium clamped fitting to NZBC G12/AS1 and AS/NZS 2642, part 3.

Application - distribution systems

3.9 WATER SUPPLY CONNECTION

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

3.10 COLD WATER INSTALLATION

From connection point, size the runs and branches to deliver the acceptable flow rate to NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures. Lay out pipes in straight runs with support spacing to NZBC G12/AS1, table 9, Water supply pipework support spacing firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, complete with necessary valves, fittings and insulation to hot water line where required.

Application isolating valves

3.11 BUILDING ISOLATING VALVE

Install an isolating valve in an accessible position at the point of entry to the building.

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3.12 INSTALL ADDITIONAL ISOLATING VALVES - CONCEALED

Install additional isolating valves in an accessible and visually discrete position adjacent to or near by the specific fixture to allow for easy connection and operation. When the building is divided into zones, ensure an isolating valve is installed in each zone.

3.13 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

3.14 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 AS 4607 for Valve-vented systems .

3.15 SEISMIC RESTRAINTS - NON-GAS WATER HEATING APPLIANCES

Non-gas (electric, wet-back, solar etc) water heating appliances to be restrained to manufacturer's requirements and NZBC G12/AS1, 6.11, Water Heater Installation.

3.16 HOT WATER PIPEWORK

Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to NZBC G12/AS1, table 7 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, and preformed bends, complete with all necessary valves and fittings.

Lag all pipes with rigid insulation to the manufacturer's requirements.

3.17 INSTALL STORAGE HOT WATER CYLINDER OVERFLOW TRAY

Install drained overflow tray to storage hot water cylinder to NZBC G12/AS1.

3.18 INSTALL TEMPERING VALVE

Install tempering valve with 1 metre minimum length of copper pipe from outlet of hot water cylinder and to manufacturer's instructions.

3.19 INSTALL TEMPERING VALVE WITH AQUAFUSE

Install tempering valve 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install preformed copper pipe 'T' supplied with AquaFuse kit from outlet of hot water cylinder to **Buteline** AquaFuse fitting connected to the Polybutene-1 piping. Install to **Buteline's** instructions.

Installation - tapware

3.20 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.

3.21 INSTALLING TAPWARE

Install tapware supplied under 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES. Install in accordance with the manufacturer's requirements.

Completion

3.22 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.

Water main

4.1 BUTELINE WATER MAIN

Size: PB 22 (18mm nominal internal bore)



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4.2 POLYETHYLENE WATER MAIN

Size: 25mm outside diameter

Pipework

4.3 BUTELINE POLYBUTENE-1 PIPE WORK

Branch off take: PB 18 (13mm nominal internal bore)
Branch main: PB 22 (18mm nominal internal bore)
Main: PB 28 (23mm nominal internal bore)

Hot water systems

4.4 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

Brand: Rinnai
Model size: ME280590E30



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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 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

1.4 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 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.

1.6 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.

1.7 NO SUBSTITUTIONS

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

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1.8 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.

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.

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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

Refer to owner



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7411M METALCRAFT ROOFING RAINWATER SPOUTING SYSTEMS

1 GENERAL

This section relates to **Metalcraft Roofing** rainwater disposal systems including gutters fascias and downpipes.

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:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
Gutter	In this section includes spouting

Documents

1.2 DOCUMENTS

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

NZBC E1/AS1	Surface water
NZBC E1/AS2	Surface water
AS 1273	Unplasticised PVC (uPVC) downpipe and fittings for rainwater
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Are available on the website or by contacting Metalcraft Roofing.

For technical assistance contact **Metalcraft Roofing**

Web: www.metalcraftroofing.co.nz

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

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

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

3 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.

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Requirements

1.6 NO SUBSTITUTIONS

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

1.7 QUALIFICATIONS

Installers to be experienced competent gutter installers, familiar with the **MetalcraftRoofing** materials and the techniques specified.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Provide one copy of all relevant **Metalcraft Roofing** maintenance information on completion of the roofing work.

Performance

1.9 TEST - NZBC E1/AS1

Test the completed rainwater disposal system with water to ensure gutters are laid to correct falls, that both spouting and downpipes are unobstructed and that no ponding occurs in gutters. Comply with NZBC E1/AS1.

1.10 TEST - AS/NZS 3500.3 & NZBC E1/AS2

Test the completed rainwater disposal system with water to ensure gutters are laid to correct falls, that both spouting and downpipes are unobstructed and that no ponding occurs in gutters. Comply with AS/NZS 3500.3 as modified by NZBC E1/AS2.

2 PRODUCTS

Materials

2.1 GUTTERS

Complete with matching brackets with fixing screws to suit the gutter / fascia. Refer to SELECTIONS for type.

3 EXECUTION

Conditions

3.1 HANDLE AND STORE

Handle and store downpipes, spouting and accessories to avoid damage. Store on site under cover, on a clean level area, stacked to eliminate movement and away from work in progress. Avoid exposure to sunlight if strippable film is still on the product.

3.2 SUBSTRATE

Check that fascia, barges or cladding are level and true to line and face and will allow work of the required standard without distortion to the product alignment. Do not proceed until they are up to standard.

3.3 THERMAL MOVEMENT

Make adequate provision in the fixing and jointing of the spouting for thermal movement in the length of the spouting. Provide an expansion joint in spouting over 12 metres in length for steel gutter.

3.4 CORROSION

Separate metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

Check compatibility of metals used for rainwater goods, against the materials being used for roofing and flashings.

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Application - metal

3.5 INSTALL METAL GUTTER AND FASCIA

Establish minimum falls necessary (minimum 1:500) to outlets to prevent ponding and screw fix brackets true-to-line at 900mm centres maximum. In areas where snow fall is possible and or high wind areas, the centres should be reduced to 600mm. Lap spouting joints in direction of flow, a minimum of 40mm to seal between and over the top of joint and seal with silicone sealant and fix with rivets. Ensure the joint is fixed over its full girth. Cut out neatly for and fit the pre-formed downpipe dropper and rivet and seal around the joint. All installation to Metalcraft Roofing details and NZMRM CoP recommendations.

3.6 INSTALL RAINWATER HEADS

Install using rivets where required to detail as shown on drawings. Ensure colour matched blind aluminium rivets are used when joining metal surfaces.

3.7 INSTALL OVERFLOWS

Install as close as practical to downpipe locations, at a height allowing water to discharge to the outside and not into the building.

Completion

3.8 REPLACE

Replace damaged or marked elements.

3.9 LEAVE

Leave the whole of this work discharging completely and freely into the stormwater system and free of all debris. Leave work to the standard required by following procedures.

3.10 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

4.1 METALCRAFT ROOFING GUTTER SYSTEMS

Profile:	125mm Quarter Round
Base material:	Steel
BMT:	0.55mm
Coating system:	COLORSTEEL® Maxam™
Colour:	TBC by owner

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7421MO MARLEY OPTIM DWV SANITARY SYSTEM

1 GENERAL

This section relates to the supply and laying of **Marley New Zealand Limited** above ground gravity flow PVC-U sanitary systems for residential and commercial applications.
It includes:

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

1.1 RELATED WORK

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures.

Refer to 7123 HOT AND COLD WATER SYSTEM for potable water systems.
Refer to 7420MD MARLEY DBLUE® ACOUSTIC SANITARY SYSTEM for acoustic sanitary system.
Refer to 7142 GREYWATER SYSTEMS for greywater systems.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

DWV	Drain, Waste and Vent

Documents

1.3 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 2887	Plastic waste fittings
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 1462.22	Methods for test for plastic pipes and fittings - Method 22: Method for determination of pipe stiffness
AS/NZS 1462.3	Methods for test for plastic pipes and fittings - Method for determining the impact characteristics of pipes
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage
Plumbers, Gasfitters and Drainlayers Act 2006	

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Marley OPTIM® DWV Technical Design Manual
Marley Material Safety Data Sheets

Manufacturer/supplier contact details

Company:	**Marley New Zealand Limited**
Web:	www.marley.co.nz
Email:	guyy@marley.co.nz
Telephone:	09 279 2799

1.5 WARRANTY - INSTALLER

Provide an installer warranty:

2 years:	For installation

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- 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

1.6 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.

1.7 NO SUBSTITUTIONS

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

1.8 AS BUILT DOCUMENTS

Refer to the general section 1238 AS BUILT DOCUMENTATION for the requirements for submission and review of as built documents and records.

Provide the following as built documents and records:

- Provide draft as built information prior to practical completion.
- Provide final as built information prior to the end of the defects liability period.

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

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

Performance

1.10 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

2.1 PVC-U DWV PIPEWORK - RESIDENTIAL

Marley PVC-U DWV pipework comprised of unplasticised PVC waste pipes, traps and fittings manufactured to AS/NZS 1260, tested to AS/NZS 1462.22 and AS/NZS 1462.3, and compliant with AS/NZS 3500.2. Available in a range of pipe types with nominal size DN20 to DN150 and stiffness class SN4 and SN6. Refer to SELECTIONS for options.

2.2 PVC-U VENT PIPES

Marley PVC-U vent pipes comprised of unplasticised PVC including fittings and accessories manufactured to AS/NZS 1260, tested to AS/NZS 1462.22 and AS/NZS 1462.3, and compliant with AS/NZS 3500.2. Available in a range of pipe types with nominal size DN 40 to DN 100 and stiffness class SN4 to SN10. Refer to SELECTIONS for options.

2.3 GULLY TRAP

Refer to 7461 FOUL WATER DRAINAGE for gully traps.

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Components

2.4 PROTECTIVE TAPE

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

3 EXECUTION

Conditions

3.1 EXECUTION GENERALLY - NZBC G13/AS1

Carry out this work to NZBC G13/AS1 and NZBC G1/AS1 and complete all tests to G13/AS1, 7.1 Test Methods.

3.2 ELECTROLYTIC ACTION

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

3.3 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 stacks, discharge pipes, 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. Strip core holes and make good after installation of pipework.

3.6 PIPE ACCESS

Fit and fix stacks, wastes and pipes in ducts independent of all other services so they are easily replaceable for their full length. Wrap or tape pipes buried in concrete.

3.7 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 - traps and wastes

3.10 TRAPS AND WASTES - CONCEALED

Conceal traps and wastes in the fabric of the building in accordance with manufacturer requirements.

3.11 INSTALL GULLY TRAPS

Refer to 7461 FOUL WATER DRAINAGE for installation of gully traps.

Installation - jointing

3.12 JOINTING PVC-U PIPE - SOLVENT WELDED JOINTS

Prime and solvent weld joints using spigots and sockets to Marley requirements.

Jointing to be in accordance with Marley OPTIM DWV jointing procedures as shown in the Marley OPTIM technical manual.



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Installation - fixing

3.13 THERMAL MOVEMENT

Accommodate longitudinal movement in pipes resulting from temperature changes. Incorporate expansion joints in PVC-U pipes. Install PVC pipes to AS/NZS 2032. Take particular care to allow for movement at horizontal take-off locations from stacks.

3.14 TRAPS AND FIXTURE DISCHARGE PIPES - NZBC G13/AS1

Size traps and pipes as required for each fixture or appliance. Establish the developed length of waste pipes. Vent and allow access for cleaning as required. Follow the most direct line with the least number of bends to NZBC G13/AS1: Foul water sanitary plumbing, table 4, Discharge unit loading for stacks and graded discharge pipes and table 7, Distance between supports.

3.15 DISCHARGE STACKS AND VENTS - NZBC G13/AS1

Size stacks and vents to NZBC G13/AS1: Foul water sanitary plumbing, table 2, Fixture discharge pipe sizes and discharge units and table 6, Vent pipe sizes. Extend up past the highest branch to form a discharge stack vent terminating to NZBC G13/AS1: Foul water sanitary plumbing, figure 12 and finishing at the base with a 45 degree bend. Support system to NZBC G13/AS1: Foul water sanitary plumbing, table 7, Distances between supports.

Completion

3.16 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.

3.17 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

3.18 TESTING

Pre-test all pipework 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.marley.co.nz
Substitutions are not permitted to the following, unless stated otherwise.

Materials - sanitary systems

4.1 MARLEY PVC DWV PIPEWORK, RESIDENTIAL

Location:	Refer to drawings
Manufacturer:	Marley New Zealand Limited
Pipe brand/type:	Marley Optim
Pipe diameter:	Refer to drawings
Jointing:	Solvent joint or as per Marley DWV Technical Design Manual
Stiffness class:	SN4 and SN6
Fittings:	Marley, refer to DWV Technical Design Manual

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7451AL ALLPROOF LEVEL THRESHOLD DRAINAGE SYSTEMS

1 GENERAL

This section relates to **Allproof Industries** level threshold drainage systems suitable for residential and commercial applications.
It comprises of an in-ground drainage channel complete with a range of grate options and fittings including connection to the network utility operators system.
It includes:

- Allproof Threaded Leg (TL) level threshold drainage system

1.1 RELATED WORK

Refer to 7431 DRAINAGE COMMON REQUIREMENTS for general matters

Refer to 7441 GROUNDWATER DRAINAGE for sub-soil drainage
Refer to 7461 FOUL WATER DRAINAGE for waste/foul water drainage

Documents

1.2 DOCUMENTS

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

NZBC E1/AS1	Surface water
NZBC E1/AS2	Surface water
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage

Plumbers, Gasfitters and Drainlayers Act 2006

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Allproof Industries Level Threshold Brochure
Allproof Industries Level Threshold Technical Details
Allproof Industries Level Threshold Installation Details

Manufacturer/supplier contact details

Company:	**Allproof Industries**
Web:	www.allproof.co.nz
Email:	info@allproof.co.nz
Telephone:	09 481 8020

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For Allproof Industries Level Threshold Drainage System components. For warranty conditions and details refer to Allproof Industries.

- Provide this warranty on Allproof Industries Ltd standard form.
- Commence the warranty from the date of purchase.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS

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

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1.6 NO SUBSTITUTIONS

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

1.7 ORDERING REQUIREMENTS

Allow manufacturing / delivery lead time after on-site measurement for the following custom products:

- Allproof Perimeter Drain Stainless Steel Grates
- Allproof Cantilever Bracket (CB) System
- Allproof Threaded Leg (TL) level threshold drainage System

1.8 SITE CONFIRMATION

Meet with the territorial authority drainage inspector to confirm the drainage layout in relation to site conditions. Confirm changes resulting and seek written site instruction before carrying out any work.

1.9 SITE CONDITIONS

Before starting work check on site the drainage layout, dimensions, levels and invert levels and ensure that line, level, falls and cover are correct.

Performance

1.10 TECHNICAL APPLICATION

Refer to Allproof Industries for technical support on grate performance and engage a hydraulics engineer for hydraulic performance, run layout and scheduling, ponding analysis and information on the chemical resistance of the trench and grate materials.

1.11 COMPLIANCE WITH NZ BUILDING CODE

All work to comply with:

- NZBC E2/AS1, paragraph 7.4.2.2, system materials and construction.
- NZBC E1/AS1: Surface water, 3.0 Drainage system materials and construction.

2 PRODUCTS

Materials - Allproof level threshold drainage systems

2.1 ALLPROOF THREADED LEG (TL) SYSTEM

Threaded Leg (TL) level threshold drainage system comprises of the following:

- Threaded Leg (TL) grate system with adjustable rods and plastic feet.
- Select from 2 options of grate.

Refer to SELECTIONS for options.

3 EXECUTION

Conditions

3.1 GROUND CONDITIONS

Specific ground conditions or contaminated ground may require an increase in the concrete surround dimensions or the addition of reinforcement.

3.2 TEMPORARY INSTALLATION

Allproof Industries level threshold drainage channels are not trafficable until fully installed. During site work and after the trench run is laid, route site traffic away from the trench. If temporary crossings are required lay base course of minimum 1 metre wide either side of the trench for protection and install temporary protective cover or timber infill for support.

Installation

3.3 GENERAL

All work to NZBC E2/AS1, paragraph 7.4.2.2, system materials and construction, AS/NZS 3500.3 as modified by NZBC E1/AS2 : and Allproof Industries Installation Details.

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3.4 INSTALL ALLPROOF THREADED LEG (TL) SYSTEM

Install Allproof Threaded Leg (TL) System in accordance with Allproof Industries Level Threshold Technical Details, and as follows:

- Set up boxing to form 150mm high x 200mm wide channel. Ensure that concrete edge has a clean bullnose edge finish as frame will need to sit flush to edge.
- Pour concrete.
- Remove boxing.
- Adjust leg height on bracket and set into channel with 12mm stoppers against the joinery.
- Apply any last adjustments ensuring that there is a level surface with the interior floor finish / joinery and exterior surface.

Installation - connection

3.5 CONNECT TO SURFACE WATER DRAIN

Connect Allproof level threshold drainage system to stormwater drain to the requirements and satisfaction of the network utility operator.

3.6 CLEAN

Clean and flush out the whole installation and remove all silt and debris before handing over.

Completion

3.7 REPLACE

Replace damaged or marked elements.

3.8 LEAVE

Leave the whole of this work discharging completely and freely into the stormwater system and free of all debris. Leave work to the standard required by following procedures.

3.9 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

Materials - Allproof level threshold drainage systems

4.1 ALLPROOF THREADED LEG (TL) SYSTEM

Location:	Refer to drawings
Manufacturer:	Allproof Industries
Grate code:	TLWW
Grate type:	Stainless perforated
Grate width:	Variable
Grate finish:	316 ss
Load rating:	A - Pedestrian (330kg nominal wheel load)

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7513 CENTRAL HEATING SYSTEMS

1 GENERAL

This section relates to the supply and installation of:

- electric heat pumps
- aluminium radiators

1.1 RELATED WORK

Refer to the HOT & COLD WATER SYSTEM section for hot and cold water piping, gas water heaters and hot water cylinders.
Refer to 7545 UNDERFLOOR HEATING for under floor heating

Documents

1.2 DOCUMENTS

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

NZBC G10/AS1	Piped services
NZBC G11/AS1	Gas as an energy source
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
AS/NZS 3500.4	Plumbing and drainage - Heated water services
NZS 5262	Gas appliance safety
AS/NZS 5601.1	Gas Installations - general installations
AS/NZS 60335.2.102	Household and similar electrical appliances - Safety - Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections
BS EN442-1	Specification for radiators and convectors. Technical specifications and requirements
CoP Boilers	Approved code of practice for the design, safe operation, maintenance and servicing of boilers

Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019)
Gas (Safety and Measurement) Regulations 2010
Plumbers, Gasfitters and Drainlayers Act 2006

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

Refer to Kekelit

Warranties

1.4 WARRANTY

Warrant this part of the work under normal environmental and use conditions against failure of materials and execution:

Piping system:	10 years issued by the manufacturer
Boiler units and heat pumps:	3 years issued by the manufacturer
Radiators:	5 years issued by the manufacturer
Execution:	1 years issued by the manufacturer's accredited installer

Requirements

1.5 QUALIFICATIONS

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

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1.6 COMPLY

Comply with the Gas (Safety and Measurement) Regulations 2010, Electricity (Safety) Regulations 2010, AS/NZS 60335.2.102 and the network utility operator's requirements. Give notices for inspections and carry out tests as required.

1.7 INFORMATION FOR OPERATION AND MAINTENANCE

Provide the owner with the manufacturer maintenance information.

2 PRODUCTS

Appliances

2.1 ELECTRIC HEAT PUMP

Air-cooled water heat pump with pumping module and helical fan for supplying hot water to underfloor heating system. Single or three phase units.

Refer to SELECTIONS for product selection.

2.2 ALUMINIUM PANEL RADIATORS

Die cast aluminium alloy hot water radiators to BS EN442-1

Refer to SELECTIONS for product selection.

3 EXECUTION

Conditions

3.1 GENERALLY

Carry out the whole of this work to the requirements of NZBC G10/AS1: (Gas); NZBC G11/AS1; NZBC G12/AS1 or AS/NZS 3500.4 as modified by NZBC G12/AS3; AS/NZS 5601.1.

3.2 DESIGN AND INSTALL

Design and install boilers to CoP Boilers.

Application

3.3 WETBACK CONNECTION FOR OPEN VENTED INSTALLATION

To NZBC G12/AS2. Connect wetback from a solid fuel heater to the solar water heating system. The piping between the solar water heating system and the wetback to be at least 20 mm diameter. Keep pipe length to a minimum. The pipe returning from the wetback outlet to the solar water heating system should not at any location be less than a 30° angle to the horizontal plane. No valves or constrictions are allowed in the inlet or outlet path between the solar water heating system and the wetback. Fit a thermostat and solenoid valve set at a maximum temperature of 90°C to provide over-heating protection.

3.4 CONNECT UP HEAT PUMP FOR UNDERFLOOR HEATING SYSTEM

Install heat pump complete with pumping module, in an exterior position on a level base bolted down on vibration damper pads of neoprene. Comply with the manufacturers requirements for the free area around the unit when installed. Connect up to the electrical supply in single phase or three phase configuration complying with wiring diagrams of the unit installed. Connect unit up to the water supply.

3.5 CONNECT UP RADIATORS

Install radiators to manufacturer's installation manual and where located on the plans. Connect inlet and outlet pipes to the radiator. Fit inlet and outlet with isolating valves.

Commissioning

3.6 POST INSTALLATION TESTING

The completed system to be fully tested and commissioned in accordance with the manufacturer's recommendations and as necessary to ensure the system is complete.

Testing to include: Pressure test to ensure any components in the system will withstand the test pressure and has been tested for leakage and proved to be sound.



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Rectify any sub-standard items and re-test.

3.7 FINAL INSPECTION AND TEST

Submit the work for inspection and test and prove to the satisfaction of the network utility operator that the installation complies with all Acts and Regulations.

Completion

3.8 REPLACE

Replace damaged, cracked or marked elements.

3.9 LEAVE

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

3.10 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 SYSTEM DESIGN

Refer to Ke Kelit NZ for heating design documentation



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7553DM DEVI UNDERTILE HEATING MAT SYSTEM

1 GENERAL

This section relates to the supply and installation of **Devi™** Heating Systems Ltd electric underfloor heating mats and control systems for domestic commercial or industrial applications installed:

- under floor tiles

1.1 ABBREVIATIONS

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

The following abbreviations are used in this specification.

UFH	Under Floor Heating

Documents

1.2 DOCUMENTS

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

NZBC G9/VM1	Electricity
NZS 6110	Electrical installations - floor and ceiling heating systems

1.3 MANUFACTURER DOCUMENTS

Devi™ Heating Systems Ltd documents relating to work in this section are:

Devi™ Installation instructions (supplied with all product).

Copies of the above literature are available from:

Web:	www.devi.co.nz
Email:	mail@devi.co.nz
Telephone:	South Island 03 348 0070 or 0800 468 356 North Island 09 415 7250 or 0800 927 635

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide the manufacturer warranty.

20 years	For **Devi™** Devimat™ heating mat
2 years	For **Devi™** DEVIreg™ Manual thermostats DEVIreg™ 330 & DEVIreg™ 530/531/532
5 years	For **Devi™** DEVIreg™ Touch & Smart thermostats

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 QUALIFICATIONS

Installation to be performed by a registered electrician or a **Devi™** approved installer to **Devi™** recommendations.

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

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1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any **Devi™** system, associated products, components or accessories.

1.8 MANUFACTURERS DOCUMENTATION

Refer to **Devi™** Heating Systems Ltd for all product information and installation instructions.

1.9 COMPLY

Comply with NZBC G9/VM1 and NZS 6110 Electrical installations - floor and ceiling heating systems.

Quality control and assurance

2 PRODUCTS

Materials - heating mat

2.1 SINGLE CONDUCTOR HEAT MAT

Devi™ Devimat™ 150 DSVF, single conductor fully screened heating mat in ready made lengths.

Materials - thermostat controls

2.2 DIGITAL TIMER THERMOSTAT - TOUCH

Devi™ DEVIreg™ Touch, time and temperature programmable electronic touch screen thermostat, 230V/16A. Available in white or black**.**

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 GENERALLY

All work and materials to comply with **Devi™** installation instructions.

3.4 CONFIRM LAYOUT

Before commencing work confirm the proposed location of heating cables and controls.

3.5 CO-ORDINATE SERVICES

Co-ordinate and co-operate with other sub-trades to avoid any conflict with the installation of the system with other subcontractors work.

Application - general

3.6 PRELIMINARY WORK

Ensure all walls (where required) and floor penetrations are clearly marked.

Installation - Devimat™ under tile floor heating

3.7 PRELIMINARY WORK

The floor is to be cleaned and primed prior to the installation of the heat mat. All fixings such as door stops and floor mounted cabinetry to be clearly marked out on the floor.

3.8 INSTALL DEVIMAT

Install the **Devimat™** ensuring as much of the floor area is covered in each of the zones shown on the plan / **Devi**™ schedule.

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3.9 TILING

After installation of the Devimat™ the floor tiler is to install tiles on a screed or tile directly over the mat using an approved adhesive. Refer to the appropriate tiling section for the supply and installation of the tiles.

3.10 COLD TAIL CONNECTIONS

Terminate all cold tails in a flush box mounted approximately 300 mm above F.F.L.

Installation - thermostat controls

3.11 THERMOSTAT INSTALLATION

Install and connect all thermostat and controls as per the **Devi™** schedule and type listed in SELECTIONS.

3.12 INSTALL THERMOSTAT SENSORS

Install thermostat sensors for each zone as per the **Devi™** schedule. Install sensors within a conduit so they are easily replaced after completion. For a timber floor install the sensor higher than the heating cables / directly under the flooring.

3.13 TEST ALL ELEMENTS

All elements to be tested for continuity, resistance and insulation resistance prior installation of flooring, and after installation and prior to livening. Fill out the pre and post floor placement test result sheets and forward these results to the owner. It is recommended that all elements are tested at prewire stage of the installation.

3.14 TEST AND ACTIVATE ALL CONTROLS

All thermostats to be activated and checked for correct operation. Where programmable or intelligent thermostats are installed the correct day and time to be programmed in. Once these thermostats have been checked, leave in manual and off unless instructed otherwise.

Completion & Commissioning

3.15 COMPLETION MATTERS

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

3.16 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

- Allow to commission the system fully to **Devi™** instructions.

4 SELECTIONS

Where there is a NO SUBSTITUTIONS clause in GENERAL, no substitutions are permitted to any of the specified systems, components and associated products listed in the following SELECTIONS.

4.1 DESIGN INFORMATION

Brand:	**Devi**™
Substrate:	New Floor
UFH type:	**Devi™ Devimat™** system - under tile
Floor covering:	Tiles

Heating element

4.2 DEVI HEATING MAT

Brand:	**Devi**™
Type:	Devimat™ DSVF 150

Thermostat control

4.3 DEVI THERMOSTATS

Brand:	**Devi**™
Thermostat type:	**DEVIreg**™ Touch

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7555E ESCEA GAS FIRES

1 GENERAL

This section relates to the supply and installation of Escea Ltd. gas fires, flues and controls.

1.1 ABBREVIATIONS AND DEFINITIONS

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

Documents

1.2 DOCUMENTS

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

NZBC G10/AS1	Piped services
NZBC G11/AS1	Gas as an Energy Source

Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).
Gas (Safety and Measurement) Regulations 2010
Plumbers, Gasfitters and Drainlayers Act 2006

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Escea and Mode product catalogues
Escea and Mode Information Sheets for Builders and Architects
Escea and Mode Installation and User manuals

Manufacturer/supplier contact details

Company:	Escea Ltd.
Web:	www.escea.com/nz
Email:	info@escea.com
Telephone:	0800 173 000

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 year Firebox Warranty:	For parts
2 years Total Warranty:	For parts and labour

- Provide the warranty in the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from 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 Total Warranty:	For installation workmanship

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

Refer to the general section 1237 WARRANTIES for additional requirements.

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Requirements

1.6 QUALIFICATIONS WORKERS - LICENSED UNDER STATUTE

Workers and supervisors to be appropriately qualified to applicable legislative requirements of Plumbers, Gasfitters and Drainlayers Act 2006. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.7 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

Where a product or material supplier is named in SELECTIONS, the product/material must be provided by the named supplier.

1.8 NO SUBSTITUTIONS

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

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

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

Provide this information prior to practical completion.

1.10 GAS CERTIFICATE OF COMPLIANCE

At the completion of gasfitting work provide a gasfitting Certificate of Compliance (CoC) as required by the Gas (Safety and Measurement) Regulations 2010, section 46 Requirements for certificate of compliance & section 47 Content of certificate of compliance. Provide a copy to the Contract Administrator and when required to the building consent authority for Code Compliance and to the energy supplier before connection.

1.11 GAS SAFETY CERTIFICATION

At the completion of gasfitting work provide a Gas Safety Certificate (GSC) as required by the Gas (Safety and Measurement) Regulations 2010, section 52B Gas safety certification. Provide a copy to the Contract Administrator and when required to the building consent authority for Code Compliance.

1.12 GAS APPLIANCE COMPLIANCE

Gas appliance supplier to provide a Supplier Declaration of Compliance (SDoC) in accordance with Gas (Safety and Measurement) Regulations 2010, section 55 Certification requirements for gas appliances and specified fittings or an endorsement to Gas (Safety and Measurement) Regulations 2010, section 57 Endorsement may replace certification for certain appliances and fittings. Provide declaration upon request.

2 PRODUCTS

Materials

2.1 DF SERIES GAS FIREPLACE

Escea DF Series – a powered direct vent flued, thermostatically controlled, flame effect, high efficiency and high output, glass fronted cassette-style gas fire. Operates on natural gas, propane or ULPG. Fire is controlled by a Bluetooth remote control handset, or by connection and control through the home Wi-Fi and Smart Heat app. Fire place can also be connected to a home automation system. Refer to SELECTIONS for fuel effect and other options.

Components

2.2 FLUES

Escea flue kits with options for different terminal installation requirements. Refer to SELECTIONS for options.

2.3 INSULATED FLEXIBLE FLUE EXTENSION

When total flue run exceeds the minimum standard length for a particular model, the flexible flue run can be extended by insulating the Ø110mm exhaust pipe for its entire length. This will push the condensate formation point out further allowing for a fully flexible run without the need for a condensate trap.

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Insulation is supplied in 4m kits to be used alongside Standard Flue kits 4m and Flexible Flue Extension Kits 4m. It must meet the minimum requirements: to have an operating temperature above 230°C and minimum R1.45 thermal resistance.

Accessories

2.4 MESH SCREEN KIT

Escea mesh screen is fixed to the glass viewing area of the fire, acting as an additional layer of protection from accidental contact with the glass of the fire during operation. Uses Invisi-Mesh technology, seamlessly incorporated into the opening of the fire. Does not require modification of the wall lining. Refer to SELECTIONS.

2.5 FLUE LINER EXTENSION

Black painted 1.2m x 225mm Ø galvanized flue liner. For use where an exposed black flue is desired or to extend the exposed portion of the freestanding fire flue kit length. Refer to SELECTIONS.

2.6 FLUE FLASHING

Flashings to flue termination do not form part of the flue kit and must be specified separately. Installation of flashings by contractor. Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation - generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install in accordance with manufacturer's installation instructions, NZBC G10/AS1 and NZBC G11/AS1.

3.6 CONCEAL

Conceal pipework within the fabric of the building unless detailed otherwise.

3.7 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.

3.8 SEISMIC RESTRAINT

Gas fires to be installed and firmly secured onto a continuous base. Refer to the requisite Escea Installation Manual.

3.9 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.

3.10 PIPE SIZE

Gas fitter to check and confirm adequate pipe size, incoming mains and meter on site as a part of the installation. Pipe sizing calculation to appropriate gas Standard.

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Installation

3.11 INSTALL IN-BUILT OR CASSETTE-STYLE FIRE

Install fire complete with necessary fittings and components to manufacturer's installation requirements.

3.12 INSTALL FLUE

Install flue to selected location and flash. Refer to Escea installation requirements and 7221 GAS APPLIANCES for flue installation and termination. Refer also to 4821 FLASHINGS or appropriate Cladding section for flashing requirements.

3.13 INSTALL INSULATED FLEXIBLE FLUE EXTENSION KITS

Install Flexible Flue Extension Kit (in conjunction with standard Escea Powerflue Kit and Flexible Flue Extension Kit) and wrapped with prescribed insulation, to current Escea installation requirements. Includes clamped connections and joiners.

Completion

3.14 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 ESCEA DF960 INDOOR GAS FIRE

Location/type:	In wall installation
Manufacturer:	Escea Ltd.
Brand:	Fire by Escea
Model:	DF960
Fuel effect:	TBC by owner
Fascia style:	TBC by owner
Fascia colour:	TBC by owner
Flue kit:	Powered vertical and powered horizontal
Power supply:	Standard 10A, 230/240V, 3 pin plug
Gas type:	LPG
Wi-Fi connection:	TBC by owner

Components

4.2 ESCEA INTERNAL VERTICAL POWERFLUE KIT

Location/type:	Roof, chimney cap
Manufacturer:	Escea Ltd.
Model:	D-Series Internal Vertical Powerflue Kit
Fan location:	Internally – inside the building or roof space
Flexible flue:	up to 4m
Power supply:	Supplied cable connecting gas fire to the flue terminal
Condensate trap:	Not required

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4.3 ESCEA HORIZONTAL POWERFLUE KIT

Location/type:	External wall
Manufacturer:	Escea Ltd.
Model:	D-Series Horizontal Powerflue Kit
Fan location:	Externally – outside the building on a wall
Flexible flue:	up to 4m
Power supply:	Supplied cable connecting gas fire to the flue terminal
Condensate trap:	Not required

4.4 FLUE FLASHING

Size:	To suit flue
Material:	0.55mm colorsteel to suit cladding material and profile

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7556E ESCEA WOOD FIRES

1 GENERAL

This section relates to the supply and installation of Escea wood fires.
It includes;

- Outdoor Escea wood fires

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:

AAC	Autoclaved Aerated Concrete
NES	Resource Management (National Environmental Standards for Air Quality) Regulations 2004
ECAN	Environment Canterbury
GRC	Glass Reinforced Concrete
LEB	Low Emission Burner(to AS/NZS 4012 & AS/NZS 4013, emissions ≤ 1.5 g/kg, efficiency ≥ 65%)
CM1	ECAN Canterbury Method 1 for testing of ultra-low emission wood burners
NCC	Nelson City Council
SFAIT	Solid Fuel Appliance Installation Technician

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
AS/NZS 2918	Domestic solid fuel burning appliances-Installation
AS/NZS 4012	Domestic solid fuel burning appliances - Method for determination of power output and efficiency
AS/NZS 4013	Domestic solid fuel burning appliances - Method for determination of flue gas emission

Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (NES)
ECAN Canterbury Method 1 for testing of ultra-low emission wood burners (CM1)

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

- Spartherm Wood Fires product catalogue
- Spartherm Wood Fires technical information
- Spartherm Wood Fires Installation Manual
- Escea TFS650-1000 Installation Manual
- Escea TC950 Installation Manual
- Escea Outdoor Fires product catalogue
- Escea EK Series Installation Manual
- Escea EK Series Timber Cavity/AAC Heat Cell Design Guide
- Escea EK Series Concrete Cavity Design Guide
- Escea EW5000 Installation Manual
- Escea EP1350 Installation Manual

Manufacturer/supplier contact details

Company:	Escea Ltd
Web:	www.escea.com/nz www.sparthermfires.co.nz
Telephone:	0800 173 000 / 03 478 8220

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Warranties

1.4 WARRANTY - INSTALLER

Provide an installer/applicator warranty:

2 year: 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.

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years Firebox Warranty

Refer to the general section 1237 WARRANTIES for additional requirements.

- Provide the warranty in the manufacturer's standard form
- Commence the warranty from date of purchase

Requirements

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Escea or Spartherm products, or associated products, components or accessories listed in this section.

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Workers to be approved by supplier. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

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

Provide this information prior to practical completion.

Performance

1.9 COMPLIANCE WITH STANDARDS

Solid fuel-burning appliances installed to AS/NZS 2918. Where required by the regulatory authority, the appliance to comply with the requirements of AS/NZS 4012 and AS/NZS 4013 or CM1, and be fitted with a compliance plate marked 'Tested to AS/NZS 4012 and AS/NZS 4013' or 'Tested to CM1'.

1.10 DURABILITY

Solid fuel-burning appliances to be installed to comply with NZBC B2/AS1 Table C.1.1.1.

1.11 FINAL INSPECTION AND TEST

Undertake final tests to show the installation complies with AS/NZS 2918 and AS/NZS 4013, and has been tested for leakage and proved to be fully operational.

Carry out testing at the time of completion of installation. Test and demonstrate the system according to manufacturer's specification.

1.12 PRODUCER STATEMENT - INSTALLATION

Provide a producer statement by the installer in the form as required by the Building Consent Authority. The Producer Statement must verify that the design complies with AS/NZS 2918 Domestic solid fuel burning appliances - Installation, naming the installer and the person responsible for verification of the installation and for the post installation tests.

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2 PRODUCTS

Outdoor wood fire

2.1 EK SERIES OUTDOOR FIREPLACE KITCHEN

In-built outdoor wood fire and BBQ. Installed into either a concrete or an AAC panel cavity. Both methods allow for the fire and chimney cavity to form part of the envelope of the building. Adjustable grills and ember generator form part of the system for cooking with a fire brick supported base. Requires a minimum 2.4m long triple skin flue (flue and casings). Refer to SELECTIONS.

Components

2.2 ESCEA OUTDOOR WOOD FIRE FLUE KIT FOR EK SERIES

Flue to comply with AS/NZS 2918 and Escea Installation Instructions. Minimum 3.6m length from the top of the firebox. Refer to SELECTIONS for options.

3 EXECUTION

Conditions

3.1 GENERALLY

Carry out the whole of this work to the requirements of AS/NZS 2918.

3.2 CO-ORDINATE SERVICES

Co-ordinate and co-operate with other sub-trades to avoid any conflict with the installation.

Application

3.3 HANDLE AND STORE

Handle and store units, 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 according to manufacturer's instructions.

3.4 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. Provide regular maintenance of outdoor products to prevent corrosion.

Installation

3.5 SEISMIC RESTRAINT - ESCEA

Escea Wood Fires are to be securely restrained through the base of the appliance into a structural floor or base component using mechanical fixings. Fire to be installed onto a continuous base. Refer to the requisite Escea Installation Manual.

3.6 INSTALL OUTDOOR WOOD FIRE

Install Escea EW5000 and EK Series outdoor wood fire complete with the necessary fittings in non-combustible enclosure to Escea installation requirements.

3.7 INSTALL ESCEA OUTDOOR WOOD FLUE

Install Escea EW5000 and EK Series Outdoor Wood Fire flue system, in the selected location, complete with the necessary fittings and flashings to Escea installation requirements and *AS/NZS 2918*.

Completion & Commissioning

3.8 COMPLETION MATTERS

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

4 SELECTIONS

For further details on selections go to www.escea.com/nz or www.sparthermfires.co.nz Substitutions are not permitted to the following, unless stated otherwise.

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Outdoor wood fires

4.1 ESCEA EK1250 OUTDOOR FIREPLACE KITCHEN

Location:	Built-in installation
Manufacturer:	Escea
Model:	EK1250 Outdoor Fireplace Kitchen
Material:	Mild steel sheet and stainless steel
Colour:	Metallic black
Fascia style:	Frameless
Appliance size:	1296mm width x 1543mm height x 655mm depth
Viewable area:	1211mm width x 628mm height
Fuel type:	Wood/charcoal briquettes
Installation method:	Standalone installation
Flue kit:	EK Series to suit standalone installation

Components

4.2 ESCEA EK SERIES CONCRETE CAVITY FLUE KIT

Location/type:	Chimney cap
Manufacturer:	Escea
Model:	EK Series Concrete Cavity Installation Flue Kit
Flue:	1200mm length x 350mm ∅ stainless steel
Flue casing:	1200mm length x 450mm ∅ galvanized steel
Cowl:	350mm ∅ stainless steel anti-downdraught cowl
Flue Dropbox:	Required
Flue kit length:	3.6m
Flue casing:	550mm ∅ (required)

4.3 CHIMNEY FLUE FLASHING

Size:	To suit flue material
Material:	Refer to drawings

Accessories

4.4 ESCEA EW5000 SERIES PIZZA OVEN

Manufacturer:	Escea
Model:	EW5000 Pizza Oven Accessory
Quantity:	1

4.5 ESCEA EK SERIES WEATHER COVER

Manufacturer:	Escea
Model:	EK Series Weather Cover
Material:	Stainless steel
EK series model:	EK1250

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7556W RINNAI WARMINGTON SOLID FUEL FIRES

1 GENERAL

This section relates to the supply and installation of **Warmington** solid fuel burning appliances, for space heating and outdoor cooking.

Documents

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:

NES	Resource Management (National Environmental Standards for Air Quality) Regulations 2004
ECAN	Environment Canterbury
CM1	ECAN Canterbury Method 1 for testing of ultra-low emission wood burners
NCC	Nelson City Council
NZHHA	New Zealand Home Heating Association
SFAIT	Solid Fuel Appliance Installation Technician

The following definitions apply specifically to this section:

Open fire	Traditional type of fire, prefabricated or in-situ, with one side (or more) open and no or little air flow control. Generally restricted to properties ≥ 2 ha (4.94 acres)
Open fire with glass front	Similar to the open fire, usually prefabricated, but with a glass front(door) and some air flow control. May or may not be tested (to AS/NZS 4012 & AS/NZS 4013 - emissions ≤ 1.5 g/kg, efficiency ≥ 65%)
Solid fuel burner (tested - non-NES compliant)	Purpose made, prefabricated, fully enclosed with airflow control (& possibly other features). Tested to AS/NZS 4012 & AS/NZS 4013. Generally restricted to properties ≥ 2 ha (4.94 acres)
Solid fuel burner (NES compliant)	Purpose made, prefabricated, fully enclosed with airflow control (& possibly other features). Tested to demonstrate compliance with the NES standards (to AS/NZS 4012 & AS/NZS 4013, emissions ≤ 1.5 g/kg, efficiency ≥ 65%). For properties of any size (subject to Local Authority rules)
Solid fuel burner, low emission (LEB)*	Generally has only one air flow control. Can not be banked down overnight. Tested to AS/NZS 4012 & AS/NZS 4013 with emissions ≤ 1 g/kg, efficiency ≥ 65%. (Note: NES emissions ≤ 1.5 g/kg). For rural or urban properties of any size
Exterior fire	An appliance intended to be installed in a fireplace or a suitably flued enclosure outdoors

* ECAN classification.

1.2 DOCUMENTS REFERRED TO

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

NZBC B1/AS3	Small chimneys
NZBC B2/AS1	Durability provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
AS/NZS 2918:2001	Domestic solid fuel burning appliances - Installation
AS/NZS 3500.4	Plumbing and drainage - Heated water services

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AS/NZS 3869	Domestic solid fuel burning appliances - Design and construction
AS/NZS 4012	Domestic solid fuel burning appliance - Method for determination of power output and efficiency
AS/NZS 4013	Domestic solid fuel burning appliances - Method for determination of flue gas emission
AS 4558 (AG 108)	Decorative gas log and other fuel effect appliances

Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (NES)
Plumbers, Gasfitters and Drainlayers Act 2006
ECAN Canterbury Method 1 for testing of ultra-low emission wood burners (CM1)

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Warmington product catalogue, specifications and installation details.

Manufacturer/supplier contact details:

Web:	https://rinnai.co.nz/
Email:	info@warmington.co.nz
Telephone:	09 273 9227

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide the material manufacturer's/supplier's warranty :

5 year	Warmington Firebox warranty and associated flue kit

- Provide this warranty on the manufacturer/supplier standard form (if unavailable use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of Practical Completion of the contract works.

Warranty terms and conditions depend on product type and location - contact Warmington for details.

Refer to the GENERAL section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER

Provide the installer's warranty for the installation work, to the project administrator.

1 year	For installation of Warmington solid fuel fire appliance and associated flue kit

- Provide this warranty in the approved installer's standard form (if unavailable use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Warranty to commence from the date of Practical Completion of the contract works.

Refer to the GENERAL section 1237 WARRANTIES for additional requirements.

Requirements

1.6 NO SUBSTITUTIONS

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

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Installation to be carried out by a certified Warmington installer, an LBP registered plumber or an Approved NZHHA Installation Technician. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

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

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- Provide the Warmington operation and maintenance instructions to the owner.

Provide this information prior to Practical Completion.

1.9 DURABILITY

Solid fuel-burning appliances to be installed to comply with NZBC B2/AS1 Table C.1.1.1.

Compliance information

1.10 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicator approval certificate from the manufacturer / importer / distributor
- Manufacturer / supplier warranty
- Installer / applicator warranty
- Producer Statement - Construction (PS3) from the applicator / installer
- Producer Statement - Construction Review (PS4) from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

1.11 COMPLIANCE WITH STANDARDS

Solid fuel-burning appliances installed to AS/NZS 2918. Where required by the regulatory authority, the appliance is to comply with the requirements of AS/NZS 4012 and AS/NZS 4013 or CM1, and be fitted with a compliance plate fixed to the appliance and marked 'Tested to AS/NZS 4012 and AS/NZS 4013' or 'Tested to CM1'.

Quality control and assurance

1.12 INSPECTIONS

On completion of installation	To AS/NZS 2918, AS/NZS 4012 and AS/NZS 4013 Tested for leakage and proved to be fully operational.

2 PRODUCTS

Indoor Fires

2.1 FREESTANDING LOW EMISSION BURNER (LEB)

Solid fuel heating appliance comprising of free standing base, firebox, firebricks, door, outer casing to firebox with hearth, wetback, and complete with stainless steel flue, shield, outer shield, ceiling plate and ceiling sleeve, flashing and weather cowl on some appliances. Caitec™ draws air from an external air source to ensure that the burner has pre-heated combustion air maximizing efficiency while maintaining the home at constant pressure equilibrium, reducing the risk of back drafting.

Designed and manufactured to AS/NZS 3869 Domestic solid fuel burning appliances - Design and construction and tested to AS/NZS 2918.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE AND HANDLING

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

3.2 ROUTINE MATTERS

Refer to the GENERAL section 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION / APPLICATION REQUIREMENTS

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

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Installation

3.4 STANDARDS AND TOLERANCES

Refer to the GENERAL section 1270 CONSTRUCTION for general requirements.

Refer to the MANUFACTURER'S DOCUMENTS for product-specific requirements and tolerances.

3.5 INSTALLATION - FREE STANDING WOOD BURNING APPLIANCE

Install the wood burner to AS/NZS 2918. Refer to Warmington installation instructions for specific model details. For free-standing appliances, bolt base down securely to floor to Warmington installation instructions. Commission unit to ensure installation complies with Warmington installation instructions. External requirements to AS/NZS 2918.4.9.

Completion & Commissioning

3.6 COMPLETION - TESTS & CERTIFICATION

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

4 SELECTIONS

For further details on selections refer to www.warmington.co.nz.
Substitutions are not permitted to the following, unless stated otherwise in writing.

Indoor Fires

4.1 FREESTANDING LOW EMISSION BURNER (LEB)

Location:	Loggia
Brand:	Warmington
Model:	Studio Stove
Authorisation number:	160215 Ecan
Flue:	Supplied flue kit



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7701 ELECTRICAL BASIC

1 GENERAL

This section relates to the wiring for domestic and small scale commercial installations, including:

- power
- lighting
- electrically-powered fittings

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

AFDD	Arc Fault Detection Device
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

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F6/AS1	Visibility in escape routes
NZBC G4/AS1	Ventilation of buildings
NZBC G9/AS1	Electricity
AS/NZS 1125	Conductors in insulated electric cables and flexible cord
AS/NZS 1768	Lightning protection
AS/NZS 2201.1	Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance
AS 2293.1:2005	Emergency escape lighting and exit signs for buildings - System design, installation and operation
AS 2293.3:2005	Emergency escape lighting and exit signs for buildings - Emergency escape luminaires and exit signs
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3008.1.2	Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions
AS/NZS 3100	Approval and test specification-general requirements for electrical equipment
AS/NZS 3112	Approval and test specification - Plugs and socket-outlets
AS/NZS 3113	Approval and test specification - Ceiling roses
AS/NZS 3190	Approval and test specification - Residual current devices (current-operated earth-leakage devices)
AS/NZS 3439.3	Low-voltage switchgear and controlgear assemblies - Particular requirements for low-voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards

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NZS 4514	Interconnected smoke alarms for houses
NZS 4246	Energy Efficiency - Installing bulking thermal insulation in residential buildings
AS/NZS 5000.2	Electric cables - Polymeric insulated - for working voltages up to and including 450/750v
AS/NZS 60335.1	Household and similar electrical appliances - Safety - General requirements
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance.
AS/NZS 61439.3	Low-voltage switchgear and controlgear assemblies - Part 3: Distribution boards intended to be operated by ordinary persons (DBO).
IEC 61643	Components for low voltage surge protection devices

Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).
TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services

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

Warranties

1.3 WARRANTY

Warrant the complete electrical installation under normal environmental and use conditions against failure of materials and execution.

1 year:	Warranty period

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

Requirements

1.4 COMPLY

Comply with the Electricity (Safety) Regulations 2010, AS/NZS 3000, AS/NZS 3008.1.2, and TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 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.

1.7 CONFIRM SELECTIONS

Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.

1.8 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.

1.9 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.

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1.10 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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Quality control and assurance

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2 PRODUCTS

2.1 MAINS SUPPLY

Tough plastic sheathed neutral screened cable to AS/NZS 5000.2 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

2.2 CABLES

Tough plastic sheathed copper conductors to AS/NZS 5000.2, stranded above 1.0mm², and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the MCB rating, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.5mm² on 10 amp MCBs
Lighting circuits:	Commercial: 1.5mm² on 16 amp MCBs
Power circuits:	2.5mm² on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
	2.5mm² on 16 amp MCBs for domestic insulated construction, or filled cavity
	2.5mm² on 20 amp MCBs for unenclosed or unfilled cavity construction
	2.5mm² on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Hot water cylinder circuits:	Single phase: 2.5mm² on 20 amp MCBs
Range/oven/hob circuits:	Single phase: 6mm² high temperature cable on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions that may be above 35°C (roof spaces above insulation etc).

2.3 METER BOX

Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.

2.4 DISTRIBUTION BOARD

Flush surface mount boards manufactured to AS/NZS 3439.3 , or AS/NZS 61439.3, and installed in accordance with AS/NZS 3000. Manufactured from engineering grade resin with a glow wire rating of 850°C, complete with neutral and earth busbars, and insulated comb phase bar. Distribution boards to have 20% spare capacity for future additions and alterations.

2.5 CIRCUIT PROTECTION

General requirements including main switch 63A or 100A. Residual current protection 30mA, ensure RCCBs' meet Type A and comply with AS/NZS 3190. MCBs to 4.5kA or 6kA rated.

2.6 SURGE PROTECTION

Protection for the homes appliances with IEC 61643 Class ll surge protection devices fitted to the switchboard. For variable electronic equipment fit IEC 61643 Class lll surge protection to switched socket outlets.

2.7 WALL BOXES

Standard grid size or equivalent to be manufactured from plastic or metal, with 2 or more gang size to be metal with steel inserts for accessory securing screws. Screw fixed.

2.8 SWITCH UNITS

Single pole switches to be 16 amp minimum rated, double pole or intermediate to be 16 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units.
Label all switch units that control electrical equipment or special lighting circuits by proprietary engraved switch mechanisms where applicable.
Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units and 2 way units.
Refer to SELECTIONS.

2.9 SWITCHED SOCKET UNITS

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10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters and manufactured to AS/NZS 3100, AS/NZS 3112 and AS/NZS 3113, single or multi gang as detailed.

2.10 SWITCH UNITS - PERSON WITH DISABILITIES

In addition to clause SWITCH UNITS above, units shall comply with NZBC G9/AS1, 2.0.1.b) and d). Refer to SELECTIONS.

2.11 CEILING ROSES

White plastic mounting base with screwed cover, manufactured to AS/NZS 3113. Terminal type. Suspended fittings to have sheathed round flexible cord to AS/NZS 3008.1.2. Refer to SELECTIONS.

2.12 HOT WATER SYSTEM SWITCH

One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

2.13 BATTEN HOLDERS

Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.

2.14 FIRE & SMOKE ALARM SYSYEM

Refer to SELECTIONS.

2.15 DOOR BELL SYSTEM

Complete with transformer for mounting on distribution board.

2.16 LIGHT FITTINGS

Fluorescent and High Intensity Discharge fittings with low loss control gear and power factor corrected to 0.95 minimum. Control gear suitable for dimming if this is required. All fittings complete with lamps; Incandescent GLS lamps pearl, coiled-coil 230v rated, bayonet cap; Fluorescent triphosphor 2700K; CFL; halogen ELV 12v dichroic reflector with cover glass unless detailed otherwise; integral/non-integral LEDs, reflectors, lenses, heatsinks and drivers - 3,000K to 4,000K, CRI >80, L70.

2.17 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 RECESSED LIGHT FITTINGS - NON-RESIDENTIAL

Non-residential recessed light fittings to AS/NZS 3000, 4.5.2.3.5:

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

Refer to clause INSULATION & GENERAL CLEARANCES for clearances from insulation and other elements.

2.19 EMERGENCY LIGHT FITTINGS

Emergency escape lighting and exit signs for buildings to AS 2293.3. Exit, recessed, ceiling or wall mounted. Refer to SELECTIONS.

2.20 SPACE HEATERS

Fixed wired room heaters radiant or convector, and compliant with AS/NZS 60335.1. Flush or surface mount, fitted with safety cut-outs.

2.21 EXHAUST FANS

Ceiling, wall or duct mounted exhaust fans for ventilation to NZBC G4/AS1, and compliant with AS/NZS 60335.1.

2.22 HEATED TOWEL RAILS

Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with AS/NZS 60335.1, scratch resistant powdercoated or chrome finish.

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2.23 EXTERIOR SWITCHES AND SWITCHED SOCKET UNITS

Using materials with superior UV protection, impact strength, and addition chemical resistance when compared with interior polycarbonate fittings. Weather protected, switches and sockets to IP56 minimum. Sockets fitted with safety shutters behind socket pins, and all products able to be padlocked off or on.

2.24 EXTERIOR LIGHT FITTINGS

Using materials with superior UV protection, impact strength, and addition chemical resistance.

Weather protection minimums:

- IP54 for protected areas under eaves or verandahs etc.
- IP55 for exposed areas not subject to pressurised water (hoses).
- IP66 for areas subject to pressurised water or major splashing.
- IP67 for inground lights
- IP68 for submerged pool fittings

Electrical automation system

2.25 ELECTRICAL AUTOMATION SYSTEM

Electrical automation system designed to enable if required:

- Lighting - automated control and dimming timer control.
- Heating including heated towel rails and ventilation systems.
- Security - programmable to simulate lights and other devices to give appearance home is occupied - ability to interface with security system and smoke detectors to activate lights.
- Energy efficiency - automatically switch circuits off when not required or on during low tariff times.
- Appliances.
- Spa pools.
- Irrigation systems.

Security system

2.26 CONTROL PANEL

Control panel system with a minimum of one installer code, one master code, 6 zones minimum and 6 user codes. The installer to select codes to suit installation.

2.27 DETECTORS

There are two main types of detectors:

- Standard passive infrared sensors: Install in stable environments with no wind flow and no direct bright sunlight.
- Passive infrared/ microwave sensors: Install in area where environmental stability is an issue.

2.28 AUDIBLE DEVICES

Internal sirens can be either a 12V Piezo Siren or a Horn speaker with a sound pressure level of no less than 95dB.

External siren can be either a stainless steel design or have hardened plastic casing. Both designs to be fully weatherproof but not limited to IP66 Rating. The siren box to contain a strobe diffuser in either blue or red. The siren shall contain a horn speaker, 12v speaker or an electronic siren. The external siren box to have both a cover and rear wall tamper mechanism.

2.29 CABLING

Security alarm wiring to NZS/AS 1125 for cables.

Security alarm wiring to be multi stranded and not single stranded, minimum 0.5mm².

2.30 PERIPHERALS

Fit anti-tamper devices to detectors, control panels and equipment housings, programmed to give a tamper indication when the system is unset and a tamper alarm when the system is set.

Standard keypad manufactured of moulded hardened plastic with either a LED or LCD screen, to match the style of the wiring accessories in diameter, colour and aesthetics.

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2.31 COMMUNICATIONS

Digital dialler to be built into the PCB of all control panels, with the options for both monitoring and remote dial in windows based software. Digital dialler to comply with all the industry standard communication formats including contact I.D and SIA, and NZ Telepermit certification.

Remote software able to upload / download programming changes and or history events and change status of the security alarm with the ability to be turned off if required.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

Installation

3.3 MAIN SUPPLY

Lay underground mains to the NUO requirements. Excavate trench, install cable and marker tape and backfill.

3.4 METER BOX

Fit to meter box manufacturer and Electricity Retailer requirements. Recess into external wall in sheltered area and flash to weatherproof to NZBC E2/AS1, Figure 9.1.8.3B: General meterbox and similar penetrations. Arrange for meter installation and connection.

3.5 DISTRIBUTION BOARD

Fit to AS/NZS 3000 and board manufacturer requirements. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

3.6 CIRCUIT PROTECTION

Install MCBs at distribution board to AS/NZS 3000 to protect each final sub circuit.

3.7 EARTHING CONDUCTIVE STRUCTURE & MATERIALS

Earth all at risk structural metalwork and conductive building materials to AS/NZS 3000, 5.4.6, and the Electricity (Safety) Regulations 2010.

If they form part of the building, this includes:

- Structural steel frames or members
- Light steel framing
- Exposed conductive materials, like metal sink/tub or vanity benches etc, with attached electrical units or equipment

3.8 EQUIPOTENTIAL BONDING

Equipotential Bond extraneous conductive parts together and to the electrical installation earthing system to AS/NZS 3000, 5.6, and the Electricity (Safety) Regulations 2010 and the fitting manufacturer requirements.

If they form part of the building, this includes:

- Conductive water piping (including tap etc) and exposed related connected conductive surfaces (like metal sink benches or metal cladding etc). Not required where isolated by non-conductors (plastic pipe etc) from the mass of earth.
- Other conductive piping (not earthed by other means) and exposed related connected conductive surfaces.
- Concrete reinforcing - for floor or wall forming part of a room with a shower or bath, or the shell and surround of a swimming/spa pool
- Built-in Swimming pool and spa pool - exposed conductive parts of electrical equipment, as well as exposed conductive, fixtures, fittings and pool structures within 1.25m of pool edge

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3.9 MAIN EARTH

Provide a plastic toby box to contain and protect the earth electrode. Fix the connecting earth wiring closely and securely against wall surfaces.

3.10 ARC FAULT DETECTION DEVICE (AFDD)

To AS/NZS 3000 clause 2.9, AFDD on all final sub-circuits not exceeding 20A.

3.11 EARTH LEAKAGE PROTECTION

Install RCD protection to AS/NZS 3000.

3.12 SURGE PROTECTION

Install surge protection devices to manufacturer requirements and in accordance with AS/NZS 3000 and AS/NZS 1768. When fitting IEC 61643 Class ll protection at the switchboard, protect the device by a dedicated MCB.

3.13 RCD - RESIDENTIAL INSTALLATIONS

Install 30mA RCD protection at the switchboard for all final sub circuits to control outlets and lighting except for fixed or stationary cooking equipment, to AS/NZS 3000.

3.14 RCD-AFDD COMBINED - RESIDENTIAL INSTALLATIONS

Install a 30mARCD - AFDD combined device (RCD Type II) at the switchboard for all final sub circuits not exceeding 20A, to control and protect outlets and lighting to AS/NZS 3000, (2018, 2.6 & 2.9). Protect over 20A to 32A final sub circuits with separate RCD and to AS/NZS 3000.

3.15 RCD - 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 RCD - SPECIFIC INSTALLATIONS

Install fixed wired RCD protected outlets (SRCD) in the following higher risk areas:

- Wet areas: bathrooms, laundries, kitchens.
- Near pools and water features.
- Where intended for use with cleaning equipment.
- Hand-held tools subject to movement in use, i.e. work-shops, garages.

3.18 SET-OUT

The position of outlets and equipment shown on drawings is indicative of requirements. Confirm documents and site conditions are not in conflict with other services or features. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

3.19 CABLING

Install wiring systems to AS/NZS 3000. All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.

3.20 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

Mount flush in cavity construction size to fit products selected. Fix vertically mounted wall boxes to studs. Screw fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

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3.22 SWITCHES AND SWITCHED SOCKET UNITS

Fit all switch units and socket units to the manufacturers requirements with heights and mounting directions as indicated in SELECTIONS.

3.23 SWITCHES AND SWITCHED SOCKET UNITS - FOR PERSON WITH DISABILITIES

Fit all switch units and socket units to the manufacturers requirements with heights (& mounting direction) and location to NZBC G9/AS1 and SELECTIONS.

3.24 ISOLATING SWITCHES

Locate isolating switches in positions as confirmed by the owner, when not specifically shown on the drawings.

3.25 LIGHT FITTINGS

Install light fittings in locations and at heights specified and confirmed by the owner, in accordance with the fitting manufacturer requirements.

3.26 EXTRA LOW VOLTAGE LIGHTING

Use electronic, transformers (halogen) or drivers (LED) for ELV lamps, one transformer/driver per lamp. Locate to manufacturer requirements and as close as practicable to the lamp. Ensure transformers/drivers and rear of light fittings are adequately ventilated and appropriately clear of any building elements, to AS/NZS 3000.

3.27 INSULATION & GENERAL CLEARANCES

Some electrical and mechanical services, and equipment may need to have a gap to insulation and some building elements. The gaps should be to the NZS 4246 based tables below or to the equipment manufacturers requirements if they require larger gaps. Smaller gaps to manufacturers requirements can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings).

Installed gap not to be more than 50mm bigger than the required gap.
The following tables are subject to:

- The requirements of NZS 4246 for insulation.
- The insulation is exposed to the source of heat or equipment etc.
- Insulation, has passed the needle flame test to AS/NZS 60695.11.5 and/or is non-combustible.
- Gaps to hot surfaces may have to be increased with non-compliant insulation and plastic/polymeric type insulation (EPS, XPS, PIR, etc), check with insulation manufacturer.
- Gaps to hot surfaces may be able to be reduced with non-combustible insulation, check with equipment manufacturer.
- "Secure insulation" if required means, glue, mechanical fix, or provide fixed barriers at gap edge of insulation to hold in place. Rigid or semi rigid insulation may only need a firm friction fit (secure loose pieces).
- Loose fill insulation will require fixed barriers to NZS 4246 to maintain gaps.

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3.28 LIGHT FITTINGS TO INSULATION

Type of fitting	Minimum insulation clearance	Comments
Recessed, marked NON-IC, or unmarked	100mm (increase if over 100W)	To NZS 4246. NON-IC fittings and new or old unmarked & unknown fittings, and/or insulation. Insulation to be secured.
Recessed, CA 80, CA 90, or CA 135.	Abut fittings	To NZS 4246. Do not cover the fittings.
Recessed, IC, IC-F, or IC-4.	Abut & cover fittings.	To NZS 4246. Ensure insulation complies.
Recessed, marked Do-Not-Cover	Manufacturer clearances	To NZS 4246. Do not cover the fittings.
Independent control gear	Place on top of insulation & 50mm from fittings	To NZS 4246. If not on top allow 50mm clearance to insulation, do not cover. Includes, transformers, ballasts & drivers etc.
Surface fittings not exposed to insulation	Nil	To NZS 4246. Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings.
Surface fittings & exposed insulation	200mm	To NZS 4246. This is exposed insulation to any part of the exposed fitting & bulb/tube (e.g. exposed light in an unlined basement). Insulation to be secured.

3.29 RECESSED LIGHT FITTINGS TO COMBUSTIBLE BUILDING ELEMENTS

Type of recessed fitting	Minimum building element clearance **	Comments
Marked NON-IC, or unmarked, ≤100W	100mm, vertical & horizontal	To AS/NZS 3000:2018
Marked NON-IC, or unmarked, >100W	200mm, vertical & horizontal	To AS/NZS 3000:2007
CA 80, CA 90 or CA 135	100mm, vertical & horizontal	To AS/NZS 3000:2018
IC, IC-F or IC-4	100mm, horizontal NA, vertical	To AS/NZS 3000:2018 To be NA vertical, fitting must be covered by insulation. If not covered use 100mm clearance.
Marked Do-Not-Cover	100mm, vertical & horizontal	To AS/NZS 3000:2018. Manufacturer clearances if greater than 100mm

** Combustible building elements exclude metal elements, but include timber framing or other timber based elements, and normal linings etc. Highly flammable materials & those likely to melt will need more clearance.

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3.30 INBUILT RECESSED HOT APPLIANCES TO INSULATION

Appliance	Minimum insulation clearance	Comments
Electrical heaters	Manufacturer clearances	To NZS 4246.
Electrical heaters	100mm	Manufacturer clearances not known. To NZS 4246. Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.
Heat producing appliances & equipment	Manufacturer clearances	To NZS 4246.
Heat producing appliances & equipment	50mm	Manufacturer clearances not known. To NZS 4246. Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.

Note - Appliances and equipment excludes cables, junction boxes, light switches & power sockets etc

3.31 EXTRACTS, VENTS & ROOF UNDERLAY TO INSULATION

Appliance	Minimum insulation clearance	Comments
Ducted fan motors	50mm	To NZS 4246. Includes ducted rangehoods, extractors etc. Applies to the motor unit and electrical enclosures (not the ducts).
Ducted fan ducts	Abut	To NZS 4246. Excludes motor unit and electrical enclosures.
Unducted fan motors usually discharging to ceiling space	200mm	To NZS 4246. Includes unducted, rangehoods, extractors etc, discharging into roof space. To prevent debris falling into motor. Clearance may be able to be reduced, by providing a fixed barrier around the vent.
Roofing material/underlay	25mm	To NZS 4246. Maintain clearance from underside of roofing or flexible roofing underlay, to prevent wicking.

3.32 EMERGENCY LIGHTING

Emergency escape lighting and exit signs for buildings to AS 2293.1 and NZBC F6/AS1. Fit emergency light fittings to manufacturer specifications. Refer to plans for position of fittings.

3.33 ELECTRIC HOT WATER SYSTEM

For storage heaters, wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end. Hot water cylinders, thermostats and 3000 watt element supplied and fitted under the hot and cold water system section.

3.34 SPACE HEATERS

Install to the heater manufacturer requirements, and to AS/NZS 3000. Fit neatly and without damage to surrounding finishes. Ensure control switches and thermostats are fitted to appliance, or otherwise connect to a control switch located adjacent to the heater and a remote thermostat.

3.35 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.

3.36 BATHROOM ELECTRICAL FIXTURES

Install all electrical fixtures. Connect the following bathroom and toilet electrical items:

- Heated towel rails: Install to manufacturers requirements and installed in accordance with AS/NZS 3000
- Mirror demisters: Locate centrally above the wash hand basin(s). Connect wiring to room

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lighting unless specified otherwise.
- Exhaust fans: Install exhaust fans to manufacturer requirements. Installed in accordance with AS/NZS 3000 and NZBC G4/AS1.

3.37 OUTDOOR/EXTERIOR SERVICES

Install all wiring systems in accordance with AS/NZS 3000 and in accordance with the manufacturer recommendations:

Provide circuits and connections for exterior installations, including ELV 12/24 Volt path lighting and electronic irrigation systems. Refer to drawings for connection points. Where underground, ensure appropriate protection, such as thickness of sheathing, conduit, depth of cabling, and proximity to other services.

Use the appropriate rated fittings for power control and power supply. Weather protected switches and sockets to IP56. Install to manufacturer specifications using recommended fittings and sealants to maintain the products integrity.

Earth leakage protection to be provided for in areas where there is increased risk to human safety in the form of either RCDs at the distribution board, or socket outlet. RCDs are recommended for visible awareness of protection.

3.38 ELECTRICAL AUTOMATION SYSTEM

Fit distribution cabinet in wall, cut-out to finish flush with the wall surface, or surface mounted. Configure installation to manufacturer instructions. Provide adequate user training and operating manual to the owner.

3.39 LABELLING

Include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit.

Completion & Commissioning

3.40 COMPLETION MATTERS

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

4 SELECTIONS

Selections

All selections to be confrimed by owners

4.1 INTERIOR SWITCHES AND SWITCHED SOCKET UNITS - PERSONS WITH DISABILITIES

In addition to clause INTERIOR OUTLETS, unit set out shall comply with NZBC G9/AS1, 2.0.1.

Item	Height to centre of unit	Orientation	Location
Switch	1000mm above FFL	vertical	Refer to drawings
Switch narrow	1000mm above FFL	vertical	Refer to drawings
Socket outlet	600mm above FFL	horizontal	Refer to drawings
Socket outlet	150mm above FFL	horizontal	Refer to drawings

Note:
- Light switches to be horizontally aligned with door handles.
- Bedrooms to have at least one light switched from bedside.
- Socket outlets shall be at least 500mm from internal corners.

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