

Kawarau Heights - Lot 67

Project Specification

55 Kawarau Heights Boulevard, Kawarau Heights, Queenstown, New Zealand
Sanderson Group
Project Ref: KH67
Date: 10 November 2026

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

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1013 DOCUMENT CONTROL

1 DOCUMENT CONTROL

Document Control

1.1 PREPARED BY

Company:	Sanderson Group Limited
Postal Address:	PO Box 15083 Tauranga 3144
Street Address:	*44 Brown Street*
City:	Tauranga 3110
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1.2 DOCUMENT DETAILS

Project Name:	23 Kawarau Heights Boulevard
Project Number:	KH51
Client:	Queenstown Commercial Limited
Client Contact:	andrew@sandersongroup.co.nz

1.3 REVISION CONTROL

Issue:	Building Consent
Revision:	01
Issued to:	QLDC for Queenstown Commercial Limited
Date of Issue:	
Reviewed by:	

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1220 PROJECT

1 GENERAL

This general section describes the project including:

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

1.1 READ ALL SECTIONS TOGETHER

Read all general sections together with all other sections.

1.2 DESCRIPTION OF THE WORK

Construct a three bedroom home with double garage. The house is constructed with a raft slab, timber framed walls, and timber gable style truss. Claddings are predominantly cedar weatherboard & Sto AAC Panel with some schist at the entrance.

1.3 RESTRICTED BUILDING WORK

This project includes Restricted Building Work.

Design Construction Safety

1.4 DESIGN CONSTRUCTION SAFETY

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

Principal's Health & Safety Matters

1.5 PRINCIPAL'S SITE HEALTH AND SAFETY PLAN

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

Site

1.6 SITE

As shown on drawing: Site Plan

1.7 LEGAL DESCRIPTION

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

Site environment - Durability

1.8 EXPOSURE ZONE

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

The site zone is: B

Site environment - Wind

1.9 WIND DESIGN PARAMETERS - NON SPECIFIC DESIGN

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

Building wind zone Very High (refer to NZS 3604, table 5.4)

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Site environment - Seismic

1.10 EARTHQUAKE ZONE - NON SPECIFIC DESIGN

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

The earthquake zone 3
is:

Archaeological discovery

1.11 REPORT FINDING ANY ANTIQUITIES AND ITEMS OF VALUE

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

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

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



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1232S1 EXPLANATION OF SCHEDULE SECTIONS

1 GENERAL

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

1.1 EXPLANATION OF SCHEDULE SECTIONS

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

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

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

1.2 SCHEDULE SECTIONS

The following Schedule sections are contained within the specification:

1235S1	Schedule of Shop Drawings
1238S1	Schedule of As Built Documentation
1239S1	Schedule of Operation & Maintenance Info
1270S1	Schedule of Samples & Prototypes
1270S2	Schedule of Spares & Maintenance Products
1278SR	Schedule Of Slip Resistance Testing



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1233 REFERENCED DOCUMENTS

1 GENERAL

1.1 REFERENCED DOCUMENTS

Throughout this specification, reference is made to various New Zealand Building Code Compliance Documents (NZBC __), acceptable solutions (__ AS_) and verification methods (__ VM_) for criteria and/or methods used to establish compliance with the New Zealand Building Code.

Reference is also made to various standards produced by Standards New Zealand (NZS, AS/NZS, NZS/AS), overseas standards and to listed Acts, Regulations and various industry codes of practice and practice guides. The latest edition (including amendments and provisional editions) at the date of this specification applies unless stated otherwise.

It is the responsibility of the contractor to be familiar with the materials and expert in the techniques quoted in these publications.

Documents cited both directly and within other cited publications are deemed to form part of this specification. However, this specification takes precedence in the event of it being at variance with the cited documents.

1.2 DOCUMENTS

Documents referred to in the GENERAL sections are:

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

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

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

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1235 SHOP DRAWINGS

1 GENERAL

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

1.1 SCHEDULE SECTION

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

1.2 SHOP DRAWING FORMAT

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

1.3 PROGRAMME FOR SHOP DRAWINGS

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

1.4 COMMUNICATION WITH SHOP DRAWING DETAILER

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

1.5 CONTRACTOR COORDINATION OF SHOP DRAWINGS

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

1.6 COORDINATION WITH SITE MEASURE

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

1.7 SHOP DRAWING REVIEW

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

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

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

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

1.8 RESPONSIBILITY

Review of shop drawings does not relieve the contractor of responsibility for the correctness of the shop drawings, site dimensions, the overall design, coordination and performance, or for ensuring the work is carried out in compliance with the contract documents. It does not remove the need for the contractor to comply with the stated requirements, details and specifications of the manufacturers and suppliers of individual components, materials and finishes. Review cannot be construed as authorising departures from the contract documents.

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1.9 RESUBMISSION OF SHOP DRAWINGS

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

1.10 WORK MAY PROCEED

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

2 SELECTIONS

2.1 SHOP DRAWING FORMAT

Submit the shop drawings in the following format

	Format/Size
Hardcopy	Not required
Electronic copy	PDF
CAD file	.dxf

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1235S1 SCHEDULE OF SHOP DRAWINGS

1 GENERAL

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

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

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

Shop drawings

1.2 SHOP DRAWINGS

Refer to the following sections:

3155MR	MAXRaft Floor System
3811	Prefabricated Structural Timber Framing
7545	Underfloor Heating

1.3 SHOP DRAWINGS - ADDITIONAL ITEMS

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



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1238 AS BUILT DOCUMENTATION

1 GENERAL

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

1.1 SCHEDULE SECTION

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

1.2 AS BUILT DOCUMENT REQUIREMENTS

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

As built drawings recording:

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

Records of:

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

1.3 PROVISIONAL AS BUILT DOCUMENTS

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

1.4 AS BUILT DOCUMENT REVIEW

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

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

1.5 COMPLETE AS BUILT DOCUMENTS

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

1.6 AS BUILT DOCUMENTS - ELECTRONIC COPY

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

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

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1238S1 SCHEDULE OF AS BUILT DOCUMENTATION

1 GENERAL

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

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

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

As built documents

1.2 AS BUILT DOCUMENTS

Refer to the following sections:

2242	Backfilling
7211	Gas System Utility Network
7545	Underfloor Heating

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:

4271	Natural Stone Veneer Cladding
4521AR	APL Residential Aluminium Windows & Doors
4555	Garage Doors
4610AG	AGP Glazing Residential
5113G	GIB Plasterboard Linings
5517PP	Prime Panels Benchtops
6700R	Resene Painting General
6734D	Dryden WoodOil Migrating Non-Filming Timber Protector
7123	Hot & Cold Water System
7126RH	Rinnai Hot Water Systems
7545	Underfloor Heating
7555E	Escea Gas Fires

Operation and maintenance manuals

1.3 OPERATION AND MAINTENANCE MANUALS

Refer to the following sections:

7421	Sanitary Systems

Maintenance contract proposals

1.4 MAINTENANCE CONTRACT PROPOSALS

Refer to the following sections:

4811S	Sika Sealants

Additional Items

1.5 ADDITIONAL ITEMS

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

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1240 ESTABLISHMENT

1 GENERAL

This general section relates to site establishment including:

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

Notices and approvals

1.1 STATUTORY OBLIGATIONS

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

1.2 BUILDING CONSENT AUTHORITY AND NETWORK UTILITY APPROVALS

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

1.3 NOTIFY NETWORK UTILITY OPERATORS

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

Inspections

1.4 CARRY OUT INSPECTIONS

~

Site preparation

1.5 SITE ACCESS

Access to the site is limited to: entry

1.6 WORKING AREA

Limited to the following designated working areas on the site:
Within specific lot

1.7 SITE AND SOIL SURVEYS

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

1.8 GROUND CONDITIONS

Refer to the geotechnical / soils report included with this specification.

Temporary construction

1.9 TEMPORARY BUILDINGS

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

1.10 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.

1.11 SITE - SAFETY SIGNAGE

Provide hazard board and other safety signage as required.

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1.12 SITE - PROJECT SIGN

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

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

First aid

1.13 FIRST AID EQUIPMENT

Provide first aid equipment.



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1256 WASTE MANAGEMENT

1 GENERAL

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

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

1.1 RELATED WORK

Refer to ~ for ~

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

REBRI	Resource Efficiency in the Building and Related Industries

1.3 DOCUMENTS

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

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

REBRI contact details

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

Special requirements

1.4 SPECIAL REQUIREMENTS - GENERALLY

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

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

1.5 SPECIAL REQUIREMENTS - SUSTAINABLE/GREEN PROJECTS

This project is a formal sustainable/green project that is required to meet the requirements of either:

- Green Star
- Homestar
- Living Building Challenge
- Circular Economy - Model Office (CEMO)

Refer to the clause RELATED WORK above for the sustainable/green Special Requirements section(s) that affects this section. Clauses in that section(s) will add or modify clauses in this section.

Requirements - part REBRI

1.6 SITE COORDINATOR

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

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1.7 WASTE MANAGEMENT PLAN

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

The submitted plan to include the following factors:

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

1.8 REPORTING

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

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

Requirements - General

1.9 ENSURE

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

2 PRODUCTS

Equipment

2.1 CONTAINERS

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

3 EXECUTION

Conditions

3.1 STORAGE

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

3.2 PLANNING

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

Statutory requirements

3.3 HAZARDOUS WASTE

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

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



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4 APPLICATION

4.1 DEMOLITION

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

4.2 DISMANTLING/REUSE

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

4.3 SITE CLEARING

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

4.4 CONCRETE

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

4.5 WOOD

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

4.6 PLASTERBOARD

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

4.7 PLUMBING

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

4.8 ELECTRICAL

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

4.9 MECHANICAL

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

Completion

4.10 CLEANING

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

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1260 PROJECT MANAGEMENT

1 GENERAL

This general section relates to project management requirements including:

- Meetings
- Reporting
- Cost control
- Communicating and records
- Confidentiality
- Programming
- Hold points and notification points
- Working hours
- Health and safety

Site Meetings

1.1 PURPOSE OF SITE MEETINGS

The purpose of site meetings is to:

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

1.2 SITE MEETING ATTENDANCE

The following persons to attend:

- Principal
- Contract administrator
- Project manager
- Contractor
- Architect
- Designer
- Engineer
- Quantity surveyor
- Services consultants when needed
- Subcontractors when needed (contractor to inform them)

1.3 REPORTING

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

Contractor: A detailed status report

1.4 SITE MEETING MINUTES

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

The minutes are to record

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

Design meetings

1.5 PURPOSE OF DESIGN MEETINGS

The purpose of design meetings is to:

- consider matters arising from design by the contractor in relation to parts of the work being carried out on a design build or performance specification basis by the contractor.
- review and assess design aspects of such work on other designed parts of the work.

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- provide value engineering advice on parts of the work where design changes are required or are being considered to meet the project financial performance requirements.

1.6 DESIGN MEETING ATTENDANCE

The following persons to attend:

- Principal
- Contract administrator
- Project manager
- Contractor
- Architect
- Designer
- Engineer
- Quantity surveyor
- Other consultants

1.7 DESIGN MEETING MINUTES

The designated design manager is to keep full minutes of all design meetings and arrange distribution to all those involved within 5 working days.

Reporting

1.8 CONTRACTORS DETAILED STATUS REPORT

A contractor's detailed status report is to address the following:

- Progress performance, addressing actual progress against the programme and any variance from the programme.
- Procurement progress on parts of the work being undertaken under a monetary allowance including the time by which direction must be given on monetary allowances to conform to the programme.
- Details of measures being taken to get work back on programme where there has been a delay and details of any future events that will or are likely to affect compliance with the programme.
- Compliance with the issued Building Consent and notification of any work or inspections that have not been passed by the BCA inspector.
- Compliance with the issued Resource Consent and any compliance issues.
- Site health and safety including any notifiable incidents.
- Details of any discrepancies in the contract documents that require clarification or determination
- A list of information requests by the contractor, the date when they were made, the person who they were directed to and the date by which a response is required.
- A variation report including progress on agreed variations, variations to be agreed and anticipated variations and the time implication of variations.
- Variation costing and the adjusted contract price including an assessment of the cost of known and potential variations.
- Review of sums not yet directed for expenditure.

Cash flow estimates

1.9 CASH FLOW ESTIMATES

The contractor is required to submit to the contract administrator a detailed cash flow estimate of all payments to which the contractor considers they will be entitled to under the contract. Where no time is stated in the conditions of contract, provide the cash flow estimate within 20 working days of the date of award of the contract. The contractor shall subsequently submit such revised cash flow estimates at 3 month intervals.

Cost control

1.10 MEASUREMENT

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

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1.11 DAYWORK VOUCHERS

To be signed by the contractor's representative as confirming the labour, times and materials used, before being supplied to the contract administrator.

Communicating and records

1.12 MEANS OF COMMUNICATION

Communications between the parties shall be as follows: -

Directions:	In writing delivered by email with a copy by post or hand
Meeting minutes:	In writing delivered by email
RFI's:	(Requests for information) by email or in writing to the contract administrator

1.13 DELIVERY OF COMMUNICATIONS

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

Where such addresses are not included in the contract agreement:

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

1.14 SERVICE OF NOTICES

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

1.15 CHANGE OF ADDRESS

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

1.16 RECORDS

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

1.17 PROGRESS PHOTOGRAPHS

Take digital photographs recording progress. Refer to SELECTIONS.

Confidentiality

1.18 CONFIDENTIALITY - PUBLICITY

Unless specifically agreed photographs and other images of the work are not to be used by the contractor, subcontractors, material suppliers and others involved in the construction of the works.

Photographs taken for record purposes may be kept but must not be passed to other persons.

1.19 CONFIDENTIALITY AGREEMENT

Where required as a condition of the contract arrange for workers to provide a confidentially agreement. Workers who have not provided such an agreement shall be excluded from the site.

Programming

1.20 PROGRAMME

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

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

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

Supply copies of the programme to the following:

Contract administrator	1
Architect	1
Designer	1
Principal	1
Quantity surveyor	1
Site supervisor	1

Monitor the programme by:

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

Hold Points and Notification Points

Refer to section 1232 INTERPRETATION & DEFINITIONS for definition of hold points and notification points.

1.21 HOLD POINTS

The following hold points are in addition to hold points nominated in work sections. Notify of hold point work/item, do not to proceed further with work/item until advised to continue.

Notify:	Contract administrator
Notification:	2 working days prior to work/item being carried out.

1.22 NOTIFICATION POINTS

The following notification points are in addition to notification points nominated in work sections. Notify of notification point work/item, continue with the work/item and subsequent work unless advised otherwise.

Notify:	Contract administrator
Notification:	2 working days prior to work/item being carried out.

Working hours

1.23 WORKING HOURS

Work on site is not restricted. Comply with territorial authority consent conditions and noise and nuisance controls.

Health and safety

1.24 HEALTH AND SAFETY LEGISLATION

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

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

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

1.25 HEALTH AND SAFETY REGULATIONS, CODES AND GUIDES

Comply with:

- Relevant New Zealand safety legislation including, Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, also Health and Safety in Employment

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Regulations 1995 as amended by that Regulation and the appropriate Health and Safety at Work Regulations.
- WorkSafe publications including "Guidelines for the provision of facilities for general safety in the construction industry".
- Relevant codes of practice, guides, guidelines and standards.

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

1.26 HEALTH AND SAFETY IMPLEMENTATION

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

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

Identify any significant hazards and risks.

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

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

1.27 SUSPENSION OF HAZARDOUS WORK

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

1.28 SITE SAFETY PERSON

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

1.29 HEALTH AND SAFETY PLAN

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

- identification of existing and potential construction hazards and risks
- Any design construction safety matters identified in section 1220 PROJECT and/or any separate project design construction safety report.
- safety procedures to eliminate, isolate or minimise construction hazards and risks
- the equipment to be used to minimise the hazards and risks
- the maintenance of a register of hazards and risks for the site
- the name and qualifications of the site safety person
- emergency procedures
- first aid facilities and safety equipment
- the methodology for notifying, recording and investigating accidents and injuries.

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

1.30 MAINTAIN HEALTH AND SAFETY PLAN

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

1.31 COMPLY WITH SITE SAFETY PLAN

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

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1.32 INFORM WORKERS OF HAZARDS AND RISKS

Inform workers and others on the site of:

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

1.33 EXPLOSIVES

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

1.34 POWDER-ACTUATED FASTENING TOOLS

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

2 SELECTIONS

Meetings

2.1 SITE MEETINGS

Frequency:	fortnightly
Start date:	To be advised or first Wednesday after site works begins
Time:	TBC
Venue:	TBC
Convener:	

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1270 CONSTRUCTION

1 GENERAL

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

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

1.1 SCHEDULE SECTION

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

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

Quality control and assurance

1.2 QUALITY ASSURANCE

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

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

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

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

1.3 PROVIDE QUALITY PLAN

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

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

1.4 REVIEW OF QUALITY PLAN

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

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

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

1.5 COMMENCEMENT OF WORK

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

1.6 NOTICE

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

1.7 NOTIFIABLE WORK

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

Noise and nuisance

1.8 LIMIT CONSTRUCTION NOISE

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

1.9 ACCEPTABLE NOISE LEVELS

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

1.10 PROVIDE INFORMATION TO NEIGHBOURS

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

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

1.11 ADDITIONAL NOISE CONSTRAINTS

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

~

1.12 INCONVENIENCE TO OTHERS

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

1.13 ROADWAY AND FOOTPATH

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

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1.14 VEHICLE CROSSING

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

1.15 TRAFFIC SAFETY

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

1.16 DIRT AND DROPPINGS

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

1.17 DAMAGE AND NUISANCE

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

1.18 SMOKE FREE REQUIREMENTS

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

1.19 RESTRICTIONS

Do not:

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

Set-out and tolerances

1.20 SURVEY INFORMATION

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

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

1.21 DATUM

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

1.22 SET-OUT

Set out the work to conform with the drawings.

1.23 SET-OUT BY LICENSED CADASTRAL SURVEYOR

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

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

1.24 CONFIRM HEIGHT IN RELATION TO BOUNDARY

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

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

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1.25 USE OF SET-OUT INSTRUMENTS

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

1.26 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.

1.27 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

1.28 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.

1.29 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.

1.30 EXECUTION GENERALLY

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

1.31 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.

1.32 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.

1.33 MINIMISE DELAYS DUE TO WEATHER

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

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Defective or damaged work

1.34 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

1.35 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.

1.36 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.

1.37 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.

1.38 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.

1.39 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

1.40 QUALIFICATIONS GENERALLY

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

1.41 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.

1.42 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.

1.43 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

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

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1.44 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.

1.45 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.

1.46 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

1.47 NEW PRODUCTS

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

1.48 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.

1.49 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.

1.50 SUBSTRATE CONDITIONS

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

1.51 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.

1.52 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.

1.53 CONDITION OF PRODUCTS

To be in perfect condition when incorporated into the work.

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1.54 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

1.55 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.

1.56 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.

1.57 OTHER SAMPLE REQUIREMENTS

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

Prototypes

1.58 PROTOTYPES - TESTING

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

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

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

1.59 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.

1.60 PROTOTYPES - GENERAL

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

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

Spares & maintenance products

1.61 SPARES & MAINTENANCE PRODUCTS

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

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

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

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

Cleaning during the works

1.62 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.

1.63 TRADE CLEANING

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

1.64 SPECIAL SITE CLEANING

~

Remove protection

1.65 REMOVE PROTECTION

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

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



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

Refer to individual work sections for any special removal requirements.

Completion

1.66 SPECIAL REQUIREMENTS

Refer to individual work sections for any special completion requirements.

1.67 LEAVE WORK

Leave work to the standard required for the following procedures.

1.68 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.

1.69 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.

1.70 COMPLETE ALL SERVICES

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

1.71 CLEANING BY CONTRACTOR

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

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

1.72 CLEANING BY COMMERCIAL CLEANER

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

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

Commissioning

1.73 SPECIAL REQUIREMENTS

Refer to individual work sections for any special commissioning requirements.

1.74 MOVING PARTS

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

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1.75 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.

1.76 INSTRUCTION AND DEMONSTRATION

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

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

1.77 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

1.78 ADDITIONAL PRACTICAL COMPLETION INFORMATION

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

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

1.79 ADDITIONAL PRACTICAL COMPLETION REQUIREMENTS

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

In addition to the requirements in the contract, the following conditions also apply:

- ~

Defects period submissions

1.80 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

1.81 FINAL COMPLETION - SUBMISSIONS

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

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

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1270S1 SCHEDULE OF SAMPLES & PROTOTYPES

1 GENERAL

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

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

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

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

Samples

1.2 SAMPLES

Refer to the following sections:

4271	Natural Stone Veneer Cladding
4811S	Sika Sealants
6721R	Resene Painting Interior

1.3 SAMPLES - ADDITIONAL ITEMS

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

Prototypes

1.4 PROTOTYPES - REVIEW

Refer to the following sections:

4821	Flashings

1.5 PROTOTYPES - TESTING

There are no work section requirements.

1.6 PROTOTYPES - ADDITIONAL ITEMS

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



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1270S2 SCHEDULE OF SPARES & MAINTENANCE PRODUCTS

1 GENERAL

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

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

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

Spares & maintenance products

1.2 SPARES & MAINTENANCE PRODUCTS

Refer to the following sections:

5538VH Vanda Blinds & Curtain Track Systems

1.3 SPARES & MAINTENANCE PRODUCTS - ADDITIONAL ITEMS

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

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1278SR SCHEDULE OF SLIP RESISTANCE TESTING

1 GENERAL

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

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

This section includes schedules identifying work sections with:

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

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

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

Slip resistance - surfaces not requiring testing

1.4 SLIP RESISTANCE - SURFACES EXEMPT FROM TESTING

There are no work section requirements.

1.5 SLIP RESISTANCE - PREVIOUSLY TESTED SURFACE

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

6311 Timber Strip, Block & Plank Flooring

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
Contaminated walking surfaces	R~	Obtain classification from the oil-wet inclining platform test method of AS 4586, Appendix D

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

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

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

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

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0.557	1 in 8	7.125°

1.8 GENERAL REPORTING REQUIREMENTS

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

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

Slip resistance - additional items

1.9 SLIP RESISTANCE - ADDITIONAL ITEMS

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

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2241 EXCAVATION

1 GENERAL

This section relates to the excavating required for the building works, removing surface soils and the disposal of excavated material.

Related work

1.1 RELATED SECTIONS

Refer to sections on architectural plans.

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZS 4402	Methods of testing soils for civil engineering purposes
WorkSafe	Good Practice Guidelines - Excavation Safety

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

Requirements

1.3 ARCHAEOLOGICAL DISCOVERY

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

Performance

1.4 GROUND CONDITIONS

Foundation investigations and drilling have been carried out. Place your own interpretation on this information as no warranty is implied that the information is truly representative or complete. Make such extra investigations as considered necessary.

Copies of bore logs are ~.

1.5 PROOF DRILLING

Site bores already carried out indicate underlying layers of unsuitable material in certain areas. For the foundations designated on the plan, hand augered proof holes may be required to determine the extent of such material. Include for this work in programming and adjust against provisional quantities scheduled.

1.6 ACCESS FOR MACHINES

Determine working conditions and access for machines. Take into account the time of year, the nature of the ground and subsoil to be excavated, the ground water table and all matters influencing the carrying out of the work.

1.7 SAFE WORKING CONDITIONS

Provide safe working conditions and adequate support to excavations at all times to WorkSafe, Good Practice Guidelines - Excavation Safety. Cover holes and fence off trenches and banks.

1.8 FOUNDATION BEARING

Request written instructions if a natural bearing is:

- reached at a lesser depth or
- not reached at the depth shown on the drawings.

In made-up ground excavate down to a natural bearing. Remove unsuitable material that is exposed and replace with compacted backfill.

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1.9 INSPECTION

Arrange for inspections and before placing any new work. If bearing becomes inadequate due to any cause then stop work and request further instructions.

1.10 SITE MEASUREMENT, ROCK

Where rock is shown to be part of the site condition by the bore logs, all rock removed to be solid measured and the quantity recorded and agreed to in writing as the excavation proceeds.

1.11 SITE MEASUREMENT, OTHER FORMATIONS

If for any reason the excavations have to vary from the drawings, those affected to be solid measured and the quantity recorded and agreed to in writing as the excavation proceeds.

2 PRODUCTS

Materials

2.1 TOPSOIL

Weathered soil, with organic inclusions capable of supporting the growth of vegetation.

2.2 CUT MATERIAL

Consisting of sands, gravels, sedimentary materials, clays, scoria and similar deposits.

2.3 ROCK

Defined as material encountered in excavations which because of its size or position can be removed only by breaking up by explosives or mechanical plant such as jack hammers or percussion drills.

2.4 UNCONTROLLED FILL

Variable fill material placed with little or no compaction control.

2.5 EXCAVATED FILL

Material from other formations in the excavation which may be selected and approved as suitable for filling and complying with NZS 4402 by having grading and moisture content properties that will allow compaction to 95% of maximum density.

3 EXECUTION

Conditions

3.1 REPORT

Report any survey pegs, bench marks, and the like on any features, leaving them undisturbed until approval is given for removal.

3.2 COMPLY

Comply with the requirements of WorkSafe, Good Practice Guidelines - Excavation Safety.

3.3 WORK BY OTHERS

Before taking over work done on the site by others check all levels and conditions and report any discrepancies affecting further work.

3.4 EXISTING SERVICES AND FOUNDATIONS

Locate underground services and foundations before work is started. Any information provided regarding the location of these services and foundations is given from available records but with no guarantee of accuracy as regards alignment or depth. Furthermore no guarantee is given or implied that the information provided covers all existing services and foundations. Make good at no extra cost damage to existing services to the satisfaction of the appropriate network utility operator. Protect existing roads, footpaths, gutters, crossings etc from damage during work.

3.5 KEEP FREE OF WATER

Keep excavations free from water and keep water from excavations clear of other construction work.

3.6 TERRITORIAL AUTHORITY REQUIREMENTS

Obtain from the territorial authority requirements for the method of discharging water from the site.

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3.7 FORM SUMPS

Form sumps outside the line of foundations and deep enough to drain excavations. Pump from sumps without disturbing excavations or any material in place.

3.8 SILT CONTROL

Undertake silt control measures required by territorial authorities and network utility operators in relation to design, location and discharge into the drainage system.

Application

3.9 STRIP TOPSOIL

Strip topsoil carefully over the whole site and stockpile where directed on the site, on the prepared subgrade, for re-spreading at the completion of the contract.

3.10 STRIP TO SUBGRADE

Strip the soil over the whole site to form a subgrade generally, but at a minimum of 200mm below the original ground level. Leave the subgrade level, clear of all loose material and with no impediment for the excavation work.

3.11 DIVERT WATERWAYS

Temporarily divert as necessary all ditches, field drains and other waterways encountered during the excavations and reinstate to approval on completion.

3.12 DIVERT DRAINS AND SERVICE LINES

Divert services, drains and field drains encountered in the excavations to new routes clear of the building and reconnect to the requirements of the network utility operator.

3.13 BREAK OUT

Break out and remove old foundations, floor slabs, drains, manholes and septic tanks, seal up connections and remove contaminated soil. Grub out roots in excess of 75mm diameter to a minimum of 500mm below the bottom level of footings or paving. Backfill with selected excavated material, well rammed in layers.

Take special care when working close to retained trees and shrubs.

3.14 EXCAVATION GENERALLY

Excavate for pads, strip foundations and tie beams to the profiles and levels shown on the drawings. Allow clearance for working space and formwork as necessary. Trim to required profiles, falls and levels. If pouring against natural ground excavate an extra 25mm that side to provide 75mm minimum cover to reinforcement horizontally. Bench surface of sloping ground to receive filling.

Use plant and equipment suitable for the purpose.

3.15 OVER EXCAVATION

Make good with well compacted backfill.

3.16 EXCAVATED BACKFILL

Stockpile selected excavated backfill on site where directed so that it does not impede continuing works until it is required.

Finishing

3.17 BATTERS, TEMPORARY PROTECTION

Protect batters with a change of level between crest and toe of more than 1.5 metres from weather erosion with a waterproof covering of either hessian and tar, or heavy duty black polythene sheet. Seal at joints and securely fix down at crest and toe. Maintain coverings in good condition until the ground is secured by permanent construction.

Completion

3.18 LEAVE

Leave work to the standard required by following procedures.

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3.19 SURPLUS TOPSOIL

Remove unwanted stripped soil from the site continually as the work proceeds. Clean up continually any soil if dropped on footpaths or roads.

3.20 SURPLUS MATERIAL

Remove surplus excavated material from the site continually as the excavation proceeds. Clean up continually any excavated material dropped on footpaths or roads.

4 SELECTIONS

4.1 BORE LOGS

Copies of bore logs are supplied construction and design team.



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2242 BACKFILLING

1 GENERAL

This section relates to the supply, placing and compaction of materials for backfill, basecourse or built-up ground, as required for the contract works.

Related work

1.1 RELATED SECTIONS

Refer to sections on architectural plans.

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZS 3104	Specification for concrete production
NZS 3604	Timber-framed buildings
NZS 4229	Concrete masonry buildings not requiring specific engineering design
NZS 4431	Code of practice for earth fill for residential development
NZS 4402	Methods of testing soils for civil engineering purposes
NZTA F2	Specification for pipe subsoil drain construction
TNZ M/04	Specification for basecourse aggregate
NZCMM	NZ Concrete Masonry Manual section 6.1 Masonry Retaining Walls

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

Requirements

1.3 AS BUILT DOCUMENTS - NZS 4431

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 as built contour plan relating final topography to original topography.
- Record areas of filled ground including areas of low density filling and areas not considered to meet the standard.
- Record location of associated drainage.
- Record location and relative levels of levelling points and benchmarks, including the date of the levelling
- Provide draft as built information prior to practical completion.
- Provide final as built information prior to the end of the defects liability period.
- Provide copies to the owner of the land and to the TA

1.4 CONTROL TESTING FOR FILLS - NZS 4431

During construction of earth fills undertake required quantitative control tests on the fill material.

1.5 INSPECTION NOTIFICATION - NZS 4431

Notify the inspecting engineer of the times required for inspection.

1.6 INSPECTION NOTIFICATION

Notify the inspecting engineer of the times required for inspection.

1.7 STATEMENT OF SUITABILITY - NZS 4431

Provide a statement of suitability of earth fill for residential development in accordance with Appendix A of NZS 4431, including engineers report.

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2 PRODUCTS

Earth fill materials

2.1 EARTH FILL – NOT REQUIRED TO SUPPORT BUILDINGS OR SURFACES

Lower density fills (defined in NZS 4431) as specified/ identified by the inspecting engineer. Refer to SELECTIONS.

2.2 EARTH FILL – RESIDENTIAL DEVELOPMENT

Earth fill material identified as a soil type whose general properties have been determined and confirmed by engineering testing and investigation as being suitable for fill material, as defined in NZS 4431. Refer to SELECTIONS.

Site concrete

2.3 SITE CONCRETE

Low strength concrete 10 MPa with minimum water for workability, all materials and batching to NZS 3104, table 3.1, **Prescribed mixes (P)**.

Geotextile Fabric

2.4 GEOTEXTILE FABRIC

Geotextile fabric. Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 UNSUITABLE MATERIALS

Remove from site all unsuitable filling material.

3.2 REMOVE SURPLUS

Remove surplus imported filling materials from the site.

3.3 SPREAD SURPLUS

Spread and level surplus imported filling materials where directed.

3.4 PLACE FILLING

Place filling using approved methods, to required dimensions, levels, lines and profiles.

3.5 PROTECTION OF FORMATION

Do not allow construction traffic on filling until the level has been raised not less than 150mm above formation level by properly compacted temporary protective filling. Remove temporary protective filling from the site before beginning permanent construction. Do not stockpile materials on newly filled areas without permission.

3.6 DIFFERING MATERIALS

Where materials of widely divergent characteristics are used for filling, spread and compact in clearly defined separate layers.

3.7 EARTHMOVING EQUIPMENT

Do not use earthmoving equipment for compaction.

3.8 COMPACTION NEAR EDGE SUPPORTS

Ensure that edge supports are strong enough to support compaction forces without movement, cracking or other damage. Make good damage caused by compaction.

3.9 MOISTURE CONTENT, GENERAL FILL

Moisture content at time of compaction to be within the range of optimum less 6% up to optimum. Do not use filling with moisture content above optimum value. If necessary:

- adjust moisture content of filling by turning and drying
- provide water sprinkling equipment if fill is too dry.

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Application - Earth fill materials

3.10 SITE PREPARATION - NZS 4431

Before fill is placed on stripped natural ground, the ground surface shall be smoothed and compacted in a manner similar to that to be used on the layers of fill.

3.11 FILL PLACING - NZS 4431

Fill shall be placed in a systematic manner, with near-horizontal layers of uniform thickness of material each being deposited progressively across the fill area. The uncompacted thickness of a layer shall be no greater than 230 mm. Fill water content control and uniformity to the requirements of NZS 4431.

3.12 FILL COMPACTION - NZS 4431

Each layer shall be compacted as a specific construction operation, using plant specifically assigned to the compaction task and following systematic patterns of travel tracks which progressively work across the surface of the fill. Recompact any compacted layer that has deteriorated after the interruption of the work.

Application - Geotextile Fabric

3.13 GEOTEXTILE FABRIC

Install geotextile fabric to manufacturer's requirements.

Completion

3.14 LEVELLING POINTS - NZS 4431

Set permanent levelling points in the upper surface of the fill to the requirements of NZS 4431.

3.15 LEAVE

Leave work to the standard required by following procedures.

3.16 REMOVE

Remove all debris and unused materials from the site.

4 SELECTIONS

Earth fill

4.1 EARTH FILL – RESIDENTIAL DEVELOPMENT

Location:	Obtain specialist engineering advice.
Type:	Obtain specialist engineering advice.

Site concrete

4.2 SITE CONCRETE

Location:	Refer architectural plans.
Type:	Prescribed mix 10.0 MPa

Geotextile Fabric

4.3 GEOTEXTILE FABRIC

Location:	Obtain specialist engineering advice.
Type:	Obtain specialist engineering advice.

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3102 CONCRETE WORK - STANDARD

1 GENERAL

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

1.1 RELATED WORK

Refer to 3155MR for MAXRaft Floor System.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

The following definitions apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

NZBC B1/AS1	Structural provisions for buildings
NZBC E2/AS3	External moisture provisions for concrete and concrete masonry buildings
AS 1366.3	Rigid cellular plastics for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS - M)
AS 1478	Chemical admixtures for concrete, mortar and grout - Admixtures for concrete.
AS/NZS 2269.0	Plywood - Structural - Specifications
AS/NZS 3000	Electrical installations
NZS 3101.1	Concrete structures standard
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3121	Water and aggregate for concrete
NZS 3122	Specification for Portland and blended cements (General and special purpose)
NZS 3125	Specification for Portland-limestone filler cement
NZS 3604	Timber-framed buildings
NZS 3631	New Zealand timber grading rules
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4671	Steel reinforcing materials
AS/NZS 4672.1	Steel prestressing materials - General requirements
Concrete NZ TR3	Alkali silica reaction

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Requirements

1.4 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications

1.5 RECORDS

Retain the following records and make available to the contract administrator upon request:

- Mixing records
- Concrete delivery docket
- Reinforcing steel batch certificate
- Time, date, location and weather condition of each pour.

Performance

1.6 CONCRETE PRODUCTION COMPLIANCE

Concrete production and testing to comply with NZS 3104. Concrete to be supplied from a concrete batching plant holding a current quality Certificate of Audit provided by CNZ PAS Concrete NZ Plant Audit Scheme or an Auditing Engineer with credentials nominated in NZS 3104.

1.7 STEEL REINFORCING COMPLIANCE

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

If requested, the supplier to provide certification upon delivery that reinforcing steel complies with the grades specified on the drawings.

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

1.8 QUALITY ASSURANCE

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

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

- Formwork construction
- Reinforcing steel placing
- Cast in items
- Concrete supply
- Concrete placing and compaction
- Concrete finishes
- Construction tolerances

2 PRODUCTS

Materials

2.1 CEMENT

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

2.2 CEMENT, FILLER

Portland limestone filler cement to NZS 3125.

2.3 SAND

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

2.4 COARSE AGGREGATE, NORMAL CONCRETE

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

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2.5 AGGREGATE, PRESCRIBED MIX CONCRETE

Builder's mix (all-in aggregate) to NZS 3104: clause 3.1.4, Definition and clause 3.3.2, Aggregate or separate aggregate and sand materials to clause 3.3.3 Proportion of sand and aggregate.

2.6 WATER

To NZS 3121.

2.7 ADMIXTURES, SITE OR PLANT

To AS 1478.

For concrete defined as Normal Concrete(N) to NZS 3104, admixtures may be added at the Plant Engineers discretion as required by concrete producers mix design, subject to the following requirements:

- The quantity of admixture used and the method of mixing to be in accordance with manufacturers recommendations.
- Admixtures containing calcium chloride will not be permitted.
- Concrete must comply with the entrained air requirements of NZS 3101 when the surface is subject to freeze-thaw cycles.
- Additional admixtures may be added to concrete at the Contractor's request to control the set, in response to weather or environmental factors, subject to approval by Engineer.
- Admixtures containing calcium chloride will not be permitted where steel reinforcing is present.

2.8 PIGMENT, SITE OR PLANT

As agreed, before mixing or placing. Refer to SELECTIONS.

Concrete

2.9 NORMAL CONCRETE

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

2.10 PRESCRIBED MIX CONCRETE

Prescribed mix concrete 10, 15, 17.5, 20 or 25 MPa grade minimum strength, using either builder's mix or separate batching of sand and aggregate to NZS 3104, section 3 Provisions for Prescribed Mix Concrete. Refer to SELECTIONS.

2.11 SITE CONCRETE

Low strength concrete 10 MPa with minimum water for workability, all materials and batching to NZS 3104, section 3 Provisions for Prescribed Mix Concrete.

2.12 MASS CONCRETE

Concrete having a minimum strength of 10 MPa at 28 days

Reinforcement

2.13 GRADE 300E STEEL

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

2.14 GRADE 500E STEEL

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

2.15 WELDED WIRE FABRIC

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

2.16 MESH FOR SLABS TO NZS 3604 OR NZS 4229

For concrete slab-on-ground designed to NZS 3604 or NZS 4229, mesh to be in accordance to NZBC B1/AS1, welded reinforcing mesh to AS/NZS 4671, Class E, minimum - Grade 500E, 2.27kg/m2 (1.14kg/m2 in each direction).

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2.17 TYING WIRE

Mild drawn steel wire not less than 1.2mm diameter.

2.18 SPACERS AND CHAIRS

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

Formwork

2.19 TIMBER BOARDS

Dressing or merchantable grade radiata pine to NZS 3631 for shutter face, to obtain the concrete finish specified.

2.20 PROPRIETARY STEEL

An approved proprietary steel formwork and shutter system.

2.21 STRUCTURAL PLYWOOD

To AS/NZS 2269.0 for shutter face with plywood grade as necessary to obtain the concrete finish specified.

2.22 TIMBER FALSEWORK

No. 2 framing radiata pine or as required to construct the required formwork.

2.23 RELEASE AGENT

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

Damp proof membrane

2.24 DAMP-PROOF MEMBRANE

0.25mm minimum polyethylene to NZS 3604, 7.5.4, **Damp-proof membrane**.

Accessories

2.25 CEMENT GROUTS

Cement mixed with the minimum quantity of water to obtain a suitable consistency. Grout cement to NZS 3122. Use grout within 30 minutes of preparation.

2.26 CELLULAR POLYSTYRENE INSULATION

Proprietary polystyrene foam board to AS 1366.3. Refer to SELECTIONS.

3 EXECUTION

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation/application

Fix formwork

3.4 LOADINGS

Design and construct formwork and falsework in accordance with in accordance with NZS 3109 Section 5 and sound engineering principles to withstand the worst combination of:

- dead loads of formwork, reinforcement, concrete and precast elements such as floor planks



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- construction loads including dynamic effects of placing, compacting and construction traffic
- wind and snow loads

3.5 PROVIDE ALL FORMWORK

Provide formwork and falsework to NZS 3109 Section 5 and to achieve the required off-the-form surface finishes to NZS 3114. Fabricate in a manner permitting its easy removal without damage to the concrete.

Provide a 20mm x 20mm chamfer to all corners unless detailed otherwise. Protect corners from damage during and after stripping.
Keep absorbent formwork wet before concrete is placed. Clean formwork by waterblasting.

3.6 FALSEWORK

Carry strutting down to a construction sufficiently strong and stable to afford the required support without permissible stress or deflections being exceeded. Prop through to other floors if the construction load on a particular suspended floor exceeds the design load.

3.7 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Unless stated otherwise on the drawings permissible deviations from established lines, grades, dimensions and cambers to remain within the tolerances laid down in NZS 3109: table 5.1, Tolerances for precast components and table 5.2,Tolerances for in situ construction.

3.8 TOLERANCES OF CONCRETE SURFACE FINISHES

Unless stated otherwise on the drawings, permissible abrupt, offset and gradual deviations for the specified surface finish to remain within the tolerances laid down in NZS 3114: table 3, Tolerances for abrupt deviations or offsets and gradual deviations.

3.9 EXPOSED CONCRETE

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

3.10 JOINTS IN FORMS

Construct joints to prevent loss of grout between joints in form linings, as well as between forms and completed work. Column forms to have full height linings so that no horizontal joints occur on exposed faces.

3.11 CAMBERS

Cambers shown on the drawings or specified, relate to the concrete immediately before formwork is struck.

3.12 STRIKING FORMWORK

Ensure the safe removal of all or any part of the formwork. Remove without shock, vibration or damage to the concrete and in such a manner as to take the imposed stresses gradually to NZS 3109.5.4. Stripping times to NZS 3109 table 5.3.

Install damp proofing

3.13 INSTALL DAMP-PROOF MEMBRANE

Install to NZS 3604.7.5.6 Polyethylene (polythene) sheet damp proof membranes. Bring granular hardfill to a suitable surface to receive the DPM using maximum 25mm sand blinding.

Lay the DPM on prepared basecourse with 150mm laps between sheets. Seal laps and penetrations with 50mm wide pressure sensitive plastic tape.
Refer to drawings for perimeter details.

Install insulation

3.14 INSTALL UNDERSLAB POLYSTYRENE INSULATION

Install polystyrene insulation system to manufacturer's requirements.

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Install reinforcing / cast-in items

3.15 INSTALL REINFORCEMENT TO NZS 3101 & NZS 3109

Install reinforcing in accordance to NZS 3101as modified by NZBC B1/VM1 and NZS 3109. Reinforcement spacing as dimensioned on drawings, or if not shown, to the clear distance minimums in NZS 3109, 3.6, Spacing of reinforcement and requirements of NZS 3101.1 8.3 Spacing of reinforcement.

3.16 INSTALL REINFORCEMENT TO NZS 3604 OR NZS 4229

Install reinforcing in accordance to NZS 3604 or NZS 4229 as modified by NZBC B1/AS1 for foundations, foundation walls and slab-on-grade.

3.17 CUT AND BEND

Cut and bend bars using proper bending tools to avoid notching and to the requirements of NZS 3101.1, 8 and NZS 3109: 3.3 Hooks and bends. Minimum radii of reinforcement bends to NZS 3101.1, 8 and NZS 3109: table 3.1, Minimum radii of reinforcement bends. Do not rebend grade 500E bars. Where rebending is necessary for grade 300E bars, use a purpose built tool, proper preparation and preheating.

3.18 ADJUSTMENTS

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

3.19 TOLERANCES

Tolerances for reinforcement bending, bar spacing & position and concrete cover to NZS 3109, 3.9, Tolerances for reinforcement, unless tighter tolerances specified.

3.20 SECURE REINFORCEMENT

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

3.21 LAPPED SPLICES

Length of laps where not dimensioned on the drawings in accordance with the SELECTIONS. Provide laps only where indicated on the drawings. Tie all lapping bars to each other. Plain bars lapped splices must be hooked

Wire mesh laps to NZS 3101.1, lap one mesh square plus 50mm minimum (do not count bar extension beyond the outermost wire).

3.22 MESH LAPS FOR SLABS TO NZS 3604 OR NZS 4229

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

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

Do not count bar extensions beyond the outermost cross wire

3.23 REINFORCING BAR LAPS TO NZS 3604

For foundation walls horizontal reinforcing bars to be lapped with a lap length of not less than 500mm. Corners and intersection laps shall be determined by NZS 3604 figure 6.15a

3.24 REINFORCING BAR LAPS TO NZS 4229

For footings reinforcing bars to be lapped with a lap length of not less than 40 times the diameter of the bar. Corners and intersection laps shall be determined by NZS 4229 figure 6.8.

3.25 REINFORCEMENT COVER TO NZS 3101.1

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

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3.26 REINFORCEMENT COVER TO NZS 3604 OR NZS 4229

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

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

3.27 CASTING IN

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

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

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

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

3.28 CONSTRUCTION JOINTS

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

3.29 EQUIPOTENTIAL BONDING REINFORCING

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

Place concrete

3.30 PRE-PLACEMENT INSPECTION

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

3.31 UNFAVOURABLE CONDITIONS

Do not place concrete in high winds or other unfavourable conditions in accordance with NZS 3109: 7.2 Unfavourable conditions

3.32 PROTECT CONCRETE WORK

Protect formwork, reinforcement, "build in" items and fresh concrete from damage, as the pour is placed, making good any damage if it occurs.

3.33 PREPARATORY WORK

Ensure at the time of placing, that surfaces to receive the concrete are clean, free of debris and with no free water present. Ensure reinforcement, cast-in items and hardened concrete against which fresh concrete is laid are free from any release agent or other deleterious surface deposit.

3.34 TRANSPORT CONCRETE

Transport concrete from agitator to final placement as quickly as possible using means that avoid segregation.

3.35 PUMPING CONCRETE

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

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3.36 PLACE CONCRETE

Place concrete to NZS 3109: clause 7.4, Handling and placing. Place in layers not more than 500mm deep, compacted and vibrated. Do not place fresh concrete against the preceding layer after more than 45 minutes, or such lesser time as required by the circumstances, to NZS 3109: clause 7.4, Handling and placing.

3.37 COMPACT CONCRETE

To NZS 3109: clause 7.6, Compaction. Compact by vibration of the concrete to expel entrapped air and until settlement of the concrete is visibly evident over all areas of the surface. Maintain vibration until settlement ceases and coarse aggregate at the surface is embedded. Do not continue vibration beyond reaching this condition.

Note: compaction by vibration is not required when using Self Compacting Concrete (SCC).

3.38 VIBRATORS

Use sufficient immersion vibrators, with one spare for emergency, to ensure that vibration is achieved throughout the entire volume of each layer of concrete, and until complete compaction is reached, to NZS 3109: clause 7.6, Compaction.

Floor slabs to NZS 3604 or NZS 4229

3.39 FLOOR SLABS TO NZS 3604

Generally for slabs on ground to NZS 3604 as modified by NZBC B1/AS1 and NZBC E2/AS3. Construct to NZS 3604, 4.5 Concrete and concrete masonry and NZS 3604, 7.5, Concrete slab-on-ground floors in timber buildings as modified by NZBC B1/AS1, 2.3 Timber. Lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish.

Allow for free joints maximum 24m centres to NZBC B1/AS1, paragraph 2.3.7.6 **NZS 3604** New clause.

3.40 FLOOR SLABS TO NZS 4229

Generally for slabs on ground to NZS 4229 as modified by NZBC B1/AS1 and NZBC E2/AS3. Construct to NZS 4229, 6, Footings and NZS 4229, 7, Foundation walls and concrete slab-on-ground as modified by NZBC B1/AS1, 2.1 Masonry. Lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish.

Allow for free joints maximum 18m centres to NZS 4229, 7.8.5.3 Free joints.

Finishing

3.41 SCREED THE SURFACE

Screed the concrete surface by straight edge or vibrating screed immediately after compaction and to tolerances in NZS 3109: table 5.2, Tolerances for in situ construction.

3.42 SURFACE FINISHES

To NZS 3114, Part 1 Off-the-form surface finishes, Part 2 Exposed aggregate surface and Part 3 Floors, exterior pavements, and inverts, for slabs and pavements. Refer SELECTIONS.

3.43 SAW CUTS TO NZS 3604 OR NZS 4229

Provide saw cuts in accordance to NZS 3604 clause 7.5.8.6 Shrinkage Control Joints and NZS 4229 clause 7.8.5 Shrinkage Control Joints. Cut slabs where indicated on the drawings as required to control shrinkage cracking. Form by saw cutting the slab (blade width approximately 5 mm) to a quarter of the depth of the slab (saw cutting shall take place no later than 24 hours after initial set for average ambient temperatures above 20 ºC, and 48 hours for average ambient temperatures below 20 ºC).

3.44 SAW CUTS

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

3.45 CLEAN OUT SAWCUTS

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

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Curing

3.46 CURING PERIOD

Cure all concrete for a minimum of 7 days. Keep time between placing of concrete and the start of curing to an absolute minimum. Ensure curing is continuous.

3.47 CURING METHOD

Notify the curing method to be used for this work. Select from the following methods;

- Ponding
- Sprinkling
- Wet coverings - Do not use at times of freezing weather
- Plastic sheet
- Curing compound

3.48 KEEP ABSORBENT FORMWORK MOIST

Keep formwork left in place continuously moist by sprinkling with water over the curing period. Continue sprinkling the exposed surface if the formwork is removed before the end of the curing period.

3.49 SECURE COVERINGS

When covering with sheet materials, ensure that edges are well secured throughout the specified curing period, to prevent draughts passing over the surfaces of the concrete.

Defects

3.50 DEFECTS

Reject concrete with structural defects. Immediately after stripping formwork, identify all defects and obtain direction. Do not carry out any repair work until directed and then only in accordance with the direction. Repair defects by cutting out, making good and replacing, or otherwise as directed.

3.51 SURFACE DEFECTS

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

Completion

3.52 COMPLETION MATTERS

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



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4 SELECTIONS

4.1 LOCATION OF CONSTRUCTION JOINTS

Location: As per SED direction
Spacing: As per SED direction

4.2 REINFORCEMENT LAPS

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

Bar Diameter	Grade 300E deformed	Grade 500E deformed
10mm	400mm	650mm
12mm	500mm	750mm
16mm	650mm	1000mm
20mm	800mm	1250mm
25mm	1000mm	1600mm
32mm	1200mm	2000mm

4.3 NORMAL CONCRETE (N)

Location: Refer Plans
28 day strength: ~ MPa
Aggregate size: ~mm maximum
Pigments: ~

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3155MR MAXRAFT® FLOOR SYSTEM

1 GENERAL

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

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

1.1 RELATED WORK

Refer to 2221 REMOVING VEGETATION for clearing site.

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

EPS	Expanded Polystyrene

Documents

1.3 DOCUMENTS

ocuments referred to in this section are:

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

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

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

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BPIR MAXSlab

Manufacturer/supplier contact details

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

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years For Pre-coated MAXEdge®

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

1.8 SHOP DRAWINGS

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

Submit shop drawings for review to the architectural designer

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

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Applicators approval certificate from the manufacturer / importer / distributor
- Manufacturer / supplier warranty
- Producer Statement PS3 - Construction from the applicator / installer
- Producer Statement PS4 - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

Quality control and assurance

1.10 STEEL REINFORCING COMPLIANCE

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

1.11 INSPECTIONS

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

1.12 POST-CUT INSPECTION

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

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2 PRODUCTS

MAXRaft® Systems

2.1 MAXSLAB®

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

2.2 MAXEDGE®

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

Materials

2.3 BLINDING

25mm compacted GAP 7. Refer to 2242 BACKFILLING.

2.4 TIMBER FORMWORK

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

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

2.5 DAMP-PROOF MEMBRANE

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

2.6 POLYSTYRENE SHEETS - MAXSLAB®

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

2.7 POLYSTYRENE EDGE INSULATION - MAXEDGE®

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

2.8 POLYSTYRENE INTERNAL CONCRETE FOOTING INSULATION

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

2.9 REINFORCEMENT

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

2.10 INTERNAL CORNER REINFORCEMENT

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

2.11 MESH

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

2.12 CONCRETE

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

Components

2.13 TYING WIRE

Mild drawn steel wire not less than 1.2mm diameter.

2.14 BAR CHAIRS

MAXRaft® proprietary barchairs.



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Finish

2.15 PLASTER - SLAB EDGE

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

Installation/application

3.3 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.4 SITE CLEARANCE

Refer to 2221 REMOVING VEGETATION.

3.5 BUILDING PLATFORM

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

3.6 TEMPORARY BUILDING PLATFORM DRAINAGE

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

3.7 HARDFILL

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

3.8 UNDERGROUND SERVICES

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

3.9 BLINDING LAYER

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

3.10 FORMWORK

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

3.11 INSTALL DAMP-PROOF MEMBRANE

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

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3.12 PLACE POLYSTYRENE - MAXEDGE®

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

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

3.13 INSTALL BARCHAIRS

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

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

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

3.14 PLACE REINFORCING STEEL

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

3.15 LAPPED SPLICES

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

3.16 PLACE REINFORCING MESH AND CHAIRS

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

3.17 MESH LAPS

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

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

Do not count bar extensions beyond the outermost cross wire.

3.18 TOPPING SLAB DEPTH

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

3.19 EQUIPOTENTIAL BONDING REINFORCING

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

3.20 CONCRETE PLACEMENT AND COMPACTION

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

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

3.21 CONCRETE FINISHING

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

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3.22 CONCRETE CURING

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

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

3.23 SHRINKAGE CONTROL JOINTS

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

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

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

3.24 UNCOATED MAXEDGE® - PLASTER & PAINT

Refer to appropriate plastering and painting sections.

3.25 STRIKE FORMWORK

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

3.26 SURFACE DEFECTS

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

3.27 CLEAN OUT SHRINKAGE CONTROL JOINTS

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

3.28 WATERPROOFING EXTERIOR OPENINGS

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

Completion & Commissioning

3.29 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 DAMP-PROOF MEMBRANE

Type:	Polythene
Brand:	~

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4.2 MAXSLAB® 300

Brand:	MAXSlab®
Size:	as per Engineered Design

4.3 UNCOATED MAXEDGE® - PLASTERED AND PAINTED

Brand:	MAXEdge®
Polystyrene Type:	VH EPS insulation
Size:	300 x 350mm as specified by Structural Engineer
Finish:	Plaster and then paint. Refer to appropriate PLASTER and PAINTING section.

4.4 CONCRETE SURFACE FINISH

Location:	
Finish class:	U3 (interior)

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3811 PREFABRICATED STRUCTURAL TIMBER FRAMING

1 GENERAL

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

- timber trusses
- timber frames

1.1 RELATED WORK

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

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

Requirements

1.4 QUALIFICATIONS

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

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

1.5 DESIGN CRITERIA NON-SPECIFIC DESIGN

Frames and trusses to NZS 3604.

1.6 DESIGN CRITERIA SED

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

1.7 SHOP DRAWINGS

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

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

~



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If requested provide the following additional information:
~

Submit shop drawings for review to ~.

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

1.8 DESIGN STATEMENT - FABRICATOR

Provide a Design Statement issued by the fabricator listing the job specific inputs used in the design process.

The Design Statement shall identify:

- The name and contact details of the accredited fabricator
- The name of the software/nail plate manufacturer that has accredited the fabricator
- Software date/version
- Reference to the Producer Statement - Design
- Supporting compliance documents including standards for material grades and sizes
- The job/design reference name or number
- The site address/location

Job specific information:

- Loads allowed for in the specific design including dead loads (cladding and ceiling) and live loads (wind and snow)
- Roof pitch
- Nominal overhang length
- Importance Level

Design working life:

- A list of the designed trusses, spans and maximum spacing
- Date of design

1.9 PRODUCER STATEMENT - DESIGN

Provide a Producer Statement - Design issued by the software provider, supporting the software and the engineering principles being applied by the software.

The Producer Statement shall:

- Have a level of detail consistent with that of an IPENZ Producer Statement PS1
- State the means of compliance with NZBC
- Reference the truss layout and Fabricator Design Statements
- Identify the job/design reference name or number
- Identify the software date/version
- Be signed by a Chartered Professional Engineer

1.10 MANUFACTURING STATEMENT - PREFABRICATED TRUSSES

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

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

Truss identification

1.11 IDENTIFICATION OF TRUSSES ON SITE

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

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

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

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

2 PRODUCTS

Materials

2.1 TRUSSES NOT EXPOSED

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

2.2 TRUSSES EXPOSED

Timber bandsawn/dry dressed and identified with its unique identifier. Treatment to suit species and location, to NZS 3602, NZBC B2/AS1, refer SELECTIONS.

2.3 FRAMES NOT EXPOSED

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

2.4 FRAMES EXPOSED

Timber bandsawn/dry dressed and identified with its unique identifier. Treatment to suit species and location, to NZS 3602, NZBC B2/AS1, refer SELECTIONS.

Accessories

2.5 STEEL CONNECTOR PLATES

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

2.6 STAINLESS STEEL CONNECTOR PLATES

0.9mm to 2.0mm thick 304 stainless steel sheet, punched to form a nail on connector.

2.7 GALVANIZED STRUCTURAL BRACKETS

>3mm thick steel plate brackets, hot-dip galvanized to NZS 3604, table 4.2, **Galvanizing of steel components other than nails and screws** with hot-dip galvanised bolts/screws and washers.

2.8 STAINLESS STEEL STRUCTURAL BRACKETS

>3mm thick, 304 stainless steel plate brackets with stainless steel bolts/screws and washers.

2.9 CORROSION RISKS

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

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

3 EXECUTION

Conditions

3.1 COMPLY

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

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3.2 DELIVER, HANDLE AND STORE TRUSSES AND FRAMES

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

Fabrication

3.3 DIMENSIONS, NOT EXPOSED ELEMENTS

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

3.4 DIMENSIONS, EXPOSED ELEMENTS

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

3.5 INSPECTION

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

3.6 FABRICATION

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

3.7 TRUSS AND FRAME FIXINGS

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

Site installation

3.8 TRUSS ERECTION

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

3.9 FRAME ERECTION

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

3.10 FIT CONNECTORS AND FIXINGS - TRUSS

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

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3.11 FIT CONNECTORS AND FIXINGS - FRAMES

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

3.12 ROOF BRACING

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

3.13 WALL BRACING

Refer to 3821 TIMBER FRAMING for wall bracing.

3.14 DPC TO TIMBER

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

3.15 TIGHTEN BOLTS

Check and tighten all fixing bolts after erection is completed.

Completion

3.16 REPLACE

Replace or repair damaged elements.

3.17 REMOVE

Remove debris, unused materials and elements from the site.

3.18 LEAVE

Leave work to the standard required by following procedures.

4 SELECTIONS



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3813J JNL J-FRAME - LVL STRUCTURAL FRAMING

1 GENERAL

This section relates to the supply and installation of Juken New Zealand Ltd J-FRAME laminated veneer lumber (LVL)

1.1 RELATED WORK

Refer to ~ for ~

1.2 ABBREVIATIONS

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

EWPAA	Engineered Wood Products Association of Australasia
LVL	Laminated veneer lumber
JNL	Juken New Zealand

Documents

1.3 DOCUMENTS

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

NZS 3603	Timber Structures Standard
NZS 3604	Timber-framed buildings
AS/NZS 4357.0	Structural laminated veneer lumber - Specifications
CodeMark™ CMNZ70031 ver4	J-Frame

1.4 MANUFACTURER'S DOCUMENTS

Juken New Zealand Ltd documents relating to work in this section are:

J-Frame Brochure
J-Frame Design & Installation Guide (v5 2025)
JNL LVL Preservation Treatment Standard July 2019
Scion Recommended procedure for testing moisture content of J-Frame LVL
BRANZ Appraisal 646 J-Frame LVL Framing (2024)

Copies of the above literature are available from Juken New Zealand Limited.

Web:	www.jnl.co.nz
Email:	info@jnl.co.nz
Telephone:	09 373 3933

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Juken New Zealand Ltd engineered wood products or associated components or accessories.

1.7 COMPLIANCE CODEMARK CERTIFICATE, J-FRAME

J-Frame meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ70031.

1.8 CO-ORDINATION

Refer to all drawings to ensure details and fixings required are provided for in the structural LVL work.



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2 PRODUCTS

Materials - Laminated Veneer Lumber

2.1 J-FRAME LVL FRAMING - HAZARD CLASS H1.2 OR LESS

J-Frame is a structural Laminated Veneer Lumber (LVL) gauged framing timber produced from Pinus radiata. The manufacture of J-Frame is certified by the EWPAA as a Special Product in accordance with AS/NZS 4357.0. Refer to SELECTIONS for sizes.

J-Frame is available in J-FRAME 8 and J-FRAME 11 grades. The characteristic properties (values) are above the minimum of SG8 in respect of J-FRAME 8 and above the minimum of SG10 for J-FRAME 11 as referenced in NZS 3604.

J-Frame is treated in accordance with the JNL LVL Preservation Treatment Standard July 2019 and is preservative treated for where Hazard Class H1.2 or less applies.

2.2 J-FRAME MARKING

J-Frame LVL framing is marked as follows;

- Assigned structural grade J-FRAME 8 or J-FRAME 11
- EWPAA Certified Structural LVL Mill 921 or 922
- A-Bond
- Formaldehyde Emission Class E0
- Preservative Treatment:
- 921 Boron
- Where Hazard Class H1.2 or less applies

Components

2.3 STEEL CONNECTOR PLATES

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

2.4 STAINLESS STEEL CONNECTOR PLATES

0.9mm to 2.0mm thick 304 stainless steel sheet, punched to form a nail on connector.

2.5 GALVANIZED STRUCTURAL BRACKETS

>3mm thick steel plate brackets, hot-dip galvanized to NZS 3604, table 4.2, **Galvanizing of steel components other than nails and screws** with hot-dip galvanized bolts/screws and washers.

Accessories

2.6 REMEDIAL PRESERVATIVE

Proprietary liquid formation containing boron for use as a remedial timber brush or spray applied preservative.

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 ERECTION GENERALLY

Set out and erect in accordance with JNL requirements, NZS 3603 and NZS 3604. Prop long length beams and lintels at the mid span until the moisture content has reached a suitable level. Prior to the application of cladding and lining materials, test the moisture content of J-Frame LVL framing to determine compliance with acceptable moisture content requirement for closing the building. Test to the Scion Recommended procedure for testing moisture content of J-Frame LVL.

3.4 SET TIMBERS

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

3.5 HOLES AND NOTCHES

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

3.6 TREAT CUT ENDS

Treat cut ends, holes, notches and the like with a brush or spray on remedial preservative.

3.7 EXPOSED TIMBER CONNECTORS AND FIXINGS

Do not use on any structural framing exposed to view unless detailed on the drawings.

3.8 POWDER-ACTUATED FASTENING TOOLS

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

3.9 FORM NAILED JOINTS

Fully drive nails in all structural joints with the number and location for each particular joint, to the requirements of the nailing schedules of NZS 3604.

3.10 FORM BOLTED JOINTS

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

3.11 FIT CONNECTORS AND FIXINGS

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

Completion & Commissioning

3.12 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 J-FRAME LAMINATED VENEER LUMBER (LVL)

Location:	~
Type:	J-Frame
Size:	~mm x ~mm
Length:	~m
Strength Grades:	~
Treatment:	Suitable for where hazard class H1.2 or less applies

Components

4.2 BOLTS AND SCREWS

Location	Type	Material	Finish
~			

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4.3 STEEL CONNECTOR PLATES

Location	Type	Material	Finish
~			

4.4 STRUCTURAL BRACKETS

Location	Type	Material	Finish
~			

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3821 TIMBER FRAMING

1 GENERAL

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

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

The following definitions apply specifically to this section:

SG Structural grade to NZS 3604, 1.3 Definitions

Documents

1.2 DOCUMENTS

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

NZBC B2/AS1	Durability
AS/NZS 2904	Damp-proof courses and flashings
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3622	Verification of timber properties
NZS 3631	New Zealand timber grading rules
NZS 3640	Chemical preservation of round and sawn timber
WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry.
BRANZ BU 673	Cavity battens

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

1.3 DIMENSIONS

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

2 PRODUCTS

Materials

2.1 TIMBER FRAMING, TREATED

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

2.2 TIMBER FRAMING, CHEMICAL FREE

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

2.3 APPEARANCE TIMBERS

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

2.4 STRAPPING

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

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

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2.5 EXTERIOR CAVITY WALL BATTENS - TIMBER - NON-STRUCTURAL

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

2.6 EXTERIOR CAVITY WALL BATTENS - TIMBER - STRUCTURAL

To BRANZ BU 673, part 6. H3.2 SG6 Radiata pine kiln dried battens, 20mm thick, 40mm minimum width, and height to match timber framing studs. To NZS 3602, table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance.

2.7 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

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 THREADED RODS

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

2.12 TIMBER CONNECTORS AND FIXINGS

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

2.13 BRACING STRAPS

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

2.14 POWDER ACTUATED FASTENERS

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

2.15 CORROSION RISKS

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

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

3 EXECUTION

Conditions

3.1 PROTECT TIMBER

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

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3.2 EXECUTION

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

3.3 SEPARATION

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

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

3.4 PRE-INSTALLATION REQUIREMENTS

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

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

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

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

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

3.6 SET-OUT

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

3.7 SET TIMBERS

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

3.8 TIMBER CUTTING

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

3.9 TIMBER PLATES AND FURRING

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

3.10 HOLES AND NOTCHES

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

3.11 STRAIGHTENING STUDS

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

3.12 EXPOSED TIMBER CONNECTORS AND FIXINGS

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

3.13 POWDER-ACTUATED FASTENING TOOLS

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

3.14 ADDITIONAL FRAMING

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

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3.15 FORM NAILED JOINTS

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

3.16 FORM BOLTED JOINTS

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

3.17 FIT CONNECTORS AND FIXINGS

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

3.18 FIT JAMB BATTENS

For walls with direct fix cladding, fit 20mm (nominal) jamb battens over the wall underlay, to the jambs of window and door rough openings, to NZBC E2/AS1, Figure 9.1.9.4: General window and door opening for direct fixed. Cut around sill flashings. Fix with 60 x 2.8 flat head galvanized nails at 300mm centres.

3.19 FIT CAVITY BATTENS

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

3.20 FIT BRACING

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

3.21 DPC TO LOSP TREATED TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.22 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section

Completion

4 SELECTIONS

4.1 CAVITY BATTENS

Cavity battens	Species	Grade	Treatment
Timber - Structural	Radiata pine	Merch	H3.2
Timber - Non Structural	Radiata pine	Merch	H3.1

4.2 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

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4161TH DRISPACE UNDERLAYS, DPC & AIRTIGHT SYSTEMS

1 GENERAL

This section relates to the application of DriSpace (a division of TCL Hunt) products, comprising:

- DriStud Wall Wrap
- DriStud EcoWall Wrap
- DriStud Cool Window flashing tape
- DriStud Repel fire retardant vapour permeable water resistant flexible air barrier

- DriStud EcoDri FR - 181 gsm fire retardant synthetic self-support roof underlay
- DriStud FRU 38 - 220 gsm fire retardant synthetic self-support roof underlay
- DriStud FRU 36 - 155 gsm fire retardant synthetic self-support roof underlay
- DriStud RU 24 - 170 gsm synthetic self-support roof underlay
- DriStud RU 22 - 140 gsm synthetic self-support roof underlay

- DriStud W8 - synthetic fire retardant medium weight white faced foil
- DriStud W11 - synthetic fire retardant heavy weight premium white faced foil

- ProctorPassive Wraptite SA - self-adhering fire retardant, vapour permeable, airtight wall and roof underlay
- ProctorPassive Wraptite UV-SA - self-adhering, high UV, fire retardant, vapour permeable, airtight wall underlay. Suitable for Open Joint Cladding applications
- ProctorPassive Rainscreen RS-IT - high UV, fire retardant vapour permeable wall underlay
- ProctorPassive SmartVap - vapour control layer for airtight ceiling and wall
- ProctorPassive GeoVap - vapour control layer for airtight ceiling and wall for high humid environments
- ProctorPassive Driflash Window Flashing Tape
- ProctorPassive Youbyute Flexi Tape

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 definitions apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

NZBC B2	Durability provisions for building elements
NZBC C/AS1	Protection from fire for buildings with sleeping (residential) and outbuildings (risk group SH)
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC C3	Fire affecting areas beyond the fire source
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F2	Hazardous building materials
AS/NZS 2904	Damp proof courses and flashings
AS 1530.2	Methods for fire tests on building materials, components and structures – test for flammability of materials
NZS 3604	Timber-framed buildings

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AS/NZS 4200.1	Pliable building membranes and underlays - Materials
AS/NZS 4201.4	Pliable building membranes and underlays - Methods of test - Resistance to water penetration
AS/NZS 4389	Roof Safety mesh
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
AAMA 711-13	Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Product
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice
CodeMark™ CMNZ70019 ver2	DriStud EcoWall Wrap and DriStud Wall Wrap Wall Underlays
CodeMark™ CMNZ70021 ver4	DriStud EcoDri FR, DriStud RU22, DriStud RU24, DriStud FRU36 and Dristud FRU38 Roof and Wall Underlays
CodeMark™ CMNZ70022 ver2	DriStud Cool Window Flashing Tape
CodeMark™ CM70040 ver1	DriStud W11
CodeMark™ CMNZ70141 ver0	DriStud Repel
CodeMark™ CMNZ70152 ver0	ProctorPassive Wraptite SA
CodeMark™ CMNZ70153 ver0	ProctorPassive Wraptite UV-SA

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

DriStud Product Literature:
DriStud Wall Wrap Installation Guide
DriStud EcoWall Wrap Installation Guide (Feb 2025)
DriStud Cool Window Flashing Tape Installation Guide for Rigid Air Barriers
DriStud Cool Window Flashing Tape Installation Guide for Flexible Wall Underlays
DriStud Cool Window Product Technical Statement
DriStud Repel Installation Guide
DriStud Repel Product Technical Statement
DriStud Sealant Compatibility Chart
DriStud FRU 38 Roof Underlay Product Technical Statement
DriStud FRU 36 Roof Underlay Product Technical Statement
DriStud RU 24 Roof Underlay Product Technical Statement
DriStud FRU38 Installation Guide Rev 4.0 (Sep 2024)
DriStud FRU36 Installation Guide Rev 5.0 (Sep 2024)
DriStud RU22 Installation Guide Rev 4.0 (August 2023)
DriStud RU24 Installation Guide Rev 5.0 (Sep 2024)
DriStud EcoDri FR Installation Guide Rev 1.0 (Sep 2024)
DriStud W8 - fire retardant medium weight white faced foil
DriStud W11 - synthetic fire retardant heavy weight premium white faced foil

ProctorPassive Wraptite SA - self-adhering, fire retardant, vapour permeable wall and roof underlay
ProctorPassive Wraptite UV-SA - self-adhering, high UV, fire retardant, vapour permeable wall underlay. Suitable for Open Joint Cladding applications.
ProctorPassive Rainscreen RS-IT - fire retardant, high UV, vapour permeable wall underlay
ProctorPassive Rainscreen RS-IT Installation Guide, June 2021
ProctorPassive SmartVap - vapour control layer for airtight ceiling and wall
ProctorPassive GeoVap - vapour control layer for airtight ceiling and wall for high humid environments

Manufacturer/supplier contact details;

Company:	TCL Hunt Ltd
Trading as:	DriSpace
Web:	www.drispace.co.nz
Email:	technical@drispace.co.nz
Telephone:	0800 374 7883

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years For materials

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of original purchase.

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 and products listed in this section.

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Performance - General

1.8 COMPATIBILITY TEST - SEALANTS & DRISTUD COOL WINDOW FLASHING TAPE

The following sealants are tested and found to be compatible in accordance with AAMA 713-08 "Voluntary Test Method to Determine Chemical Compatibility of Sealants and Self-Adhered Flexible Flashings", using test temperatures of 5ºC, 30ºC, 60ºC and 80ºC with DriStud Cool Window Flashing Tape.

- Dowsil 758
- Dowsil 790
- Dowsil 795
- Fixall HG MS
- Fixall 220 MS
- Gorilla Firestop MS
- Sika AT
- Sika MS

1.9 COMPATIBILITY TEST - TRADE-SEALS (MARSHALL INNOVATIONS) & DRISTUD WALL WRAP

Trade seals from Marshall Innovations and DriStud Wall Wrap samples were tested and found to be compatible according to AAMA 713-08 "Voluntary Test Method to Determine Chemical Compatibility of Sealants and Self-Adhered Flexible Flashings", using test temperatures of 5ºC, 30ºC, 60ºC and 80ºC.

1.10 COMPATIBILITY - PROCTOR PASSIVE WRAPTITE SA, PROCTOR PASSIVE WRAPTITE UV-SA AND MULTIPLE SUBSTRATES

ProctorPassive Wraptite SA and ProctorPassive Wraptite UV-SA are compatible with the following substrates;

- Exterior Gypsum Sheathing
- Aluminium (painted or mill finish)
- OSB
- Most rigid insulation
- Cast in place concrete
- Rigid Vinyl
- Pre-painted steel
- Galvanized metal
- Pre-cast concrete
- Steel
- Concrete block
- Plywood

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2 PRODUCTS

Wall

2.1 DRISTUD WALL WRAP

Fire retardant, non-woven, wall underlay and air barrier, water resistant, absorbent and breathable.

DriStud Wall Wrap is CodeMark™ certified, suitable for residential or commercial, timber or steel framed buildings. Suitable for direct fixor cavity installation with absorbent or non-absorbent cladding and gable ends.
Suitable for wind zones up to and including Very High and Extra High when used as a flexible underlay over a rigid wall underlay, as outlined in NZS 3604.

2.2 DRISTUD COOL WINDOW FLASHING TAPE

Window sealing system to AAMA 711-13, can also be used for general sealing of wall penetrations. DriStud Cool window flashing tape has a polymer adhesive with a service temperature range of -28°C to 80°C and can be exposed to UV for up to 180 days. CodeMark™ certified, suitable for residential or commercial, timber or steel framed buildings. Can be used with DriStud Wall Wrap for plywood/fibre cement rigid air barrier installation. To NZS 3604 Building Wind Zones up to and including Extra High.

381µm thick, and available in 3 widths, 75mm, 150mm and 200mm.

Floor

2.3 DPC

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

Roof Underlays

2.4 DRISTUD FRU 36 FIRE RETARDANT SELF-SUPPORT SYNTHETIC ROOF UNDERLAY

A medium weight fire retardant, absorbent, breathable air barrier, synthetic non-woven roofing underlay consisting of two spun-bonded polyolefin fabric layers laminated to a micro porous water resistant film. CodeMark™ certified and suitable for both self support and heavyweight applications under masonry tiles, metal tiles, or profiled metal roof claddings, on timber or steel framing.

Suitable for wind zones up to and including Extra High, as outlined in NZS 3604.
Fire retardant to AS 1530.2 with flammability index of ≤ 5, to NZBC C/AS2, meets the requirements for suspended fabrics.

2.5 DRISTUD RU 24 SYNTHETIC SELF SUPPORT ROOF UNDERLAY

Heavy weight, self support, synthetic non-woven roofing underlay consisting of two spun-bonded polyolefin fabric layers laminated to a micro porous water resistant film. CodeMark™ certified and designed for use as a water absorbent, breathable air barrier, water resistant roofing underlay under masonry tiles, metal tiles or profiled metal roof claddings, on timber or steel framing.

Suitable for wind zones up to and including Extra High, as outlined in NZS 3604.

2.6 DRISTUD RU 22 SYNTHETIC SELF SUPPORT ROOF UNDERLAY

Medium weight, self support, synthetic non-woven roofing underlay. Consisting of two spun-bonded polyolefin fabric layers laminated to a micro porous water resistant film. CodeMark™ certified and designed for use as a water absorbent, breathable air barrier, water resistant roofing underlay under masonry tiles, metal tiles or profiled metal roof claddings, on timber or steel framing.

Suitable for wind zones up to and including Extra high, as outlined in NZS 3604.

3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

Design, application and installation of DriStud products to NZBC E2/AS1, CodeMark™ certification, DriStud Technical Literature and Industry Codes of Practice.



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3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Carry out remedial work identified before laying underlay.

Application - DriStud Wall Wrap & REPEL Air Barrier

3.4 DRISTUD WALL UNDERLAY INSTALLATION

Fix horizontally to outside face of framing in true alignment, with succeeding sheets overlapping 150mm to NZBC E2/AS1, 9.1.6 Wall underlay, and refer to DriStud for requirement for fastenings. Pull the underlay taut over the framing before fixing. Run the underlay horizontally and extend it from the upper side of the top plate to the under-side of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs. Horizontal laps must be minimum 75mm wide, with the direction of the lap ensuring that the water is shed to the outer face. Vertical joints and end laps to be over framing and be minimum 150mm wide. Protect from UV light within 90 days.

3.5 OPENINGS

Run the underlay over openings and leave covered until windows and doors are ready to be installed. Form openings in the membrane by cutting a 45° diagonal from each corner of the penetration. Fold back the flaps inside the opening and staple to the penetration framing. Cut off excess underlay flush with the internal face of the wall frame.

Restrain from bulging into the drained cavity to NZBC E2/AS1, paragraph 9.1.7.10.

3.6 INSTALL STUD STRAPS

Where stud spacing is greater than 450mm centres, install 19mm wide polypropylene straps, over underlay, horizontally at 300mm centres, draw taut and fix to studs with stainless steel staples.

Application - DriStud Window Flashing Tape

3.7 DRISTUD COOL WINDOW FLASHING TAPE

Corners of window/door sills to have a strip of 150mm by 75mm Cool Window Flashing Tape to be laid at a 45° angle, sealing the corner junction. Install DriStud Cool Window Flashing Tape to full length of sill and lapped up jambs 200mm in accordance with DriStud installation instructions. Tape to be aligned to the inside edge of opening and overlap face of wall 50mm min. On the two upper corners of opening, apply tape to 200mm down jamb and across head with 45° seal to corners.

Application - Roofing Underlay and Foil

3.8 ROOF UNDERLAY INSTALLATION

Install in accordance with the DriStud Instruction Manual. Apply from the lowest point to allow laps to shed water. All edge and end laps must be overlapped by a minimum of 150mm. Ensure that the underlay is properly fixed to the surface at perimeters or around penetrations.

Completion

3.9 COMPLETION MATTERS

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

4 SELECTIONS

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

Wall

4.1 DRISTUD WALL WRAP

Location:	Over RigidRAP
Brand / type:	DriStud Wall Wrap

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4.2 DRISTUD COOL WINDOW FLASHING TAPE

Location:	~
Brand:	DriStud
Type:	Cool Window Flashing Tape
Width:	150mm

Roofing Underlays

4.3 DRISTUD FRU 36

Location:	Roofing
Type:	DriStud FRU 36



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4165DV DRISPACE ROOF VENTILATION & WALL VENTED CAVITY BATTEN

1 GENERAL

This section relates to the supply and installation of DriSpace VENT roof and wall ventilation systems.

It includes:

- Ventilated Wall Cavity Batten
- Ventilated Roof Products

1.1 RELATED WORK

Refer to 4161TH DRISPACE UNDERLAYS, DPC & AIRTIGHT SYSTEMS for roof and wall underlays.

Documents

1.2 DOCUMENTS

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

NZBC C/AS1	Protection from fire for buildings with sleeping (residential) and outbuildings (risk group SH)
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC C/VM1	Protection from fire
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
BRANZ Appraisal 979 Roof Ventilation Products
BRANZ Appraisal 1099 (2024) - Vent Ventilated Wall and Drainage Cavity Batten

Roof Ventilation Design Guide for all roof pitches
VENT Passive Ventilation System - brochure
VENT Product Technical Sheets - for various products
ProctorPassive HC9 Drainage Mat - Product Technical Statement

Manufacturer/supplier contact details

Company:	DriSpace (a division of TCL Hunt Ltd)
Web:	www.drispace.co.nz
Email:	sales@drispace.co.nz technical@drispace.co.nz
Telephone:	0800 DRISTUD (0800 374 7883)

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For durability of DriSpace ventilation products

- Provide this warranty on the TCL Hunt Warranty for DriSpace Products standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT).
- Refer to TCL Hunt Warranty for DriSpace Products warranty form for conditions and limitations of warranty.
- Commence the warranty from the date of purchase.

Refer to the general section 1237 WARRANTIES for additional requirements.

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Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

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

2 PRODUCTS

Materials

2.1 VENT VB10 VENTILATION AND DRAINAGE ROOF BATTEN

VENT VB10 Ventilated and Drainage Roof Batten, a 45mm wide x10mm thick x 1800mm long batten manufactured from extruded polypropylene with peel-off adhesive backing and with 4mm vents that provide passive air flow of 8,000mm² per lineal metre. Use to provide ventilation and drainage between the roof underlay and steel longrun roofing mitigating dew point condensation.

Components

2.2 FIXINGS - ROOF BATTEN VB20 FIXING

40 x 2.5mm hot-dip galvanized flat head nails or hot-dip galvanized or stainless steel finishing brads.

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. Carry out remedial work identified before installing VENT products.

3.4 CONDITIONS - PREVENTION OF FIRE

Separation or protection must be provided to the VENT products from heat sources such as fire places, heating appliances, flues and chimneys. Refer to NZBC C/AS1-AS2 and NZBC C/VM1 for requirements.

3.5 CONDITIONS - SITE EXPOSURE

Do not expose VENT propylene products to weather or ultra-violet light for a prolonged periods of time, especially G502 Roll Panel Vent (Ventilated Eaves Baffle) which should be covered on the same day as installation.

Installation/application

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Application - Roof

3.7 FIX ROOF UNDERLAY

Refer to relevant underlay section for installation.

3.8 INSTALL VENT VB10 VENTILATION AND DRAINAGE ROOF BATTEN

Install VENT VB10 Ventilation and Drainage Roof Batten to the manufacturer's requirements after the installation of roof underlay.

Remove peel-off backing to battens and temporarily fix over underlay to the top of the purlins. Battens maybe cut with a knife, handsaw or dropsaw. The battens are fixed by the roof cladding fixings which will penetrate the roof framing.

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

Materials

4.1 VENT VB10 VENTILATION AND DRAINAGE ROOF BATTEN

Location:	Refer architectural drawings
Supplier:	DriSpace
Manufacturer:	Blue Building Solutions Ltd (T/A VENT)
Type/Brand:	VENT VB10 - Ventilation and Drainage Roof Batten
Size:	45mm wide x 10mm thick x 1800mm long
Fixings:	Self-adhesive backing (temporary fixing)

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4171IB IBS RIGIDRAP RIGID AIR BARRIER SYSTEM

1 GENERAL

This section relates to the use of **RigidRAP®** as a rigid air barrier system and bracing element in both residential and commercial timber framed buildings.

1.1 RELATED WORK

Refer to the appropriate timber frame section for timber framing.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FSC	Forest Stewardship Council
IBS	Independent Building Supplies Limited
OSB3	Oriented Strand Board (consisting of three cross-oriented layers)
PEFC	Programme for the Endorsement of Forest Certification
RAP	Rigid air panel

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCE 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 E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber Structures Standard
NZS 3604	Timber-framed buildings
CodeMark™ CMNZ70035-4	IBS RigidRAP

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

IBS RigidRAP Installation Details - dwg, pdf or jpg format
IBS RigidRAP® Product Specification
IBS RigidRAP® Maintenance & Warranty
IBS RigidRAP® Design & Installation Guide (April 2024)

Manufacturer/supplier contact details:

Company:	Independent Building Supplies Limited
Web:	www.ibs.co.nz
Email:	info@ibs.co.nz
Telephone:	0800 367 759

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

50 years	For IBS RigidRAP®

- 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.

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Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS WORKERS - LICENSED UNDER STATUTE

Installers to be experienced, competent trades people familiar with the **RigidRAP®** materials and techniques specified. Installation must be carried out, or supervised by, a Licensed Building Practitioner.

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the **RigidRAP®** specified systems, components or associated products listed in this section.

Compliance information

1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

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

Performance - Wind

1.9 DESIGN PARAMETERS, WIND

Design the installation to the manufacturer's requirements in accordance with CodeMark™ certificate CM70035 and as appropriate for the project wind design stated in the general section 1220 PROJECT.

RigidRAP® installed as bracing

1.10 BRACING SYSTEM

Provide braced wall systems using the **RigidRAP®** bracing system to meet the requirements of NZS 3604 Section 5, **Bracing design.** Refer to drawings and bracing ID schedule for location and type.

Building wind zone	~ (refer to NZS 3604, table 5.4)
Earthquake zone:	~ (refer to NZS 3604 figure 5.4)

Buildings or parts of buildings beyond the scope of NZS 3604 must be to specific design - the **RigidRAP®** bracing system provides bracing resistance for walls and subfloor foundations for light timber framed buildings under wind and earthquake loading to NZBC B1/AS1 and specifically designed to NZS 3603**.**

2 PRODUCTS

Materials

2.1 IBS RIGIDRAP®

Used as a rigid air panel (RAP), certified to CodeMark™ certificate CM70035, panels are faced with a BRANZ appraised laminated synthetic building wrap. Low formaldehyde emitting, 8mm thick, 3-layered, flat pressed panels of oriented strands (OSB3 micro veneers) are sourced from PEFC/FSC certified forests and bonded with synthetic resin. The OSB is manufactured by Swiss Krono to EN 300 and certified to EN 13986.

IBS **RigidRAP®** meets the requirements of NZBC E2/AS1, Table C.2.1.1: Properties of roof underlays and wall underlays.

Available in sheet sizes:

- 2440mm x 1196mm x 8mm
- 2745mm x 1196mm x 8mm
- 3050mm x 1196mm x 8mm

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Components - Generally

2.2 FIXINGS

To NZS 3604, Table 4.3.

Application:	Zone:	Minimum nail length:
Rigid air barrier (not used as bracing)	Zone B & C (all zones where 15 years durability is required)	30mm x 2.5mm galvanized clouts, D or round head
Rigid air barrier (not used as bracing)	Zone D & E	Type 304 Stainless Steel, Gauge 8 x 25mm Surefix screws or 45mm x 2.5mm stainless steel nails annular grooved

Application:	Zone:	Minimum nail length
Structural wall bracing	Zone B & C	30mm x 2.5mm galvanized clouts, D or round head
Structural wall bracing	Zone D & E	Type 304 Stainless Steel, Gauge 8 x 25mm Surefix screws or 45mm x 2.5mm stainless steel nails annular grooved

2.3 CAVITY BATTENS

A minimum 20mm ventilated cavity must be created between IBS **RigidRAP®** rigid air barrier and the exterior cladding.

2.4 PVC FLASHINGS

PVC horizontal and PVC cavity closure flashings or acceptable flashings to NZS 3604 and IBS **RigidRAP®** Design & Installation Guide. A proprietary 'Z' flashing must be installed at mid-floor level where **RigidRAP®** is used above a single storey.

2.5 FLEXIBLE SEALING TAPE

Self-adhesive joint sealing tape to be approved for use with IBS **RigidRAP®** and installed to tape manufacturer's specifications and installation instructions. If all joints are taped in accordance with IBS **RigidRAP®** Design & Installation Guide, additional building wrap is not required. 75mm minimum tape width for vertical joints, 150mm minimum tape width for horizontal joints.

IBS approved joint-sealing tapes:

- Thermakraft Premium Joining Tape 75mm
- Marshall Innovations SUPER-STICK Building Tape®
- Pro ClimaTescon Extoria IBS-OS
- Techno Insulation Watertight®
- 3M™ All Weather Flashing Tape 8067
- Masons 40 Below
- Masons 75mm Hydro Tape
- Dristud Cool Tape
- Frame Protection System Euroband S 60
- SIGA Wigluv

Components - Bracing

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 150mm x 12mm dia galvanized coach screw for timber floors.

2.7 BRACING STRAPS

Mild steel galvanized steel straps to suit application, 25mm x 1.0mm. Nail-on type to the requirements of NZS 3604, section 4, **Durability**, and of the number and type required for each particular application to NZS 3604, sections 6-10.

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3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE AND HANDLING

Store panels horizontally on squared bearers or gluts, at 800mm centres maximum. Do not store directly on the ground. Remove strapping and shrink wrap immediately upon arrival at the installer's storage area or on site.

Protect from direct exposure to the weather in a well ventilated area.
Reject and replace goods that are damaged or will not provide the required finish.
Provide a 48 hour acclimatisation period to adjust to site conditions before fixing.

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Moisture content: 18% maximum in use

3.4 WALL FRAMING

Kiln dried timber framing (maximum moisture content 18%) sizes and set outs to NZS 3604 with stud and nog centres and timber widths to **RigidRAP**® Design & Installation Guide. Treatment to NZBC B2/AS1 and NZS 3602.

Installation - Generally

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.6 FASTENERS

Fasten in accordance with CodeMark™ certificate CM70035 and **RigidRAP**® Design & Installation Guide -

- Bracing element - 150mm centres around perimeter and 300mm centres on intermediate supports of each sheet
- Rigid air barrier - 300mm centres around perimeter and 300mm centres on intermediate supports of each sheet.

3.7 SUPPORT EDGES AND JOINTS

Fully support edges and joints as per **RigidRAP**® Design & Installation Guide. Sheets to overhang bottom plate by 15-40mm.

3.8 PENETRATIONS AND FLASHINGS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding to NZBC E2/AS1, 9.1.4 Wall underlays to wall openings, and 9.1.5 Air seals.

Required preparatory work includes the following:

- Materials lapped in a way that water tracks down to the exterior face of the **RigidRAP**® rigid air barrier.
- Underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations.

3.9 CUT EDGES

Seal cut edges with tape or a waterproof product to prevent moisture ingress.

Installation - Rigid Air Barrier

3.10 FIXING RIGIDRAP SHEETS - RAP

For wind zones up to and including Extra High, fix in accordance with NZS 3604 and **RigidRAP**® Design & Installation Guide. Allow a minimum of 4mm at panel joints to accommodate movement.

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3.11 JOINT SEALING

Seal vertical joints, internal and external corners, penetrations and around windows with minimum 75mm wide self-adhesive sealing tape to **RigidRAP**® Design & Installation Guide. Dust out joints before applying the tape. Horizontal joins to be sealed with a proprietary 'Z' flashing or 150mm wide self-adhesive sealing tape. Refer to list of IBS approved sealing tape.

Installation - Structural Wall Bracing Element

3.12 FIXING RIGIDRAP SHEETS - BRACING

Fix in accordance with NZS 3604 and **RigidRAP**® Design & Installation Guide.

Ensure that:

- Required hold down, strapping, angles, or bolts are in place, and that framing centres are correct.
- GIB HandiBrac® hold-down connections are fixed 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 of the bracing element, bottom plates are fixed to the requirements of NZS 3604.
- Bottom plate fixing - M12 hold down bolts with 50mm x 50mm x 3mm washers when using strap brace method. Hold down bolts provided with system when using GIB HandiBrac® method.

3.13 BRACING SYSTEM 1 - RIGIDRAP 300MM X 2400MM WALL USING GIB HANDIBRAC®

Panel size - 300mm x 2400mm
Wall Construction:
90mm x 45mm MSG8 studs (600mm centres), plates
8mm RigidRAP® board one side, 30mm x 2.5mm dia galvanized clouts or 45mm x 2.5mm s/s annular grooved nails at 150mm centres around the perimeter
GIB HandiBrac® hold down brackets fixed to each end of studs and to bottom plate with concrete hold downs to manufacturer's specifications
Tested on a concrete floor with M12 hold down bolts

3.14 BRACING SYSTEM 2 - RIGIDRAP 400MM X 2400MM WALL USING GIB HANDIBRAC®

Panel size - 400mm x 2400mm
Wall Construction:
90mm x 45mm MSG8 studs (600mm centres), plates
8mm RigidRAP® board one side, 30mm x 2.5mm dia galvanized clouts or 45mm x 2.5mm s/s annular grooved nails at 150mm centres around the perimeter
GIB HandiBrac® hold down brackets fixed to each end of studs and to bottom plate with concrete hold downs to manufacturer's specifications
Tested on a concrete floor with M12 hold down bolts

3.15 BRACING SYSTEM 3 - RIGIDRAP 600MM X 2400MM WALL USING GIB HANDIBRAC®

Panel size - 600mm x 2400mm
Wall Construction:
90mm x 45mm MSG8 studs (600mm centres), plates
8mm RigidRAP® board one side, 30mm x 2.5mm dia galvanized clouts, 8 x 25mm stainless steel Surefix screws or 45mm x 2.5mm stainless steel nails at 150mm centres around the perimeter
GIB HandiBrac® hold down brackets fixed to each end of studs and to bottom plate with concrete hold downs to manufacturer's specifications
Tested on a concrete floor with M12 hold down bolts

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3.16 BRACING SYSTEM 4 - RIGIDRAP 1200MM X 2400MM WALL USING GIB HANDIBRAC®

Panel size - 1200mm x 2400mm
Wall Construction:
90mm x 45mm MSG8 studs (600mm centres), plates
8mm RigidRAP® board one side, 30mm x 2.5mm dia galvanized clouts or 45mm x 2.5mm s/s annular grooved nails at 150mm centres around the perimeter
GIB HandiBrac® hold down brackets fixed to each end of studs and to bottom plate with concrete hold downs to manufacturer's specifications
Tested on a concrete floor with M12 hold down bolts

3.17 BRACING SYSTEM 5 - RIGIDRAP 2400MM X 2400MM WALL USING GIB HANDIBRAC®

Panel size - 2400mm x 2400mm
Wall Construction:
90mm x 45mm MSG8 studs (600mm centres), plates
8mm RigidRAP® board one side, 30mm x 2.5mm dia galvanized clouts or 45mm x 2.5mm s/s annular grooved nails at 150mm centres around the perimeter
GIB HandiBrac® hold down brackets fixed to each end of studs and to bottom plate with concrete hold downs to manufacturer's specifications
Tested on a concrete floor with M12 hold down bolts

3.18 BRACING SYSTEM 6 - RIGIDRAP 1200MM X 2400MM WALL

Panel size - 1200mm x 2400mm
Wall Construction:
90mm x 45mm MSG8 studs (600mm centres), plates
8mm RigidRAP® board one side, 30mm x 2.5mm dia galvanized clouts or 45mm x 2.5mm s/s annular grooved nails at 150mm centres around the perimeter
No hold down brackets

3.19 BRACING SYSTEM 7 - RIGIDRAP 400MM X 2400MM WALL USING GIB HANDIBRAC® AND GIB® BOARD

Panel size - 400mm x 2400mm
Wall Construction:
90mm x 45mm MSG8 studs (600mm centres), plates
8mm RigidRAP® board one side, 30mm x 2.5mm dia galvanized clouts or 45mm x 2.5mm s/s annular grooved nails at 150mm centres around the perimeter
GIB HandiBrac® hold down brackets fixed to each end of studs and to bottom plate with concrete hold downs to manufacturer's specifications
GIB® Standard 10mm board on inside face of stud framing fixed with 32mm x 6g GIB® Grabber® high thread drywall screws, spaced at 150mm centres, decreased to 50mm centres at corners.
Tested on a concrete floor with M12 hold down bolts

3.20 BRACING SYSTEM 8 - RIGIDRAP 600MM X 2400MM WALL USING GIB HANDIBRAC® AND GIB® BOARD

Panel size - 600mm x 2400mm
Wall Construction:
90mm x 45mm MSG8 studs (600mm centres), plates
8mm RigidRAP® board one side, 30mm x 2.5mm dia galvanized clouts, 8 x 25mm stainless steel Surefix screws or 45mm x 2.5mm stainless steel nails at 150mm centres around the perimeter
GIB HandiBrac® hold down brackets fixed to each end of studs and to bottom plate with concrete hold downs to manufacturer's specifications
GIB® Standard 10mm board on inside face of stud framing fixed with 32mm x 6g GIB® Grabber® high thread drywall screws, spaced at 150mm centres, decreased to 50mm centres at corners.
Tested on a concrete floor with M12 hold down bolts

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3.21 BRACING SYSTEM 9 - RIGIDRAP 1200MM X 2400MM WALL USING GIB HANDIBRAC® AND GIB® BOARD

Panel size - 1200mm x 2400mm
Wall Construction:
90mm x 45mm MSG8 studs (600mm centres), plates
8mm RigidRAP® board one side, 30mm x 2.5mm dia galvanized clouts or 45mm x 2.5mm s/s annular grooved nails at 150mm centres around the perimeter
GIB HandiBrac® hold down brackets fixed to each end of studs and to bottom plate with concrete hold downs to manufacturer's specifications
GIB® Standard 10mm board on inside face of stud framing fixed with 32mm x 6g GIB® Grabber® high thread drywall screws, spaced at 150mm centres, decreased to 50mm centres at corners.
Tested on a concrete floor with M12 hold down bolts

Completion & Commissioning

3.22 ROUTINE CLEANING

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

3.23 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Leave work to the standard required for following procedures. Tape over any damage to the paper.

3.24 PROTECTION

Provide the following temporary protection of the finished work:

~

Maximum exposure to weather prior to cladding installation - 90 days.

3.25 COMPLETION MATTERS

Refer to the general section 1270 CONSTRUCTION for completion requirements and, if required, commissioning requirements.

4 SELECTIONS

For further details on selections go to www.ibs.co.nz
Substitutions are not permitted to the following **RigidRAP**® product, or associated components, unless stated otherwise.

Rigid Air Barrier

4.1 IBS RIGIDRAP

Location:	Exterior
Manufacturer:	IBS RigidRAP®
Thickness:	8mm
Sheet size:	As Required

4.2 FIXINGS - NON-STRUCTURAL

Type/size/material: 30mm x 2.5mm galvanized clouts

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Structural Wall Bracing

4.3 IBS RIGIDRAP BRACING

Location:	~
Manufacturer:	IBS RigidRAP®
Thickness:	8mm
Panel size:	~
Bracing System:	~
Timber certification:	~

4.4 FIXINGS - STRUCTURAL

Type/size/material:	30mm x 2.5mm galvanized clouts, D or round head for Durability Zone B & C

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4221HA HERMPAC ACCOYA® HORIZONTAL WEATHERBOARD CLADDING SYSTEM

1 GENERAL

This section relates to the supply and fixing of Hermpac Accoya® Horizontal cladding:

- Bevel Back & Rebated Bevel Back weatherboards
- Rusticated weatherboards
- Splaycut & Multi-Splay weatherboards
- Cavity batten systems
- Fascia
- Mouldings and trims
- Proprietary flashing systems

1.1 RELATED WORK

Refer to ~ for ~.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FSC®	Forest Stewardship Council®
NASH	National Association of Steel Framed Housing

Documents

1.3 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
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
BRANZ BU411	Recommended Timber Cladding Profiles
BRANZ BU 673	Cavity battens
NASH Building	2019 Light Steel Framed Buildings Envelope Solutions
NASH N-11	House Insulation Guide
NASH Standard	May 2019 Light Steel Framed Buildings Part 2
CodeMark CMNZ30139 RevB	Hermpac Accoya® Rusticated, Splaycut and Multi-splay Weatherboard Cavity System
CodeMark CMNZ30140 RevB	Hermpac Accoya® Bevelback & Rebated Bevelback Weatherboard Cavity System

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Hermpac Accoya®/Accoya Grey® literature
Accoya®/Accoya Grey® Grade descriptions
Accoya® Datasheet
Accoya® Safety Datasheet
Hermpac Accoya® Wood Information Guide V4.0 (January 2026)

Hermpac Product Technical Statement (PTS) – Bevelback & Rebated Bevelback (July 2023)
Hermpac Accoya® Bevelback & Rebated Bevelback Construction Drawings (2021)

Hermpac Accoya® Bevelback & Rebated Bevelback Weatherboard Cavity System Installation Specifications
Hermpac Accoya® Bevelback & Rebated Bevelback Weatherboard Direct Fix System Installation Specifications
Hermpac Accoya® Product Installation Checklist – Bevelback and Rebated Bevelback Weatherboard Cavity System (Aug 2023 V2)

Hermpac Product Technical Statement (PTS) – Rusticated, Splaycut and Multi-splay (July 2023)
Hermpac Accoya® Rusticated, Splaycut & Multi-Splay Construction Drawings (2021)
Hermpac Accoya® Rusticated Random Width & Depth Construction Drawings (2021)
Hermpac Accoya® Splaycut Construction Drawings
Hermpac Accoya® Rusticated, Splaycut & Multi-Splay Weatherboard Cavity System Installation Specifications
Hermpac Accoya® Rusticated, Splaycut & Multi-Splay Weatherboard Direct Fix System Installation Specifications
Hermpac Accoya® Product Installation Checklist – Rusticated, Splaycut & Multi-Splay Weatherboard Cavity System (Aug 2023 V2)

Hermpac Standard and Custom Profiles
Hermpac Profile Portfolio
Hermpac Nail/Screw fixings
Hermpac Legal and / or Sustainable Certification
Machinecoat - Flood Coat Inundation versus Spray Application
Maintenance of selected Wood Oil / Oil Based Stain finishes
Hermpac Accoya® Maintenance Guidelines (July 2024 V2)
Hermpac Accoya Grey General & Maintenance Guidelines (May 2025 V4)

Resene Coatings Specification M01-01-20 amended - Accoya Weatherboards, Decking & Joinery, New Zealand & Australia

Manufacturer/supplier contact details

Company:	ITI NZ Limited
Trading as:	Hermpac by ITI
Contacts:	Kyle Deans - 021 771 857, kyled@iti.net.nz
	Carmen Hansen - 027 809 4588, carmenh@iti.net.nz
Web:	www.hermpac.co.nz
Email:	technical@hermpac.co.nz
Telephone:	09 421 9840

Warranties

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years:	For installation of the Hermpac ACCOYA Horizontal Weatherboard Cladding 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.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Compliance information

1.7 CODEMARK CERTIFICATES

Hermpac Accoya® Rusticated, Splaycut and Multi-splay Weatherboard Cavity System and Hermpac Accoya® Bevelback & Rebated Bevelback Weatherboard Cavity System meet the requirements of the NZBC when used within the Conditions and Limitations of their Codemark Certificates CMNZ30139 and CMNZ30140.

1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

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

Performance

1.9 FIXINGS, WIND

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

1.10 PERFORMANCE

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

2 PRODUCTS

Timber species

2.1 ACCOYA®

Hermpac Accoya® is FSC certified New Zealand grown Radiata Pine modified by the proprietary non-toxic acetylation process.

2.2 ACCOYA® GREY

Hermpac Accoya® Grey is FSC certified New Zealand grown Radiata Pine modified by the proprietary non-toxic acetylation process with a natural dye impregnated into the boards.

Materials

2.3 HORIZONTAL WEATHERBOARDS

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

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

- Horizontal Standard Bevel Back and Hermpac Custom Profiles
- Horizontal Standard Rebated Bevel Back and Hermpac Custom Profiles
- Horizontal Standard Rusticated and Hermpac Custom Profiles
- Horizontal Standard Splaycut, Multi-Splay and Hermpac Custom Profiles

2.4 COVER BOARDS, MOULDINGS AND SCRIBERS

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

2.5 FASCIA BOARDS

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

2.6 WALL UNDERLAYS

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

2.7 RADIATA PINE EXTERIOR CAVITY WALL BATTENS - NON-STRUCTURALLY FIXED

Radiata Pine H3.1 and H3.2 minimum 20mm thickness, width and height to match timber framing studs. Refer to SELECTIONS.

2.8 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Mill finish Grade 316 Stainless Steel cavity closure strip, punched with 3mm-5mm holes or slots to provide a minimum ventilation opening area of 1000mm² per lineal metre of wall. Length and width to suit cavity. To NZBC E2/AS1, paragraphs 9.1.7.5 - 9.1.7.7, and Figure 9.1.7.4A: Cavity base closer/vermin proofing.

Components

2.9 NAILS, STAINLESS STEEL

Hermpac Crown, Rose or Flat Head, Annular Grooved Grade 316 Stainless Steel fixings to NZBC E2/AS1, Table C.3.1.1: Fixing selection for wall claddings. Refer to Hermpac Accoya® literature for fixing details and to SELECTIONS for fixing sizes. Delete if specifying screw fixings

2.10 SCREWS, STAINLESS STEEL

Hermpac Starcap Grade 316 Stainless Steel fixings to NZBC E2/AS1, Table C.1.1.1B: Compatibility of materials in contact. Refer to Hermpac Accoya ® literature for fixing details and to SELECTIONS for fixing sizes and colours.

2.11 JOLT HEAD NAILS, STAINLESS STEEL

Hermpac Jolt Head, Annular Grooved Grade 316 Stainless Steel fixings to NZBC E2/AS1, Table C.3.1.1: Fixing selection for wall claddings. Refer to Hermpac Accoya® literature for fixing details and to SELECTIONS for fixing sizes.

2.12 CLINCH NAILS, STAINLESS STEEL

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

2.13 FLASHINGS GENERALLY

To NZBC E2/AS1, 4.0 Flashings. Material, grade and colour as detailed and scheduled and to NZBC E2/AS1, Table C.1.1.1B: Compatibility of materials in contact, and Table C.1.1.1C: Compatibility of materials subject to run-off. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.

2.14 FLASHINGS - IN CONTACT WITH COATED ACCOYA®

Flashings, in Mill finish Grade 316 Stainless Steel and extruded aluminium. Refer to SELECTIONS.

2.15 SOAKERS, STAINLESS STEEL

To NZBC E2/AS1, 4.0 Flashings. Machine folded Grade 316 Stainless Steel sheet to profile of weatherboard and mitred corner joints. To NZBC E2/AS1, Table C.1.1.1B: Compatibility of materials in contact, and Table C.1.1.1C: Compatibility of materials subject to run-off. Ensure that materials used for soakers are compatible with adjacent materials and fixings, cladding materials and fixings.

2.16 ADHESIVE

Two-part epoxy adhesive, suitable for exterior use with timber and metals.

2.17 SEALANT

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

Finishes

2.18 FACTORY PRE-FINISH - MACHINECOAT (NZ) MIGRATING WOOD OIL / OIL BASED STAIN

Flood Coat Inundation: Factory application of selected oil-based stain finishes by flood inundation and enhanced penetration of timber surface by roller pressure and fibre saturation.
Refer to: www.hermpac.co.nz/our-products/coatings

Wood X Stain:

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

2.19 FACTORY PRE-FINISH - DRESSED FACE PROFILES - MACHINECOAT (NZ) PAINT

Factory spray application of Calcium Carbonate free primer (Resene True-Prime). Option also available for first finishing coat on to pre-primed and undercoated timber surface. Refer to www.hermpac.co.nz/our-products/coatings

Primer: - factory applied:	One coat of Resene True-Prime
Top/finishing coats - factory or site applied.	One coat of Resene Lumbersider for factory finish of top coat colour. Site application: two coats of Sonyx 101 semi-gloss acrylic or two coats of Resene Lumbersider for a low-sheen finish.
Factory applied Finishing:	Refer to SELECTIONS.

2.20 SITE APPLIED WOOD OIL / OIL BASED STAINS AND PAINTS

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

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

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

Application - generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 GENERAL - RUSTICATED, SPLAYCUT & MULTI-SPLAY WEATHERBOARDS

Execution to NZBC E2/AS1, 3.0 Weathertightness risk factors, 9.0 Wall claddings, 9.1.7 Drained cavities, and 9.4 Timber weatherboards, BRANZ Appraisal and CodeMark requirements.

Application - preparation

3.6 DOCKING DEFECTS

Before site coating and before installing boards, check for any defects and dock out in accordance with NZ Grading Rules.

3.7 COATING BARE SURFACES & CUT ENDS

Coat all bare surfaces and cut ends of weatherboards and mouldings with specified coating system (3 coats) prior to installation and in accordance with coating manufacturers instructions.

3.8 SITE STAINING - WOOD OIL/OIL STAIN FINISH

If not pre-finished before delivery, prepare and coat all faces and edges with one coat of premium wood oil or oil stain to coating manufacturers specifications. Once coated, individually stack each board to dry (or penetrate) making sure that nothing can mark the face of the board. Once the coating is dry (Resene Woodsman Natural Wood Oil) or penetrated (Wood-X wood oil), stack the boards face to face and back to back in subsequent layers, so as not to damage the face and finish. Keep dry and undamaged.

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

3.9 SITE COATING - PAINT FINISH

For the best performance, the first coat of Resene True-Prime should be applied by in - line machine application, as per recommendations from Resene. If this is not possible, follow the Resene M01-01-20 specification from the first coat ensuring all four sides are coated with Resene True-Prime before installation. Once on site, stack the boards face to face and back to back in subsequent layers, so as not to damage the face and finish. Keep dry and undamaged.

Application - horizontal cladding over cavity battens

3.10 RADIATA PINE BATTEN DRAINED CAVITY - NON-STRUCTURALLY FIXED

Install 20mm minimum thickness drained cavity to NZBC E2/AS1, 9.0 Wall claddings, where required. The Radiata Pine battens are temporarily fixed over the wall underlay using Stainless Steel nails and then firmly fixed by the cladding fixings which will penetrate the wall framing studs.

3.11 CAVITY CLOSER / VERMIN PROOFING

Refer to Hermpac Cavity System Installation Specification. Seal the top of the cavity and install cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). Use cavity spacers where fixing is required between cavity battens.

3.12 PENETRATIONS

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

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

3.13 SETOUT

Use a string line, laser or mechanical device to set out all nailing that will be visible in the finished work. Align all nailing accurately in straight lines. Refer to relevant Hermpac Installation Specification and Accoya® literature to establish correct angle of nail and consistent, accurate placement relative to visible edge of board.

Application - fixing

3.14 FIXING - OIL / STAIN / UNCOATED FINISH

Install level, true to line and face, to NZBC E2/AS1, 9.4 Timber weatherboards. Minimum triple coat all cut ends before fixing. Pilot drill all fixings slightly smaller than gauge of fixing to ensure a snug fit and to minimise risk of moisture entry. Finish the base of heads for Hermpac Crown, Rose and Flat head nails flush onto and not into the board surface. Do not over drive the nail head and crush the timber surface beneath and surrounding the nail.

Refer to Hermpac Accoya literature for suitable face fixings (options include Hermpac Grade 316 Stainless Steel nails or Starcap screws), correct placement of fixings, size, length and minimum penetration requirements, and for external and internal corner construction and fixing details.

3.15 FIXING - PAINT FINISH

Install level, true to line and face, to NZBC E2/AS1, 9.4 Timber weatherboards. Minimum triple coat all cut ends before fixing. Pilot drill all fixings slightly smaller than gauge of fixing to ensure a snug fit and to minimise risk of moisture entry. When using Stainless Steel jolt head nails, punch all fixings and fill void flush to the surface using a two-pot polyester filler before coating with an appropriate Calcium Carbonate free primer. Fill all nail holes flush with board surface.

Refer to Hermpac Accoya literature for suitable face fixings (options include Hermpac Grade 316 Stainless Steel nails or Starcap screws), correct placement of fixings, size, length and minimum penetration requirements, and for external and internal corner construction and fixing details.

3.16 FIXING RUSTICATED, SPLAYCUT & MULTI-SPLAY WEATHERBOARDS

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

Using a Hermpac specialty clinch nail, prior to the next row of Rusticated, Splaycut or Multi-Splay boards being fixed alongside (studs at maximum 600mm centres) and at a position hard up against but not into the hidden lap board edge at every fixing point, restrain the hidden lap tongue by driving the clinch nail into the frame so that the clinch head settles flush into the weatherboard's surface. The clinch nail head must not sit proud of the timber surface nor prevent the correct separation of each adjacent row of boards.
Do not pin weatherboard laps or weatherboards.

3.17 SCARF JOINS (WITHIN-BOARD JOINS)

Scarf joins to occur over cavity battens, and randomly staggered across adjacent boards. Maximum of one scarf join permitted in any length of weatherboard. Do not place adjacent to another scarf joint, junction, corner or penetration. Orientate scarf joints away from prevailing winds and weather with board cut to 30 degree angle. Refer to Hermpac construction drawing HA-RUST-413 or HA-BEVEL-413 and relevant system Installation Guidelines.

3.18 INSTALL FLASHINGS

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

3.19 SEALANT

Coated Accoya® laid over Mill Finish Grade 316 Stainless Steel:

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

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

3.20 COMPLETE

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

Application - pre-finished boards final coat

3.21 PRE-FINISHED BOARDS – FINAL COAT

After installation, apply finishing coat(s) to pre-finished weatherboards, mouldings and trims to achieve specified finish/appearance. Touch up and repair any damage prior to application of final coat. Apply coatings in accordance with manufacturer's instructions.

Completion & Commissioning

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. Contact technical@hermpac.co.nz for assistance or more information.

Timber species

4.1 HERMPAC ACCOYA CERTIFIED SUSTAINABLE TIMBER

Product:	Hermpac Accoya® products
Certification type:	FSC
Timber species:	Radiata Pine (Pinus Radiata)
Origin:	New Zealand
Claim:	FSC Mix

4.2 HERMPAC ACCOYA GREY CERTIFIED SUSTAINABLE TIMBER

Product:	Hermpac Accoya® Grey products
Certification type:	FSC
Timber species:	Radiata Pine (Pinus Radiata)
Origin:	New Zealand
Claim:	FSC Mix

Materials

4.3 HERMPAC WEATHERBOARDS - HORIZONTAL

Location:	~
Species:	~
Grade:	HERMPAC A1
Profile Number/Series:	~
Profile type:	~
Cover dimensions:	~mm
Thickness:	~mm
Cavity Fixing System:	~
Surface finish:	Band Sawn Face (BSF) or Dressed Face (DF)
Moisture content:	≤6-8% at fixing recorded by capacitive moisture meter
Profile Number/Series options:	Select Standard (HP) and Custom (CP) Profiles from website or Hermpac Profile Portfolio or specified nominated alternative custom profile - Series numbers SH1-6 or SH20-25.
Moisture content:	Refer to NZS 3602 Table 4.

4.4 HERMPAC CORNER MOULDS, COVER BOARDS, BOXED CORNERS & SCRIBERS

Location:	~
Species:	~
Grade:	HERMPAC A1
External Corner Mould:	~
Internal Corner Mould:	~
Cover boards:	HP 201, HP202
Scriber:	HP15, HP17, HP18
Surface finish:	Band Sawn Face (BSF) or Dressed Face (DF)
Moisture content:	≤6-8% at fixing recorded by capacitive moisture meter

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4.5 HERMPAC FASCIA

Species:	~
Grade:	HERMPAC A1
Profile:	~
Surface finish:	Band Sawn Face (BSF) or Dressed Face (DF)

Components

4.6 WEATHERBOARD FASTENINGS - STAINLESS STEEL NAILS - WOOD OIL / OIL STAIN / UNCOATED FINISH

Nails:	Crown Head
Type:	Grade 316 Stainless Steel
Size:	~

4.7 WEATHERBOARD FASTENINGS – STAINLESS STEEL SCREWS – WOOD OIL / OIL STAIN / UNCOATED FINISH

Screws:	Hermpac Starcap
Type:	Grade 316 Stainless steel
Colour:	~
Size:	~

4.8 WEATHERBOARD FASTENINGS - STAINLESS STEEL NAILS - PAINT FINISH

Nails:	Jolt Head
Type:	Grade 316 stainless steel
Size:	~

4.9 LAP FASTENINGS - CLINCH NAILS

Nails:	Clinch nails
Type:	Grade 316 Stainless Steel
Size:	~mm x 2.0mm

4.10 RADIATA PINE EXTERIOR CAVITY WALL BATTENS - NON-STRUCTURALLY FIXED

Product:	Radiata Pine Batten
Material:	H3.1 or H3.2 Radiata Pine
Size:	Min. 45mm wide x 20mm thick
Fixings:	Flat head nails
Fixing size:	40mm x 2.5mm

4.11 HERMPAC CAVITY CLOSER/VERMIN-PROOFING

Brand/type:	Hermpac cavity closure
Material:	~

4.12 HERMPAC INTERNAL AND EXTERNAL CORNER BACK FLASHINGS

Material:	~
Size:	~
Length:	~
Type:	~

4.13 CORNER AND JOINT SOAKERS

Location:	External corners / board ends
Material:	Grade 316 Stainless Steel
Finish:	~

4.14 SEALANT

Location:	~
Sealant:	~
Manufacturer:	~

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Factory finish

4.15 FACTORY FINISH - STAIN - FLOOD COAT INUNDATION

Brand:	Machinecoat (NZ) Ltd
Product:	Wood X penetrating stain - Factory formulation
Coating process:	Machinecoat (NZ) Ltd. Flood Coat Inundation
Colour:	~
Number of factory coats:	~
On site coats:	~

4.16 FACTORY FINISH - WOOD OIL - FLOOD COAT INUNDATION

Brand:	Machinecoat (NZ) Ltd
Product:	Wood-X migrating wood oil
Coating process:	Machinecoat (NZ) Ltd. Flood Coat Inundation
Colour:	~
Number of factory coats:	~
On site coats:	~

4.17 FACTORY FINISH - PAINT

Brand:	Machinecoat (NZ) Ltd
Product:	Resene
Coating process:	Machinecoat (NZ) Ltd. Spray Application
Primer:	Resene True-Prime (one coat)
Top coat:	Resene Lumbersider (one coat)
Top coat - site applied:	~
Top coat colour:	~

Site finish

4.18 SITE FINISH - OIL STAIN

Brand:	Wood X penetrating stain
Colour:	~
Site applied coat(s):	~

4.19 SITE FINISH - MIGRATING WOOD OIL

Brand:	Wood-X migrating wood oil
Colour:	~
Site applied coat(s):	~

4.20 SITE FINISH - PAINT

Brand:	Resene
Primer:	Resene True-Prime factory applied by Machinecoat NZ Ltd
Top coat:	~
Topcoat colour:	~

4271 NATURAL STONE VENEER CLADDING

1 GENERAL

This section relates to the installation of natural stone as a mechanically anchored masonry veneer cladding.

1.1 RELATED WORK

Refer to ~ for ~

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

kPa	Kilopascal
MPa	Megapascal

The following definitions apply specifically to this section:

Masonry	To NZS 4210, any construction in units of stone laid to a bond in, and joined together with, mortar
Pointing	To NZS 4210, finishing of previously raked joints of masonry with mortar
Veneer	To NZS 4210, a single skin of non-loadbearing masonry which is attached to and laterally supported by a structural element
Wall tie	To NZS 4210, a tie, together with its fixings or anchorages, used to transfer face loads from a veneer to a structural wall, or between skins of a cavity wall, while being capable of accommodating differential inplane horizontal and vertical deflections between the attached elements

Documents

1.3 DOCUMENTS

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

AS/NZS 2699.1	Built-in components for masonry construction - Wall ties
AS/NZS 2699.3	Built-in components for masonry construction - Lintels and shelf angles (durability requirements)
NZS 3404.1-2	Steel structures standard
NZS 4210	Masonry construction - Materials and workmanship
AS/NZS 4456	Masonry units, segmental pavers and flags - Methods of test
AS/NZS 4600	Cold-formed steel structures

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

~

Manufacturer/supplier contact details

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

1.5 SPECIFIC DESIGN DOCUMENTS

Specific design documents relating to this part of the work:

Documents:	~
Note:	Refer to ~

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Warranties

1.6 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

~ years For ~

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.7 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

~ years For ~

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.8 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.9 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.

1.10 NO SUBSTITUTIONS

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

1.11 SAMPLES

Refer to the general section 1270 CONSTRUCTION for details of how samples will be reviewed and how instructions to proceed will be given. Provide the following samples for review:

	Sample A	Sample B	Sample C
Sample description:	~	~	~
Sample type:	~	~	~
Number:	~	~	~
Location:	~	~	~
Supporting documentation:	~	~	~
Reviewer:	Contract administrator~	Contract administrator~	Contract administrator~
Time for review:	10 working days ~	10 working days ~	10 working days ~
Review criteria:	~	~	~

1.12 TEST MASONRY

Test masonry in accordance with NZS 4210 for the following and at frequencies required by the engineer. Keep test records and make available to the contract administrator on request.

- 28 day compressive strength of mortar
- 7 day masonry-to-mortar bond strength

1.13 KEEP RECORDS

Keep the following records and make available to the contract administrator on request:



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- Proportions of mortar used, including admixtures
- Supplier of mortar sand

1.14 INFORMATION FOR INSTALLATION

Contractor to obtain manufacturer / supplier instructions and requirements for the installation of the natural stone product. Keep and maintain on site the relevant latest version of such documents and make available to workers carrying out that part of the work.

1.15 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.

Compliance information

1.16 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

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

Quality control and assurance

1.17 INSPECTIONS

~ ~

2 PRODUCTS

Materials - cavity

2.1 CAVITY BATTENS

Refer to SELECTIONS.

Materials - veneer

2.2 NATURAL STONE

Quarried stone worked to size, shape and face finish to form veneer cladding and decorative stone work, such as string courses, quoins, sill and cap stones. Salt attack resistance tested to AS/NZS 4456 to comply with NZS 4210. Refer to SELECTIONS.

2.3 MORTAR

To NZS 4210, bedding and jointing mortar composed of Portland cement, sand, admixture or hydrated lime and clean, fresh water free from excess alkali, salt, silt and organic materials. Mortar for pointing and for use with sill and cap stones to include waterproofing agents. Coloured mortar to be coloured by use of mineral oxide pigments or coloured cement. Refer to SELECTIONS.

2.4 WALL TIES

Wall ties and associated fixings of the specified type. Durability classification, marking and structural performance to AS/NZS 2699.1. 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 STORAGE & HANDLING OF AGGREGATES

Store and handle aggregates to prevent segregation and contamination by foreign materials and intermixing of aggregate sizes.

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3.3 STORAGE & HANDLING OF CEMENT & MORTAR

Store and handle cement and mortar to protect it against deterioration and contamination. Store accessible for inspection.

3.4 STORAGE & HANDLING OF NATURAL STONE

Store natural stone to protect from weather so that stone is in an air-dry state at installation. In hot dry weather dampen stone as per the manufacturer / supplier instructions. Check stone is of required thickness, size, shape and finish, and without defects. Carry out such additional work to bring stone to the required condition.

3.5 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.

3.6 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work, including (but not limited to):

- Vertical and horizontal alignment of the concrete base
- Installation of damp proofing material to walls and concrete base
- Installation of flashings required to be installed prior to veneer cladding installation (i.e. joinery flashings)
- Installation of windows and doors

Installation/application - generally

3.7 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements. Tolerances to NZS 4210, Maximum tolerances.

3.8 COLD & HOT WEATHER CONSTRUCTION

In air temperatures below 5°C and above 25°C or in drying winds, install natural stone veneer cladding to the precaution requirements of NZS 4210 for cold and hot weather construction.

3.9 BLENDING OF NATURAL STONE

Blend natural stone to achieve a consistent colour and size spread throughout the work.

3.10 CLEANING OUT

To NZS 4210, Cleaning Out. Clean out drained cavities and remove mortar from ties, mortar protruding into cells and cavities at joints, mortar droppings and other loose material.

3.11 FACE WORK

Keep natural stone face work clean during erection and until completion of the contract works. Remove occurring stains as per the natural stone manufacturer / supplier instructions and requirements for cleaning.

3.12 PROTECTION OF UNFINISHED WORK

Protect freshly laid stone work and the top course of uncompleted walls during interruption through rain and at completion of each day's work.

3.13 PROTECTION OF CAVITY

Install temporary protection where required to protect the cavity from wet mortar entering. Only remove when mortar has cured.

Installation - cavity

3.14 INSTALLATION CAVITY BATTENS

Install cavity battens vertically, true to line and face, at required spacing. Rigidly fix in place.

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Installation - veneer

3.15 PREPARATION MORTAR

Mix materials for mortar to composition and proportion required by, and to the instructions of, the manufacturer and NZS 4210. Measure materials in calibrated devices, thoroughly mix to an even consistency in a mechanical batch mixer or with a hand-mixer for quantities of mortar not exceeding 0.03m³.

3.16 LAYING OF VENEER STONES

Ensure stone is clean, sound and free of defects. Start at corners / wall ends and work horizontally towards the centre, lay stone to the required bond, true to line, plumb and level in 10mm thick (±3 mm tolerance) soft plastic mortar bed, up to 20mm thickness is acceptable for bottom course where required to accommodate variations in the foundation. Lay stone from sedimentary geological formation with its natural bed horizontal. Tool mortar joints to the specified type.

3.17 INSTALLATION WALL TIES

Install wall ties as the work proceeds to the specified embedment, spacing and fixing and to the instructions of the manufacturer. Install at a 5° downward angle away from the exterior wall and contained within the veneer's mortar bed over its full contact length. When fixing through membranes pre-fill fixing holes with silicone sealant.

3.18 INSTALLATION WEEP HOLES

Install 75mm high x maximum 10mm wide weep holes at maximum 800mm centres to mortar joints at the bottom of the natural stone veneer cladding and at any other location shown on construction drawings and stated in the specific design documentation. Where 75mm height cannot be achieved reduce weep hole spacing to provide at least 1000mm² opening area per lineal meter.

3.19 INSTALLATION VENTILATION

Provide ventilation to the top of the veneer to the requirements of NZS 4210 and in accordance with construction drawings and specific design documents.

Completion & Commissioning

3.20 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 - cavity

4.1 CAVITY BATTENS

Location:	~
Supplier:	~
Brand:	~
Type:	~
Material:	~
Size:	20mm
Fixings:	~

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Materials - veneer

4.2 NATURAL STONE

Location:	Exterior and Interior
Supplier:	Island Stone
Type:	Natural Stone
Thickness:	15mm - 40mm
Size:	Random - each piece varies
Face finish:	Penetrating Sealer
Compressive strength:	~MPa minimum unconfined compressive strength

4.3 MORTAR

Location:	~
Supplier:	~
Brand:	~
Type:	~
Classification:	~
Colour:	~
Compressive strength:	~MPa minimum 28 day compressive strength
Bond strength:	~kPa minimum 7 day masonry-to-mortar bond strength
Joint type:	~

4.4 WALL TIES

Location:	~
Supplier:	~
Brand:	~
Type:	~
Classification:	~
Material:	~
Spacing:	~
Embedment:	~
Fixings:	~

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4311NZ COLORSTEEL® ROOFING

1 GENERAL

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

1.1 RELATED WORK

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

Refer to 7411 RAINWATER SPOUTING SYSTEMS for rainwater disposal.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
CoP	Code of Practice for Metal Roofing
MS	Modified silicone

Documents

1.3 DOCUMENTS

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

BPS	Building Product Specifications
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 3566	Self-drilling screws for the building and construction industries
ISO 5660.1	Reaction to fire tests - heat release, smoke production and mass loss rate. Part 1 Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction to fire tests - heat release, smoke production and mass loss rate. Part 2 Smoke production rate (dynamic measurement)
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice
CodeMark™ CMNZ70050 ver2	Colorsteel® Dridex®

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

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

Manufacturer/supplier contact details

Company:	New Zealand Steel Limited
Web:	www.colorsteel.co.nz
Email:	specifications@colorsteel.co.nz
Telephone:	0800 100 523



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Rollformer: Freeman Roofing

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

40 years	For COLORSTEEL® Maxam™ for perforation in Exposure Zone C
18 years	For COLORSTEEL® Maxam™ for paint in Exposure Zone C

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

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	For workmanship

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS - DRIDEX®

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

1.9 NO SUBSTITUTIONS

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

1.10 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

Performance - Fire

1.11 INTERIOR SURFACE FIRE PROPERTIES - GROUP NUMBER

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

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

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2 PRODUCTS

Materials

2.1 COLORSTEEL® MAXAM™ - STEEL, TYPE AM COATING (ALUMINIUM/ZINC/MAGNESIUM ALLOY), PREPAINTED

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

Fixings

2.2 FASTENERS GENERALLY

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

2.3 FIXING CLIPS - TRAY PROFILES

Metallic coated steel or stainless steel clips, to suit the roofing material, profile metal and location as required by roofing profile manufacturer (roll-formers) products. Clip screw fixings to roofing profile manufacturer's fixing charts or Specific Engineered Design, minimum Class 3.

2.4 FIXING SCREWS

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

2.5 RIVETS

Sealed aluminium, minimum diameter 4.0mm.

Components

2.6 FLASHINGS GENERALLY

To NZBC E2/AS1, 4.0 Flashings.

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

2.7 BOOT FLASHINGS

EPDM proprietary boot flashing designed to weatherproof cylindrical penetrations.

Accessories

2.8 WIRE NETTING AND SAFETY MESH

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.9 UNDERLAY AND REFLECTIVE FOIL

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.10 SEALANT

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

2.11 LAP SEALING TAPE

Closed cell self-adhesive nitrile tape.

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3 EXECUTION

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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

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

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

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

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

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

3.4 WORK SAFE

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

3.5 SEPARATION

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

Application

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 PENETRATIONS AND JUNCTIONS

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

Required work includes the following:

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

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3.8 SET-OUT

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

3.9 MARKING AND CUTTING

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

3.10 FIX SHEETS

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

3.11 THERMAL MOVEMENT

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

3.12 END LAPS

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

3.13 STOP ENDS AND DOWNTURNS

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

3.14 INSTALL FLASHINGS

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

3.15 FLASHING PENETRATIONS

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

3.16 INSTALL RIDGING

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

3.17 FLASHING TERMINATION

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

3.18 USE OF SEALANTS

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

Completion

3.19 COMPLETION MATTERS

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

3.20 PROTECT

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

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4 SELECTIONS

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

Material - Roofing

4.1 COLORSTEEL® MAXAM™ PROFILED ROOFING

Location:	Gable roofs - Refer Architectural Plans
Manufacturer:	New Zealand Steel
Material:	COLORSTEEL® Maxam™
BMT:	0.55mm
Colour:	Refer Finishes Specification
Profile:	Freeman Roofing Alpine Tray SS675
Fixing:	Clip fixings to cladding Freeman Roofing requirements for selected profile, exposure category and wind zone

4.2 COLORSTEEL® MAXAM™ PROFILED ROOFING

Location:	Low pitch roofs - Refer Architectural Plans
Manufacturer:	New Zealand Steel
Material:	COLORSTEEL® Maxam™
BMT:	0.55mm
Colour:	Refer Finishes Specification
Profile:	Freeman Roofing Five Rib
Fixing:	Clip fixings to cladding Freeman Roofing requirements for selected profile, exposure category and wind zone

Accessories

4.3 FLASHINGS BEHIND CLADDING

Location:	Refer Architectural Plans
Manufacturer:	New Zealand Steel
BMT/material:	0.9mm aluminium
Coating system:	COLORSTEEL Altimate®
Coating colour:	As per roofing

4.4 FLASHINGS - GENERALLY

Location:	Refer Architectural Plans
Manufacturer:	New Zealand Steel
BMT/material:	0.55mm
Coating system:	To match roofing
Coating colour:	To match roofing

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4337 PLYWOOD ROOFING & DECKING SUBSTRATE

1 GENERAL

This section relates to the use of plywood sheets for:

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

1.1 RELATED WORK

Refer to 4422VE for Viking Enviroclad Membrane.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

NZBC B1/AS1	Structural provisions for buildings
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 1170.2:2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment.
AS/NZS 2269.0	Plywood - Structural - Specifications
NZS 3604	Timber-framed buildings

Performance (design by contractor)

1.4 WIND DESIGN PARAMETERS - NON SPECIFIC DESIGN

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

Refer to general section 1220 PROJECT for details.

1.5 SEISMIC - NON SPECIFIC DESIGN

Design the system and its anchorages/fixings to resist the earthquake loads of the earthquake zone in accordance with NZS 3604, 5.3 **Earthquake bracing demand**.

Refer to general section 1220 PROJECT for details.

2 PRODUCTS

Materials

2.1 PLYWOOD

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

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

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Components

2.2 SCREWS

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

General

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

Under membranes

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

2.3 ADHESIVE

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

2.4 TIMBER FILLETS

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Moisture content:	18% maximum

3.4 PRE-COATING/FINISHING REQUIREMENTS

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

3.5 SUPPORT FRAMING

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

Application/installation

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 SUPPORT EDGES AND JOINTS

Fully support edges and joints on square edged sheets.

3.8 FIXINGS

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

3.9 UNDER MEMBRANES

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

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Provide whichever is the greater falls:

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

Completion

3.10 COMPLETION MATTERS

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

4 SELECTIONS

4.1 PLYWOOD - ROOFING SUBSTRATE

Location:	Box gutters - Refer Architectural Plans
Brand/grade:	CD - minimum required by NZBC E2/AS1 for membranes
Stress grade:	F8, F11 or other
Thickness:	17mm
Treatment:	H3.2 CCA - per Viking Enviroclad requirements
Fixing:	Screws stainless steel

4.2 SCREWS

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

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4422VE VIKING ENVIROCLAD MEMBRANE

1 GENERAL

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

It includes:

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

1.1 RELATED WORK

Refer to ~ for ~.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section

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

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
AS/NZS 1859.1	Reconstituted wood based panels - Specifications - Particle board
AS/NZS 2269.0	Plywood - Structural - Part 0: Specifications
CodeMark™ CMNZ30058 verH	Viking Enviroclad Roofing and Deck Membrane System
CodeMark™ CMNZ70176 ver2	Viking Enviroclad "Sure-Weld TPO" Waterproofing membrane

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Viking Plywood Substrate Checklist - Enviroclad
Viking Plywood Substrate Checklist - Dec-K-ing
Viking Strandsarking Substrate Checklist - Enviroclad
Viking Concrete Substrate Checklist - Enviroclad
Viking Enviroclad Standard Details
Viking Enviroclad Applicator Handbook
Viking Enviroclad Product Technical Statement
Viking PDS – RhinoBond Mechanical Fastening to Enviroclad TPO
Viking Rhinobond Standard Details
Viking PDS EJOBAR TPO 2G Mounting Bar
Viking PDS Enviroclad Walkway Roll
Viking PDS Cav-Grip III, Low VOC Low Temperature Adhesive
Viking PDS Enviroclad TPO pourable sealer pockets and pourable sealer
Viking PDS Viking Surface Sealer
Viking PDS AFS Low Profile Barge Flashing System
Viking Technical Note Flood Testing
Viking Technical Note Venting
BRANZ Appraisal 656 (2020) - Enviroclad Roofing Membrane - Amended 16 April 2025

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BRANZ Appraisal 713 (2018) - Viking WarmRoof / WarmSpan System - Amended 16 April 2025
BRANZ Appraisal 946 (2022) - Strandsarking® for Low Slope Membrane Roofs

Manufacturer/supplier contact details;

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

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years:	For Viking Enviroclad Membrane

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

Refer to the section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

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

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

Refer to the section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

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

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

Compliance information

1.9 COMPLIANCE - CODEMARK CERTIFICATE

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

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

1.10 COMPLIANCE - BRANZ APPRAISAL

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

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Performance

1.11 TEST - ELECTRONIC LEAK DETECTION METHOD

Carry out leak detection test using selected electronic leak detection system.
Test the waterproof membrane using Electronic Leak Detection procedure upon completion of membrane installation and prior to any covering. Test to be carried out by experienced operator. Make good any lack of watertightness when the surface is completely dry. Repeat test process after making repairs.

Refer to relevant electronic leak detection section for further information.

1.12 PERFORMANCE

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

2 PRODUCTS

Materials

2.1 ENVIROCLAD (SURE-WELD TPO) WATERPROOFING MEMBRANE

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

Components

2.2 ADHESIVE

Sureweld Bonding Adhesive - proprietary solvent based contact adhesive.

2.3 ADHESIVE, LOW TEMPERATURES /LOW VOC

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

2.4 ENVIROCLAD CUT EDGE SEALANT (CLEAR)

Proprietary sealant for sealing cut edges.

2.5 WATER CUT-OFF MASTIC

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

2.6 ENVIROCLAD UNIVERSAL SEALANT

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

2.7 ENVIROCLAD WEATHERED MEMBRANE CLEANER

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

2.8 HP SPLICE WIPES

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

2.9 ENVIROCLAD OUTSIDE AND INSIDE CORNERS

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

2.10 ENVIROCLAD NON-REINFORCED MEMBRANE

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

2.11 ENVIROCLAD T-JOINT COVERS

Proprietary unreinforced TPO disks.

2.12 ENVIROCLAD PIPE SEAL

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

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2.13 ENVIROCLAD SPLIT PIPE BOOT

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

2.14 ENVIROCLAD TPO POURABLE SEALER POCKETS

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

2.15 ENVIROCLAD WHITE ONE-PART POURABLE SEALER

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

2.16 PRIMER

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

2.17 LAPTAPE

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

Accessories

2.18 VENTS

Aluminium vent or TPO vent for roof top mounted cavity ventilation.

2.19 ENVIROCLAD SCUPPER OUTLETS

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

2.20 ENVIROCLAD SCUPPER OVERFLOW

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

2.21 ELECTRONIC LEAK DETECTION ROOF (NON-VISUAL ROOFS)

Refer to relevant 4481 LEAK DETECTION SYSTEM for electronic leak detection.

304 stainless steel synthetic conductive ribbon. Installed directly under adhered membrane for all roofs other than where the membrane is directly applied to reinforced concrete.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Confirm the moisture content of substrates:

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

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3.4 WEATHER

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

3.5 EQUIPMENT

Equipment to be used:

- Suitable welding equipment
- Hand rollers for welding
- Seam probe
- 35kg + roller for use with adhesive applied membrane
- Magnetic heat sink poles for Rhinobond
- Rhinobond Induction welder

Application - General / preparation

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 GENERALLY

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

3.8 PRELIMINARY WORK

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

3.9 ACCEPTANCE OF SUBSTRATE

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

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

3.10 PLYWOOD SUBSTRATE

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

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

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

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

3.11 INSTALL DRAINAGE ACCESSORIES

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

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Installation - Metal Leak Detection Substrate (by membrane installer)

3.12 INSTALL ELECTRONIC LEAK DETECTION RIBBON (NON-VISUAL ROOFS)

Membrane installer to place ribbon directly onto substrate directly beneath the membrane. Ribbon grid must cover the total area that is to receive membrane. Terminate the ribbon 50mm from all membrane termination points, penetrations outlets, overflows and projections. Where a join in ribbon is required, overlap by 50mm. Fix ribbon with stainless steel staples. Ensure that there are no sharp wire protrusions left exposed.

For metal skin Structural Insulated Panel (SIP) substrates install a 200mm long strip of conductive aluminium tape at maximum 3m centres across all joins and junctions between adjacent SIP panels. The tape to be centred on the join or junction and extend 100mm over each SIP panel to provide a continuously conductive substrate.

Install two earthing terminals for up to 500m² of roof area and one additional terminal for each additional 500m² of roof area.

Application - laying

3.13 GENERAL

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

3.14 SUBSTRATE PREPARATION

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

3.15 POSITION AND RELAX

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

3.16 LAP JOINTS

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

3.17 APPLY ADHESIVE - SUREWELD

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

3.18 APPLY ADHESIVE – CAV-GRIP III

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

3.19 INSTALL MEMBRANE SHEETS - ENVIROCLAD ADHESIVE FIXED

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

3.20 MEMBRANE CLEANER

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

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

3.21 HOT AIR WELD

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

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3.22 INSPECT

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

3.23 PENETRATIONS AND JUNCTIONS

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

3.24 VENTING – ROOF CAVITIES

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

Finishing

3.25 PROTECTION CONSTRUCTION TRAFFIC

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

3.26 ACCEPTANCE

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

3.27 SUBSEQUENT WORK

Make good any damage and repair to Viking Roofspec specifications.

Completion

3.28 COMPLETION - TESTS & CERTIFICATION

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

Carry out required testing procedures - ~.

4 SELECTIONS

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

4.1 VIKING ENVIROCLAD MEMBRANE – ADHESIVE FIXED

Location:	~
Substrate:	~
Sealer:	~
Membrane:	Viking Enviroclad
Thickness:	~mm
Size:	~ metres wide x 30.4 metres long
Colour:	~
Finish:	smooth
Adhesive:	Viking Sureweld or Viking Cav-Grip III spray applied (for low temperatures and low VOC)

4.2 ACCESSORIES - DRAINAGE OUTLETS & OVERFLOWS

Location:	~
Product:	~

4.3 ACCESSORIES - VENTS

Location:	~
Product:	~

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4.4 ELECTRONIC LEAK DETECTION GRID

Refer to relevant 4481 LEAK DETECTION SYSTEM section for details.

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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 RELATED WORK

Refer to 4610AG for AGP Glazing Residential

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:

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

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F4/AS1	Safety from falling
NZBC 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

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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.

1.4 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

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
Telephone::	07 849 8888

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years:	For fabrication
2 years:	For hardware

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years:	For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

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Requirements

1.7 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 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.

1.10 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:
APL Window Solutions Specifier Guide

Provide this information prior to practical completion.

1.11 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

1.12 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

1.13 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.

1.14 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)

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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.

Flashings

2.8 FLASHINGS GENERALLY

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

Components for installation - cavity systems

2.9 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.

2.10 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

2.11 GLAZING GASKETS

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

2.12 HARDWARE AND FURNITURE

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

2.13 SAFETY STAYS

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

2.14 FIXING BRACKETS

Designed by manufacturer to specific design.

2.15 WEATHERING/INSTALLATION SEALANT

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

Finishes

2.16 DURALLOY +PLUS POWDER COATED ALUMINIUM

Polyester powder organic coating in accordance with WGANZ PQAS and AAMA 2603. Refer to SELECTIONS.

2.17 DURATEC POWDER COATED ALUMINIUM

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



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2.18 FLUOROSET POWDER COATED ALUMINIUM

Very high-performance PVF2 fluoropolymer powder coating in accordance with WGANZ PQAS and AAMA 2605. 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 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.

3.5 HARDWARE GENERALLY

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

3.6 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.

3.7 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

3.8 SUPPLY OF FIXINGS

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

3.9 EXPOSED FIXINGS AND FASTENINGS

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

3.10 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.

3.11 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.

3.12 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.13 INSTALLATION GENERALLY

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



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Fabrication

3.14 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.

3.15 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 NOMINATED FABRICATOR

The nominated fabricators for this section of work are;

Company:	Design Windows Central Otago
Contact:	Jarrad McNeil
Telephone:	027 404 7457

4.2 SUPPLY AND INSTALLATION

Supply and installation of the specified APL aluminium joinery.

Supply:	By fabricator

Performance

4.3 THERMAL PERFORMANCE - VERTICAL WINDOWS & DOORS

Window /Door Number:	Construction R-value:
All (Climate Zone 6)	R5.0

4.4 AIR INFILTRATION

For NZS 4211, table 3 Air infiltration.

Non-air conditioned zones:
Air conditioned zones:

Finishes - Powder Coating

4.5 DURALLOY - POWDER COATING FINISH

Type:	Polyester organic powder coating

Glazing

4.6 GLASS

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

Flashings and Sealant

4.7 FLASHINGS

Material/type:	Colorsteel
Pattern:	Formed to suit details provided

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4.8 WEATHERING SEALANT

Type: 1-part polyurethane moisture curing, elastic joint sealant

Reveals

Window and door system - APL Architectural Series THERMALHEART+®

4.9 APL ARCHITECTURAL SERIES THERMALHEART AWNING WINDOW

Type:	APL Architectural Series ThermalHEART®
Location:	Refer Joinery Schedules
Sash Type:	Non-facing
Frame size:	114mm
Reveal/plasterboard adaptor:	Plasterboard

4.10 APL ARCHITECTURAL SERIES THERMALHEART CASEMENT WINDOW

Type:	APL Architectural Series ThermalHEART®
Location:	Refer Joinery Schedules
Sash Type:	Non-facing
Frame size:	114mm
Reveal/plasterboard adaptor:	Plasterboard

4.11 APL ARCHITECTURAL SERIES THERMALHEART SLIDING DOOR

Type:	APL Architectural Series ThermalHEART®
Location:	Refer Joinery Schedules
Frame size:	114mm (2 panel) and 171mm (to match adjacent units), 171mm (3 panel)
Reveal/plasterboard adaptor:	Plasterboard

4.12 APL ARCHITECTURAL SERIES THERMALHEART HINGED DOOR

Type:	APL Architectural Series ThermalHEART®
Location:	Refer Joinery Schedules
Frame size:	114mm
Stile size:	Small (64mm)
Rail size:	Small (64mm)
Reveal/plasterboard adaptor:	Plasterboard

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4555 GARAGE DOORS

1 GENERAL

This section relates to the manufacture, supply and installation of garage door systems including required opening/operating systems.

Documents

1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

AS/NZS 1170	Structural design actions
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
NZS 3604	Timber-framed buildings
AS/NZS 4505	Garage doors and other large access doors

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

1.2 MANUFACTURER'S DOCUMENTS

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

Garador

Copies of the above literature are available from:

Web:	https://www.garador.co.nz/

Requirements

1.3 INFORMATION FOR OPERATION AND MAINTENANCE

Provide operating instructions for the garage doors and associated opening equipment. Provide a list of all components requiring regular maintenance.

Performance

1.4 DESIGN PARAMETERS WIND

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

1.5 LOADS - DOORS SPECIFIC DESIGN

For all garage doors over 3.0m high or in wind zones beyond NZS 3604. Garage doors complete with hinges, roller assemblies and fasteners to comply with wind and seismic load performance requirements to AS/NZS 1170.2 and NZS 1170.5.

1.6 RESPONSIBILITY FOR PERFORMANCE

Accept responsibility for the structural and weathertight performance of the completed garage door installation.

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2 PRODUCTS

2.1 GARAGE DOOR

Manufacture to AS/NZS 4505 complete with a compliance label.

2.2 MOTORISED DOOR OPENER

3 EXECUTION

3.1 PREPARATION FOR INSTALLATION

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

3.2 MANUFACTURER'S REQUIREMENT FOR INSTALLATION

Install door, track and operating equipment complete with all specified and necessary accessories and hardware to the manufacturer's requirements.

3.3 START UP

Carry out start up procedures and verify proper performance of the doors.

3.4 ADJUSTMENT

Lubricate bearings and sliding parts and adjust doors to operate easily, free of warp, twist or distortion with a weathertight fit round the entire perimeter.

3.5 DEMONSTRATION

Carry out start up procedures and verify proper performance of the door. Demonstrate the operation of the door to the principal/principal's representative. Set security features to principal's requirements. Reset security features at practical completion of the contract works.

Completion

3.6 ENSURE

Ensure all elements are free of marks or blemishes, with all moving parts working fully and freely.

3.7 REPLACE

Replace damaged, cracked or marked elements.

3.8 LEAVE

Leave work to the standard required by following procedures.

3.9 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

4.1 GARAGE DOOR - SECTIONAL OVERHEAD DOOR

Location:	Garage
Brand:	Garador
Type:	Sectional Lift

4.2 GARAGE DOOR FITTINGS AND HARDWARE

4.3 GARAGE DOOR CONTROLLERS

Brand:	Garador
Number of remotes:	2 per door
Location of internal control buttons:	by internal door
Number of internal control buttons:	1



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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 RELATED WORK

Refer to 4521AR APL RESIDENTIAL ALUMINIUM WINDOWS & DOORS

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:

IGU	Insulating Glass Units
PVB	Polyvinyl Butyral
uPVC	Unplasticised polyvinyl chloride

Documents

1.3 DOCUMENTS

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

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
NZBC H1/VM1	Energy Efficiency
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

1.4 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

1.5 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

1.6 NO SUBSTITUTIONS

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

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for 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:

- Care and maintenance of your AGP glass
- Condensation guide

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
- 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

1.10 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.

1.11 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)

1.12 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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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 REFLECTIVE AND COATED FLOAT GLASS

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

2.6 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

2.7 GLAZING TAPE AND GASKETS

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

2.8 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.

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.

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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.

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.



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

Finishing

3.18 SAFETY

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

Completion & Commissioning

3.19 COMPLETION MATTERS

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

3.20 COMPLETION - TESTS & CERTIFICATION

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

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 OBSCURE GLASS

Location:	Refer Joinery Schedules
Brand:	AGP
Pattern:	Refer Finishes Specification
Thickness:	4mm

4.3 AGP TOUGHENED GLASS

Location:	All exterior joinery
Brand:	AGP
Type:	Toughened
Thickness:	4mm

4.4 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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4.5 AGP SOLUX-E® - TINTED LOW E THERMAL AND SOLAR CONTROL IGU

Location:	All IGUs
Brand/type:	AGP SOLUX-E® & TINT
Outer glass tint colour:	Refer Finishes Specification
Outer glass thickness:	4mm
Spacer width:	16mm
Spacer type:	ATS-Architectural Thermal Spacer®
Space gas:	Argon
Inner glass brand/type:	AGP SOLUX-E
Coated surface:	#3
Inner glass type:	Clear
Inner glass thickness:	4mm

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4711P PINK® BATTS® THERMAL INSULATION

1 GENERAL

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

1.1 RELATED WORK

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BIB	Building Insulation Blanket

Documents

1.3 DOCUMENTS

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

NZS/AS 1530.1	Methods for fire tests on building materials, components and structures - Combustibility test for materials
AS/NZS 3000	Electrical installations (Known as the Australian/New Zealand Wiring Rules)
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
AS/NZS 4859.1	Thermal insulation materials for buildings - General criteria and technical provisions

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

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

Manufacturer/supplier contact details

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

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

50 years	For Pink® Batts® insulation products

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

the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

Compliance information

1.9 COMPLIANCE - BRANZ APPRAISAL 238

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

1.10 COMPLIANCE - BRANZ APPRAISAL 632

Pink® Batts® SnugFloor® Insulation has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 632.

1.11 COMPLIANCE - BRANZ APPRAISAL 767

Pink® Batts® Skillion Roof Insulation has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 767.

Performance

1.12 FIRE PROPERTIES

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

2 PRODUCTS

Materials

2.1 PINK® BATTS® INSULATION BATTS

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

2.2 PINK® BATTS® BIB

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

Components

2.3 WIRE NETTING

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

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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/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALL INSULATION - GENERALLY

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

3.6 INSULATION CLEARANCES

Provide insulation clearances to NZS 4246 and for recessed luminaires AS/NZS 3000, 4.5.2.3. Where allowed by these standards provide insulation clearances to product manufacturer's stated clearances. Secure insulation in place so clearances are maintained and use guards/barriers , if required, where insulation is not secured.

3.7 LAY WIRE NETTING - UNDER JOISTS / PURLINS

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

3.8 LAY WIRE NETTING - OVER PURLINS

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

3.9 LAY PLASTIC STRAPPING TAPE

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

3.10 PREPARATION INSULATION

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

3.11 CUTTING INSULATION TO SIZE

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

3.12 INSTALL PINK® BATTS® TIMBER WALL INSULATION

Friction fit insulation slabs between framing.

3.13 INSTALL PINK® BATTS® SECONDARY WALL INSULATION LAYER

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

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3.14 INSTALL PINK® BATTS® STEEL WALL INSULATION

Cut to size allowing insulation to fit neatly into the C section. Slide insulation slabs into the C-section of the framing and friction fit in place. Where sliding slabs into C-section is not possible, cut to size and friction fit insulation slabs between framing.

3.15 INSTALL PINK® BATTS® MASONRY WALL INSULATION

Friction fit insulation slabs between vertical strapping members. Staple the top of the insulation to the inside face of strapping.

3.16 INSTALL PINK® BATTS® CEILING INSULATION

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

3.17 INSTALL PINK® BATTS® SUPERBATTS® CEILING INSULATION - SINGLE LAYER INSTALLATION

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

3.18 INSTALL PINK® BATTS® SUPERBATTS® CEILING INSULATION - DOUBLE LAYER INSTALLATION

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

3.19 INSTALL PINK® BATTS® SKILLION ROOF INSULATION

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

3.20 INSTALL PINK® SUPERBATTS® SKILLION ROOF INSULATION - SINGLE LAYER INSTALLATION

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

3.21 INSTALL PINK® SUPERBATTS® SKILLION ROOF INSULATION - DOUBLE LAYER INSTALLATION

Friction fit upper layer of insulation slabs between framing. Install to the midpoint of the top plate. From underneath, friction fit the lower layer slabs between the ceiling battens. Maintain a 25mm gap clearance between the insulation slabs and roof underlay.

3.22 INSTALL PINK® BATTS® SNUGFLOOR® INSULATION

Friction fit insulation slabs between framing. Label location of wires, pipes and cables for future reference. Pieces must be 30mm wider than the distance between joist faces. Friction fit each piece between the joists. Fold on one side. Do not cover over wiring with insulation. Cut neatly around penetrations. Secure each slab with minimum 2 straps stapled to inside face of joist. Use two staples for each fixing point. Fold must not extend below bottom joist, trim if required.

3.23 INSTALL PINK® BATTS® BIB

Friction fit BIB between framing and fully supported on wired netting or safety mesh. Maintain a 25mm gap clearance between the insulation slabs and roof underlay.

Completion

3.24 COMPLETION MATTERS

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

4 SELECTIONS

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

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Materials

4.1 PINK® BATTS® TIMBER WALL INSULATION

Location:	~
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® ~
Secondary layer:	Pink® Batts® ~
R-value:	~
Nominal stabilised thickness:	~
Batt size:	~

4.2 PINK® BATTS® STEEL WALL INSULATION

Location:	~
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® ~
R-value:	~
Nominal stabilised thickness:	90mm
Batt size:	1220mm x 610mm

4.3 PINK® BATTS® MASONRY WALL INSULATION

Location:	~
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® Masonry Wall
R-value:	~
Nominal stabilised thickness:	~
Batt size:	~

4.4 PINK® BATTS® CEILING INSULATION

Location:	~
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® ~
R-value:	~
Nominal stabilised thickness:	~
Batt size:	~

4.5 PINK® BATTS® SKILLION ROOF INSULATION

Location:	~
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® ~
R-value:	~
Nominal stabilised thickness:	~
Batt size:	~

4.6 PINK® BATTS® SNUGFLOOR® INSULATION

Location:	~
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® ~
R-value:	~
Nominal stabilised thickness:	~
Batt size:	~

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4.7 PINK® BATTS® BIB

Location:	~
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® BIB
R-value:	~
Nominal stabilised thickness:	~
Roll size:	~

4.8 PINK® BATTS® CEILING INSULATION

Location:	~
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® ~
R-value:	~
Nominal stabilised thickness:	~
Batt size:	~

4.9 PINK® BATTS® CEILING INSULATION

Location:	~
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® ~
R-value:	~
Nominal stabilised thickness:	~
Batt size:	~

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4811S SIKA SEALANTS

1 GENERAL

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

It includes:

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

1.1 RELATED WORK

Refer to ~ for ~.

1.2 ABBREVIATIONS

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

VOC	Volatile Organic Compound

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS 1530.4:2005	Methods for fire tests on building materials, components & structures. Part 4: Fire resistance test of elements of construction
AS/NZS 4020	Testing of products for use in contact with drinking water
ASTM C719	Standard test method for adhesion and cohesion of elastomeric joint sealants under cyclic movement
EN 1366.4	Fire resistance tests for service installations. Linear joint seals.
ISO 9047	Building construction - Jointing products - Determination of adhesion/cohesion properties of sealants at variable temperatures
ISO11600	Building construction - Jointing products - Classification and requirements for sealants

1.4 MANUFACTURER'S DOCUMENTS

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

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

Manufacturer/supplier contact details:

Company:	Sika (NZ) Ltd
Web:	nzl.sika.com
Email:	info@nz.sika.com

Telephone: 0800 SIKA NZ, 0800 745 269

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years: For Sika sealants and adhesives

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

Refer to the general section 1237 WARRANTIES for additional requirements

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years: For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

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

1.8 SEALANT SELECTION

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

1.9 NO SUBSTITUTIONS

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

1.10 SAMPLES

Refer to the general section 1270 CONSTRUCTION for details of how samples will be reviewed and how instructions to proceed will be given. Provide the following samples for review:

	Sample A	Sample B	Sample C
Sample description:	~	~	~
Sample type:	~	~	~
Number:	~	~	~
Location:	~	~	~
Supporting documentation:	~	~	~
Reviewer:	Contract administrator ~	Contract administrator ~	Contract administrator ~
Time for review:	10 working days ~	10 working days ~	10 working days ~

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Review criteria:	~	~	~

1.11 MAINTENANCE CONTRACT PROPOSAL

Provide a priced proposed maintenance contract for annual inspection, cleaning and repairing of sealant joints.

2 PRODUCTS

Joint Substrate Primers & Accessories

2.1 NON-POROUS SUBSTRATE CLEANER - TO IMPROVE SEALANT ADHESION

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

2.2 POROUS SUBSTRATE PRIMER - TO IMPROVE SEALANT ADHESION

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

2.3 PRIMER - WINDOW & DOOR REVEALS

Sikadur-52, two-part, very low-viscosity, solvent-free epoxy primer for use on Sikalastic-152. For use with Sika products only.

2.4 BACKING ROD - TO CONTROL DEPTH OF JOINT SEALANT

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

2.5 BOND BREAKER TAPE

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

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

2.6 FACADE SEALANT - HIGHEST MOVEMENT, POLYURETHANE, PAINTABLE

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

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

2.7 FACADE SEALANT - MEDIUM MOVEMENT, HYBRID, PAINTABLE

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

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

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

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

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

Facade sealants for concrete / masonry brickwork - fire rated

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

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

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Facade sealants for aluminium composite panel systems and metal profiled sheet

2.10 FACADE SEALANT - HIGHEST MOVEMENT, POLYURETHANE, PAINTABLE

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

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

Facade sealants for timber / fibre cement sheets and boards

2.11 FACADE SEALANT - HIGHEST MOVEMENT, POLYURETHANE, PAINTABLE

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

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

2.12 FACADE SEALANT - MEDIUM MOVEMENT, HYBRID, PAINTABLE

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

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

2.13 FACADE SEALANT - MEDIUM MOVEMENT, MS, PAINTABLE

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

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

Window and door sealants - aluminium / timber / PVC

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

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

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

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

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

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

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

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

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

Concrete Floor Sealant - control joints & movement joints

2.17 CONCRETE FLOOR - JOINTS IN FLOORS & CIVIL ENGINEERING STRUCTURES

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

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

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2.18 CONCRETE FLOOR - SELF-LEVELLING AND FAST CURING - WITH BOOSTER

Sikaflex®-406 KC is a one component, self-levelling, moisture curing polyurethane floor joint sealant that can be accelerated with Sikaflex®-406 KC Booster allowing the product to cure rapidly. Joint movement capability of +/- 25% to ISO 9047. Very good mechanical resistance and resistance to hydrocarbons like fuels, oils and many other chemicals.

2.19 CONCRETE FLOOR - INTERIOR AND EXTERIOR FLOOR JOINTS

Sikaflex®-11 FC Purform® is a one component, low VOC, moisture curing polyurethane floor joint sealant with a joint movement capability of +/- 25% to ISO 9047. Excellent adhesion, strength, elasticity, UV stability and tear resistance properties. Conforms to ISO 11600 Type F, Class 25HM. Complies with AS/NZS 4020.

Roofing sealants

2.20 ROOFING SEALANT - METAL ROOFING PROFILES & FLASHINGS

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

2.21 ROOFING SEALANT - POTABLE WATER APPROVAL

Sikaseal® Roof & Gutter, a one component neutral curing silicone sealant with movement joint capacity of +/-25%. Complies with AS/NZS 4020. Non-corrosive to metals and has excellent adhesion to many substrates. Conforms to ISO 11600 Type F, class 25LM.

2.22 ROOFING SEALANT - BITUMEN ROOFING & FLASHING

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

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

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

Plumbing sealants

2.24 PLUMBING SEALANT

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

Gypsum plasterboard - fire rated joints

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

Sikaflex®-400 Fire is a one component, fire rated, polyurethane, moisture curing, paintable, elastic joint sealant with a movement capacity of +/-35%. For internal and external applications. Up to 4 hour fire resistance (depending on tested joint configuration) in accordance to AS 1530.4 and EN 1366.4.

Interior sealants / adhesives

2.26 BATHROOM ADHESIVE - ACRYLIC SHOWER LINERS & BATHWARE

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

2.27 BATHROOM SEALANT - ACRYLIC BATHWARE

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

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2.28 INTERIOR GENERAL SEALANT - WALL PANELS, MOULDINGS ETC

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

2.29 INTERIOR SOLVENT BASED ADHESIVE - BONDING WALL PANELS

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

2.30 INTERIOR LOW VOC ADHESIVE - BONDING WALL PANELS

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

2.31 INTERIOR MULTIPURPOSE BONDING

Sikaflex®-11 FC Purform® is a one component, low VOC, moisture curing polyurethane elastic adhesive. It provides excellent adhesion, strength, elasticity and tear resistance properties for a durable strong bond on a wide range of substrates including concrete masonry, ceramic, wood, metal and glass.

2.32 INTERIOR GENERAL SEALANT - CERAMIC TILING TO FLOORS & WALLS

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

Specialist sealants - for clean rooms / potable water / electronics

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

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

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

2.34 SPECIALIST SILICONE SEALANT - REFRIGERATION

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

Specialist sealants - for civil engineering & swimming pools

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

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

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

2.36 SELF-LEVELLING POLYURETHANE SEALANT - RUNWAYS / ROAD PAVEMENTS

Sikaflex®-406 KC is a one component, self-levelling, moisture curing polyurethane floor joint sealant that can be accelerated with Sikaflex®-406 KC Booster allowing the product to cure rapidly. Joint movement capability of +/- 25% to ISO 9047. Very good mechanical resistance and resistance to hydrocarbons like fuels, oils and many other chemicals.

2.37 SPECIALIST SILICONE SEALANT, - SWIMMING POOLS, CHLORINE

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



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3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

3.4 CONDITIONS FOR APPLICATION

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

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

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

3.5 JOINT DESIGN

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

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

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

3.6 COMPATIBILITY

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

3.7 SUBSTRATE STAINING

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

3.8 SEALANT PAINTABILITY

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

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

3.9 COLOURS

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

3.10 LIMITATIONS

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

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Installation/application

3.11 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Preparatory work

3.12 PRE-COMMENCEMENT CHECK

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

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

3.13 TEST SUBSTRATES

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

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

3.14 SUBSTRATE CLEANING & PREPARATION

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

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

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

Application - sealants / adhesives

3.15 INSTALLATION BACKING ROD

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

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

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

3.16 INSTALLATION BOND BREAKER TAPE

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

3.17 PRIMING - POROUS SUBSTRATES

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



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

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

3.18 PRIMING - NON-POROUS SUBSTRATES

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

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

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

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

3.19 PRIMING - FOR ACRYLIC AND BITUMEN BASED SEALANTS

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

3.20 PRIMING - WINDOW & DOOR REVEALS

Where sealant is to be applied to windows and door reveals that have been waterproofed with Sikalastic-152, prime the Sikalastic-152 with Sikadur-52. Only prime those areas that will receive sealant. Mix Sikadur-52 parts A & B and apply in accordance with Sika application instructions. Allow primer to become touch dry before proceeding with sealant application. Apply sealant with 24 hours of primer application.

3.21 SEALANT APPLICATION

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

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

3.22 SEALANT TOOLING & FINISHING

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

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

A compatible tooling agent or fresh clean water can be used sparingly to assist with the smoothing of the tooled surface. Do not use products containing solvent, alcohol or fuel, as these products will inhibit the curing of the sealant.

Remove masking immediately after tooling and remove excess sealant from adjoining surfaces before sealant surface starts to skin. Refer to the relevant and current Product Data Sheet for information on curing times. Note skinning times are temperature dependent.

Any cured sealant can only be removed mechanically and care must be taken to avoid damage of surrounding surfaces.

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3.23 ADHESIVE APPLICATION

Apply selected Sika adhesive for bonding shower liners and wall panels such as seratone and hardiglaze in accordance with Sika NZ Ltd instruction and the relevant and current Product Data Sheets.

3.24 SURROUNDING WORK

Leave surrounding surfaces in a neat, clean condition with no evidence of spill over.

Completion

3.25 COMPLETION MATTERS

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

4 SELECTIONS

For further details on selections go to nzl.sika.com.
Substitutions are not permitted to the following, unless stated otherwise.

Facade joints - concrete, masonry & brickwork - non-fire rated

4.1 SIKAHYFLEX®-250 FACADE - FACADE SEALANT FOR CONCRETE, MASONRY, BRICK

Location:	~
Application detail:	~
Product:	SikaHyflex®-250 Facade
Product colour:	Concrete Grey
Joint width	~mm
Substrates:	~/~
Primer/cleaner:	Sika Primer 3N - for porous substrates
Backing:	Sika PEF Backing rod - (diameter - 25% wider than joint)

4.2 SIKAFLEX® AT-FACADE SEALANT - FACADE SEALANT FOR CONCRETE / MASONRY

Location:	~
Application detail:	~
Product:	Sikaflex® AT-Facade
Product colour:	~
Joint width:	~mm
Substrate:	~/~
Primer/cleaner:	Sika Primer 3N - for porous substrates
Backing:	Sika PEF Backing rod - (diameter - 25% wider than joint)

4.3 SIKAFLEX® MS SEALANT - FACADE SEALANT / AIR SEAL FOR CONCRETE / MASONRY

Location:	~
Application detail:	~
Product:	Sikaflex® MS
Product colour:	~
Joint width:	~mm
Substrate:	~/~
Primer/cleaner:	Sika Primer 3N - for porous substrates
Backing:	Sika PEF Backing rod - (diameter - 25% wider than joint)

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Facade joints - concrete, masonry & brickwork - fire rated

4.4 SIKAFLEX®-400 FIRE - FIRE RATED FACADE SEALANT FOR CONCRETE / MASONRY

Location: ~
Application detail: ~
Product: Sikaflex®-400 Fire
Product colour: Grey
Joint width: ~mm
Substrate: ~/~
Primer/cleaner: Sika Primer 3N - for porous substrates
Backing: Sika PEF Backing rod - (diameter - 25% wider than joint)

Facade joints - aluminium composite panels and metal profiles sheets

4.5 SIKAHYFLEX 250 FACADE - FACADE SEALANT FOR ALUMINIUM COMPOSITE PANELS / METAL PROFILED SHEET

Location: ~
Application detail: ~
Product: SikaHyflex®250 Facade
Product colour: Concrete Grey
Joint width: ~mm
Substrates: ~/~
Primer/cleaner: Sika Aktivator 205 - for non-porous substrates
Backing: Sika PEF Backing rod - (diameter - 25% wider than joint)

Facade joints - Timber, fibre-cement sheets & boards

4.6 SIKAHYFLEX 250 FACADE - FACADE SEALANT FOR TIMBER / FIBRE CEMENT

Location: ~
Application detail: ~
Product: SikaHyflex®250 Facade
Product colour: Concrete Grey
Joint width: ~mm
Substrates: ~/~
Primer/cleaner: Sika Primer 3N - for porous substrates
Backing: Sika PEF Backing rod - (diameter - 25% wider than joint)

4.7 SIKAFLEX AT FACADE - FACADE SEALANT FOR TIMBER / FIBRE CEMENT

Location: ~
Application detail: ~
Product: Sikaflex® AT Facade
Product colour: ~
Joint width: ~mm
Substrates: ~/~
Primer/cleaner: Sika Primer 3N - for porous substrates
Backing: Sika PEF Backing rod - (diameter - 25% wider than joint)

4.8 SIKAFLEX® MS SEALANT - FACADE SEALANT / AIR SEAL FOR TIMBER / FIBRE CEMENT

Location: ~
Application detail: ~
Product: Sikaflex® MS
Product colour: ~
Joint width: ~mm
Substrate: ~/~
Primer/cleaner: Sika Primer 3N - for porous substrates
Backing: Sika PEF Backing rod - (diameter - 25% wider than joint)

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Window & Door Sealant - Aluminium / PVC / Timber

4.9 SIKAHYFLEX®-250 FACADE - WINDOW & DOOR SEALANT

Location:	~
Application detail:	~
Product:	SikaHyflex®-250 Facade
Product colour::	Concrete Grey
Joint width:	~mm
Substrate:	~/~
Primer/cleaner:	Sika Aktivator 205 - for non-porous substrates or Sika Primer 3N - for porous substrates
Backing:	Sika PEF Backing rod - (diameter - 25% wider than joint)

4.10 SIKAFLEX® AT-FACADE - WINDOW & DOOR SEALANT

Location:	~
Application detail:	~
Product:	Sikaflex® AT-Facade
Product colour:	~
Joint width:	~mm
Substrates:	~/~
Primer/cleaner:	Sika Aktivator 205 - for non-porous substrates or Sika Primer 3N - for porous substrates
Backing:	Sika PEF Backing rod - (diameter - 25% wider than joint)

4.11 SIKAFLEX® MS SEALANT - WINDOW & DOOR SEALANT / AIRSEAL

Location:	~
Application detail:	~
Product:	Sikaflex® MS
Product colour:	~
Joint width:	~mm
Substrate:	~/~
Primer/cleaner:	Sika Aktivator 205 - for non-porous substrates or Sika Primer 3N - for porous substrates
Backing:	Sika PEF Backing rod - (diameter - 25% wider than joint)

Concrete floor sealant - control joints & movement joints

4.12 SIKAFLEX® PRO-3 PURFORM - CONCRETE FLOOR CONTROL JOINTS

Location:	~
Application detail:	~
Product:	Sikaflex® PRO-3 Purform
Product colour:	Concrete Grey
Joint width:	~mm
Substrate:	Concrete
Primer/cleaner:	Sika Primer 3N - for porous substrates
Backing:	~

4.13 SIKAFLEX®-406 KC - CONCRETE FLOOR CONTROL JOINTS

Location:	~
Application detail:	~
Product:	Sikaflex®-406 KC + Sikaflex®-406 KC Booster
Product colour:	Concrete Grey
Joint width:	~mm
Substrate:	Concrete
Primer/cleaner:	Sika Primer 3N - for porous substrates in high performance applications
Backing:	~

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4.14 SIKAFLEX®-11 FC PURFORM - INTERIOR AND EXTERIOR CONCRETE FLOOR JOINTS

Location: ~
Application detail: ~
Product: Sikaflex®-11 FC Purform
Product colour: ~
Joint width: ~mm
Substrate: Concrete
Primer/cleaner: Sika Primer 3N - for porous substrates
Backing: ~

Roof sealant

4.15 SIKASIL® ROOFING AND PLUMBING - METAL ROOFING PROFILES & FLASHINGS

Location: ~
Application detail: ~
Product: Sikasil® Roofing and Plumbing
Product colour: Translucent
Substrates: ~ / ~
Primer/cleaner: None

4.16 SIKASEAL® ROOF & GUTTER - POTABLE WATER APPROVAL

Location: ~
Application detail: ~
Product: Sikaseal® Roof & Gutter
Product colour: Translucent
Substrates: ~ / ~
Primer/cleaner: None

4.17 SIKASEAL®-173 BITUMEN ROOF SEALANT

Location: ~
Application detail: ~
Product: SikaSeal®-173
Product colour: Black
Substrates: ~ / ~
Primer/cleaner: None

4.18 SIKAFLEX® -123 MS BOND SEALANT & FLEXIBLE ADHESIVE - CONCRETE / CLAY / TERRACOTTA TILES

Location: ~
Application detail: ~
Product: Sikaflex® -123 MS Bond
Product colour: ~
Substrates: ~/~
Primer/cleaner: None

Plumbing sealants

4.19 SIKASIL® ROOFING AND PLUMBING - PLUMBING APPLICATIONS

Location: ~
Application detail: ~
Product: Sikasil® Roofing and Plumbing
Product colour: Translucent
Substrates: ~ / ~
Primer/cleaner: None

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Gypsum plasterboard - fire rated joints

4.20 SIKAFLEX®-400 FIRE - FIRE RATED SEALANT FOR GYPSUM PLASTERBOARD

Location:	~
Application detail:	~
Product:	Sikaflex®-400 Fire
Product colour:	Grey
Joint width:	~mm
Substrate:	~/~
Primer/cleaner:	Sika Primer 3N - for porous substrates
Backing:	Sika PEF Backing rod - (diameter - 25% wider than joint)

Interior sealants and adhesives

4.21 SIKA SHOWERBOND - ACRYLIC SHOWER LINERS & BATHWARE

Location:	~
Application detail:	~
Product:	Sika Showerbond
Product colour:	Green
Substrates:	~/~
Primer/cleaner:	None

4.22 SIKAFLEX® -123 MS BOND - ADHESIVE FOR BONDING WALL PANELS, LOW VOC

Location:	~
Application detail:	~
Product:	Sikaflex® -123 MS Bond - low VOC
Product colour:	~
Substrates:	~/~
Primer/cleaner:	None

4.23 SIKASIL® NG - SEALANT FOR ACRYLIC BATHWARE

Location:	~
Application detail:	~
Product:	Sikasil® NG
Product colour:	~
Substrates:	~/~
Primer/cleaner:	None

4.24 SIKASIL WET AREAS - GENERAL INTERIOR SEALANT

Location:	~
Application detail:	~
Product:	Sikasil® Wet Areas
Product colour:	~
Substrate:	~/~
Primer/cleaner:	None

4.25 SIKA® NAILBOND® SB - ADHESIVE FOR BONDING WALL PANELS, SOLVENT BASED

Location:	~
Application detail:	~
Product:	Sika® Nailbond® SB
Product colour:	Biege
Substrates:	~/~
Primer/cleaner:	None

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4.26 SIKAFLEX®-11 FC PURFORM - INTERIOR MULTIPURPOSE BONDING

Location: ~
Application detail: ~
Product: Sikaflex®-11 FC Purform
Product colour: ~
Substrates: ~ / ~
Primer/cleaner: ~

4.27 SIKASEAL-190 N - GENERAL INTERIOR SEALANT FOR TILING

Location: ~
Application detail: ~
Product: Sikaseal®-190 N Silicone
Product colour: ~
Substrate: ~/~
Primers/cleaners: None

Specialist sealants - for clean rooms / potable water / electronics

4.28 SIKAFLEX® PRO-3 PURFORM - SPECIALIST SEALANT FOR FOOD PREP / CLEAN ROOMS / POTABLE WATER / ELECTRONICS

Location: ~
Application detail: ~
Product: Sikaflex® PRO-3 Purform
Product colour: Concrete Grey
Joint width: ~
Substrates: ~/~
Primer/cleaner: ~
Backing: ~

4.29 SIKASIL C - SPECIALIST SEALANT FOR REFRIGERATION & HYGIENE AREAS

Location: ~
Application detail: ~
Product: Sikasil® C
Product colour: ~
Joint width: ~mm
Substrate: ~/~
Primer/cleaner: None
Backing: ~

Specialist sealants - for civil engineering & swimming pools

4.30 SIKAFLEX PRO-3 PURFORM - SPECIALIST SEALANT FOR CIVIL ENGINEERING

Location: ~
Application detail: ~
Product: Sikaflex® Pro-3 Purform
Product colour: Concrete Grey
Joint width: ~mm
Substrate: ~/~
Primer/cleaner: ~
Backing: ~

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4.31 SIKAFLEX®-406 KC - SELF-LEVELLING SEALANT FOR RUNWAYS / ROAD PAVEMENTS

Location:	~
Application detail:	~
Product:	Sikaflex®-406 KC + Sikaflex®-406 KC Booster
Product colour:	Concrete Grey
Joint width:	~mm
Substrate:	Concrete
Primer/cleaner:	Sika Primer 3N - for porous substrates in high performance applications
Backing:	~

4.32 SIKASIL POOL - SPECIALIST SEALANT FOR SWIMMING POOLS, CHLORINE

Location:	~
Application detail:	~
Product:	Sikasil® Pool
Product colour:	Grey
Joint width:	~mm
Substrates:	~/~
Primer/cleaner:	~
Backing:	~

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4821 FLASHINGS

1 GENERAL

This section relates to the fabrication and installation of flashing systems not forming part of a proprietary system.

Documents

1.1 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 3566	Self-drilling screws for the building and construction industries - General requirements and mechanical properties
NZS 3604	Timber-framed buildings
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

Requirements

1.2 QUALIFICATIONS

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

1.3 VERIFY DIMENSIONS

Verify dimensions against site measurements prior to fabrication.

Standards of performance

1.4 DURABILITY REQUIREMENTS

Design and install the flashings appropriate for the durability applications in accordance with NZBC B2/AS1. The Building Code B2, 3.2 requires that all hidden elements have at least the same durability as that of the element that covers it. Refer to NZBC B2/AS1, Table C.1.1.1 and NZBC E2/AS1, Table C.1.1.1A: Material selection.

1.5 COMPATIBILITY REQUIREMENTS

Each flashing material shall be selected in accordance with NZBC E2/AS1, Table C.1.1.1A: Material selection, to minimise corrosion. Refer to either NZS 3604 Clause 4.2 or AS/NZS 2728 for the relevant exposure conditions. For compatibility of materials in contact and subject to run-off, refer to NZBC E2/AS1, Table C.1.1.1B: Compatibility of materials in contact, and Table C.1.1.1C: Compatibility of materials subject to run-off.

1.6 PROTOTYPES - REVIEW

Refer to the general section 1270 CONSTRUCTION for details of how prototypes will be reviewed and how instructions to proceed will be given. For flashings where there are no specific details or drawings, provide full size prototypes of the flashings to integrate components into the weathertight system. Co-ordinate with the trades affected by the installation. Provide the prototype flashings to the contract administrator for review.

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2 PRODUCTS

2.1 FLASHING MATERIALS

Acceptable materials for flashings are described in NZBC E2/AS1, 4.0 Flashings. Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the building and cladding materials and their fixings.

2.2 FLASHING FABRICATION

Fabricate flashings generally to NZBC E2/AS1, 4.0 Flashings, from a ductile grade of metal designed for lateral strength by folding, stiffening or ribbing on external edges, having a maximum un-stiffened width of 300mm. Provide all hooks, hems, kick outs, bird's beaks, stop ends, soft edges and turn downs etc. to NZBC E2/AS1, 4.0 Flashings, or as shown on the drawings.

2.3 FIXINGS

Rivets, screws, nails and cleats to be compatible with the materials being fastened. Fasteners complying with the corrosion requirements of AS 3566 are suitable for use with ZINCALUME® steel products. Use only low carbon non-conductive sealing washers.

2.4 JOINTS - SEALANTS

Neutral Curing silicone or MS polymer sealant as required, with low resistance to compression and be-able to withstand large temperature variations. MS polymer sealant to be used where the sealant is exposed and the surrounding surfaces are to be subsequently painted or coated.

3 EXECUTION

Conditions

3.1 DELIVERY

Keep flashings dry in transit. Take delivery of flashings in an undamaged condition. Reject all damaged materials.

3.2 STORAGE

Store materials and accessories on a level, firm base, in dry conditions, well ventilated, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until fixed.

3.3 HANDLING

Avoid distortion and contact with potentially damaging surfaces/substances. Do not drag flashings across each other, or across other surfaces. Protect edges, corners and surfaces from damage.

3.4 SUBSTRATE

Do not commence work until the substrate is of the standard required by the installer for the specified flashings, level and in true alignment.

3.5 PROTECT

Protect surfaces, window and door joinery, and finishes already in place, from the possibility of damage during the installation process.

3.6 CONFIRM LAYOUT

Before commencing work confirm the proposed installation of the flashings and expansion joints and other visual considerations of the finished work.

3.7 CO-ORDINATE INSTALLATION

Co-ordinate installation of flashings with associated trades.

Application

3.8 INSTALLATION

Install flashings in accordance with NZMRM CoP and in compliance with NZBC E2/AS1, 4.0 Flashings. For very high wind zones and where the pitch of the roof is below 15° the flashing joint laps shall be sealed with sealant at each end of the lap to prevent the ingress of water.

Refer to NZBC E2/AS1, Table 4.5.1.1: General dimensions of metal flashings and other flashings as listed, for general dimensions of flashings.

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3.9 FIXINGS

Fix flashings with fasteners appropriate to the situation. For fixing flashings with proprietary brackets or clips ensure they are aligned to allow for movement and are compatible with the flashing material.

Fix screws with the shank perpendicular to the surface of the flashing with the washer fitted firmly against the flashing. Screws to be compatible with the flashing material.

Rivets 'blind' or 'pop' are to be sealed when used. Aluminium rivets are compatible with zinc or AZ coated steel. Monel and stainless steel rivets can be used to fix galvanized steel flashings. Minimum diameter of rivet to be used is 4.0mm. Drill hole 1mm larger than the rivet size. Seal head of rivet with neutral cured silicone.

3.10 JOINTING - SEALANTS

Clean surfaces to be lapped using a solvent ensuring all traces of the solvent are removed with a clean rag. Apply sealant by gun in a continuous bead of approximately 5mm diameter. Width of sealant when compressed should not exceed 25mm. Sealant joints shall be mechanically fixed for strength. Refer to NZMRM CoP for details.

3.11 FINAL INSPECTION

A final inspection by the installer to take place after completion of the flashing work. Any defects or subsequent damage to be made good.

Completion

3.12 PROTECT

Protect new work from damage.

3.13 REPLACE

Replace all damaged or marked elements.

3.14 LEAVE

Leave work to the standard required for following procedures.

3.15 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 FLASHINGS

Type	Material and finish/colour
General flashings:	0.55mm Colorsteel ZR8 to match joinery
Window/doors:	
- Head:	0.55mm Colorsteel ZR8 to match joinery
- Sill:	0.55mm Colorsteel ZR8 to match joinery
Cladding:	
Meter box:	0.55mm Colorsteel ZR8 to match joinery
Soffit:	0.55mm Colorsteel ZR8 to match joinery (when required)
Wall/roof junctions:	0.55mm Colorsteel ZR8 to match joinery
Barge:	0.55mm Colorsteel ZR8 to match joinery
Apron:	0.55mm Colorsteel ZR8 to match joinery
Parapet capping:	0.55mm Colorsteel ZR8 to match joinery
Roof penetrations:	Proprietry

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5113G GIB® PLASTERBOARD LININGS

1 GENERAL

This section relates to the supply and installation of Winstone Wallboards Ltd GIB® plasterboard linings to walls and ceilings.

1.1 RELATED WORK

Refer to ~ for ~.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
FRR	Fire resistance rating
IIC	Impact insulation class
Rw	Weighted sound reduction index
STC	Sound transmission class

Documents

1.3 DOCUMENTS

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

BPS	Building Product Specifications
AS/NZS 2588	Gypsum plasterboard
AS 1530.4	Methods for fire tests on building materials, components and structures - Fire-resistance tests for elements of construction
ISO 5660.1	Reaction-to-fire tests – heat release, smoke production and mass lose rate – Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Smoke production rate (dynamic measurement)
BRANZ Technical Paper P21	A wall bracing test and evaluation procedure (2010)

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

GIB® Noise Control Systems Specification and Installation Manual (September 2017)
GIB® Fire Rated Systems Specification and Installation Manual (September 2024)
GIB® Wet Area Systems Specification and Installation Manual (February 2021)
GIB Weatherline® Rigid Air Barrier Systems Design and Construction Manual (March 2021)
GIB Curveline® Specification and Installation Manual for Curved Walls and Ceilings (November 2025)
GIB Ezybrace® Systems Specification and Installation Manual (August 2016)
GIB Ezybrace® Bracing Design Software
GIB Ezybrace® for Light Steel Frame Systems (March 2017)
GIB® Tough Systems Design and Installation Guide (May 2025)
GIBFix® Framing System (August 2016)
GIB® Rondo® Metal Batten Systems Specification and Installation Manual (September 2024)
GIB® Site Guide
GIB® Product BPIS
GIB® Plasterboard Lining Systems Care and Maintenance
GIB® Product and System Warranty
BRANZ Appraisal 289 (2024) GIB® Fire Rated Systems
BRANZ Appraisal 394 (2025) GIB® Noise Control Systems
BRANZ Appraisal 427 (2021) GIB® Wet Area Systems
BRANZ Appraisal 928 (2021) GIB EzyBrace® Systems
BRANZ Appraisal 1048 (2025) GIB Weatherline® Rigid Air Barrier Systems

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Manufacturer/supplier contact details
Company: Winstone Wallboards Ltd
Web: www.gib.co.nz
Telephone: 0800 100 442

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years For GIB® products and systems

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years For workmanship

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 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:
GIB® Plasterboard Lining Systems Care and Maintenance

Provide this information prior to practical completion.

1.9 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Compliance information

1.10 COMPLIANCE - BRANZ APPRAISAL 289

GIB® Fire Rated Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 289.

1.11 COMPLIANCE - BRANZ APPRAISAL 394

GIB® Noise Control Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 394.

1.12 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.

1.13 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.

1.14 COMPLIANCE - BRANZ APPRAISAL 1048

GIB Weatherline® Rigid Air Barrier Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 1048.

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Performance

1.15 BRACING

GIB EzyBrace® Systems have been tested and analysed using the BRANZ Technical Paper P21 test method to BPS, 3.5.3 Wall bracing elements.

1.16 INTERIOR SURFACE FIRE PROPERTIES - WALLS & CEILING, GROUP NUMBER

GIB® plasterboards have been tested to ISO 5660 and have been assigned Group Number 1-S to BPS, 8.5.1 Group Numbers.

1.17 FIRE RESISTANCE RATINGS - FRR SYSTEMS

GIB® Fire Rated Systems have been tested to AS 1530.4. Refer to SELECTIONS for systems FRR.

1.18 ACOUSTIC RATED SYSTEMS

GIB® Noise Control Systems have been tested for Sound Transmission Class STC and/or Impact Insulation Class. Refer to SELECTIONS for STC/IIC ratings.

2 PRODUCTS

Materials

2.1 GIB® STANDARD PLASTERBOARD

Paper-bound gypsum plaster core sheet lining, manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.2 GIB AQUALINE® PLASTERBOARD

Paper-bound, modified water-resistant gypsum plaster core sheet lining, manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.3 GIB TOUGHLINE® AQUA PLASTERBOARD

Paper-bound, high-density gypsum plaster core sheet lining with modified water-resistant formulation and embedded fibreglass mesh, manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.4 GIB WEATHERLINE® PLASTERBOARD

Exterior-grade glass-fibre fleece-wrapped modified gypsum core sheet lining with water and mould resistant properties, manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.5 GIB TOUGHLINE® PLASTERBOARD

Paper-bound, high-density gypsum plaster core sheet lining with embedded fibreglass mesh, material manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.6 GIB BRACELINE®/GIB NOISELINE® PLASTERBOARD

Paper-bound, high-density gypsum plaster core sheet lining manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.7 GIB FYRELINE® PLASTERBOARD

Paper-bound, high-density gypsum plaster core sheet lining with glass fibres and fire-resistant additives, manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.8 GIB CURVELINE® PLASTERBOARD

Paper-bound gypsum plaster core sheet lining, formulated for forming tight curves, manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.9 STRUCTURAL PLYWOOD

Minimum 7mm thick, square edge structural plywood, Type A phenolic bonded timber veneers to AS/NZS 2269.0. Refer to SELECTIONS.

2.10 GIB-COVE®

Paper-encased gypsum plaster cornice. Available in a range of profiles and sizes. Refer to SELECTIONS.

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Components

2.11 GIB® RONDO® METAL BATTEN SYSTEM

Hot-dipped galvanized steel ceiling battens, batten joiners, fixing clips, and perimeter channel. Refer to SELECTIONS.

2.12 GIBFIX® ANGLES

45mm x 45mm metal angles.

2.13 GIB® GRABBER® SCREWS

Proprietary drywall screws. Refer to SELECTIONS.

2.14 GIB® TRIMS AND EDGES

Proprietary corner trims and edge beads available as paper-faced galvanized steel, perforated galvanized steel, and composite moulds. Refer to SELECTIONS.

2.15 GIB® CONTROL JOINTS

Proprietary control joints available as paper-laminated galvanized steel, perforated galvanized steel, and plastic. Refer to SELECTIONS.

Accessories

2.16 GIBFIX® ADHESIVE

Proprietary wallboard adhesive. Available in water-based and solvent-based formulations. Refer to SELECTIONS.

2.17 GIB® JOINTING COMPOUND

Proprietary jointing compounds. Available in a range of plaster-based and polymer-based compounds. Refer to SELECTIONS.

2.18 GIB® JOINT TAPE

Proprietary joint tape. Available in paper and fibreglass. Refer to SELECTIONS.

2.19 GIB HANDIBRAC® HOLD DOWN BRACKET

Galvanized steel bracket supplied with 5 Tek screws and 2 BOWMAC blue head screw bolts.

2.20 PINK BATTS GLASS WOOL INSULATION

Bio-soluble fibrous glass wool insulation. Refer to SELECTIONS.

2.21 RONDO® FLEXIBLE TRACK

0.50 BMT steel track with Z275 corrosion resistant coating. Available in a range of widths to suit framing. Refer to SELECTIONS.

2.22 GIB WEATHERLINE® FLASHING TAPE

Proprietary self-adhesive flashing tape.

2.23 GIB FIRE SOUNDSEAL®

Proprietary water-based acrylic sealant with fire and acoustic properties.

2.24 GIB GAP FILLER

Proprietary flexible water-based acrylic gap 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 PRE-INSTALLATION REQUIREMENTS

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

Timber framing: 18% maximum moisture content

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install plasterboard linings in accordance with the relevant GIB® system installation instructions and the GIB® Site Guide.

3.6 INSTALL RONDO FLEXIBLE TRACK

Coordinate flexible track installation with framing construction. Fit track to the top and bottom of curved walls and fix studs through the pre-punched holes.

GIB® Rondo® Ceiling Batten System

3.7 LAYOUT CEILING BATTEN SYSTEM

Determine the ceiling height datum. Set out and mark batten centres along the framing to the required batten spacing.

3.8 INSTALL PERIMETER CHANNEL/ANGLE

Install ceiling perimeter channels/angles level to walls at determined datum height.

3.9 INSTALL FIXING CLIPS

Set a string line on the datum along the framing. Install fixing clips to the required batten spacing, using the string line to maintain level.

3.10 INSTALL CEILING BATTENS - DIRECT FIX

Cut battens to allow a 5mm gap at the perimeter. Seat batten ends in the perimeter channel/angle. Fix battens to framing and perimeter channels without distortion.

3.11 INSTALL CEILING BATTENS - CLIP FIX

Seat batten ends in the perimeter channel/angle. Clip fit battens into fixing clips and fix battens to perimeter channels without distortion.

GIB® Plasterboard

3.12 INSTALL GIBFIX® ANGLES

Install angles continuously to the timber framing at wall and ceiling junctions. Overlap adjacent angles by a minimum of 300mm at joints.

3.13 INSTALL PLASTERBOARD LININGS - WALLS

Horizontally fixed sheets: Install sheets with vertical sheet end joints fully supported. Fix to framing at 300mm centres around the wall perimeter. Fix to intermediate framing at 300mm centres with fasteners or daubs of adhesive. Fix a single fastener each side of horizontal sheet edge joints where crossing a stud.

Vertically fixed sheets: Install full-height sheets with the sheet perimeter fully supported. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres with fasteners or daubs of adhesive.

Place fasteners 12mm from paper-bound edges, 18mm from cut edges, and 50mm in each direction from corners. Touch fit adjacent sheets. Leave a 5mm-10mm gap at floor level.

3.14 INSTALL PLASTERBOARD LININGS - GIBFIX® FRAMED WALLS

Horizontally fixed sheets: Install sheets with vertical sheet end joints fully supported. Fix to framing at 300mm centres around the wall perimeter. Fix to intermediate framing at 300mm centres with fasteners or daubs of adhesive. Fix a single fastener each side of horizontal sheet edge joints where crossing a stud.



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Vertically fixed sheets: Install full-height sheets with the sheet perimeter fully supported. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres with fasteners or daubs of adhesive.

At GIBFix® Angle junctions, fix the sheet to the stud side first, then to the angle-only side. Where the angle-only side must be fixed first, install additional clouts into the framing at maximum 500mm centres before lining. Place fasteners 12mm from paper-bound edges, 18mm from cut edges, and 50mm in each direction from corners. Touch fit adjacent sheets. Leave a 5mm-10mm gap at floor level.

3.15 INSTALL PLASTERBOARD LININGS - CEILINGS

Install sheets perpendicular to ceiling framing. Form all sheet joints off frame with back-blocking, staggering sheet end joints a minimum of 600mm. Apply daubs of adhesive to the battens at 200mm centres between fastener locations. Fix around the ceiling perimeter at 600mm centres. Fix sheets to each batten along sheet edges and sheet centres. Place fasteners 12mm from tapered sheet edges, 18mm from cut edges. Touch fit adjacent sheets.

GIB® Tough Systems

3.16 INSTALL PLASTERBOARD LININGS - TOUGH SYSTEM WALLS

Horizontally fixed sheets: Install sheets with the sheet perimeter fully supported. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres with daubs of adhesive.

Vertically fixed sheets: Install full-height sheets with the sheet perimeter fully supported. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres with daubs of adhesive.

Place fasteners 12mm from sheet edges, 18mm from sheet ends, and 50mm in each direction from corners. Touch fit adjacent sheets. Leave a 5mm-10mm gap at floor level.

GIB® Wet Area Systems

3.17 INSTALL CORNER REINFORCING - TILED WET AREA WALLS

Install angles continuously to the framing at internal corner junctions in tiled showers and tiled showers over bath to a minimum height of 1800mm.

3.18 INSTALL PLASTERBOARD LININGS - NON-TILED TIMBER FRAMED WET AREA WALLS

Horizontally fixed sheets: Install sheets with vertical sheet end joints fully supported. Fix to framing at 300mm centres around the wall perimeter. Fix to intermediate framing at 300mm centres daubs of adhesive. Fix a single fastener each side of horizontal sheet edge joints where crossing a stud.

Vertically fixed sheets: Install full-height sheets with the sheet perimeter fully supported. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres daubs of adhesive.

Place fasteners 12mm from sheet edges, 18mm from sheet ends, and 50mm in each direction from corners. Touch fit adjacent sheets. Leave a 5mm-10mm gap at floor level.

3.19 INSTALL PLASTERBOARD LININGS - NON-TILED STEEL FRAMED WET AREA WALLS

Horizontally fixed sheets: Install sheets with vertical sheet end joints fully supported. Fix to framing at 300mm centres around the wall perimeter. Fix to intermediate framing at 300mm centres with fasteners or daubs of adhesive. Fix a single fastener each side of horizontal sheet edge joints where crossing a stud.

Vertically fixed sheets: Install full-height sheets with the sheet perimeter fully supported. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres with fasteners or daubs of adhesive.

Place fasteners 12mm from sheet edges, 18mm from sheet ends, and 50mm in each direction from corners. Touch fit adjacent sheets. Leave a 5mm-10mm gap at floor level.



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3.20 INSTALL PLASTERBOARD LININGS - TILED WET AREA WALLS

Horizontally fixed sheets: Install sheets with vertical sheet end joints fully supported. Fix to framing at 150mm centres around the wall perimeter and to intermediate framing. Fix a single fastener each side of horizontal sheet edge joints where crossing a stud. Support horizontal sheet edge joints on nogs in showers and shower-over-bath walls.

Vertically fixed sheets: Install full-height sheets with the sheet perimeter fully supported. Fix to framing at 150mm centres around the sheet perimeter. Fix to intermediate framing at 150mm centres.

Place fasteners 12mm from sheet edges, 18mm from sheet ends, and 50mm in each direction from corners. Touch fit adjacent sheets. Leave a 5mm-10mm gap at floor level.

3.21 INSTALL PLASTERBOARD LININGS - WET AREA CEILINGS

Install sheets perpendicular to ceiling framing. Form sheet joints off frame with back-blocking, staggering sheet end joints a minimum of 600mm. Apply daubs of adhesive to the battens at 200mm centres between fastener locations. Fix around the ceiling perimeter at 600mm centres. Fix sheets to each batten along sheet edges and sheet centres. Place fasteners 12mm from sheet edges. Touch fit adjacent sheets.

GIB EzyBrace® Systems

3.22 INSTALL HOLD DOWN BRACKETS

Fix GIB® HandiBrac® hold-down brackets at each end of bracing element with supplied fasteners.

3.23 INSTALL PLASTERBOARD LININGS - BRACED WALLS

Horizontally fixed sheets: Install sheets with vertical sheet end joints fully supported. Fix the perimeter of the bracing element to the framing to the GIB EzyBrace® fastener pattern. Fix to intermediate framing at 300mm centres with daubs of adhesive. Fix a single fastener each side of horizontal sheet edge joints where crossing a stud.

Vertically fixed sheets: Install full-height sheets with the sheet perimeter fully supported. Fix the perimeter of the bracing element to the framing to the GIB EzyBrace® fastener pattern. Fix vertical sheet edge joints to framing at 300mm centres. Fix to intermediate framing at 300mm centres with daubs of adhesive.

Place fasteners 12mm from paper-bound edges and 18mm from cut edges. Touch fit adjacent sheets.

3.24 INSTALL STRUCTURAL PLYWOOD - BRACED WALLS

Install full-height plywood sheets vertically with sheet perimeter fully supported. Fix to framing at 150mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres.

3.25 INSTALL PLASTERBOARD LININGS - CEILING DIAPHRAGM

Install sheets perpendicular to ceiling framing. Form sheet joints off frame with back-blocking, staggering sheet end joints a minimum of 600mm. Fix the diaphragm perimeter to the framing to the GIB EzyBrace® fastener pattern. Apply daubs of adhesive to the battens at 200mm centres between fastener locations. Fix around the ceiling perimeter at 600mm centres. Fix sheets to each batten along sheet edges and sheet centres. Place fasteners 12mm from sheet edges and 18mm from sheet ends. Touch fit adjacent sheets.

GIB® Noise Control Sub-intertenancy Systems

3.26 INSTALL INSULATION

Refer to relevant Pink Batts section(s) for insulation installation requirements.

3.27 APPLY SEALANT - SUB-INTERTENANCY WALLS

Apply a continuous bead of GIB Fire Soundseal® around the wall perimeter. Where a two-layer system is required, apply sealant to the perimeter over first plasterboard layer before installing the second layer.



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3.28 INSTALL PLASTERBOARD LININGS - QUIET STUD SUB-INTERTENANCY WALLS

Install full-height sheets vertically with the sheet perimeter fully supported. Fit sheets hard to the floor. Fix to framing at 300mm centres. In two-layer systems offset joints 600mm. Place fasteners 12mm from sheet edges and 50mm from sheet ends. Touch fit adjacent sheets.

3.29 INSTALL PLASTERBOARD LININGS - SUB-INTERTENANCY WALLS

Single layer, or inner layer (two-layer system): Install full-height sheets vertically with the sheet perimeter fully supported. Fit sheets hard to the floor. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres.

Where a two-layer plasterboard system is required, offset sheet joints by 600mm. The outer layer can be fixed horizontally or vertically.

Horizontally fixed sheets (outer layer): Fix to framing at 300mm centres around the wall perimeter. Fix to intermediate framing at 300mm centres with fasteners. Fix a single fastener each side of horizontal sheet edge joints where crossing a stud.

Vertically fixed sheets (outer layer): Fix full-height sheets to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres.

Place fasteners 12mm from paper-bound edges, 18mm from cut edges, and 50mm in each direction from corners. Touch fit adjacent sheets.

3.30 APPLY SEALANT - SUB-INTERTENANCY CEILINGS

Apply a continuous bead of GIB Fire Soundseal® around the ceiling perimeter. Where a two-layer system is required, apply sealant to the perimeter over first plasterboard layer before installing the second layer.

3.31 INSTALL PLASTERBOARD LININGS - SUB-INTERTENANCY CEILINGS

Install sheets perpendicular to ceiling framing with sheet end joints supported on the framing. Fix to ceiling battens at 200mm centres and along sheet end butt joints at 100mm centres. Place fasteners 12mm from sheet edges. Touch fit adjacent sheets. Where a two-layer plasterboard system is required, offset sheet joints by 600mm.

GIB® Fire Rated Boundary Firewall

3.32 INSTALL GIB® FIRE RATED SYSTEM BOUNDARY FIREWALL

Inner layer (two-layer system): Install sheets horizontally or vertically with the sheet perimeter fully supported. Fix to framing at 600mm centres along studs and 200mm centres along sheet end butt joints.

Single layer, or outer layer (two-layer system): Install sheets horizontally or vertically. In two-layer systems offset joints 600mm. Fix to framing at 300mm centres along studs and 200mm centres along sheet end butt joints.

Place fasteners 12mm from sheet edges and 18mm from sheet ends. Touch fit adjacent sheets.

3.33 INSTALL GIB WEATHERLINE® BOUNDARY FIREWALL

Weatherline® plasterboard layer: Install full-height sheets vertically with the sheet perimeter fully supported. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres. Leave a 5mm-10mm gap at floor level. Apply GIB Weatherline® Flashing Tape over exterior joints and fasteners.

Fyreline® plasterboard layer: Install sheets horizontally or vertically with the sheet perimeter fully supported. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres.

Place fasteners 12mm from sheet edges and 18mm from sheet ends. Touch fit adjacent sheets.

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GIB Curveline® Systems

3.34 PRE-WETTING PLASTERBOARD LININGS - CONCAVE CURVED WALLS

Lightly wet both sides of the plasterboard with a sponge or roller. Allow to penetrate for at least 5 minutes before installation.

3.35 PRE-WETTING PLASTERBOARD LININGS - CONVEX CURVED WALLS

Lightly wet both sides of 10mm and 13mm plasterboard with a sponge or roller. For 6.5mm GIB Curveline®, wet the rear face only. Allow to penetrate for at least 5 minutes before installation.

3.36 INSTALL PLASTERBOARD LININGS - CURVED WALLS

Install sheets horizontally with the sheet perimeter fully supported. Extend sheets a minimum of 300mm beyond each end of the curve. Fix to framing at 200mm centres. In two-layer system, stagger joints a minimum of 200mm.

Place fasteners 12mm from paper-bound edges, 18mm from cut edges, and 50mm in each direction from corners. Touch fit adjacent sheets. Leave a 5mm-10mm gap at floor level.

3.37 INSTALL PLASTERBOARD LININGS - CURVED CEILINGS

Install sheets perpendicular to ceiling framing. Extend sheets a minimum of 300mm beyond each end of the curve. Fix to ceiling battens at 200mm centres. Place fasteners 12mm from paper-bound edges, 18mm from cut edges, and 50mm from sheet ends.

GIB® Jointing and Finishing Systems

3.38 FIX GIB® SLIM ANGLE METAL TRIM

Screw fix metal trims over plasterboard at 300mm centres.

3.39 FIX GIB® PLASTIC/GIB® RONDO® P35 METAL CONTROL JOINTS

Fit the control joint trim into the gap between plasterboard sheets. Staple to the plasterboard at 150mm centres on each side of the joint.

3.40 JOINTING AND STOPPING

Apply first coat of bedding compound 150mm wide to joints, 75mm along corner faces, and 75mm each side of control joints. Embed joint tape, and paper-faced trims or control joints where required, in the compound. Cover with a thin layer of bedding compound over tape and allow to dry. Apply a second coat of bedding compound, extending a minimum of 25mm beyond the first coat. Feather the edges and allow to dry. Apply finishing compound, extending a minimum of 25mm beyond the second coat. Feather the edges and allow to dry. Lightly sand with fine sandpaper. Stop all fastener heads. Finish smooth and free of tool marks and ridges.

3.41 INSTALL COVES

Apply continuous beads of GIB-Cove® Bond jointing compound to the wall and ceiling contact faces of the selected cornice profile. Press firmly into position and wipe off excess adhesive.

Completion & Commissioning

3.42 COMPLETION MATTERS

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

4 SELECTIONS

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



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GIB® Plasterboard

4.1 GIB® PLASTERBOARD - TIMBER FRAMED WALLS

Location: ~
Lining: ~
Fasteners: ~
Adhesive: ~
Finish level: ~

4.2 GIB® PLASTERBOARD - GIBFIX® TIMBER FRAMED WALLS

Location: ~
Lining: ~
Fixing angles: GIBFix® Angle
Fasteners: ~
Adhesive: ~
Finish level: ~

4.3 GIB® PLASTERBOARD - STEEL FRAMED WALLS

Location: ~
Lining: 13mm GIB® Standard plasterboard
Fasteners: 25mm x 6g GIB® Grabber® Self-Tapping Screws
Adhesive: ~
Finish level: ~

4.4 GIB® PLASTERBOARD - CEILINGS

Location: ~
Lining: ~
Fasteners: ~
Adhesive: ~
Finish level: ~

GIB® Wet Area Systems

4.5 GIB® WET AREA SYSTEMS - NON-TILED TIMBER FRAMED WALLS

Location: ~
Lining: ~
Fasteners: ~
Adhesive: ~
Finish level: ~

4.6 GIB® WET AREA SYSTEMS - NON-TILED STEEL FRAMED WALLS

Location: ~
Lining: ~
Fasteners: 25mm x 6g GIB® Grabber® Self-Tapping Screws
Adhesive: GIBFix® All-Bond
Finish level: ~

4.7 GIB® WET AREA SYSTEMS - TILED TIMBER FRAMED WALLS

Location: ~
Lining: ~
Fasteners: 32mm x 6g GIB® Grabber® High Thread Screws
Corner reinforcement: ~
Finish level: 3

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4.8 GIB® WET AREA SYSTEMS - TILED STEEL FRAMED WALLS

Location: ~
Lining: ~
Fasteners: 32mm x 6g GIB® Grabber® Self-Tapping Screws
Corner reinforcement: ~
Finish level: 3

4.9 GIB® WET AREA SYSTEMS - CEILINGS

Location: ~
Lining: ~
Fasteners: ~
Adhesive: ~
Finish level: ~

GIB® Tough Systems

4.10 GIB® TOUGH SYSTEMS - TIMBER FRAMED WALLS

Location: ~
Lining: 13mm GIB Toughline®
Fasteners: 32mm x 6g GIB® Grabber® High Thread Screws
Adhesive: ~
Finish level: ~

4.11 GIB® TOUGH SYSTEMS - STEEL FRAMED WALLS

Location: ~
Lining: 13mm GIB Toughline®
Fasteners: 32mm x 6g GIB® Grabber® Self-Tapping Screws
Adhesive: ~
Finish level: ~

GIB EzyBrace® Systems

4.12 GIB® NOISE CONTROL SUB-INTERTENANCY - TIMBER FRAMED WALLS

Location: ~
Specification number: ~
STC: ~
Insulation: Pink Batts R2.2 (90mm) glass wool insulation
Lining: ~
Fasteners: ~
Finish level: ~

4.13 GIB EZYBRACE® SYSTEM - TIMBER FRAMED WALLS

Location: ~
Specification code: ~
Lining: ~
Hold-down: ~
GIB fasteners: ~
Plywood fasteners: ~
Adhesive: ~
Finish level: ~

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4.14 GIB EZYBRACE® SYSTEM - GIBFIX® TIMBER FRAMED WALLS

Location:	~
Specification code:	~
Lining:	~
Hold-down:	~
GIB fasteners:	32mm x 7g GIB® Grabber® Dual Thread Screws
Plywood fasteners:	~
Fixing angles:	GIBFix® Angle
Adhesive:	~
Finish level:	~

4.15 GIB EZYBRACE® SYSTEM - STEEL FRAMED WALLS

Location:	~
Specification code:	~
Lining:	~
Hold-down:	End-brace bracket and 5mm washer
GIB fasteners:	32mm x 6g GIB® Grabber® Self-Tapping Screws
Plywood fasteners:	32mm x 6g GIB® Grabber® Self-Tapping Screws
Fixing angles:	GIBFix® Angle
Adhesive:	~
Finish level:	~

4.16 GIB EZYBRACE® SYSTEM - CEILING DIAPHRAGM

Location:	~
Lining:	~
Fasteners:	~
Adhesive:	~
Finish level:	~

GIB® Noise Control Sub-intertenancy Systems

4.17 GIB® NOISE CONTROL SUB-INTERTENANCY - STEEL FRAMED WALLS

Location:	~
Specification number:	~
STC:	~
Insulation:	Pink Batts BIB R1.8 (75mm) glass wool insulation
Lining:	~
Fasteners:	~
Finish level:	~

4.18 GIB® NOISE CONTROL SUB-INTERTENANCY - QUIET STUD STEEL FRAME WALLS

Location:	~
Specification number:	~
STC/Rw:	~
Framing:	GIB® Rondo® Quiet Stud®
Insulation:	Pink Batts R2.2 (90mm) glass wool insulation
Lining:	~
Fasteners:	~
Finish level:	~

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4.19 GIB® NOISE CONTROL SUB-INTERTENANCY - CEILINGS

Location: ~
Specification number: ~
STC/IIC: ~
Batten system: GIB® Rondo® metal ceiling battens with Quiet Clip®
Insulation: Pink Batts Silencer (100mm) glass wool insulation
Lining: ~
Fasteners: ~
Finish level: ~

GIB® Fire Rated Boundary Firewall

4.20 GIB® FIRE RATED BOUNDARY FIREWALL

Location: ~
Specification number: ~
FRR: 30/30/30
Lining: ~
Fasteners: ~
Finish level: ~

GIB Curveline® Systems

4.21 GIB CURVELINE® SYSTEMS - TIMBER FRAMED WALLS

Location: ~
Lining: ~
Fasteners: 32mm x 6g GIB® Grabber® High Thread Screws
Finish level: ~

4.22 GIB CURVELINE® SYSTEMS - STEEL FRAMED WALLS

Location: ~
Lining: ~
Fasteners: 25mm x 6g GIB® Grabber® Self-Tapping Screws
Finish level: ~

4.23 GIB CURVELINE® SYSTEMS - WET AREA TIMBER FRAMED WALLS

Location: ~
Lining: ~
Fasteners: 32mm x 6g GIB® Grabber® High Thread Screws
Finish level: ~

4.24 GIB CURVELINE® SYSTEMS - WET AREA STEEL FRAMED WALLS

Location: ~
Lining: ~
Fasteners: 25mm x 6g GIB® Grabber® Self-Tapping Screws
Finish level: ~

4.25 GIB CURVELINE® SYSTEMS - CEILINGS

Location: ~
Lining: ~
Fasteners: ~
Finish level: ~

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Components

4.26 GIB® RONDO® CEILING BATTEN SYSTEM - DIRECT FIX BATTENS

Location:	~
Type:	GIB® Rondo® Ceiling battens
Batten type:	GR310-DF
Batten fixing:	~
Drop height:	35mm
Batten spacing:	~

4.27 GIB® RONDO® CEILING BATTEN SYSTEM - CLIP FIX BATTENS

Location:	~
Type:	GIB® Rondo® Ceiling battens
Batten type:	~
Clip type:	~
Batten clip fixing:	~
Drop height:	~
Batten spacing:	~

4.28 GIB® RONDO® CEILING BATTEN SYSTEM - PERIMETER

Location:	~
Type:	~
Perimeter to wall fixing:	~
Batten to perimeter fixing:	~

4.29 GIB® CORNER TRIMS

Type:	~

4.30 GIB® EDGE PROFILES

Type:	~

4.31 GIB® JOINTING SYSTEM

Joint tape:	~
Bedding compound:	~
Finishing compound:	~

Accessories

4.32 GIB-COVE®

Type:	~
Jointing compound:	GIB-Cove® Bond

4.33 GIB® CONTROL JOINTS

Type:	~

4.34 RONDO® FLEXIBLE TRACK - CURVED WALLS

Width:	~
Fixing:	13mm x 7g GIB® Grabber® Pancake Head Drill Tip screws



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5124HL HERMPAC INTERNAL TIMBER LININGS

1 GENERAL

This section relates to the supply and fixing of Hermpac interior timber lining.
It includes:

- Ceiling and sarking lining/finishing timber
- Wall lining/finishing timber.

1.1 RELATED WORK

Refer to ~ for

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
AS/NZS 4600	Cold-formed steel structures
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - coatings of zinc and zinc alloyed with aluminium and magnesium

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Hermpac Timber Panelling & Boards/Battens (D4S) Interior Sarking or Walls V2
Hermpac Panelling / Sarking / Soffit Lining (Hermpac Panelling Brochure).
Hermpac Profile Portfolio.

Manufacturer/supplier contact details

Company:	Hermpac Ltd.
Web:	www.hermpac.co.nz
Email:	technical@hermpac.co.nz
Telephone:	09 421 9840 Auckland 04 586 9674 Wellington 03 341 2163 Christchurch
Contacts:	Kyle Deans - 021 771 857, kyle.deans@hermpac.co.nz Carmen Hansen - 027 809 4588, carmen@hermpac.co.nz

Warranties

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years:	For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

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Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

1.8 NO SUBSTITUTIONS

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

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Manufacturer / supplier warranty
- Installer / applicator warranty
- Other information required by the BCA in the Building Consent Approval documents.

Performance - General

1.10 SURFACE FIRE PROPERTIES FOR LININGS

Group Number to NZBC C/AS2, Table 4.12.1.1: Maximum permitted Group Number for internal surface finishes. Refer to SELECTIONS.

Quality control and assurance

2 PRODUCTS

Materials

2.1 TIMBER LINING BOARDS

Solid timber panelling boards to Hermpac profiles, available in various widths, thicknesses and lengths for jointing on site as required (Refer to Hermpac Profile Portfolio). Band sawn or dressed and sanded finish. Species and grading to NZS 3602, moisture content 12 - 14% maximum at time of fixing. Refer to SELECTIONS for profiles.

2.2 WESTERN RED CEDAR

Hermpac Canadian Western Red Cedar (Thuja plicata) harvested from the sustainable managed forests of British Columbia, Canada. Hermpac Western Red Cedar is supplied from forest sources, certified legal and sustainable, and available with FSC or PEFC third party verified certification.

Available in the following grades:
Premium Clears No.1 (PC1), PremSelect (knotty / feature grade).
CedarOne Evolve (Quarter sawn, finger jointed) or CedarLine Evolve (mixed grain, finger jointed), Evolve is suitable for stain or oil finish. CedarOne Mantle (Quarter sawn, finger jointed) or CedarLine Mantle (mixed grain, finger jointed), Mantle is supplied primed and undercoated via machine coat for paint finish, top coat applied on site.

Coatings

2.3 FACTORY PRE-FINISHING - MACHINECOAT (NZ) - OIL / STAIN FINISH

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

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

Wood X:	Penetrating wood oil- exclusive Machinecoat (NZ) factory formulation, standard and custom colour range.
Other options:	Resene Colorwood or Dryden Woodmaster

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If required, additional site applied coat can be included , generally not required.

Components

2.4 BATTENS - TIMBER

SG6 radiata pine gauged.

Moisture content: 14 - 18% at fixing.

2.5 BATTENS - METAL

Steel battens to AS/NZS 4600. Steel Grade and zinc coating class G2 Z275 to AS 1397.

2.6 HERMPAC PANELLING CLIPS

Stainless steel or galvanized Hermpac proprietary panelling clip to suit specified standard or custom panelling profile.

2.7 PANELLING CLIP FIXINGS

Flat head Grade 316 SS nails 30mm x 2.0mm, or 4-gauge pozi head 30mm SS screws.

2.8 NAILS - FOR FACE OR SECRET FIXING OF INTERNAL TIMBER LININGS

Grade 316 stainless steel or silicon bronze nails for face-fixing and Grade 316 stainless steel for secret fixing of panelling profiles. Pre-drill timber if face fixing, to avoid splitting the timber. Position of face nail dependent on profile width. Nails to be minimum 2.0mm gauge. Length to provide min. 30mm penetration to substrate. Tongue and groove profiles can be secret fixed by placing a nail on an angle through the tongue.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

Timber to be stored inside, in an environment close to the ambient temperature in which the timber is going to be installed. Timber to be stored off the ground, wrapped and protected to ensure it does not get wet, dirty, contaminated or damaged. Care must be taken to avoid any damage to the timber prior to installation.

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Do not start cutting down and fitting and fixing linings before the building is enclosed and external moisture excluded from the area.
Before starting fixing, ensure that the substrate conforms to NZS 3604, and that the relative humidity is suitable to receive lining.

Moisture content of framing:	14% maximum
Moisture content of concrete:	less then 5%

If timber has been stored on-site prior to installation, boards must be checked and wiped down prior to installation. Wear gloves to avoid contaminating the timber and/or coating.

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3.4 MOISTURE CONTENT - LINING

Immediately before starting fixing, test the moisture content of the lining to ensure the moisture content is acceptable. Use an electrical moisture meter to the board manufacturer's requirements, testing 5% of not less than 10 boards in the centre of the length. Do not commence laying if 90% of values obtained are not within the range specified.

3.5 PRE-COATING/FINISHING REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for specified finish. Carry out such additional preparatory work as required to bring the substrate to suitable condition. Wipe boards clean before any subsequent coating is applied. Pre-seal backs and edges of boards where fixing in damp areas or areas of high humidity. Always follow coating manufacturer's instructions.

3.6 ENVIRONMENTAL CONDITIONS - HEATING

The heating is designed to provide spaces with continuous/intermittent heating. Refer to SELECTIONS. Fix timber strip lining to suit these conditions.

Make arrangements for operating the heating installation up until completion of the works.

3.7 ENVIRONMENTAL CONDITIONS - AIR CONDITIONING

The air conditioning system is designed to provide spaces with heating and humidity control. Refer to SELECTIONS. Fix timber strip lining to suit these conditions.

Make arrangements for operating the air conditioning installation up until completion of the works.

Installation/application

3.8 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.9 FIX TIMBER BATTENS (SUBSTRATE)

Rigidly fix in place in straight lines with bolts or power fixing and damp-proof course separation, with butt joints staggered and all true to plane for fixing of linings.

3.10 FIX METAL BATTENS (SUBSTRATE)

Rigidly fix in place in straight lines with bolts or power fixing and damp-proof course separation, with butt joints staggered and all true to plane for fixing of linings.
Refer to framing/purlin manufacturers details.

3.11 FIX PANELLING

Fix panelling/boards in accordance with Hermpac Timber Panelling & Boards/Battens (D4S) Interior Sarking or Walls. Fix directly to the wall framing, or over a plywood or other sheet substrate. Install level, true to line and face. Fix panelling to backing in pattern as detailed in straight parallel lines with tongues tightly fitted into grooves. Slightly undercut end joints square, fully supported, fitted tight and random staggered across adjacent boards. Allow for movement at all corners. Select board lengths to give a minimum number of end joints.

Fixings for linings

3.12 FACE FIX - NAILS

Pre-drill all boards for nails. Nail every board to every stud/rafter/nog with 1 or 2 nails (depending on width of profile). Boards to be hand nailed. Back of nail to sit on the surface of the timber unless timber is to be painted. If painting timber, then fixings to be punched and filled.

3.13 SECRET FIX NAILS

Secret nail fix with brads/panel pins diagonally through the tongue only. Punch nails to ensure correct alignment of the next board.

3.14 SECRET FIX - HERMPAC PANEL CLIP FIX

Screw or nail fix Hermpac panel clips with suitable screw or nail into a timber stud or nog/dwang line. Drive screw or nail heads flush.
Place groove in the board into the open side of the clip. Place tongue of subsequent board into the groove and repeat process. Fix at the following spacings:

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- Panelling profiles up to 9-12mm thick at 400mm centres
- Panelling profiles 12-28mm thick at 600 centres.

For fixing into metal battens, use the clips and suitably sized screw to fit through pre-drilled panel clip hole and fix through into the metal batten. Confirm suitable fixing type and size with metal batten manufacturer, for the specified timber, including maximum spans.

Place groove in the board into the open side of the clip. Place tongue of subsequent board into the groove and repeat process.

3.15 SAND LININGS

Sand linings with a machine sander to the standard required for the finish specified. Do not sand linings if they already have a coating applied, unless specified in the coating manufacturer's documentation / specification.

Coating

3.16 FACTORY APPLIED COATING

Factory applied Machinecoat (NZ) finish. If required, apply finishing top coat on site, refer to SELECTIONS.

Completion & Commissioning

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

Materials

4.1 WALL/CEILING LINING TIMBER - WESTERN RED CEDAR

Location:	Refer Architectural Plans
Supplier:	Herman Pacific Limited (Hermpac)
Species:	Western Red Cedar
Profile / size:	Refer Architectural Plans
Surface fire:	Group Number 4
Timber certification:	PEFC certified / PEFC Claim - 100% PEFC Origin

Coatings

4.2 FACTORY PRE-FINISHING - MACHINECOAT (NZ) - OIL / STAIN FINISH

Brand:	Machinecoat (NZ) Ltd
Coating process:	Machinecoat (NZ) Ltd. Flood Coat Inundation
Product:	Wood-X penetrating wood oil
Colour:	Refer Finishes Specification
Factory coats:	One

Components

4.3 BATTENS - TIMBER (SUBSTRATE)

Treatment:	H1.2
Dimensions:	70x35
Spacing:	600mm centre to centre

4.4 BATTENS - METAL (SUBSTRATE)

Dimensions:	35mm
Spacing:	600mm centre to centre

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4.5 NAILS

Material:	Grade 316 stainless steel or silicon bronze - for face-fixing
Head type:	Refer Finishes Specification
Size:	Length of nails to achieve minimum 30mm embedment into substrate

4.6 FIXING CLIPS

Manufacturer:	Hermpac
Material:	Galvanized
Dimensions:	Two sizes of clips are available - to fit 9-12mm timber thickness, and to fit 18-28mm timber thickness. Bags contain approx. 200 clips. Fixings sold separately.
Spacing:	Refer Product Literature

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5231 INTERIOR DOORS & WINDOWS

1 GENERAL

This section relates to the supply and installation of interior:

- doors
- windows
- doors and frames
- doorsets

1.1 RELATED WORK

Refer to glazing sections for glazing

Refer to painting sections for finishes

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

AS/NZS 1170.1	Structural design actions - Permanent, imposed and other actions
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3610	Specification for profiles of mouldings and joinery
NZS 4223.3	Glazing in buildings - Human impact safety requirements

Window & Glass Association NZ (WGANZ) documents:

PQAS	Powder Coating Quality Assurance System
SFA 3503-03	Anodic Oxide coatings on wrought aluminium for external architectural application (2005)

1.4 PERFORMANCE REQUIREMENTS

Refer to 5241 FIRE AND ACOUSTIC INTERIOR DOORS AND WINDOWS for fire and acoustic performance details.

2 PRODUCTS

Materials - door and window frames general

2.1 TIMBER DOORS AND WINDOWS

To NZS 3602. Moisture content 10-14%. To NZS 3610.

Materials - doors general

2.2 TIMBER

To NZS 3602. Moisture content 10-14%. To NZS 3610. Solid or hollow core.

Materials - doorsets

2.3 STANDARD DOORSETS, SIDE HUNG DOOR

Frames to profile as detailed and dimensioned, fitted with solid or hollow core door.

Refer to SELECTIONS.

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2.4 STANDARD DOORSETS, SLIDING

Frames to profile as detailed and dimensioned, fitted with solid or hollow core door.

Refer to SELECTIONS.

Components

2.5 WINDOW AND DOOR FURNITURE

Refer to 5521 HARDWARE for type and finish.

2.6 SCREWS

Stainless steel or non-corrodible metal. Length sufficient to penetrate into the background support up to the shank. Screws for fixing hinges, hardware or furniture to match the item being attached.

2.7 NAILS

Length sufficient to penetrate into the background support at least half the nail length, except if into radiata pine then three-fifths their length.

2.8 DOOR HINGES

Size and gauge to carry door size and weight. 3 hinges per door.

Type:	Loose pin
Size:	89mm
Material:	Zinc-plated steel
Pin:	Loose-pin zinc-plated steel

2.9 INTERIOR SLIDING DOOR GEAR

To suit door size and weight and as detailed.

2.10 DOOR SKIN (FACINGS)

Doors skins as detailed and dimensioned.

Finish

2.11 TIMBER - PAINT FINISH

Factory applied coating system.

2.12 TIMBER - CLEAR FINISH

Factory applied coating system.

2.13 TIMBER - LACQUER FINISH

Factory applied coating system.

3 EXECUTION

Conditions

3.1 GENERALLY

Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.2 DO NOT DELIVER

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

3.3 HANDLE

Handle, unload and store elements without distortion and avoiding pre-finished surfaces rubbing together, and contact with mud, moisture and other damaging materials.

3.4 PROTECT

Protect all elements against damage to arrises and glazing beads. Store frames and doors flat and away from moisture or direct sunlight.



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3.5 FABRICATE DOORSETS

Fabricate doorsets and windows in the factory with doors hung, provision for furniture made, finishes applied and fully operable.

3.6 FABRICATE DOORS

Fabricate doors in the factory, with provision for door furniture.

3.7 CHECK ALL OPENINGS

To NZS 3604.Check all openings on site for size and standard of execution before installing window or door frames. Installation tolerances of windows subject to earthquake design to comply with AS/NZS 1170.1.

Assembly

3.8 FABRICATION GENERALLY

Manufacture and fabricate frames and doors as detailed. Install hinges and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

Application - generally

3.9 FIXING FRAMES

Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion and with all opening sashes fully and easily operating. Fit architraves.

3.10 DISTORTION

Do not distort frames when wedging or other packing, or when tightening fixings. If necessary adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

3.11 FIXINGS

Fix frames so that nail heads are covered by applied stops and beads. Punch all nail heads below timber surfaces which will be visible in completed work. Ensure that at least one frame fixing is adjacent to each hanging point.

Application - doorsets

3.12 PROPRIETARY ELEMENTS

Fix in accordance with the door manufacturer's requirements.

3.13 INSTALLATION GENERALLY

Wedge frames into opening and fix through into the wall framing. Locate all wedges and fixing at hinge positions and opposite, with one fixing in the vicinity of the lock. Fixings concealed behind planted stops.

Hang doors on hinges, sliding or bi-fold gear as specified and to operate freely. Fit all hardware and door furniture.

3.14 TIMBER STUD WALLS - TIMBER FRAMES

Wedge into opening and nail through into the studs. All wedges and fixing to be at hinge positions and opposite, with one fixing in the vicinity of the lock.

3.15 BOTTOM CLEARANCE

Provide for specified floor coverings plus 5mm clearance at any point of swing. When floor covering is not specified, allow 25mm total.

For ventilated and/or air conditioned spaces allow 20mm clearance above finished floor coverings for supply/return air.

3.16 REMOVE DOORS

Remove doors from the frames if necessary to protect them, or for re-finishing, store safely and near completion refit them, all without any damage.

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3.17 INSTALL PANELS

Prime rebates and beads, install sealant backing strips or silicone. Install dry beading to outside of panels as selected. Do not mitre corners of beads.

3.18 INSTALL FURNITURE

Install latches, locks and door furniture as scheduled.

3.19 CHECK

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

Application - windows

Completion

3.20 PROTECTION

Protect all finishes against damage from adjacent and following work.

3.21 REPLACE

Replace damaged, cracked or marked elements.

3.22 TRADE CLEAN

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

3.23 LEAVE

Leave work to the standard required for following procedures.

3.24 REMOVE

Remove safety indicators and protective coverings, and wipe down all doorsets thoroughly to leave them perfectly clean. Remove all debris, unused materials and elements from the site.

4 SELECTIONS

Frames

4.1 DOOR FRAMES - TIMBER

Timber species:	Pine
Grade:	PG
Finish:	Paint
Thickness:	19mm

Doors

4.2 STANDARD DOORS

Door type:	Hollow core door
Door finish:	Paint
Hinge type/finish:	loose pin / 89mm / zinc plated steel

Finish

4.3 PAINT FINISH

Brand:	Refer Finishes Schedule
System name:	Refer Finishes Schedule
Finish/colours:	Refer Finishes Schedule

4.4 POWDER COATING

Refer to 6746D DULUX POWDER AND INDUSTRIAL COATINGS for powder coating products.

Refer to 6746IP INTERPON POWDER COATINGS for powder coating products.

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Hardware

4.5 HARDWARE SCHEDULE

Location	Type of hardware	Number off
Refer to plans	Astron Vector	

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5231C CS CAVITY SLIDERS

1 GENERAL

This section relates to the supply and installation of **CS FOR DOORS®** product range.
It includes;

- cavity sliders
- wardrobe sliders
- track systems
- door leaves
- CaviLock® handle hardware

1.1 RELATED WORK

Refer to glazing section/s for glazing for timber doors.

Documents

1.2 DOCUMENTS

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

AS/NZS 1170.1	Structural design actions - Permanent, imposed and other actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
NZS 3602	Timber and wood-based products for use in building
NZS 4223.3	Glazing in buildings - Human impact safety requirements

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

CS FOR DOORS® Specifiers Guide
BIA Accreditation #93/006A.
BRANZ Appraisal 900 - CS Cavity Sliders

Manufacturer/supplier contact details

Company:	CS FOR DOORS®
Web:	www.csfordoors.co.nz
Email:	info@csfordoors.co.nz
Telephone:	0800 754 337 09 276 0800 Auckland 07 928 0800 Waikato/Bay of Plenty 03 348 6158 South Island

Warranties

1.4 WARRANTY

Provide the following CS FOR DOORS® warranties

10 Years on the following product categories:
Cavity Sliders, Wardrobe Sliders, Pre- Hung Jambs, Track Systems.

5 Years on the following product categories:
CS manufactured Door Leaves, Automatic Units

2 Years on the following product categories:
CaviLock® Handle Hardware

12 Months on the following product categories:
Electrical components and parts

Provide this warranty on the manufacturer's standard form.

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Refer to the general section 1237 WARRANTIES for additional requirements. Refer to www.csfordoors.co.nz for guarantee terms and conditions.

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.

2 PRODUCTS

Materials - general

2.1 TIMBER

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

2.2 GLASS

Refer to SELECTIONS for frameless glass cavity slider doors.

Refer to glazing section/s for glazing to timber and aluminium doors.

2.3 INTERIOR TIMBER

To NZS 3602. Moisture content approximately 10-14%.

Materials - Cavity Slider units

2.4 CAVITY SLIDER UNITS

CS For Doors® cavity slider units to profile as scheduled, detailed and dimensioned. Refer to SELECTIONS.

Components

2.5 DOOR FURNITURE

CS CaviLock® architectural handles and locks as scheduled.

2.6 SCREWS

Stainless steel or non-corrodible metal. Length sufficient to penetrate into the background support up to the shank. Screws for fixing hinges, hardware or furniture to match the item being attached.

2.7 NAILS

Length sufficient to penetrate into the background support at least half the nail length, except if into radiata pine then three-fifths their length.

2.8 SLIDING DOOR GEAR

CS CavitySliders® track to suit door size, weight and application. Stainless steel carriages and mount plates are available for the CS240 kg and CS500 kg systems.

Finish

2.9 FINISH

~

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 GENERALLY

Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.4 FABRICATE DOORSETS

Fabricate doorsets in the **CS FOR DOORS®** factory with doors hung, provision for furniture made, finishes applied and fully operable.

3.5 FABRICATE DOORS

Fabricate doors in the factory, with provision for door furniture.

3.6 CHECK ALL OPENINGS

Check all openings on site for size and standard of execution before installing window or door frames. Installation tolerances of windows subject to earthquake design to comply with AS/NZS 1170.1 or NZS 1170.5.

Assembly

3.7 FABRICATION GENERALLY

Manufacture and fabricate frames and doors as detailed. Install running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.

Application - generally

3.8 FIXING FRAMES

Fit to frame as required. Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion. Fit facings, scribers, draught-stopping and sealants.

3.9 DISTORTION

Do not distort frames when wedging or other packing, or when tightening fixings. If necessary adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

3.10 FIXINGS

Fix frames so that nail heads are covered by applied stops and beads. Punch all nail heads below timber surfaces which will be visible in completed work. Ensure that at least one frame fixing is adjacent to each hanging point.

Application - doorsets

3.11 PROPRIETARY ELEMENTS

Fix in accordance with **CS FOR DOORS®** requirements.

3.12 INSTALLATION GENERALLY

Frames finished to match the width of lined walls. Wedge frames into opening and nail through into the studs making sure you have one fixing in the vicinity of the lock.

Hang doors on sliding gear as specified and to operate freely. Fit all hardware and door furniture to CS FOR DOORS® instructions.

3.13 TIMBER STUD WALLS - TIMBER FRAMES

Fix direct to opening and pack, with one fixing in the vicinity of the lock.

3.14 STEEL STUD WALLS - STEEL FRAMES

Using a pilot hole in the frame, fix to steel studs with countersunk self-drilling corrosion proof screws. Fix direct to opening and pack, with one fixing in the vicinity of the lock.



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3.15 STEEL STUD WALLS - TIMBER FRAMES

Drill the timber frame and fix to steel studs with countersunk self-drilling corrosion proof screws. Fix direct to opening and pack, with one fixing in the vicinity of the lock.

3.16 BOTTOM CLEARANCE

Provide for specified floor coverings plus a minimum of 5mm clearance at any point of slide. When floor covering is not specified, allow 25mm total.

For ventilated and/or air conditioned spaces allow 20mm clearance above finished floor coverings for supply/return air.

3.17 REMOVE DOORS

Remove doors from the frames if necessary to protect them, or for re-finishing, store safely and near completion refit them, all without any damage.

3.18 INSTALL PANELS

Prime rebates and beads, install sealant backing strips or silicone. Install dry beading to outside of panels as selected. Do not mitre corners of beads.

3.19 MANIFESTATIONS

To comply with NZS 4223.3.

3.20 INSTALL FURNITURE

Install latches, locks and door furniture as scheduled.

3.21 CHECK

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

Completion & Commissioning

3.22 COMPLETION MATTERS

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

4 SELECTIONS

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

CS Cavity Sliders Standard Range

4.1 CS CAVITY SLIDERS - TIMBERFORMED®

Location:	~
Manufacturer:	CS Cavity Sliders
Leaf dimensions:	~mm x ~mm
Door type:	~
Door finish:	~
Closing action:	~
Single or Biparting:	~
Jamb type/finish:	~
Framing/size:	~
Lining thickness:	~mm
Track finish:	~
Detail option:	~
Handle type:	Refer to CaviLock® specialised hardware

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4.2 CS CAVITY SLIDERS - FRAMELESS GLASS

Location: ~
Manufacturer: CS Cavity Sliders
Door type: ~mm toughened glass
Glass finish: ~
Closing action: ~
Single or Biparting: ~
Jamb type/finish: ~
Framing/size: ~mm
Lining thickness: ~mm
Track finish: ~
Detail option: ~
Handle type: Refer to CaviLock® specialised hardware

4.3 CS CAVITYSLIDERS® SQUAREFORMED™

Location: ~
Leaf dimensions: ~mm x ~mm
Door type: ~
Door finish: ~
Closing action: ~
Single or Biparting: ~
Jamb type/finish: SquareStop Split Jamb
Framing/size: 90mm, timber framing only
Lining thickness: ~mm
Track finish: Natural anodised
Handle type: Refer to CaviLock® specialised hardware

Aluminium door leaves

4.4 CS CAVITY SLIDERS - LOFTDOOR™

Location: ~
Manufacturer: CS Cavity Sliders
Leaf Type: LoftDoor™
Leaf dimensions: ~mm x ~mm
Configuration: ~
Lighting configuration ~
Finish/colour: Powder coated matt black
Glazing: ~
Application: ~
Handle type: ~

Hardware

4.5 CAVILOCK® SLIDING-DOOR HANDLE HARDWARE

Provide the following CS CaviLock® specialised handle hardware:

Location	Handle Type	Finish	Fitting Height to centre	Door Thickness	Comments
~	CL400 Passage	~	990mm	34 - 52mm	~
~	CL400 Privacy	~	990mm	34 - 52mm	~
~	CL400 Key Lock	~	990mm	34 - 52mm	~
~	CL400 Bi-Parting		990mm	34 - 52mm	~
~	CL400 ADA Passage	~	990mm	34 - 52mm	~

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~	CL400 ADA Privacy	~	990mm	34 - 52mm	~
~	CL400 ADA Bi-Parting	~	990mm	34 - 52mm	~
~	CL200 Passage	~	990mm	33 - 46mm	~
~	CL200 Privacy	~	990mm	33 - 46mm	~
~	CL100 LaviLock	~	990mm	33 - 42mm	~
~	CL100 Flushturn	~	990mm	38 - 42mm	~
~	CL100 Digital	~	990mm	36 - 42mm	~
~	CL100 Louise	~	990mm	38 - 42mm	~
~	CL100 Lever/Lever	~	990mm	38 - 42mm	~
~	Louey	~	990mm	~mm	~
~	Timber Edge Pull	~	990mm	~mm	~
~	Other	~	~	~	~

Location: ~
Leaf Type: NewYorker®
Leaf dimensions: ~mm x ~mm
Configuration: ~
Finish/colour: ~
Glazing: ~
Application: ~
Handle type: ~

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5511 JOINERY & CABINETRY FIXTURES

1 GENERAL

This section relates to custom joinery fittings and cabinetwork, purpose made in a factory and fitted on site.

1.1 RELATED WORKS

Refer to ~ for ~.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.3 DOCUMENTS REFERRED TO

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

AS/NZS 1859.1	Reconstituted wood based panels - Specifications - Particleboard
AS/NZS 1859.2	Reconstituted wood based panels - Specifications - Dry processed fibreboard
AS/NZS 1859.3	Reconstituted wood based panels - Specifications - decorative overlaid wood panels
AS/NZS 4386.1	Domestic kitchen assemblies - Kitchen units
AS/NZS 4386.2	Domestic kitchen assemblies - Installation

2 PRODUCTS

Materials

2.1 TIMBER BOARDS AND FRAMES

Boards and frames carefully sawn to minimise the inherent warping, twisting and bowing of the selected species and to give a finish suitable for clear finishing.

2.2 PLYWOOD PANEL

Urea-formaldehyde resin hot-press bonded timber veneers, select grade interior.

2.3 PARTICLEBOARD

Urea-formaldehyde resin bonded medium density particleboard to AS/NZS 1859.1.

2.4 MEDIUM DENSITY FIBRE BOARD

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2.

2.5 MEDIUM DENSITY FIBRE BOARD - MELAMINE VENEER

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 and AS/NZS 1859.3 veneered both sides with melamine sheet.

2.6 MEDIUM DENSITY FIBRE BOARD - WOOD VENEER

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 and AS/NZS 1859.3 veneered with selected wood veneer.

2.7 SOLID POLYMER BOARD

Non-porous polymer formed with a homogenous blend of alloys and fillers into a solid rigid sheet. Worked by certified fabricators only.

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2.8 BACKING BOARD

Urea-formaldehyde resin bonded very fine wood fibre sheet to AS/NZS 1859.2.

Minimum thickness: 6mm

2.9 PRE-FINISHED BACKING BOARD

Urea-formaldehyde resin bonded fine wood fibre sheet to AS/NZS 1859.2 and AS/NZS 1859.3, veneered one side with melamine sheet.

Minimum thickness: 6mm

Components

2.10 BENCHTOPS

As detailed on the drawings and as required for specified fittings and appliances.

2.11 CARCASE CONNECTORS

One-piece steel, straight deep-cut thread, fibre board screws with press fit plastic trim cap.

2.12 CARCASE FASTENERS

Knock down type centric sphere zinc alloy connectors with connecting bolts, sleeves and dowels, to suit each particular fastening location.

2.13 BUTT HINGES

Butt, broad butt, flush butt or overlay steel or brass, to suit the location, or as detailed.

2.14 CONCEALED HINGES

All-metal zinc alloy with automatic spring and screw-fixed. Door stops of plastic foam with self adhesive backs, or plastic buttons clear or coloured to match unit.

2.15 GLASS DOOR HINGES

All-metal zinc alloy body and metal/plastic glass cup, with automatic spring, screw-fixed and with matching door pulls.

2.16 FLAP HINGES

All-metal, flush-fitted and screw-fixed with no gap when the flap is down.

2.17 FLAP STAY

All-metal, slide/folding and screw fixed.

2.18 DRAWER RUNNERS

Under mounted type, precision running ball-mounted full extension, bright steel finish system.

Accessories

2.19 ADHESIVES

As approved by the manufacturer for the timber product or pre-finished timber product joint being used.

Finishes

2.20 LIGHT DUTY COATING SYSTEM

Single pack, clear or pigmented nitro-cellulose or pre-catalysed lacquer.

2.21 MEDIUM DUTY COATING SYSTEM

Two pack, clear or pigmented acid catalysed coating.

2.22 HEAVY DUTY COATING SYSTEM

Two pack, clear or pigmented polyurethane coating.

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3 EXECUTION

Conditions

3.1 JOINERY FIXTURES GENERALLY

Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs). Take responsibility for the completed joinery fixtures including fittings included within fixtures and the on site installation.

3.2 DOMESTIC KITCHEN ASSEMBLIES

Unless otherwise specified / detailed, domestic kitchens to be constructed to AS/NZS 4386.1 and installed to AS/NZS 4386.2

3.3 SITE MEASURE

Site check and confirm dimensions after wall linings have been fixed. Verify positions of electric power outlets, wiring to light fittings included in joinery fixtures, water supplies and waste pipe locations.

3.4 SHRINKAGE

Arrange jointing and fixing so that shrinkage in any part and direction does not impair the strength or appearance of the finished work or damage the adjoining work.

3.5 TOLERANCES

Provide reasonable tolerances at connections between the joinery fittings and the building fabric so that any irregularities are adequately compensated for in the site fixing.

3.6 NATURAL FINISH TIMBER

Select timber for match or uniformity or symmetry of colour or grain of adjacent pieces. Finish to same standard on all faces.

3.7 PRE-FINISH WOOD VENEER

Select veneer board for match or uniformity, or symmetry of colour or grain of adjacent pieces. Finish to same standard on all faces. Clash exposed edges with solid matching timber strips.

3.8 PRE-FINISH MELAMINE VENEER

Select and match all adjacent pieces. Clash exposed edges of wood grains with solid matching timber strips and with selected PVC strips to other patterns.

Conditions - site

3.9 TRANSIT

Load, transport and unload fittings without distortion or damage and keep covered to protect from the weather.

3.10 DELIVERY

Deliver fittings to the site only when floor, wall and ceiling surfaces are in place and the fittings can be immediately placed in their final location.

Assembly

3.11 MACHINING

Carry out machining within the practices required for the particular timber, wood product or pre-finished wood product being used. Machine drill holes, cut recesses and form joints ready for assembly to the componentry manufacturer's requirements. Ensure work is accurate, square and true to line.

3.12 MAKE CUT OUTS FOR APPLIANCES AND FITTINGS

Obtain fitting templates from the appliances and other fittings to be installed within joinery fixtures and bench tops. Ensure appliances and fittings can be installed with the required tolerances and clearances. Where bench tops are being provided under other work sections, provide templates and confirm dimensions to others.

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3.13 ASSEMBLY

Carry out gluing, dowelling, and other operations necessary for the proper assembly of the fittings as detailed with fixings concealed unless detailed otherwise. Scribe fit adjustable shelves with 4 shelf pins to each and with force fit pin holes at 50mm maximum centres in solid cheeks. Construct drawers and using groove mounting runners, fit them with 3mm clearance into drawer space. Hang doors on concealed hinges with 115 degree openings except where detailed for 170 degrees.

3.14 GLUE JOINTS

Use glue joints where provision for shrinkage is not required. Cross-tongue or otherwise reinforce. Surfaces in contact to have an even sawn or planed finish and be free of contamination. Mix, apply and set to the glue manufacturer's requirements with adequate pressure applied to ensure intimate contact that will be maintained while the glue sets.

3.15 CONNECTOR JOINTS

Locate and drive connectors to the board manufacturer's requirements. Fit plastic trim cap where detailed. Conceal or hide from sight other connector heads.

3.16 FASTENER JOINTS

Locate and drive connecting bolts to the board manufacturer's requirements. Form joint and fit and rotate centric sphere connector to finish it rigid and tightly fitting over the whole length of the joint.

Application

3.17 FIXING ON SITE

- Scribe fit and conceal fix rigidly in place square, level, plumb and true to line and face as detailed and to the required standard.
- Assemble fittings on-site if brought in sections.
- Fit counter and bench tops and upstands.
- Complete with moveable parts in place and freely moving in their proper range.

Finishing

3.18 COATING SYSTEM - PREPARATION

- Fill timber defects with proprietary wood filler. (e.g. cracks, holes, etc)
- Sand timber to a smooth even finish using 180 grit paper.
- Remove all sanding dust using air guns and tack rags.
- Ensure substrate is free from dust, grease, dirt and other contaminants.
- Ensure moisture content of the timber is less than 15% immediately before commencing coating operations.

3.19 COATING SYSTEM - APPLICATION

To coating manufacturer's requirements.

3.20 PROTECT

Protect finished surfaces from damage, particularly benchtops.

Completion

3.21 REPLACE

Replace damaged or marked elements.

3.22 LEAVE

Leave work complete, clean and without blemish and to the standard required by following procedures.

3.23 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS



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5517PP PRIME PANELS BENCHTOPS

1 GENERAL

This section relates to the supply and installation of bench tops incorporating the Prime Panels™ range of surface finishes and materials.
It includes:

- Prime Laminate
- Prime Stone
- Prime Porcelain.

Associated components and accessories necessary to complete the benchtop installation.

1.1 RELATED WORK

Refer to 5511PP PRIME PANELS CABINETRY for associated cabinetry work.

Documents

1.2 DOCUMENTS

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

BPS	Building Product Specifications
NZBC C/AS2	Protection from fire for buildings other than risk group SH
AS 1530.3	Method of test for heat Methods for fire tests on building materials, components and structures - Simultaneous determination of ignitability, flame propagation, heat release and smoke release
AS/NZS 2924.1	High pressure decorative laminates - Sheets made from thermosetting resins - Classification and specifications
AS/NZS 3837	Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter
EN 438.4	High-pressure decorative laminates (HPL) - sheets based on thermosetting resins (usually called laminates) - part 4: Classification and specifications for compact laminates of thickness 2mm and greater
ISO 5660.1	Reaction to Fire Tests - Heat Release Smoke Production and Mass Loss Rate Part 1: Heat Release Rate (Cone Calorimeter Method)

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Prime Panels™

- Product Brochures
- Technical Data Sheets
- Material Safety Data Sheets
- Information Bulletins
- BRANZ Fire Test Report

Manufacturer/supplier contact details

Company:	Prime Panels™, a business unit of New Zealand Panels Group Limited
Web:	www.primepanels.co.nz
Email:	sales@primepanels.co.nz
Telephone:	0800 477 463

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	for Prime Stone product
10 years	for Prime Laminate product
25 years	for Prime Porcelain product

Refer to Prime Panels™ Terms & Conditions of Trade for material warranty details and conditions.

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- Provide material warranty in accordance with Prime Panels™ requirements
- Commence the warranty from the date of Practical Completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements (if required)

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years	For installation

- Provide this warranty on the installer standard form.
- Commence the warranty from the date of Practical Completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified Prime Panels™ materials, components or associated products listed in this section.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Provide maintenance documentation in accordance with Prime Panels™ recommendations as necessary for the Principal to maintain the works. Provide documentation no later than the date of Practical Completion or the date on which the Principal takes occupation of the works.

Performance

1.9 SURFACE FIRE PROPERTIES

Prime Panels™Stone bench tops are classed as inflammable, with auto-ignition temperature of 490 °C or higher.

Prime Panels™Laminate benchtop collection is tested to Group Number Classification of '3' to NZBC C/AS2, Table 4.12.1.1: Maximum permitted Group Number for internal surface finishes, as determined in accordance with BPS, 8.5.1 Group Numbers.

Quality control and assurance

1.10 INSPECTIONS

Give sufficient notice so that inspection may be made of the following, before installation;

- Pre-assembled bench tops fabricated and ready to be delivered to site.
- Site-assembled on site ready for installation.
- Areas of the building prepared to receive the bench tops.

2 PRODUCTS

Materials

2.1 PRIME LAMINATE

Prime Laminate, a high pressure decorative laminate with an unpressed thickness that ranges from 0.7mm to 1.0mm. It is a non-porous surface with scratch and scuff resistance. Internal or external curves can be formed to a minimum radius of 6mm in the machine direction. There are more than 50 colours in the Benchtop Collection - five are non-post-formable.

2.2 PRIME STONE

Prime Stone, an engineered quartz stone and resin compacted panel with either a honed non-reflective matt surface finish, textured leather finish or polished. 20mm or 30mm thick, sheets 3200mm x 1600mm with square edge profile. Available in more than 20 colours. Refer to SELECTIONS for colour range.

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2.3 PRIME PORCELAIN

Prime Porcelain, a sintered stone manufactured from a blend of clays, feldspar, and natural mineral oxides fused together under extremely high temperature. 12mm thick, slabs 3200mm x 1600mm. Available in a range of colours and finishes. Refer to SELECTIONS for colour range.

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.

Pre-Installation

3.3 PRE-INSTALLATION REQUIREMENTS

Ensure all rooms/areas are completely decorated and all services installed in preparation for benchtop installation.

3.4 SITE MEASURE

Site check and confirm dimensions after wall linings have been fixed. Verify positions of electric power outlets, wiring to light fittings included in joinery fixtures, water supplies and waste pipe locations.

3.5 SUBSTRATE

Ensure substrate and fixings will allow work of the specified standard. Ensure adjacent wall and floor finishes are complete prior to installation.

3.6 SUPPORT

Confirm fixing points needed for each benchtop and confirm that the appropriate continuous support frame /cabinetry, nogging or lining at each fixing point location are provided.

3.7 CO-ORDINATION

Do not proceed if support frame /cabinetry or services do not match the requirements of the bench top. Check all necessary components are included.

3.8 ASSEMBLY

Check all necessary components are included. Assemble to Prime Panels™ instructions and to achieve finished bench top.

Installation

3.9 LOCATE

Locate bench top at heights and/or locations shown on the drawings. Before proceeding, confirm any dimension not shown or unknown.

3.10 FABRICATION QUALITY

Carry out machining within the practices required by Prime Panels™ for the bench top. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's requirements. Ensure work is accurate, square and true to line and face.

3.11 MAKE CUT OUTS FOR APPLIANCES AND FITTINGS

Obtain fitting templates from the appliances and other fittings to be installed within the bench top. Ensure appliances and fittings can be installed with the required tolerances and clearances.



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3.12 INSTALL

Install each bench top in accordance with Prime Panels™ requirements using templates and tools supplied or recommended by the manufacturer. Set bench tops level, plumb and true to line and required location.

Completion & Commissioning

3.13 COMPLETION MATTERS

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

4 SELECTIONS

For further details on selections go to www.primepanels.co.nz.
Substitutions are not permitted to the followingPrime Panels™ materials and/or associated components, unless stated otherwise.

Materials

4.1 PRIME PANELS - LAMINATE BENCHTOP COLLECTION - POST FORMABLE

Location:	~
Supplier:	Prime Panels™ - a business unit of New Zealand Panels Group
Brand/type:	Prime Panels™ Laminate - Benchtop Collection
Benchtop size:	~ x ~ x ~mm
Benchtop profile:	~
Substrate:	~
Edge radius:	~
Colour:	~
Finish:	~

4.2 PRIME PANELS - LAMINATE BENCHTOP COLLECTION - EDGED

Location:	~
Supplier:	Prime Panels™ - a business unit of New Zealand Panels Group
Brand/type:	Prime Panels™ Laminate - Benchtop Collection
Benchtop size:	~ x ~ x ~mm
Benchtop profile:	~
Substrate:	~
Edge treatment:	~
Colour:	~
Finish:	~

4.3 PRIME PANELS - PRIME STONE - ENGINEERED QUARTZ BENCHTOPS

Location:	~
Supplier:	Prime Panels™ - a business unit of New Zealand Panels Group
Brand/type:	Prime Panels™ Stone
Benchtop size:	~ x ~ x ~ mm
Benchtop profile:	Square edge
Colour:	~
Finish:	~

4.4 PRIME PANELS - PRIME PORCELAIN - SINTERED STONE BENCHTOPS

Location:	~
Supplier:	Prime Panels™ - a business unit of New Zealand Panels Group
Brand/type:	Prime Panels™ Porcelain
Benchtop size:	~ x ~ x ~mm
Benchtop profile:	Square edge
Colour:	~
Finish:	~

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Accessories

4.5 ADHESIVES

Manufacturer: ~

Product name: ~

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5538VH VANDA BLINDS & CURTAIN TRACK SYSTEMS

1 GENERAL

This section relates to the supply and installation of Vanda Holdings Ltd blinds and curtain track systems.

1.1 RELATED WORK

Refer to 5530 BLINDS & CURTAINS for curtains and accessories.

1.2 ABBREVIATIONS AND DEFINITIONS

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

Documents

1.3 DOCUMENTS

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

AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Vanda Information and Technical Sheets
Forest Information and Technical Sheets

Manufacturer/supplier contact details

Company:	Vanda Holdings Ltd
Web:	www.vanda.co.nz
Email:	admin@vanda.co.nz
Telephone:	0800 826 326

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

~ years	For materials

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

~ years	For 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

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

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1.8 NO SUBSTITUTIONS

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

Performance

1.9 INTERIOR SURFACE FIRE PROPERTIES - SUSPENDED FLEXIBLE FABRICS

Roller and roman blind fabric has been assigned a flammability index when tested to AS 1530.2. Refer to SELECTIONS.

2 PRODUCTS

Blinds

2.1 VANDA ROLLER BLINDS

Fabric roller blind with Acmeda Systems hardware. Available in a range of fabrics. Manually operable and motorised with Somfy Motorisation Systems. Available in a range of operation methods. Refer to SELECTIONS.

2.2 VANDA ROMAN BLIND

Fabric roman blind with aluminium splines. Available in a range of fabrics. Manually operable and motorised with Somfy Motorisation Systems. Available in a range of operation methods. Refer to SELECTIONS.

2.3 VANDA ROLLER BLIND RECESS FLUSHBOX - FULL

Vanda Full Flushbox extruded aluminium section with a removable cover plate. 106mm wide x 120mm depth with an 8mm bottom flange to conceal plasterboard edge. Available in 4.2m lengths, mill or custom powder coat finish. The Full Flushbox is supplied with end caps and cover plate.

Refer to SELECTIONS.

2.4 VANDA ROLLER BLIND RECESS FLUSHBOX - PART

Extruded aluminium section with 60mm and 80mm wide removable access cover plate and 8mm bottom flange to conceal plasterboard edge. Supplied in 4.2m lengths. Available in a range of finishes. Refer to SELECTIONS.

Curtain tracks

2.5 VANDA FLUSH FIT RECESSED CURTAIN TRACK

Recessed curtain track 16mm wide x 13mm high with a 5mm flange each side. Top fix tracks include pre-drilled fixing holes. Supplied with glides, end stops, cover plates, and pan square head self-tapping screws. Powder coated finish available in a range of colours. Available straight or with a bend radius. Refer to SELECTIONS.

2.6 FOREST DS CURTAIN TRACK, HAND DRAWN

24mm x 12mm extruded aluminium curtain track, hand drawn, with Smart Klick surface mounted brackets, and UV protected clickable carriers suitable for fabrics up to 4kg/m weight. Powder coated finish available in a range of colours. Available straight or with a bend radius. Refer to SELECTIONS.

2.7 FOREST KS CURTAIN TRACK, HAND DRAWN

24mm x 14mm extruded aluminium curtain track, hand drawn, with Smart Klick surface mounted brackets, and UV protected clickable carriers suitable for fabrics up to 4kg/m weight. Powder coated finish available in a range of colours. Available straight, with a bend radius, and continuous curved. Refer to SELECTIONS.

2.8 FOREST CS CURTAIN TRACK, HAND DRAWN

20mm x 20mm extruded aluminium curtain track, hand drawn, with Smart Klick surface mounted brackets, and UV protected clickable carriers suitable for fabrics up to 8kg/m weight. Powder coated finish available in a range of colours. Available straight or with a bend radius. Refer to SELECTIONS.



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2.9 FOREST CKS CURTAIN TRACK, CORD DRAWN

24mm x 12mm extruded aluminium curtain track, cord drawn transversing system, with Smart Klick surface mounted brackets, and UV protected clickable carriers suitable for fabrics up to 4kg/m weight. Powder coated finish available in a range of colours. Available straight or with a bend radius. Refer to SELECTIONS.

2.10 FOREST CCS CURTAIN TRACK, CORD DRAWN

20mm x 20mm extruded aluminium curtain track, cord drawn transversing system, with Smart Klick surface mounted brackets, and UV protected clickable carriers suitable for fabrics up to 6kg/m weight. Powder coated finish available in a range of colours. Available straight or with a bend radius. Refer to SELECTIONS.

Motorised curtain track systems

2.11 FOREST FMS MOTORISED CURTAIN TRACK

20mm x 20mm extruded aluminium motorised curtain track system, belt driven by high frequency 45 and 60 watt FMS motorisation systems with operating speeds of 15cm/second. Available in a range of operation methods. Suitable for integration with building automation systems. Adjustable fixing brackets and UV protected clickable carriers suitable for heavyweight fabrics. Powder coated finish available in a range of colours. Available straight or with a bend radius. Refer to SELECTIONS.

2.12 FOREST SHUTTLE MOTORISED CURTAIN TRACK

20mm x 20mm extruded aluminium motorised curtain track system, driven by high frequency 45 and 60 watt Shuttle motorisation systems with Touch Impulse Technology and Integrated Emergency Control. Available in a range of operation methods. Suitable for integration with building automation systems. Adjustable fixing brackets and UV protected clickable or roller carriers. Powder coated finish available in a range of colours. Available straight or with a bend radius. Refer to SELECTIONS.

Accessories

2.13 VANDA WAVE HEADING TAPE

77mm wide clear curtain heading tape, supplied with hooks.

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 systems rigid, plumb, true to line and face and square in accordance with Vanda Holdings and Forest installation instructions.

3.6 INSTALL VANDA ROLLER BLIND RECESS FLUSHBOX - FULL

Insert and fix full Flushbox into framed 106mm wide x 120mm deep recess. Fit 8mm flange over ceiling lining concealing edge of lining.

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3.7 INSTALL VANDA ROLLER BLIND RECESS FLUSHBOX - PART

Insert and fix part Flushbox into framed recess. Fit 8mm flange over ceiling lining concealing edge of lining.

3.8 INSTALL VANDA FLUSH FIT RECESSED CURTAIN TRACK

Insert track into 18mm wide gap in ceiling lining. Finish track 11mm shorter that required to fit and remove glides. Screw fit track with supplied screws in the pre-drilled fixing holes. Fit 5mm flanges over ceiling lining concealing edge of lining.

3.9 INSTALL FOREST CURTAIN TRACKS

Fix curtain tracks into framing and solid blocking to support weight of track system.

Completion & Commissioning

3.10 COMPLETION MATTERS

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

4 SELECTIONS

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

Blinds

4.1 VANDA ROLLER BLIND

	Blind 1	Blind 2	Blind 3
Location:	~	~	~
Roller system:	~	~	~
Width:	~mm	~mm	~mm
Height:	~mm	~mm	~mm
Cassette type:	~	~	~
Fixing:	~	~	~
Fascia type:	~	~	~
Fascia colour:	~	~	~
Bottom rail:	~	~	~
Bottom rail colour:	~	~	~
Fabric type:	~	~	~
Fabric colour:	~	~	~
Flammability index:	~	~	~
Operating system:	~	~	~

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4.2 VANDA ROMAN BLIND

	Blind 1	Blind 2	Blind 3
Location:	~	~	~
Roller system:	~	~	~
Width:	~mm	~mm	~mm
Height:	~mm	~mm	~mm
Cassette type:	~	~	~
Fixing:	~	~	~
Fascia type:	~	~	~
Fascia colour:	~	~	~
Bottom rail:	~	~	~
Bottom rail colour:	~	~	~
Fabric type:	~	~	~
Fabric colour:	~	~	~
Flammability index:	~	~	~
Operating system:	~	~	~

4.3 VANDA MOTORISED BLINDS - SOMFY MOTORS

Location: ~
Motor system: Somfy Motorisation System
Motor model: ~
Operation: ~
Sensors: ~

4.4 VANDA ROLLER BLIND RECESS FLUSHBOX

Location: ~
Type: ~
Finish: ~

Curtain tracks

4.5 VANDA FLUSH FIT RECESSED CURTAIN TRACK

Location: ~
Model: Vanda Flush Fit Recessed Curtain Track
Material: Aluminium
Type: ~
Colour: ~

4.6 FOREST DS CURTAIN TRACK, HAND DRAWN

Location: ~
Model: Forest DS Curtain Track, hand drawn
Material: Aluminium
Type: ~
Fixing: ~
Colour: ~

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4.7 FOREST KS CURTAIN TRACK, HAND DRAWN

Location: ~
Model: Forest KS Curtain Track, hand drawn
Material: Aluminium
Type: ~
Fixing: ~
Colour: ~

4.8 FOREST CS CURTAIN TRACK, HAND DRAWN

Location: ~
Model: Forest CS Curtain Track, hand drawn
Material: Aluminium
Type: ~
Fixing: ~
Colour: ~

4.9 FOREST CKS CURTAIN TRACK, CORD DRAWN

Location: ~
Model: Forest CKS Curtain Track, cord drawn
Material: Aluminium
Type: ~
Fixing: ~
Colour: ~

4.10 FOREST CCS CURTAIN TRACK, CORD DRAWN

Location: ~
Model: Forest CCS Curtain Track, cord drawn
Material: Aluminium
Type: ~
Fixing: ~
Colour: ~

Motorised curtain track systems

4.11 FOREST FMS MOTORISED CURTAIN TRACK

Location: ~
Model: Forest FMS Motorised Curtain Track System
Material: Aluminium
Type: ~
Fixing: ~
Colour: ~
Motor: ~
Motor position: ~
Operation: ~

4.12 FOREST SHUTTLE MOTORISED CURTAIN TRACK

Location: ~
Model: Forest Shuttle Motorised Curtain Track System
Material: Aluminium
Type: ~
Fixing: ~
Carriers: ~
Colour: ~
Motor: ~
Motor position: ~
Operation: ~

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Spares & maintenance products

4.13 SPARES & MAINTENANCE PRODUCTS

Refer to the general section 1270 CONSTRUCTION for details of how spares and maintenance products will be handled. Provide the following spares and maintenance products:

Item: ~
Quantity: ~
Location: Refer to 1270 CONSTRUCTION



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6311 TIMBER STRIP, BLOCK & PLANK FLOORING

1 GENERAL

This section relates to the supply, laying and finishing of timber flooring as an overlay, including underlays over the existing substrate.
It includes:

- laminated timber
- solid timber

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

The following definitions apply specifically to this section:

~

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 D1/AS1	Access routes
AS/NZS 1859.4	Reconstituted wood-based panels - Specifications - Wet-processed fibreboard
AS/NZS 1860.1	Particleboard flooring - Specifications
AS/NZS 2269.0	Plywood - Structural - Specifications

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier 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.

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 years:

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS

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.

Performance

1.7 TESTING MOISTURE CONTENT

Sample and test the substrate to ensure that moisture content is within the limits specified. Provide a written record.

1.8 SURFACE FIRE PERFORMANCE

Flooring to be non-combustible or have a Critical Radiant Flux to NZBC C/AS2, Table 4.12.3.1: Critical radiant flux requirements for flooring (kW/m2). Refer to SELECTIONS.

Performance - Slip resistance

1.9 SLIP RESISTANCE - PREVIOUSLY TESTED SURFACE

The following walking surfaces have previously been tested for slip resistance, and comply with NZBC D1/AS1 requirements.

2 PRODUCTS

Materials

2.1 CONSTRUCTION PLYWOOD UNDERLAY

Rotary cut radiata pine veneer ply, face sanded, treated H3 for wet areas and to AS/NZS 2269.0.

2.2 HARDBOARD UNDERLAY

High density standard hardboard sheet to AS/NZS 1859.4.

2.3 MDF OR PARTICLE BOARD UNDERLAY

MR melamine-urea formaldehyde resin bonded particleboard/MDF to AS/NZS 1860.1.

2.4 ACOUSTIC OVERLAY

Minimal thickness sound control system to isolate impact noise.

2.5 TIMBER STRIP, BLOCK AND PLANK FLOORING

Refer to SELECTIONS for product selection.

2.6 TIMBER TRIM

Skirting, edge strip, reducer strip and nosing as detailed and to match overlay flooring.

Accessories

2.7 CONCRETE SEALER

Two part water based epoxy coating.

2.8 EXPANSION STRIPS

Coloured silicone flexible expansion sealant.

2.9 EXPANSION COVERS

Selected expansion covers as supplied.

2.10 ADHESIVE, DIRECT STICK

As required by the overlay flooring supplier and as not to cause cupping or curling of timber through moisture absorption from the adhesive.

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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Accept packs of timber and accessories undamaged and dry. Store on level, dry surfaces in non-traffic, non-work areas that are enclosed and dry. Avoid damage to timber.

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. Carry out such additional preparatory work as required in bringing the substrate to suitable condition.

Check for moisture content by hygrometer. Do not commence laying flooring 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 60-70%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, and in the case of air-conditioned buildings the air-conditioning operating for 6 weeks, before starting work.

3.5 PREPARATION

Check that the timber supplied is as specified, of a consistent colour and grain and sufficient to complete the work. Reject timber that varies widely in colour or grain. Reject timber that is damaged. Check the moisture content of the timber to ensure it is at the required level for the installation environment.

Check laminated strip and plank flooring to ensure it has been supplied at the moisture content recommended by the suppliers for the proposed location. Do not remove planks from packs until just prior to installation.

3.6 CARRY OUT THE WORK

Carry out the work to conform with this specification and in accordance with the timber floor supplier's technical requirements.

3.7 PROTECTION

Protect adjoining work surfaces and finishes during the installation.

3.8 LAYOUT

Before beginning the installation, confirm the proposed layout of the timber, grain direction, any other visual considerations of the finished work and specified expansion requirements relating to the specified product. Minimise in number with no cut planks less than half width and only at the perimeter of the work.

3.9 SURFACE TOLERANCES, DIRECT STICK

Substrate to have no deviations greater than 3mm over a 3 metre straightedge in any given direction and no abrupt variations greater than 1mm over 250mm.

Application - general

3.10 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

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Application - surface preparation - new

3.11 PREPARATION NEW CONCRETE

Clear substrate of debris, then vacuum to remove dust. Refer to allowable surface tolerances. Check for moisture content by hygrometer. Do not commence installation until the hygrometer readings show 60-70%. Apply concrete sealer if required before commencing flooring installation.

Application - floor underlays

3.12 INSTALLING PLYWOOD UNDERLAYS

Lay plywood sheets with joints staggered, with a 1mm gap between sheets and 2mm at perimeters. Use 18mm divergent staples at 100mm centres throughout the whole sheet and 30mm apart, 18mm in from the edges of the sheets. Punch staples below the surface and sand joints level.

3.13 INSTALLING HARDBOARD, PARTICLE BOARD OR MDF UNDERLAYS

Lay standard hardboard, with joints staggered, with a 1mm gap between sheets and 2mm at perimeters. Use 18mm divergent staples at 100mm centres throughout the whole sheet, 30mm apart, 18mm in from the edges of the sheets. Punch staples below the surface and sand joints level.

3.14 INSTALLING ACOUSTIC OVERLAY

Place acoustic underlay strip around the base of walls, columns and any vertical fixtures. Glue fix overlay pads to substrate using adhesive as required by the overlay manufacturer, ensuring pads are placed diagonally to the joints in the surface floor coverings.

Application - installation

3.15 LAYING, DIRECT STICK

Apply adhesive approved by the flooring supplier, at the required spread rate. Follow requirements for open time, taking note of substrate porosity, ambient temperature and relative humidity. Remove excess adhesive as the work proceeds using approved techniques. Install the flooring strictly in accordance with the flooring supplier's stated requirements. Ensure the required expansion gap is left at perimeters and around fixed obstacles.

3.16 EXPANSION GAPS, PERIMETERS

Calculate expansion gaps strictly to manufacturer's requirements, to suit the environment, size of the installation and product type.

3.17 EXPANSION STRIPS

Apply coloured silicone flexible expansion sealant supplied by the flooring manufacturer to match the dimensions of the expansion gap flush with the finished flooring. Apply to flooring manufacturer's directions.

3.18 EXPANSION COVERS

Cover expansion joints using matching expansion joint covers supplied by flooring manufacturer.

Finishing

3.19 SURFACE FINISHING, UNFINISHED FLOORS

Allow the adhesive to cure fully and then finish the timber surface with five fine sandings.

3.20 CLEAN TIMBER FLOORING

Leave timber flooring surfaces free of adhesive, dirt and debris. Vacuum off, damp mop with a low-foam neutral detergent and allow to dry.

Completion

3.21 COMPLETION MATTERS

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

4 SELECTIONS

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



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Materials

4.1 TIMBER LAMINATED PLANK FLOORING

Location:	Refer architectural drawings
Brand:	Refer Product Selections
Size:	Refer Product Selections
Thickness:	Refer Product Selections

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6511 CARPETING

1 GENERAL

This section relates to the supply and installation of carpet laid conventionally (stretched), direct stuck or double bonded (double direct stuck).
It includes:

- carpet underlay
- woven sheet carpet

Documents

1.1 DOCUMENTS

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

NZBC C/AS2	Protection from fire for buildings other than risk group SH
AS/NZS 2270	Plywood and blockboard for interior use
AS/NZS 2455.1	Textile floor coverings - Installation practice - General
BPS	Building Product Specifications

Warranties

1.2 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

1 year: For materials

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.3 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year: For execution

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.4 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

1.6 NO SUBSTITUTIONS

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

2 PRODUCTS

Materials

2.1 UNDERLAY

To AS/NZS 2455.1 Soft underlay and underlays manufacturer's requirements.

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Refer to SELECTIONS for product selection.

2.2 CARPET

To AS/NZS 2455.1 Textile floor coverings.

Refer to SELECTIONS for product selection.

Components

2.3 BINDER BARS

Anodised aluminium section with fluted face.

2.4 DIVIDER STRIPS

Hardwood strips 20mm x 15mm or as specified. Refer to SELECTIONS for type and size.

2.5 EDGE GRIPPER

Timber/plywood to AS/NZS 2270 with steel grippers to carpet manufacturer's requirements, constructed of sufficient pins and nails so as to withstand a minimum stretching force of 6580N over a 1220 mm length.

Accessories

2.6 ADHESIVE, UNDERLAY

To AS/NZS 2455.1, clause 1.5.3. and underlay manufacturer's requirements.

2.7 ADHESIVE, CARPET

To AS/NZS 2455.1, clause 1.5.3. and carpet manufacturer's requirements.

2.8 TAPE

To carpet manufacturer's requirements.

2.9 FLOOR LEVELLING COMPOUND

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.

Handle carpet on flat dollies using carpet cradles, with probes on fork- lifts and without sharp bending or folding. Store carpet in flat bins with a maximum height of three rows. Keep dry. Protect from damage.

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Ensure all fittings and fixtures around which the carpet is to be scribed are in place. Carry out such additional preparatory work as required in bringing the substrate to suitable condition.

Confirm moisture content of substrate in accordance with AS/NZS 2455.1. Appendix B Do not commence laying carpet until readings for the whole area are within acceptable levels as follows:

Moisture Content:	Timber substrate - 8 -12% for air conditioned buildings - 10 -14% for intermittently heated buildings - 12 -16% for unheated buildings
	Concrete substrate 75%RH

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3.4 BEFORE COMMENCING WORK

Ensure that the building is enclosed, wet work complete, doors hung and lockable, finishes and trim complete, and good lighting available, before starting work.

3.5 TEMPERATURE

Acclimatise carpet to a room temperature above 15°C through the whole of the installation.

3.6 PROTECTION

Protect adjoining work surfaces and finishes during the carpet installation.

3.7 TAPE

Tape for binding and seaming using type and width required by the carpet manufacturer to suit the specified carpet and the standard of performance required.

3.8 LAYING GENERALLY

Carry out the whole of the work to AS/NZS 2455.1 and to the flooring manufacturer's requirements.

3.9 LAYOUT

Plan the general layout so that:

- seams run lengthways
- traffic runs along the seam
- light from windows is not across the seam
- pile faces away from the light source.

Application - general / substrate preparation

3.10 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.11 PREPARING NEW CONCRETE FLOOR

To be level, smooth, clean, cured and dry. Remove loose material and dust.

Application - carpet laying

3.12 INSTALLATION, UNDERLAY

Installation to underlay manufacturer's requirements. Lay at right angles to the carpet direction.

3.13 INSTALLATION, CONVENTIONAL SYSTEM

Tape carpet joints, fix grippers to floor and install underlay and carpet to AS/NZS 2455.1, section 3. Stretch carpet tight in both width and length evenly without bowing, square with walls.

3.14 FIXING TRIMS

Fix binder bars, carpet to carpet bars, and trims to all junctions with other materials and to carpet edges, to the carpet manufacturer's requirements. Ensure that junctions with other materials are neatly formed, with bars and trim securely fastened to the substrate, 20mm from each end and at a maximum of 100mm centres.

Completion

3.15 SPECIAL PROTECTION

Self Adhesive carpet protective film: ~

3.16 COMPLETION MATTERS

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

4 SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise.

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Materials

4.1 UNDERLAY

Location	Type/thickness/weight
Refer architectural drawings	High density bonded polyurethane foam (PBF)

4.2 CARPET

Location	Brand/type/weight/code
Refer architectural drawings	Refer Product Specification

Accessories

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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 Master Painters New Zealand Association Inc. Specification manual.

3.2 CORROSION PROTECTION SUPERVISION FOR STRUCTURAL STEEL

To AS/NZS 5131, 9.9.20, for corrosion protection of structural steel. Provide an Inspection and Test Plan (ITP) to AS/NZS 5131, 13.9.1, prior to commencement.

Corrosion protection painting to be supervised by a competent person.

3.3 TREATED SURFACES

Where surfaces have been treated with preservatives or fire retardants, check with the treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance. If they are not compatible, obtain instructions before proceeding.

3.4 BACK PAINTING

Co-ordinate with cladding and/or lining installer as to who will do the work and timing.

Exterior
For exterior cladding and trim that require on site finishing, paint the back and exposed bottom edges at the base of the cladding (generally, bottom plate overhang and horizontal flashings) to the manufacturer's requirements, but at least to 150mm up from base. Coating to match front finish, generally apply 2 coats or 1 coat if pre-primed.
Refer to appropriate exterior paint sections SELECTION clauses for claddings to be back painted.

Interior
For lining and trim that require on site finishing and/or back painting (usually wet areas), paint the back and exposed bottom edges at the base of the lining, to the manufacturer's requirements, but at least to 150mm up from base. Coating to match front finish, generally apply 2 coats or 1 coat if pre-primed, or if no front finish, seal to manufacturer's requirements.
Refer to appropriate interior paint sections SELECTION clauses for linings to be back painted.

3.5 ANCILLARY SURFACES

The descriptions of areas in schedules and elsewhere are of necessity simplified. Coat ancillary exposed surfaces to match similar or adjacent materials or areas, except where a fair-faced natural finish is required or items are completely prefinished. In cases of doubt obtain written instructions before proceeding.

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3.6 HARDWARE

Do not paint hinges or hardware that cannot be removed. Before commencing work carefully remove hardware, fixtures and fittings, set aside where they cannot be damaged or misplaced and replace on completion. Refer to SELECTIONS for hardware, fixtures and fittings for removal.

3.7 PROTECTION

Supply, lay and fix drop sheets, coverings and masking necessary to protect adjoining, fixtures, fittings and spaces from paint drops, spots, spray and damage.

Application - preparatory work

3.8 SURFACE PREPARATION

Refer to the **Resene** Surface Information & Preparation Data Sheets (SIPDS) and product data manual for surface preparation sheets (or obtain them by phoning 0800 RESENE, or at www.resene.co.nz) listed in the materials systems schedule clauses. Carry out the preparatory work required by them for each of the substrates.

3.9 SHARP EDGES, CRACKS AND HOLES

Remove and/or repair sharp edges, cracks and holes if present, as outlined in the preamble of the **Resene** One-Line specifications and product data manual.

Elastomeric sealants, if used, should not be painted. The paint film will not match the flexibility of the sealant and may severely limit its effectiveness.

3.10 REMEDIAL WORK

If any substrate or surface, that even with the preparation work called for in this section, cannot be brought up to a standard that will allow painting or clear finishing of the required standard then do not proceed until remedial work is carried out.

3.11 GAP FILLING

Make good cracks, holes, indented and damaged surfaces. Use suitable gap fillers to match the surface being prepared. Any special priming requirements of the fillers must be satisfied. Allow to dry or set before sanding back level with the surface. Prime or seal timber before using putty.

Exterior and wet areas: Use only Portland cement base or water-insoluble organic base gap fillers.

3.12 OFF-SITE WORK

Carry out this work under cover in a suitable environment with suitable lighting. Store items, both before and after coating, in a clean, dry area protected from the weather and mechanical damage, properly stacked and spaced to allow air circulation and to prevent sticking. Specific instructions for transport to site to avoid damage to the factory applied paint system may be required particularly for metallic top coat paints.

3.13 PRIMING JOINERY

Pre-treat any cut surfaces of preservative treated timber before priming. Ensure L.O.S.P treated joinery has dried sufficiently to lose solvent odour. Pre-treat bare timber with **Resene TimberLock** (see Data Sheet D48) to improve the durability of subsequent coats.

Liberally coat end grain, allow to soak in and then recoat.

3.14 CONCEALED JOINERY SURFACES

Where off-site coatings are specified they must be applied to surfaces including those concealed when incorporated into the building.

3.15 CONCEALED METAL SURFACES

Apply primer to suit the coating system to surfaces which will be concealed when incorporated into the building.

3.16 EXTERNAL DOORS

Prime or seal and paint bottom edges before hanging.



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3.17 BEAD GLAZING

Stained, varnished, or painted joinery to have the first two coats of a suitable primer and one undercoat, applied to rebates and beads before glazing.

3.18 PUTTY FRONTING - LINSEED GLAZING PUTTIES

According to the putty manufacturer's instructions allow putty to set, then prime with **Resene Wood Primer** (see Data Sheet D40) or **Resene Enamel Undercoat** (see Data Sheet D44). Fully protect the putty by completing the **Resene** coating system as soon as it is sufficiently firm.

Glazing putties not based on linseed oil to be over coated according to the putty manufacturer’s instruction.

Application - generally

3.19 PAINTING GENERALLY

Comply with the **Resene** SIPDS Surface Information & Preparation Data Sheets or **Resene** One-Line specifications and product data manual data sheets and the additional requirements of this work section.

Ensure large wall areas that require more than one container of paint per coat, have enough paint boxed (mixed) together to complete the final coat. This will not apply if a single factory batch of paint, rather than shop tinted paint, is applied.

3.20 MIXING

Although generally supplied ready to use, all paints must be thoroughly mixed to lift any settled pigment and ensure the paint is homogeneous.

3.21 ENVIRONMENT

Defer painting of exterior surfaces until weather conditions are favourable - warm dry days without frost or heavy dews. Avoid painting in direct sunlight any surfaces that absorb heat excessively. As far as possible apply paint in the temperature range 15°C to 25°C. If temperatures fall outside the range of 10°C and 35°C do not paint unless paints with the necessary temperature tolerance have been specified. **Resene Hot Weather Additive** can be added to most **Resene** waterborne top coats to extend open time when application is undertaken at elevated temperatures or conditions that will cause rapid loss of water from the applied wet film. Do not apply solvent borne paint if moisture is present on the surface.

3.22 SEQUENCE OF OPERATIONS

Painting work to generally follow the following sequences:

- Back painting and pre-installation painting, then post-installation exposed-face painting
- Complete surface preparation before commencing painting.
- Apply primers, sealers, stains, undercoats, paints and clear coatings in the sequences laid down by **Resene**.
- Allow the full drying time between coats laid down by **Resene**.
- Do not expose primers, undercoats and intermediate coats beyond **Resene** recommendations before applying the next coat.
- Finish broad areas before painting trim.
- Ensure batch numbers of tins are matched for whole areas.
- Internally, paint ceilings before walls and walls before joinery, trim and other items.

3.23 APPLICATION

Select brush, roller, or pad and apply coatings to the requirements of **Resene** to obtain a smooth, even coating of the specified thickness, uniform gloss and colour.

3.24 LIGHTLY SAND

Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. A more thorough sanding to provide a mechanical key for the new paint system may be required depending upon the condition or age of the existing paint system..

3.25 DEFECTIVE WORK

Correct defective work immediately and recoat as required, following precisely the **Resene** system being applied. The same applies to transportation damage to site of factory painted items.

3.26 EACH COAT

Each coat of paint and the completed paint system to have the following qualities and properties:

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- Uniform finish, colour, texture, sheen and hiding power and the proper number of coats applied.
- No blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, significant brush marks, ladder marks and blistering.
- Proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application.

Completion

3.27 CLEAN

Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at the completion of the building works. Clean glass inside and out to a shining finish. Use the **Resene Washwise** on site 'paint equipment clean-up water' reclamation system to minimise the environmental impact of cleaning paint application tools.

3.28 LEAVE

Leave the whole of this work uniform in gloss and colour, of correct thickness, free from painting defects, clean and unmarked and to the standard required by following procedures.

3.29 REMOVE

Remove drop sheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.

3.30 REPLACE

Replace hardware without damage to it or the adjoining surface and leave hardware properly fitted and in working order.

3.31 DISPOSAL OF PAINTS AND THINNERS

Note: The use and disposal of paint and thinners represents a significant environmental hazard.

Ensure all paint and thinners are disposed of in the following manner:

- When requested hand over part used paint containers to client for maintenance touch ups.
- Recycle leftover paint at a **Resene ColorShop** as part of the **Resene "Paintwise programme"**. Contact your local **Resene ColorShop** for details or view information online at www.resene.co.nz/paintwise.htm.
- Donate left over paint to local community groups.
- Solvent based paints, paint thinners, turpentine, mineral spirits and solvents require special disposal procedures. Do not pour down sewer or stormwater drains, sinks or into the ground. If they cannot be recycled they must be disposed of in a refuse dump licensed to take toxic waste.

3.32 MAINTENANCE

Good maintenance of coating systems involves a routine of regular cleaning as well as regular inspections. Regular inspections of the coating systems are recommended to identify breakdown, accidental damage to or undesirable deterioration of the paint.

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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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

1.2 SAMPLES

Refer to the general section 1270 CONSTRUCTION for details of how samples will be reviewed and how instructions to proceed will be given. Provide the following samples for review:

	Sample A	Sample B	Sample C
Sample description:	~	~	~
Sample type:	~	~	~
Number:	~	~	~
Location:	~	~	~
Supporting documentation:	~	~	~
Reviewer:	Contract administrator ~	Contract administrator ~	Contract administrator ~
Time for review:	10 working days ~	10 working days ~	10 working days ~
Review criteria:	~	~	~

2 PRODUCTS

Materials

2.1 PRODUCTS

Refer to 6700R RESENE PAINTING GENERAL for product clauses.

3 EXECUTION

Conditions

3.1 EXECUTION

Refer to 6700R RESENE PAINTING GENERAL for execution clauses.

4 SELECTIONS

For further details on selections go to www.resene.co.nz
Substitutions are not permitted to the following, unless stated otherwise.

4.1 INSPECTION OF WORK

Stage	Resene SIPDS number/system
~	~

4.2 BACK PAINTING SCHEDULE

Paint 2 coats (including any pre-prime) usually to match exposed face coating. If there is no coating use water resistant clear finish sealer.

Lining type	Extent of back painting
~	~

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4.3 HARDWARE

Hardware for removal: ~

Resene interior paint systems

Plasterboard - new

4.4 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

4.5 RESENE NEW INTERIOR PLASTERBOARD, WALLS - WET AREAS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1: 1A/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

4.6 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

4.7 RESENE NEW INTERIOR PLASTERBOARD, CEILINGS - WET AREAS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1: 1A/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

4.8 RESENE AQUALAQ: TIMBER JOINERY, MDF, CABINETRY – SOLID COLOUR

Surface Prep:	Resene SIPDS No7 and Spec Sheet 7: 1/1 Note: for use by specialist applicators only
2 coats:	Resene AquaLAQ Quick Dry Sealer - white interior waterborne OR AquaLAQ NGR Primer Sealer white – solvent based alkyd
2 coats:	Resene AquaLAQ Colour Coat - interior waterborne satin

Note: Contact help@reseneauto.co.nz for Specialist applicator details and project management service

4.9 RESENE NEW INTERIOR TIMBER DOORS, JOINERY, SKIRTING

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 9/1
1st coat:	Resene Quick Dry D45, Waterborne Acrylic Primer Undercoat
2nd coat:	Resene Lustacryl D310, Semi-Gloss Waterborne Enamel
3rd coat:	Resene Lustacryl D310, Semi-Gloss Waterborne Enamel

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4.10 RESENE NEW INTERIOR TIMBER DOORS, JOINERY, SKIRTING - CEDAR

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 9/1
1st coat:	Resene Enamel Undercoat D44, Solvent-borne Undercoat
2nd coat:	Resene Lustacryl D310, Semi-Gloss Waterborne Enamel
3rd coat:	Resene Lustacryl D310, Semi-Gloss Waterborne Enamel

4.11 RESENE NEW INTERIOR TIMBER WALLS, CEILINGS - (PARTICLE BOARD, MDF, PLYWOOD)

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 14/1
Fire rating:	Group 3
1st coat:	Resene Quick Dry D45, Waterborne Acrylic Primer Undercoat
2nd coat:	Resene Spacecote Low Sheen D311, Waterborne Enamel
3rd coat:	Resene Spacecote Low Sheen D311, Waterborne Enamel

4.12 RESENE NEW INTERIOR TIMBER WALLS, CEILINGS - (PARTICLE BOARD, MDF, PLYWOOD) - CLEAR COAT

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 10/1
Fire rating:	Group 3
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

4.13 RESENE NEW INTERIOR TIMBER WALLS, CEILINGS - (PARTICLE BOARD, MDF, PLYWOOD) - STAIN

Surface Prep:	Resene SIPDS No2 and Spec Sheet 2: 10/1
Fire rating:	Group 3
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

Interior fibre cement - new

4.14 RESENE NEW INTERIOR FIBRE CEMENT, WALLS - DRY AREAS

Surface Prep:	Resene SIPDS No3 and Spec Sheet 3: 6/1
Fire rating:	Group 1-S
1st coat:	Resene Concrete Primer D405, Acrylic Concrete Primer
2nd coat:	Resene SpaceCote Low Sheen D311, Waterborne Enamel
3rd coat:	Resene SpaceCote Low Sheen D311, Waterborne Enamel

4.15 RESENE NEW INTERIOR FIBRE CEMENT, WALLS - CLINICAL DRY AREAS

Surface Prep:	Resene SIPDS No3 and Spec Sheet 3: 6/1
Fire rating:	Group 1-S
1st coat:	Resene Concrete Primer D405, Acrylic Concrete Primer
2nd coat:	Resene ClinicalCote Satin D318, Waterborne
3rd coat:	Resene ClinicalCote Satin D318, Waterborne

4.16 RESENE NEW INTERIOR FIBRE CEMENT, WALLS - WET AREAS

Surface Prep:	Resene SIPDS No3 and Spec Sheet 3: 6/1
Fire rating:	Group 1-S
1st coat:	Resene Sureseal D42, solventborne Pigmented Sealer
2nd coat:	Resene SpaceCote Low Sheen D311, Waterborne Enamel
3rd coat:	Resene SpaceCote Low Sheen D311, Waterborne Enamel

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4.17 RESENE NEW INTERIOR FIBRE CEMENT, WALLS - CLEAR COAT

Surface Prep:	Resene SIPDS No3 and Spec Sheet 3: 6/1
Fire rating:	Group 1-S
1st coat:	Resene Concrete Clear Gloss D54a, Waterborne Clear
2nd coat:	Resene Concrete Clear Satin D54a, Waterborne Clear
3rd coat:	Resene Concrete Clear Satin D54a, Waterborne Clear

4.18 RESENE NEW INTERIOR FIBRE CEMENT, CEILINGS - DRY AREAS

Surface Prep:	Resene SIPDS No3 and Spec Sheet 3: 6/1
Fire rating:	Group 1-S
1st coat:	Resene Concrete Primer D405, Acrylic Concrete Primer
2nd coat:	Resene SpaceCote Flat D314, Waterborne Enamel
3rd coat:	Resene SpaceCote Flat D314, Waterborne Enamel

4.19 RESENE NEW INTERIOR FIBRE CEMENT, CEILINGS - CLINICAL DRY AREAS

Surface Prep:	Resene SIPDS No3 and Spec Sheet 3: 6/1
Fire rating:	Group 1-S
1st coat:	Resene Concrete Primer D405, Acrylic Concrete Primer
2nd coat:	Resene ClinicalCote Low-Sheen D318, Waterborne
3rd coat:	Resene ClinicalCote Low-Sheen D318, Waterborne

4.20 RESENE NEW INTERIOR FIBRE CEMENT, CEILINGS - WET AREAS

Surface Prep:	Resene SIPDS No3 and Spec Sheet 3: 6/1
Fire rating:	Group 1-S
1st coat:	Resene Sureseal D42, solventborne Pigmented Sealer
2nd coat:	Resene SpaceCote Low Sheen D311, Waterborne Enamel
3rd coat:	Resene SpaceCote Low Sheen D311, Waterborne Enamel

4.21 RESENE NEW INTERIOR FIBRE CEMENT, CEILINGS - CLEAR COAT

Surface Prep:	Resene SIPDS No3 and Spec Sheet 3: 6/1
Fire rating:	Group 1-S
1st coat:	Resene Concrete Clear Gloss D54a, Waterborne Clear
2nd coat:	Resene Concrete Clear Satin D54a, Waterborne Clear
3rd coat:	Resene Concrete Clear Satin D54a, Waterborne Clear

Interior fibrous plaster - new

4.22 RESENE NEW INTERIOR FIBROUS PLASTER, WALLS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1: 6/1
1st coat:	Resene Sureseal D42, Solventborne pigmented sealer
2nd coat:	Resene SpaceCote Low Sheen D311, Waterborne Enamel
3rd coat:	Resene SpaceCote Low Sheen D311, Waterborne Enamel

4.23 RESENE NEW INTERIOR FIBROUS PLASTER, CEILINGS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1: 6/1
1st coat:	Resene Sureseal D42, Solventborne pigmented sealer
2nd coat:	Resene SpaceCote Flat D314, Waterborne Enamel
3rd coat:	Resene SpaceCote Flat D314, Waterborne Enamel

Interior metal - new

4.24 RESENE NEW INTERIOR GALVANIZED STEEL - SINGLE PACK DECORATIVE

Surface Prep:	Resene SIPDS No4 and Spec Sheet 4: 6/1
1st coat:	Resene Galvo Prime D402, Waterborne Galvanised steel primer
2nd coat:	Resene Lustacryl D310, Semi-Gloss Waterborne Enamel
3rd coat:	Resene Lustacryl D310, Semi-Gloss Waterborne Enamel

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4.25 RESENE NEW INTERIOR ALUMINIUM

Surface Prep:	Resene SIPDS No4 and Spec Sheet 4: 8/1
1st coat:	Resene Galvo Prime D402, Waterborne Galvanised steel primer
2nd coat:	Resene Lustacryl D310, Semi-Gloss Waterborne Enamel
3rd coat:	Resene Lustacryl D310, Semi-Gloss Waterborne Enamel



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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
MPNZA	Specification manual

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.

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:	As per Finishes Schedule
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:	As per Finishes Schedule
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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7123 HOT & COLD WATER SYSTEM

1 GENERAL

This section relates to piped potable water supply systems from the network utility supply authority water main to designated points and appliances, the installation of hot water heating appliances, distributing piped hot water to other appliances, and the installation of valves.

1.1 RELATED WORK

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures and tapware selections.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC G4/AS1	Ventilation of buildings
NZBC G11/AS1	Gas as an energy source
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
NZBC H1/AS1-AS2	Energy Efficiency
AS 1432	Copper tubes for plumbing, gas fittings and drainage applications
AS/NZS 1477	PVC pipes and fittings for pressure applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 2033	Installation of polyethylene pipe systems
AS 2345	Dezincification resistance of copper alloys
AS/NZS 2492	Cross Linked Polyethylene (PE-X) pipe for pressure applications
AS/NZS 2537.1	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) General
AS/NZS 2537.2	Mechanical joining fittings for use with crosslinked Polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations - Crosslinked Polyethylene (PE-X) - Fittings
AS/NZS 2537.3	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) fitness for purpose of system
AS/NZS 2537.4	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) Guidance for the assessment of conformity
AS/NZS 2642.1	Polybutylene pipe systems - Polybutylene (PB) pipe extrusion compounds
AS/NZS 2642.2	Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications
AS/NZS 2642.3	Polybutylene pipe fittings - Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications
AS/NZS 2845.1	Water supply - Backflow prevention devices - Materials, design and performance requirements
AS 2845.3	Water supply - Backflow prevention devices - Field testing and maintenance
AS/NZS 3500.1	Plumbing and drainage - Water services
AS/NZS 3500.4	Plumbing and drainage - Heated water services
NZS 3501	Specification for copper tubes for water, gas and sanitation

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AS 3688	Water supply and gas systems - metallic fittings and end connectors
AS/NZS 3879	Solvent cements and priming fluids for PVC (PVC-U and PVC-M and ABS and ASA pipes and fittings
AS 4032.2	Water supply - Valves for the control of heated water supply temperatures - Tempering valves and end-of-line temperature actuated devices
AS/NZS 4129	Fittings for polyethylene (PE) pipes for pressure applications.
AS/NZS 4130	Polyethylene (PE) pipes for pressure applications
NZS 4305	Energy efficiency domestic type hot water systems
NZS 4602	Low pressure copper thermal storage electric water heaters
NZS 4606.1	Storage water heaters. General requirements
NZS 4606.2	Storage water heaters. Specific requirements for water heaters with single shells.
NZS 4606.3	Storage water heaters. Specific requirements for water heaters with composite shells.
NZS 4607	Installation of thermal storage electric water heaters: valve vented Systems
NZS 4617	Tempering (3-port mixing) valves
AS 4809	Copper pipe and fittings. Installation and commissioning
AS 5200 part 053	Plumbing and drainage products, Stainless steel pipes and tubes for pressure applications.
AS/NZS 5601.1	Gas installations - general installations
AS/NZS 60335.2.35	Household and similar electrical appliances. Safety - Pat 2.35 Particular requirements for instantaneous water heaters

Gas (Safety and Measurement) Regulations 2010
Plumbers, Gasfitters and Drainlayers Act 2006

NZ Backflow Testing Standard:	NZ Backflow Testing Standard 2019, Field testing of backflow prevention devices and verification of air gaps

Warranties

1.3 WARRANTY

Provide warranty for:

2 years:	For the supply and installation of the plumbing system and fixtures

- Provide the warranty in the standard form in the general section 1237WA WARRANTY AGREEMENT.
- Commence the warranty from the date of practical completion of the contract works.

Requirements

1.4 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying plumber under the Plumbers, Gasfitters and Drainlayers Act 2006.

1.5 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

1.6 HOT WATER TEMPERATURES

To NZBC G12/AS1, 6.14

Storage water heaters to store water at not less than 60ºC.

Hot water piping system, with temperature controls where necessary (tempering valve etc), to provide water at the outlet at the following temperatures:

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For personal hygiene fixtures (showers, baths, wash hand basins etc) temperatures to be close to but not to exceed:

- 45ºC - for early child hood centres, schools, elderly facilities, hospitals, psychiatric or disabled institutions.
- 50ºC - for personal hygiene fixtures in all other buildings.

For non-personal hygiene fixtures (kitchen sinks and equipment, laundry tubs, cleaners sinks, industrial fixtures etc) temperatures are:

- Unrestricted - direct from water heater, approx. 60°C, must be less than 65°C (for kitchen sinks and equipment, laundry tubs, cleaners sinks etc) - in all buildings.
- Unrestricted - direct from water heater not tempered (for industrial fixtures and specific items etc) - in all buildings.

This clause excludes boiling units.

Performance

1.7 TESTING - TO NZBC G12/AS1

Test to NZBC G12/AS1, 7.6, Watertightness, for hot and cold water.

- Test to a pressure of 1500 kpa for period not less than 15 minutes.

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Slowly fill service pipes with water to exclude air. Test and ensure there is no measurable loss of pressure for the minimum period. Slowly fill distribution pipes with water to exclude air. Ensure that with draw-off taps closed the system must remain water-tight.

1.8 GAS CERTIFICATE OF COMPLIANCE

Provide a Certificate of Compliance (CoC) as required by the Gas (Safety and Measurement) Regulations 2010 to the owner, and when required provide a copy to the energy supplier before connection.

1.9 GAS SAFETY CERTIFICATION

Provide a Gas Safety Certificate (GSC) as required by the Gas (Safety and Measurement) Regulations 2010 and provide a copy to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.

1.10 GAS APPLIANCE COMPLIANCE

Supplier to provide a Supplier Declaration of Compliance (SDoC) in accordance with the requirements of the Gas (Safety and Measurement) Regulations 2010.

2 PRODUCTS

Materials

2.1 COPPER PIPE

To NZBC G12/AS1, 2 Materials. Copper pipe to NZS 3501, AS 1432 (type A, B & C) and AS 3688 for fittings

2.2 POLYETHYLENE PIPE

To NZBC G12/AS1, 2 Materials. Polyethylene pipes to AS/NZS 4130 and fittings to AS/NZS 4129. Except for solid black PE, protect from sunlight. For cold water applications only.

2.3 WATER METER

To the requirements of the network utility operator.

2.4 VALVES

Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief or temperature valve, pressure relief valve and isolating valves to NZBC G12/AS1.

2.5 BACKFLOW PREVENTION DEVICES

Provide backflow prevention devices to AS/NZS 2845.1 where it is possible for water or contaminants to backflow into the potable water supply. Refer to NZBC G12/ AS1 3.4 Backflow protection, 3.5 Containment Backflow protection, table 2, Selection of Backflow Protection and table 2A Containment Backflow Protection.

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2.6 TEMPERING VALVE

Tempering valve to NZS 4617 or AS 4032.2 to NZBC G12/AS1.

Materials - Hot water heating appliances

2.7 GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE

Continuous flow unit with an integral gas burner and flue to NZS 4305 and Gas (Safety and Measurement) Regulations.

2.8 HEAT PUMP WATER HEATER - SPLIT SYSTEM

Heat pump water heating system, with insulated storage cylinder and separate compressor/condenser/evaporator, complete with required fittings. With flow and return pipe work for water between cylinder and heat pump. Insulated exposed flow and return pipe work.

Components

2.9 INSULATION

Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements and to NZBC H1/AS1-AS2 and AS/NZS 3500.4.

2.10 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.



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3 EXECUTION

3.1 EXECUTION GENERALLY

Generally carry out the whole of this work and tests to NZBC G12/AS1 or AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3.

3.2 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress.

Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.

3.3 CORE HOLES AND SLEEVES

Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.

3.4 CONCEAL

Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

3.5 CORROSION

Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

3.6 THERMAL MOVEMENT

Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

3.7 PIPE SIZE

Flow rates to each outlet to be no less than those given in AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in NZBC G12/AS1, table 4, Tempering valve and nominal pipe diameters.

3.8 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

3.9 EXCAVATE

Excavate for the water main to a firm, even trench base in straight runs. Allow to backfill.

Application - Jointing

3.10 JOINTING COPPER PIPE

Braze pipe, fit alloy compression fittings, crox type joints and seal ring compression joints to NZBC G12/AS1 and AS 4809.

3.11 JOINTING POLYETHYLENE PIPE

Seal ring compression joints and electrofusion to NZBC G12/AS1 and AS/NZS 2033.

Application - Pipework installation

3.12 WATER SUPPLY CONNECTION

Arrange with the network utility operator for a connection to the water main and from there through a water meter and gate valve. Provide back flow prevention to NZBC G12/AS1.

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3.13 POTABLE WATER SUPPLY PIPEWORK INSTALLATION

From connection point, run pipes complete with all fittings, support and fixing, joins and install to manufacturers specifications. Size the pipes and branches in straight runs to deliver the acceptable flow rate to AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures and size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Pipework support spacing to be firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with machine made 3 diameter bends, complete with necessary valves and fittings. Conceal pipework and pressure test before the wall linings are fixed.

3.14 HOT WATER PIPEWORK

Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 9 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, and preformed 3 diameter bends, complete with all necessary valves and fittings.

Lag all pipes with rigid insulation to the manufacturer's requirements and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1.

3.15 EQUIPOTENTIAL BONDING METALLIC WATER SUPPLY PIPES

If it is an electrical requirement, before enclosing, ensure metallic water supply pipes and metallic sanitary fixtures are equipotential bonded (or at least conductor cable attached) to NZBC G12/AS1, 9.0.

3.16 IN-LINE FILTER

Install an in-line filter immediately adjacent to the main isolating valve at the point of entry to the building, in an accessible position to allow for easy cleaning.

3.17 PENETRATIONS

Provide and fit collars and escutcheon plates to match the pipework at all penetrations through constructions.

Application - Hot water systems

3.18 HOT WATER CYLINDER INSTALLATION GENERALLY

Install hot water cylinders complete to the manufacturer's requirements and to NZBC G12/AS1, 6. 11, Water heater installation or NZS 4606 for Valve-vented systems.

3.19 SEISMIC RESTRAINTS - GAS WATER HEATING APPLIANCES

Gas appliances to be restrained to manufacturer's requirements, NZBC G11/AS1 and AS/NZS 5601.1.

3.20 INSTALLING HOT WATER PIPE INSULATION

Insulate all hot water pipes to NZBC H1/AS1-AS2 Energy Efficiency, AS/NZS 3500.4, 8.2 Thermal Insulation, and to the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of steel studs.

3.21 INSTALL GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE

Install complete with the necessary fittings to the manufacturer's requirements and in accordance with NZBC G12/AS1, 6. 11, Water heater installation. Install flue in accordance with the manufacturer's details and requirements and, AS/NZS 5601.1 (for internal or external appliances) or NZBC G4/AS1 (internal appliances). Refer to section 7221 GAS APPLIANCES for installation of gas appliances.

3.22 INSTALL HEAT PUMP WATER HEATER - SPLIT SYSTEM

Install complete with the necessary fittings and pipe work, to the manufacturer's installation instructions.

3.23 INSTALL STORAGE HOT WATER CYLINDER OVERFLOW TRAY

Install drained overflow tray to storage hot water cylinder to NZBC G12/AS1.

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3.24 INSTALL TEMPERING VALVE

Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install copper pipework for 1 metre minimum downstream of tempering valve prior to connection of non-metallic pipework.

Installation - valves

3.25 INSTALLING BELOW GROUND ISOLATING VALVE

Install all below ground items such as main isolating valves and water meters in preformed concrete pits or approved equivalent.

3.26 INSTALLING APPLIANCE ISOLATING VALVES - CONCEALED

Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.

3.27 INSTALLING BACKFLOW PREVENTION DEVICE

Provide and install backflow prevention device as near as practicable to the potential source of contamination, and in an accessible position for maintenance and testing to AS 2845.3 or NZ Backflow Testing Standard.

Completion

3.28 LABEL

Label all pipework with permanent adhesive markers at 3 metre minimum intervals.

3.29 CLEAN IN-LINE FILTER

Clean all in-line filters on completion of works.

3.30 REPLACE

Replace damaged or marked elements.

3.31 LEAVE

Leave work to the standard required by following procedures.

3.32 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

Water main

4.1 POLYETHYLENE WATER MAIN

Size: 25mm outside diameter (i.e. DN 25 in AS/NZS 4130)

Pipework

Hot water systems

4.2 GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE

Brand: Rinnai
Model size: HDi200

4.3 HEAT PUMP WATER HEATER - SPLIT SYSTEM

Brand: Toshiba
Model: Estia Hydrobox
Location cylinder: Garage
Location heat pump: service Court

Valves and accessories

4.4 MAIN ISOLATING VALVE

Location: Garage

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4.5 APPLIANCE ISOLATING VALVES - EXPOSED

Appliance: Washing machine
Brand/type: Refer to tapware selections

4.6 IN-LINE FILTER

Location: Suggested location is adjacent to the main isolating valve and positioned for easy access for cleaning.



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7126RH RINNAI HOT WATER SYSTEMS

1 GENERAL

This section relates to the supply and installation of **Rinnai New Zealand Limited** hot water systems.
It includes:

- Rinnai continuous flow gas water heating units
- Rinnai storage and electric water heaters
- Rinnai supplied storage and electric water heaters
- Rinnai hot water heat pumps.

1.1 RELATED WORK

Refer to the hot and cold water system section for pipe systems

Refer to 7211 GAS SYSTEM UTILITY NETWORK for piped gas supply
Refer to 7212 GAS SYSTEM LPG CYLINDERS for cylinder gas supply
Refer to 7554RS RINNAI SPACE HEATING SYSTEMS for space heating

Documents

1.2 DOCUMENTS

25.1Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS1-AS2	Protection from fire
NZBC G12/AS1	Water supplies
AS/NZS 1596	Storage and handling of LP Gas
AS/NZS 51	Heat pump water heaters - performance assessment - part 1: air source heat pump water heaters
AS/NZS 5149	Refrigerating systems and heat pumps - safety and environmental requirements - part 1: definitions, classification and selection criteria
AS/NZS 60335.1	Household and similar electrical appliances - Safety - Part 1: General requirements
NZS 4305	Energy efficiency - domestic type hot water systems
NZS 4602	Low pressure copper thermal storage electric water heaters
NZS 4607	Installation of thermal storage electric water heaters: valve vented systems
AS/NZS 5601.1	Gas installations Part 1: General installations

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 work in this section are:

Rinnai Operation and Installation Guides

Manufacturer/supplier contact details

Company:	**Rinnai New Zealand Limited**
Web:	www.rinnai.co.nz
Email:	info@rinnai.co.nz
Telephone:	0800 RINNAI (0800 746 624)

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

The manufacturer/supplier warranty period will depend on the type, model, parts, labour and application of the selected product. Refer to Rinnai New Zealand Limited for confirmation of appropriate warranty details.

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- Provide this warranty on the Rinnai New Zealand Limited standard form.
- Commence the warranty from the date of installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

The installer warranty period will depend on the type, model, parts, labour and application of the selected product. Refer to Rinnai New Zealand Limited for confirmation of appropriate warranty details.

- Provide this warranty on the installer standard form.
- Commence the warranty from the date of installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Rinnai products, or associated products, components or accessories.

1.7 COMPLY

Comply with the Gas (Safety and Measurement) Regulations 2010, Electricity (Safety) Regulations 2010 and the network utility operator's requirements. Give notices for inspections and carry out tests as required.

1.8 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.

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

1.10 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.
- 55ºC - 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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Performance

1.11 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 and has been tested for leakage and proved to be sound.

Testing should be at the time of completion. Confirm this timing before carrying out any tests. Test and demonstrate the system according to manufacturer's specification.

1.12 GAS CERTIFICATE OF COMPLIANCE

Provide a Certificate of Compliance (CoC) as required by the Gas (Safety and Measurement) Regulations 2010 to the owner, and when required provide a copy to the energy supplier before connection.

1.13 GAS SAFETY CERTIFICATION

Provide a Gas Safety Certificate (GSC) as required by the Gas (Safety and Measurement) Regulations 2010 and provide a copy to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.

1.14 APPLIANCE COMPLIANCE

Supplier to provide a Supplier Declaration of Compliance (SDoC) in accordance with the requirements of the Gas (Safety and Measurement) Regulations 2010.

2 PRODUCTS

Materials - hot water gas heating units

2.1 CONTINUOUS FLOW GAS HOT WATER HEATING UNIT

Rinnai INFINITY® continuous flow gas hot water heating unit with an integral gas burner. Water temperature electronically preset by digital controllers where selected. Refer to SELECTIONS for controller type.

2.2 DIGITAL CONTROLLER(S)

Rinnai digital controller for Rinnai INFINITY® continuous flow gas hot water heating units. Refer to SELECTIONS for type.

Components

2.3 FLUES

Matching Rinnai Flue system.

2.4 SECURITY BRACKET

Rinnai INFINITY® security bracket.

2.5 RECESS BOX

Rinnai INFINITY® metal recess box for housing the external Rinnai INFINITY® unit, pipe work and power supply behind a hinged door.

2.6 PIPE COVER

Rinnai INFINITY® pipe cover (where a recess box is not being used), attaches to the base of the Rinnai INFINITY® unit.

3 EXECUTION

Installation - general

3.1 HANDLE AND STORE

Handle and store units, cylinders, pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress. Store according to manufacturer's instructions.

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3.2 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.

3.3 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.

3.4 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.

3.5 PIPE SIZE

Plumber to check and confirm adequate pipe size, incoming mains and meter on site as a part of the installation. Pipe sizing calculation to NZBC G12/AS1, table 4.

Installation - general, hot water cylinders

3.6 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. Valve-vented systems to NZS 4607.

3.7 SEISMIC RESTRAINTS - GAS WATER HEATING APPLIANCES

Gas appliances to be restrained to manufacturer's requirements, AS/NZS 5601.1 and NZBC C/AS1-AS2, 7.2 Gas-burning Appliances.

3.8 INSTALL STORAGE HOT WATER CYLINDER OVERFLOW TRAY

Install drained overflow tray to storage hot water cylinder to NZBC G12/AS1.

3.9 INSTALL TEMPERING VALVE

Install one metre minimum from outlet of hot water cylinder and to manufacturer's instructions.

Installation - gas hot water systems

3.10 INSTALL CONTINUOUS FLOW GAS HOT WATER HEATING UNIT

Install Rinnai INFINITY® continuous flow gas hot water heating unit complete with the necessary fittings to Rinnai requirements and to NZBC G12/AS1, 6.11, Water heater installation. Install flue (if applicable) to Rinnai details and requirements and digital controllers in location specified. Install in Rinnai recess box with security bracket where specified. Refer to section 7221 GAS APPLIANCES for installation of gas appliances.

3.11 INSTALL GAS APPLIANCES

Fit and connect gas appliances complete with flues as required to the appliance manufacturer's requirements and AS/NZS 5601.1. Also refer to section 7221 GAS APPLIANCES for installation.

3.12 INSTALL ELECTRIC BOILING CYLINDER, WALL MOUNTED

Install to Rinnai requirements. Locate where shown.

Completion

3.13 REPLACE

Replace damaged or marked elements.

3.14 LEAVE

Leave work to the standard required by following procedures.

3.15 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

For further details on selections go to www.rinnai.co.nz
Substitutions are not permitted to the following, unless stated otherwise.



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Gas hot water systems

4.1 RINNAI INFINITY® - INTERNAL CONTINUOUS FLOW GAS HOT WATER HEATING UNIT

Location: Refer architectural drawings
Brand: Rinnai
Model: Rinnai INFINITY®
Gas type: Natural gas

Components

4.2 RINNAI DIGITAL CONTROLLER

Location: Laundry or Garage near distribution board
Brand: Rinnai
Mode/type: Compact Controller

4.3 RINNAI PIPE COVER

Location: External
Brand: Rinnai
Model: Rinnai INFINITY®

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7211 GAS SYSTEM UTILITY NETWORK

1 GENERAL

This section relates to the fabrication, installation and operation of gas systems for low pressure:

- natural gas from a piped public utility network system.
- LPG from a piped private utility network system.

1.1 RELATED WORK

Refer to ~ for ~

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

LPG	Liquid Petroleum Gas

1.3 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
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS 4176	Polyethylene/aluminium and cross linked polyethylene/aluminium macrocomposite pipe systems for pressure applications
AS/NZS 4129	Fittings for polyethylene pipes for pressure applications
AS/NZS 4130	Polyethylene (PE) pipes for pressure applications
AS/NZS 5601.1	Gas Installations - general installations
NZS 5255	Safety verification of existing gas installations
NZS 5258	Gas distribution networks

Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019)
Gas (Safety and Measurement) Regulations 2010
Plumbers, Gasfitters and Drainlayers Act 2006

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years:	For the complete gas system

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 COMPLY

Comply with the Gas (Safety and Measurement) Regulations 2010, Electricity (Safety) Regulations 2010, AS/NZS 3000, and the gas supplier requirements. Give notices for inspections and carry out tests as required.

1.6 PRIMARY CONNECTION

Include for the cost of this service complete with excavation and backfilling.

1.7 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

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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.

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:
1:100 scale as-built plan of the gas pipe runs, sizes componentry and fittings

Provide as built information prior to practical completion.

1.9 DESIGN NATURAL GAS

Design the piping system to AS/NZS 5601.1, with pipe sizes to give a minimum pressure at any appliance inlet to AS/NZS 5601.1, Table 5.1, of 1.13 kPa for natural gas. Include pressure regulators if required.

Performance

1.10 PRESSURE TEST

Pressure test the system for leakage to AS/NZS 5601.1 before pipework is concealed by linings.

1.11 FINAL INSPECTION AND TEST

Submit the work for inspection and test and prove to the satisfaction of the network utility operator/gas supplier that the installation complies with all Acts and Regulations and has been tested for leakage and proved to be sound.

1.12 CERTIFICATION CERTIFICATE

Provide a Gasfitting Certificate of Compliance as required by Clause 46 and 47 of the Gas (Safety and Measurement) Regulations 2010 and when required provide a copy to the energy supplier.

1.13 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Installer / applicator's warranty
- Manufacturer / supplier warranty
- Gasfitting Certificate of Compliance - from the installer

1.14 GAS CERTIFICATE OF COMPLIANCE

Provide a Certificate of Compliance (CoC) as required by the Gas (Safety and Measurement) Regulations 2010 to the owner, and when required provide a copy to the energy supplier before connection.

1.15 GAS SAFETY CERTIFICATION

Provide a Gas Safety Certificate (GSC) as required by the Gas (Safety and Measurement) Regulations 2010 and provide a copy to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.

1.16 GAS APPLIANCE COMPLIANCE

Supplier to provide a Supplier Declaration of Compliance (SDoC) in accordance with the requirements of the Gas (Safety and Measurement) Regulations 2010.

2 PRODUCTS

Materials

2.1 PIPEWORK GENERAL

Pipework requirements to AS/NZS 5601.1, particularly AS/NZS 5601.1, Section 4, **Means of compliance - materials, fittings and components**.

2.2 COPPER PIPE

Complete with fittings to AS/NZS 5601.1. Range of use to AS/NZS 5601.1, table 4.1 **Consumer Piping Materials**.

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2.3 MACROCOMPOSITE PIPE

Polyethylene/aluminium/cross linked polyethylene combination (PE/AL/PE, PE-X/AL/PE-X or PE-X/AL/PE) macrocomposite pipe systems for pressure applications to AS 4176. Range of use to AS/NZS 5601.1, table 4.1 **Consumer Piping Materials**. Used for general pipework, can also be used in ground beneath a building.

2.4 POLYETHYLENE PIPE

Polyethylene pipes to AS/NZS 4130 Series two, or AS/NZS 4130 Series three. Fittings to AS/NZS 4129. Range of use to AS/NZS 5601.1, table 4.1 **Consumer Piping Materials**. For use in ground but not beneath a building.

2.5 ISOLATING VALVES

Manual shut-off valves to AS/NZS 5601.1.

2.6 METER

Primary meter to suit design load, supply pressure and pressure drop, supplied and installed by the network utility operator/gas supplier.

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

Carry out the whole of this work to the requirements of NZBC G10/AS1, NZBC G11/AS1 and AS/NZS 5601.1.

3.4 EXISTING SYSTEMS

Check the existing pipework and system to be reused, to NZS 5255.

3.5 BURIED PIPES

Pipes to be bedded in a trench, backfilled, marker taped and separated from other services, to AS/NZS 5601.1, 5.4 **Installation of consumer piping underground.**

3.6 ARRANGE

Arrange for the network utility operator/gas supplier to connect their distribution system to the primary meter, to NZS 5258.

3.7 METER INSTALLATION

Confirm suitability of meter location with utility operator/gas supplier.

Check the location of a free standing meter with the owner, or if the meter is in an enclosure, recess and conceal as detailed. Advise the utility operator/gas supplier or their agent of the location for the meter. Not all utility operators install gas meters. Meters are usually owned by retailers or meter lease companies and installed by them or their agent.

Application

3.8 INSTALL PIPING

Run the system, completely concealed, in the most suitable type of pipe for each part of the installation, bent, supported, jointed and complete with all fittings to AS/NZS 5601.1. Confirm the type of pipe and its location. Label pipework to distinguish it from other services to AS/NZS 5601.1, 5.1.12 **Identification of pipework**.

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3.9 EQUIPOTENTIAL BONDING METALLIC GAS SUPPLY PIPES

If it is an electrical requirement, before enclosing, ensure metallic gas supply pipes and connected metallic gas fixtures are equipotential bonded (or at least conductor cable attached).

3.10 PRESSURE TEST

Pressure test the system for leakage to AS/NZS 5601.1 before pipework is concealed by linings.

Completion

3.11 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused materials and elements from the site.

3.12 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Leave work to the standard required for following procedures.

Commissioning

3.13 FINAL INSPECTION AND TESTING

Check the system is working and ensure all connected appliances are operating correctly. Carry out final inspections and testing, pressure test the system for leakage to AS/NZS 5601.1.

3.14 HANDOVER

Provide a copy of the system operating and maintenance instructions.

4 SELECTIONS

4.1 GAS TYPE

Gas supplier:	TBC
Gas type:	Natural gas

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7221 GAS APPLIANCES

1 GENERAL

This section relates to the supply and installation of gas-powered appliances using low pressure gas.

1.1 RELATED WORK

Refer to appropriate GAS FIRE section for selected gas fire

Refer to hot and cold water system section for gas water heaters

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC G4/AS1	Ventilation of buildings
NZBC 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
AS/NZS 5601.1	Gas Installations - general installations

Electricity (Safety) Regulations 2010 (Reprint as at 4 April 2016)
Gas (Safety and Measurement) Regulations 2010
Plumbers, Gasfitters and Drainlayers Act 2006

Warranties

Requirements

1.3 COMPLY

Comply with the Gas (Safety and Measurement) Regulations 2010, Electricity (Safety) Regulations 2010 and the network utility operator's/gas suppliers requirements. Give notices for inspections and carry out tests as required.

1.4 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.

Performance

1.5 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 and has been tested for leakage and proved to be sound.

1.6 GAS CERTIFICATE OF COMPLIANCE

Provide a Gasfitting Certificate of Compliance as required by Clause 46 and 47 of the Gas (Safety and Measurement) Regulations 2010 and when required provide a copy to the energy supplier.

1.7 GAS SAFETY CERTIFICATION

Provide a Gas Safety Certificate (GSC) as required by the Gas (Safety and Measurement) Regulations 2010 and provide a copy to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.

1.8 APPLIANCE COMPLIANCE

Supplier to provide a Supplier Declaration of Compliance (SDoC) in accordance with the requirements of the Gas (Safety and Measurement) Regulations 2010.

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2 PRODUCTS

Materials

2.1 GAS APPLIANCES
Refer to SELECTIONS for product selection.

2.2 GAS TYPE
All appliance to be specifically suited to the gas type supply, refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 GENERALLY
Carry out the whole of this work to the requirements of NZBC G10/AS1, NZBC G11/AS1 and AS/NZS 5601.1.

Application

3.2 INSTALL GAS APPLIANCES
Fit and connect gas appliances to AS/NZS 5601.1, complete with isolation valves as required to the appliance manufacturer's requirements.

3.3 INSTALL FLUES
Install flues in accordance with the manufacturer's details and requirements, and AS/NZS 5601.1 (for internal or external appliances) or NZBC G4/AS1 (internal appliances)

3.4 SEISMIC RESTRAINTS - GAS APPLIANCES
Where gas appliances require seismic restraints, restrain to manufacturer's requirements, NZBC G11/AS1 and AS/NZS 5601.1.

3.5 CONNECT UP GAS HOT WATER HEATERS
Connect gas hot water heaters supplied and fitted under Hot and Cold Water system section or by gas fitter, to NZBC G10/AS1, G11/AS1, G12/AS1 or AS/NZS 3500.4 as modified by NZBC G12/AS3 and to AS/NZS 5601.1 and the water heater manufacturer's requirements.

Completion

3.6 REPLACE
Replace damaged, cracked or marked elements.

3.7 LEAVE
Leave appliances clean and in full working order and leave work to the standard required by following procedures.

3.8 REMOVE
Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 GAS TYPE

Gas type: Natural gas

4.2 GAS APPLIANCES

Appliance	Make and code
Cooker top:	Refer Product Specification
Fireplace:	Escea DS1400

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7421 SANITARY SYSTEMS

1 GENERAL

This section relates to above ground gravity flow sanitary systems;

- for foul water
- from sanitary fixtures to first underground drain connection
- including system wastes, floor wastes, floor waste gullies, traps, vents and valves
- with associated components and accessories to make the system work

1.1 RELATED SECTIONS

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures.

Refer to 7123 HOT AND COLD WATER SYSTEM for potable water systems.
Refer to 7431 DRAINAGE COMMON REQUIREMENTS for underground drains.
Refer to 7142 GREYWATER SYSTEMS for greywater systems.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC G1/AS1	Personal hygiene
NZBC G12/AS1	Water supplies
NZBC G13/AS1	Foul water - Sanitary plumbing
NZBC G13/AS3	Foul water - Sanitary plumbing and drainage
AS 1589	Copper and copper alloy waste fittings
AS 2887	Plastic waste fittings
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage
AS/NZS 4401	Plastic piping systems for soil and waste discharge (low and high temperature) inside buildings - polyethylene (PE)
AS/NZS 7671	Plastic piping systems for soil and waste discharge (low and high temperature) inside buildings - Polypropylene (PP)
BS EN 1124 .1	Pipes and fitting of longitudinally welded stainless steel pipes with spigot and socket for waste water systems. Requirements, testing, quality control.
BS EN 1124 .2	Pipes and fitting of longitudinally welded stainless steel pipes with spigot and socket for waste water systems. System S, forms and dimensions.

Plumbers, Gasfitters and Drainlayers Act 2006

Requirements

1.3 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying plumber under the Plumbers, Gasfitters and Drainlayers Act 2006.

1.4 OPERATION AND MAINTENANCE MANUALS

Supply maintenance manual information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

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Performance

1.5 TESTING

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC G13/AS1, 7.1 Test Methods or AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations, as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

2 PRODUCTS

Materials

2.1 COPPER PIPES AND TRAPS

To NZS 3501 for pipes and AS1589 for fittings.

Pipes complete with copper-alloy compression fittings and/or crox type joints and seal ring compression joints. Traps complete with screwed access ports. Exposed traps and wastes, complete with matching ferrules at penetration location, satin chrome plated.

2.2 PVC-U WASTE PIPES AND TRAPS

To AS/NZS 1260, complete with fittings and accessories to the pipe manufacturer's requirements, all brand matched.

2.3 PVC-U VENT PIPE

To AS/NZS 1260, complete with fittings and accessories to the pipe manufacturer's requirements and all brand matched.

2.4 EXPOSED PLASTIC PIPES AND TRAPS

Plastic traps and fittings to AS 2887.

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for locations and types of traps.

2.5 FLOOR WASTES

Floor wastes and floor waste gullies to AS/NZS 3500.2, complete with chrome grates to suit flooring.

Components

2.6 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

3 EXECUTION

Conditions

3.1 EXECUTION GENERALLY - AS/NZS 3500.2

Carry out this work to AS/NZS 3500.2, as modified by NZBC G13/AS3, and complete all tests to AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations.

3.2 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

3.3 EQUIPOTENTIAL BONDING METALLIC WASTE PIPES

If it is an electrical requirement, before enclosing, ensure metallic waste pipes connected to metallic drains and attached metallic sanitary fixtures are equipotential bonded (or at least conductor cable attached) similar to NZBC G12/AS1, 9.0.

3.4 HANDLE AND STORE

Handle and store pipes, fittings and accessories to avoid damage. Store on site under cover on a clean level area, stacked to eliminate movement and away from work in progress.

3.5 SETTING OUT

Set out location of all stacks, discharge pipes, fittings and vent pipes and the completeness of their discharge into the drainage system.



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3.6 CORE HOLES AND SLEEVES

Fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Sleeve diameter to be 25mm larger than outside diameter of pipe accommodated. Strip core holes and make good after installation of pipework.

3.7 PIPE ACCESS

Fit and fix stacks, wastes and pipes in ducts independent of all other services so they are easily replaceable for their full length. Wrap or tape pipes buried in concrete.

3.8 FITTINGS ACCESS

Fit and fix traps and wastes to enable access for cleaning and for maintaining the total system.

3.9 CONFIRM LOCATIONS

Unless the location and height are clearly delineated on the drawings, confirm installation height and plan locations of sanitary fittings before commencing the piping installation.

3.10 TRAPS AND WASTES

Conceal traps and wastes in the fabric of the building unless detailed otherwise. Fit and fix satin chrome plated exposed pipes, traps and wastes unless detailed otherwise.

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for locations and types of traps.

3.11 CORROSION

Separate metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

Application - jointing

3.12 JOINTING COPPER PIPE - AS/NZS 3500.2

Braze pipe, fit alloy compression fittings, crox type joints and seal ring compression joints to AS/NZS 3500.2, section 2.8 Joints.

3.13 JOINTING PVC-U PIPE

Prime and solvent weld joints using spigots and sockets, flanged joints and seal ring compression joints to AS/NZS 2032.

Application - fixing

3.14 THERMAL MOVEMENT

Accommodate longitudinal movement in pipes resulting from temperature changes. Incorporate expansion joints in copper and PVC-U pipes. Install PVC pipes to AS/NZS 2032. Take particular care to allow for movement at horizontal take-off locations from stacks.

3.15 TRAPS AND FIXTURE DISCHARGE PIPES - AS/NZS 3500.2

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 AS/NZS 3500.2, table 3.3.1, for fixture loading and AS/NZS 3500.2, table 10.2.1, distance between supports.

3.16 DISCHARGE STACKS AND VENTS - AS/NZS 3500.2

Size stacks and vents to AS/NZS 3500.2, table 6.3(A), for fixture discharge pipe sizes and discharge units and AS/NZS 3500.2, table 3.9.3.1, vent pipe sizes. Extend up past the highest branch to form a discharge stack vent terminating to AS/NZS 3500.2, section 6.9 Vents, and finishing at the base with a 45 degree bend. Support system to AS/NZS 3500.2, table 10.2.1, for distances between supports.

3.17 FLASH ROOF PENETRATIONS

Flash or arrange for roofer to flash all penetrations to NZBC E2/AS1.

For profiled metal roofs, fit proprietary EPDM pipe collar flashings to NZBC E2/AS1, 8.4.12 Roof penetrations, and manufacturer's requirements.



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Completion

3.18 REPLACE

Replace damaged or marked elements.

3.19 LEAVE

Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following procedures.

3.20 REMOVE

Remove debris, unused materials and elements from site.

4 SELECTIONS

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7451 SURFACE WATER DRAINAGE

1 GENERAL

This section relates to below ground, gravity flow stormwater pipework complete with maintenance access and fittings and connected to network utility operators 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 G13/AS2	Foul water
AS/NZS 1254	PVC-U pipes and fittings for Stormwater and Surface Water applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 2033	Installation of Polyethylene pipe systems
AS/NZS 2566.1	Buried Flexible Pipelines - Structural Design
AS/NZS 2566.2	Buried Flexible Pipelines - Installation
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
NZS 3104	Specification for concrete production
AS/NZS 4058	Precast concrete pipe (pressure & non pressure)
NZS 4442	Welded steel pipes and fittings for water, sewage and pressure gas
AS/NZS 4671	Steel reinforcing materials
AS/NZS 5065	Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
~

Copies of the above literature are available from ~

Company:	~
Web:	~
Email:	~
Telephone:	~

Performance

1.4 TESTING - NZBC E1/AS1

Complete all tests to NZBC E1/AS1, 8.0, Drain Leakage Tests.

1.5 TESTING - AS/NZS 3500.3 & NZBC E1/AS2

Complete all tests to AS/NZS 3500.3 as modified by NZBC E1/AS2.

2 PRODUCTS

Materials

2.1 REINFORCING STEEL

Plain round and/or deformed steel bars, Grade 300 to AS/NZS 4671.

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2.2 PVC-U PIPES AND FITTINGS

Unplasticised PVC pipe and fittings to AS/NZS 1254.

Underground PVC-U pipe to comply with AS/NZS 1254 and Classified as follows:

Classification	Use
SN4 - SN6	Domestic & light load areas
SN8 - SN10	Commercial & Industrial medium load areas
SN16	Public roads & high load areas

2.3 POLYETHYLENE PIPES AND FITTINGS

Polyethylene pipe and fittings to AS/NZS 5065.

2.4 CHANNEL DRAIN, GRATING AND SUMPS

Proprietary PVC channel or precast concrete drain complete with friction fit grating sections and matching sumps.

Accessories

2.5 BEDDING SURROUND AND FILLING MATERIALS

Granular:	Clean gravel or crushed stone or a blend of these. Particle size from minimum 7mm to maximum 20mm.
Selected:	Fine grain soil or granular material suitable for bedding and excluding topsoil, organic matter and rubbish.
Ordinary:	Top soil or other excavated materials excluding organic matter and rubbish.

2.6 CONCRETE

To NZS 3104.

Prescribed mix 17.5 MPa:	For in situ bases, anchors and pipe surrounds.
Prescribed mix 14 MPa:	For bedding only.

3 EXECUTION

Conditions

3.1 EXECUTION GENERALLY - NZBC E1/AS1

Carry out this work to NZBC E1/AS1 and complete all tests to E1/AS1, 8.0, Drain Leakage Tests.

3.2 EXECUTION GENERALLY - AS/NZS 3500.3 & NZBC E1/AS2

Carry out this work to AS/NZS 3500.3 as modified by NZBC E1/AS2 and complete all tests to AS/NZS 3500.3, section 9, as modified by NZBC E1/AS2.

Application

3.3 BEDDING - NZBC E1/AS1

Place to NZBC E1/AS1, 3.9, Bedding and backfilling, using compacted granular material to avoid differential settlement and to obtain longitudinal support of the pipe.

3.4 BEDDING - AS/NZS 3500.3 & NZBC E1/AS2

Place to AS/NZS 3500.3 as modified by NZBC E1/AS2, using compacted granular material to avoid differential settlement and to obtain longitudinal support of the pipe.

3.5 SURROUND AND BACKFILL - NZBC E1/AS1

Place to NZBC E1/AS1, 3.9, Bedding and backfilling, using compacted granular material and compacted fill. Compact in layers not exceeding 100mm.

3.6 SURROUND AND BACKFILL - AS/NZS 3500.3 & NZBC E1/AS2

Place to AS/NZS 3500.3 as modified by NZBC E1/AS2, using compacted granular material and compacted fill. Compact in layers not exceeding 100mm.

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3.7 SETTING OUT

Use string line, boning rod or laser equipment methods. Use surveying and levelling equipment to accurately set out design invert levels.

3.8 LAYING AND JOINTING

Lay in straight lines between changes of line or grade from the lower end of the pipeline with sockets pointing uphill, each pipe set true to line and grade and each joint completed before the next pipe is laid. Install PVC Pipes to AS/NZS 2032 or AS/NZS 2566.1 and AS/NZS 2566.2. Install polyethylene Pipes to AS/NZS 2033. To prevent entry of foreign matter cap ends of uncompleted runs each day. Test drains and backfill progressively to minimise site disruption. Concrete cap trenches to all drains with less than 375mm cover.

3.9 LAYING STORM WATER SYSTEM

From the building rainwater system, sealed yard areas and including all access chambers, sumps, bends and junctions, lay the drainage system as detailed to discharge into the network utility operator water system and to their requirements.

3.10 DIFFERENTIAL SETTLEMENT

Provide flexible jointing, bedding and surrounding of pipes at junctions with manholes, foundation walls and other points where differential settlement may occur.

Application - fittings

3.11 INSTALL CHANNEL DRAIN

Excavate for, provide bedding to fall and install channel drains and sumps complete with grated covers, to the manufacturer's requirements.

Application - connections

3.12 CONNECT TO SURFACE WATER - PUBLIC MAINS

Locate, excavate and expose the existing drain, connect new pipework to existing drain to the requirements of the network utility operator.

3.13 CONNECT TO SURFACE WATER - PUBLIC MAINS ACCESS OR INSPECTION CHAMBER

Locate, excavate and break into the existing chamber, modify as necessary and connect new pipes to the requirements of the network utility operator.

4 SELECTIONS

4.1 SURFACE WATER CHANNEL DRAIN, GRATING AND SUMPS

Manufacturer/brand: Accrete

Model:	2 Stage channel drain system
Sump size/model:	Custom

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7461 FOUL WATER DRAINAGE

1 GENERAL

This section relates to below ground, non-pressure foul water pipework complete with all maintenance access and fittings and connected to network utility operator sewers.

1.1 RELATED WORK

Refer to 7431 DRAINAGE COMMON REQUIREMENTS for general matters

Refer to 7421 SANITARY SYSTEMS for above ground pipework
Refer to 7441 GROUNDWATER DRAINAGE for sub-soil drainage
Refer to 7451 SURFACE WATER DRAINAGE for storm/surface 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 G13/AS2	Foul water - Drainage
NZBC G13/AS3	Foul water - Sanitary plumbing and drainage
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 2033	Installation of Polyethylene pipe systems
AS/NZS 2566.1	Buried Flexible Pipelines - Structural Design
AS/NZS 2566.2	Buried Flexible Pipelines - Installation
NZS 3104	Specification for concrete production
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage
AS/NZS 4058	Precast concrete pipe (pressure & non pressure)
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4671	Steel reinforcing materials
AS/NZS 5065	Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications
BS EN 1124 .1	Pipes and fitting of longitudinally welded stainless steel pipes with spigot and socket for waste water systems. Requirements, testing, quality control.
BS EN 1124 .2	Pipes and fitting of longitudinally welded stainless steel pipes with spigot and socket for waste water systems. System S, forms and dimensions.

Performance

1.3 TESTING

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC G13/AS2,6.1 Testing 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 PIPES AND FITTINGS

Unplasticised PVC pipe and fittings to AS/NZS 1260, buried pipes classified as follows:

Classification	Use
SN4 - SN6	Domestic & light load areas
SN8 - SN10	Commercial & Industrial medium load areas

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SN16	Public roads & high load areas

2.2 GULLY TRAPS - AS/NZS 3500.2

Gully traps complete with grating to AS/NZS 3500.2, 4.6 Gullies, as modified by NZBC G13/AS3.

2.3 INSPECTION OPENINGS & SMALL CHAMBERS - AS/NZS 3500.2

Circular precast concrete or plastic to AS/NZS 3500.2, 4.7 Inspection Openings and/or 4.8 Inspection Chambers, as modified by NZBC G13/AS3, complete with cast iron lid and frame. All joints watertight (base/pipes, base/riser, riser/riser, riser/lid, lid throat and throat/frame). Use epoxy mortar joints in concrete chambers. Use ring seals in plastic chambers.

Accessories

2.4 TRENCH BACKFILLING MATERIAL - AS/NZS 3500.2

Bedding and backfilling material to AS/NZS 3500.2, 5.4, Bedding of drains, and for concrete, if required, AS/NZS 3500.2, 5.3 Concrete Support.

2.5 CONCRETE

To NZS 3104.

Prescribed mix 17.5 MPa:	For in situ bases, anchors and pipe surrounds.
Prescribed mix 14 MPa:	For bedding only.

3 EXECUTION

Conditions

3.1 EXECUTION GENERALLY - AS/NZS 3500.2

Carry out this work to AS/NZS 3500.2 as modified by NZBC G13/AS3 and complete all tests to AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations.

Bedding, backfilling and encasement

3.2 TRENCH BACKFILLING GENERALLY - FOUL & SURFACE WATER

Granular bedding and selected fill shall be placed in layers no greater than 100 mm loose thickness and compacted. Base bedding (beneath the pipe) shall be placed and compacted before pipes are laid. Up to 300mm above the pipe, compaction shall be by tamping by hand tool over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing or distorting the drain. Run marker tape along line of the pipe on top of the bedding.

More than 300 mm above the pipe, compaction shall be by at least four passes of a mechanical tamping foot compactor (whacker type) with a minimum weight of 75 kg. For plastic based pipes, ensure care taken to avoid impact loading of the pipe.

3.3 FOUL WATER TRENCH BACKFILLING - AS/NZS 3500.2

Carry out foul water trench backfilling to AS/NZS 3500.2, 5.1, 5.2 and 5.5 as modified by NZBC G13/AS3.

UPVC pipe to AS/NZS 2032 and polyethylene pipes to AS/NZS 2033.

3.4 CONCRETE ENCASEMENT

Concrete encase shallow drains and drains under driveways, on a 100mm deep 17.5 MPa concrete bed reinforced with three 10mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100mm 17.5 MPa concrete.

Application

3.5 SETTING OUT

Use string line, boning rod or laser equipment methods. Use surveying and levelling equipment to accurately set out design invert levels.

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3.6 LAYING AND JOINTING

Lay in straight lines between changes of line or grade from the lower end of the drain with sockets pointing uphill. Set each pipe true to line and grade and each joint completed before the next pipe is laid. Install PVC-U pipes to AS/NZS 2032 or AS/NZS 2566.1 and AS/NZS 2566.2. Install polyethylene Pipes to AS/NZS 2033. Cap ends of uncompleted runs each day to prevent entry of foreign matter. Test drains and backfill progressively to minimise site disruption. Concrete cap trenches to drains with less than 375mm cover.

3.7 LAYING FOUL WATER DRAINS

Lay the drainage system from soil stacks and gully traps, including access chambers, inspection chambers, bends, junction inspections, and vents (fresh air inlets). Discharge into the network utility operator foul water system to their requirements.

3.8 DIFFERENTIAL SETTLEMENT

Provide flexible jointing, bedding and surrounding of pipes at junctions with manholes, foundation walls and other points where differential settlement may occur.

Application - fittings

3.9 CONSTRUCT GULLY TRAPS - AS/NZS 3500.2

Set in a minimum 100mm thick concrete with top surround 25mm above paving and 75mm above other surfaces, to AS/NZS 3500.2, 4.6,Gullies.

3.10 CONSTRUCT SMALL INSPECTION CHAMBERS - AS/NZS 3500.2

Construct as detailed on a poured concrete footing to AS/NZS 3500.2, 4.7 Inspection openings and 4.8 Inspection chambers, as modified by NZBC G13/AS3. Provide all necessary haunching to channels.

Application - connections

3.11 CONNECTION TO FOUL WATER - PUBLIC MAINS

Locate, excavate and expose the existing drain, connect new pipework to existing drain to the requirements of the network utility operator.

3.12 CONNECTION TO FOUL WATER - PUBLIC MAINS ACCESS CHAMBER

Locate, excavate and break into the existing chamber, modify as necessary and connect new pipes to the requirements of the network utility operator.

4 SELECTIONS



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7545 UNDERFLOOR HEATING

1 GENERAL

This section relates to the supply and installation of a Hydronic Underfloor Heating (UFH) system for domestic or commercial applications.

1.1 RELATED WORK

Refer to 7211 GAS SYSTEM UTILITY NETWORK for piped gas supply.

Refer to 7212 GAS SYSTEM LPG CYLINDERS for cylinder gas supply
Refer to electrical section/s for electric power supply and water heating system for underfloor heating.
Refer to the appropriate concrete section for insulation under concrete slabs.
Refer to the HOT & COLD WATER SYSTEM section for hot and cold water piping, gas water heaters and hot water cylinders.

1.2 ABBREVIATIONS

The following abbreviations are used in this specification.

UFH	Underfloor Heating

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability provisions for building elements
NZBC G10/AS1	Piped services
NZBC G11/AS1	Gas as an energy source
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
AS/NZS 2492	Cross Linked Polyethylene (PE-X) pipe for pressure applications
AS/NZS 3500.4	Plumbing and drainage - Heated water systems
BS EN 1264	Floor heating - Systems and components
BS 7291	Thermoplastic pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings

Gas (Safety and Measurement) Regulations 2010
Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).
Plumbers, Gasfitters and Drainlayers Act 2006

1.4 MANUFACTURER DOCUMENTS

Manufacturer and supplier documents relating to work in this section are:

~

Requirements

1.5 ACCREDITED INSTALLERS

Installers shall be accredited by the proprietary UFH manufacturer. The installer is responsible to insure any equipment connected to the controls and supplied by others is suitable for the purpose and installed to manufacturer requirements.

1.6 QUALIFICATIONS

Plumbers to be certified installers, 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 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance manual information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

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Documentation

1.8 SHOP DRAWINGS

Provide shop drawings for review before installation takes place.

1.9 AS BUILT DOCUMENTS

Provide as-built information to the owner within 10 working days of practical completion, including:

Photographs recording actual layout.
Drawings showing the as built layout.

Warranties

1.10 WARRANTY

Warrant this part of the work under normal environmental and use conditions against failure of materials and execution.

Warranty period: 5 years

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

Performance

1.11 GENERAL INSPECTIONS

Inspection of the work to take place at each of the stages as scheduled. Confirm a written programme to facilitate these inspections, including notification when each stage of the work is ready for inspection.

1.12 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 and has been tested for leakage and proved to be sound.

Testing should be at the time of completion. Confirm this timing before carrying out any tests. Test and demonstrate the system according to piping manufacturer's specifications.

2 PRODUCTS

Materials

2.1 PIPEWORK

To BS 7291, AS/NZS 2492, NZBC B2/AS1, NZBC G10/AS1, NZBC G12/AS1. Refer to the SELECTIONS for pipe type and size.

2.2 CONTROLS

Controls include water temperature controls, boiler controls and air temperature controls. Refer to SELECTIONS for type.

2.3 INSULATION - SOLID CONCRETE FLOOR

Polystyrene under slab. Refer to SELECTIONS for thickness.

2.4 INSULATION - OVERLAY FLOOR SYSTEM

Proprietary combined insulation and pipe fixing system. Refer to SELECTIONS for type.

Components

2.5 MANIFOLD

Thermostatically controlled multi-valve manifold to control the temperature of the water and control the flow rate to the various zones. The manifold is available in a range of sizes. Refer to SELECTIONS for port arrangement.

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2.6 PUMPING UNIT

Pump to take heated water from the primary boiler and inject the water down to the required temperature for the UFH. Refer to SELECTIONS for type.

2.7 MIXING VALVE

Mixing valve to mix the 80°C water from the boiler with the cooler water from the return of the floor heating circuits. Refer to SELECTIONS for type.

2.8 THERMOSTATS

Programmable thermostats complete with setback temperature reduction mode. Refer to manufacturer for options to use in wet areas. Refer to SELECTIONS for type and location.

2.9 HEAT SOURCE

Refer to SELECTIONS for type.

Finishes

2.10 FLOOR COVERING

Refer to SELECTIONS for type of floor covering.

3 EXECUTION

Conditions

3.1 GENERALLY

To AS/NZS 3500.4, BS EN 1264, NZBC B2/AS1, NZBC G10/AS1, NZBC G11/AS1, NZBC G12/AS1 or AS/NZS 3500.4 as modified by NZBC G12/AS3. Confirm suitability of heat source, concrete/screed, insulation, floor finishes with the manufacturer before installation of the UFH system.

3.2 INSTALLATION

Ensure the area for installation remains dry and weathertight by incorporating a damp-proof membrane in the floor slab. Lay insulation to the total area of the installation, with edge insulation on all internal and external wall lines. If the floor construction is a two part slab with the walls already in place edge insulation is required around the walls to prevent heat loss up the walls.

3.3 INSULATION - OVERLAY SYSTEM

Confirm suitable insulation material and thickness with UFH manufacturer.

Application

3.4 HEAT SOURCE

Confirm suitability of the heat source with the UFH system, before connecting it to the UFH installation. Comply with AS/NZS 3500.4 as modified by NZBC G12/AS3 and Electricity (Safety) Regulations 2010. When using a gas heat source comply with Gas (Safety and Measurement) Regulations 2010.

3.5 PIPEWORK LAYOUT

Lay pipes to provide an even spread of heat and a relatively even surface temperature across the area to UFH manufacturer's recommendations. Lay pipes to the layout pattern recommended by the manufacturer and approved by the owner. Insure the layout allows for increased heat required against colder exterior surfaces (perimeter zone).

3.6 INSTALL PIPEWORK - TIED TO REINFORCEMENT

Pipework to be cable tied to the concrete mesh. Lay pipes in a continuous length from the manifold in the pre-designed configuration. Connections must not be made in the area to be concreted. Pipes start and finish at the manifold position. Run pipes to the corresponding port on the manifold. Do not cross pipes over in the floor. Allow for pressure testing of the pipework to 600kpa. Leave at this pressure until concrete is cured.

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3.7 INSTALL PIPEWORK - OVERLAY SYSTEM

Pipework fixed onto the insulation board to manufacturer's recommendations. Lay pipes in a continuous length from the manifold in the pre-designed configuration. Connections must not be made in the area to be screeded. Pipes start and finish at the manifold position. Pipes must run to the corresponding port on the manifold. Do not cross pipes over in the floor. Allow for pressure testing of the pipework to 600kpa. Leave at this pressure until concrete is cured.

3.8 SCREED - OVERLAY SYSTEM

Install screed as specified under the appropriate concrete section to provide a minimum thickness of 45mm above the crown of the water heating pipework. For a one pour slab use 40mm chairs to support the mesh. Refer to manufacturer's requirements.

Lay the screed as soon as possible after laying the pipe circuits and completion of a pressure test. Leave the system pressurised throughout the screeding and curing process. Allow the screed to cure in accordance with manufacturer's instructions. Lay the screed in good contact with the pipes without any air pockets.

3.9 CONDUIT SLEEVING

Sleeve all flow pipes with conduit sleeving where the pipe enters and returns from concrete for the first metre to manufacturer's requirements. Sleeve across construction joints in floor.

3.10 FILLING AND PRESSURE TESTING

Pressure test the system with water to ensure all joints are watertight and no damage has occurred to the pipe during installation.

3.11 CONNECT TO HEAT SOURCE

Install pump and manifold when wall finishes are completed. Connect heat source to pump pack using recommended pipe and fittings to manufacturer's installation instructions.

Finishing

3.12 INITIAL START UP

The start up procedure following installation to be done to BS EN 1264 and to UFH manufacturer's requirements.

Completion

3.13 COMMISSIONING

Commission the UFH system. Pipes flushed and refilled with the use of an inhibitor. Following the initial start up period commission the system with all floor coverings laid to ensure the system can be correctly balanced. Ensure the complete central heating system, including radiators if present, is working to required operational temperature. Adjust each circuit slowly via the valves on the manifold to ensure an even flow and heat up is achieved.

3.14 FLOOR FINISHES

Run the system for two weeks before the floor covering is finally laid. Use adhesive suitable for temperatures up to 40°C.

3.15 REPLACE

Replace damaged or marked elements.

3.16 LEAVE

Leave work to the standard required by following the UFH system manufacturer's recommended procedures.

3.17 REMOVE

Remove debris, unused materials and elements from the site.



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4 SELECTIONS

4.1 DESIGN INFORMATION

Insulation: Maxraft slab - XPS
Heat source: Heatpump split system
Floor covering: Varies

4.2 UNDERFLOOR HEATING PIPES

Manufacturer: ~
Pipe: ~ m x ~mm
Layout pattern: to manufacturer's design

4.3 UNDERFLOOR HEATING - MANIFOLD

Manufacturer: ~
Number: ~ ports

4.4 UNDERFLOOR HEATING - MIXING VALVE

Manufacturer: ~
Type: ~

4.5 UNDERFLOOR HEATING - PUMP

Manufacturer: ~
Type: ~

4.6 UNDERFLOOR HEATING - THERMOSTATS

Manufacturer: ~

Location	Type
~	~

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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 RELATED WORK

Refer to ~ for ~

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

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

1.4 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

1.5 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.

1.6 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

1.7 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.

1.8 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

Where a product or material supplier is named in SELECTIONS, the product/material must be provided by the named supplier.

1.9 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

1.10 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents:
Escea Gas Fire User Guide

Provide this information prior to practical completion.

1.11 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.

1.12 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.

1.13 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 DS SERIES GAS FIRE

Escea DS Series – a thermostatically controlled, flame effect, high efficiency and high output, glass fronted built-in gas fire. Fire can be single or double sided. 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. Fireplace 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.

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Accessories

2.3 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.

2.4 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.

2.5 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.

Completion

3.13 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

4 SELECTIONS

For further details on selections go to www.escea.com/nz.
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 ESCEA DS1400 SERIES INDOOR GAS FIRE

Location/type:	~
Manufacturer:	Escea Ltd.
Brand:	Fire by Escea
Model:	DS1400
Single/double side:	~
Fascia style:	~
Fascia colour:	~
Fuel effect:	~
Heat flow adjuster:	~
Flue kit:	~
Gas type:	~
Power supply:	Standard 10A, 230/240V, 3-pin plug
Wi-Fi connection:	~

Components

4.2 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

4.3 FLUE FLASHING

Size:	To suit flue
Material:	~ to suit cladding material and profile

Accessories

4.4 MESH SCREEN KIT

Location:	Glass viewing area
Manufacturer:	Escea Ltd.
Model:	~

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4.5 1.2M FLUE LINER EXTENSION

Location: ~
Manufacturer: Escea Ltd.
Model: 1.2m Long SS Volcanic Black Flue Liner Extension
Colour: Black

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7701 ELECTRICAL BASIC

1 GENERAL

This section relates to the wiring for domestic and small scale commercial installations, including:

- power
- lighting
- electrical automation
- security system
- complete with componentry
- electrically-powered fittings
- fire rated sealers, liners and accessories

1.1 RELATED WORK

Refer to ~ for ~.

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

AFDD	Arc Fault Detection Device
COC	Certificate of Compliance
ELV	Extra Low Voltage
IP	international (ingress) protection classification
MCB	Miniature circuit breakers
NUO	Network Utility Operator
PCB	printed circuit board
RCCB	Residual Current-operated Circuit Breaker
RCD	Residual Current Device
SIA	security integration architecture
TCF	Telecommunications Carriers' Forum

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F6/AS1	Visibility in escape routes
NZBC F8/AS1	Signs
NZBC G4/AS1	Ventilation of buildings
NZBC G9/AS1	Electricity
AS/NZS 1125	Conductors in insulated electric cables and flexible cord
AS/NZS 2201.1	Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance
AS 2293.1:2005	Emergency escape lighting and exit signs for buildings - System design, installation and operation
AS 2293.3:2005	Emergency escape lighting and exit signs for buildings - Emergency escape luminaires and exit signs
AS/NZS 2648.1	Underground marking tape - Non-detectable tape
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3008.1.2	Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions
AS/NZS 3111	Approval and test specification - Miniature overcurrent circuit-breakers

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AS/NZS 3112:2017	Approval and test specification - Plugs and socket-outlets
AS/NZS 3113	Approval and test specification - Ceiling roses
NZS 3604	Timber framed buildings
NZS 4246	Energy Efficiency - Installing bulking thermal insulation in residential buildings
AS/NZS 5000.2	Electric cables - Polymeric insulated - for working voltages up to and including 450/750v
AS/NZS 60898	Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations - Series
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance.
AS/NZS 61439.3	Low-voltage switchgear and controlgear assemblies - Part 3: Distribution boards intended to be operated by ordinary persons (DBO).
IEC 61008.1	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - Part 1: General rules
IEC 61009.1	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules
IEC 61643	Components for low voltage surge protection devices
IEC 62423	Type F and type B residual current operated circuit-breakers with and without integral overcurrent protection for household and similar uses
IEC 62606	General requirements for arc fault detection devices

Electricity (Safety) Regulations 2010
NZ Telecommunications Forum (TCF) Premises Wiring Guidelines
Private Security Personnel Investigations Act 2010

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

~

Manufacturer/supplier contact details:

Company:	~
Web:	~
Email:	~
Telephone:	~

Warranties

1.5 WARRANTY

Warrant the complete electrical installation under normal environmental and use conditions against failure of materials and execution.

1 year:	Warranty period

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

Requirements

1.6 COMPLY

Comply with the Electricity (Safety) Regulations 2010, AS/NZS 3000, AS/NZS 3008.1.2, and TCF Premises Wiring Guidelines for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

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1.7 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

Electrical workers holding a current Practising Licence (with an appropriate Registration class) to carry out prescribed electrical work. An Electrical Worker who holds a Trainee Limited Certificate or a Limited Certificate to be supervised by a licensed electrical worker with an appropriate Registration class.

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 QUALIFICATIONS WORKERS - LICENSED UNDER STATUTE - SECURITY TECHNICIAN

Security technician holding a licence under the Private Security Personnel and Private Investigators Act 2010. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.9 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

1.10 CONFIRM SELECTIONS

Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.

1.11 INSPECTIONS

Type:	~
Requirement:	~
Location:	~
Notify:	Contract administrator
	~
Notification:	2 working days prior to work/item being carried out.

Requirements - Compliance

1.12 ELECTRICAL CERTIFICATE OF COMPLIANCE

At the completion of electrical work provide a Certificate of Compliance (CoC) to Electricity (Safety) Regulations 2010, regulation 65-67. Provide a copy to the Contract Administrator and NUO prior to connection and when required to the BCA for Code Compliance.

- Arrange for the NUO to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.
- Arrange for an inspector to inspect high risk electrical work as required by Electricity (Safety) Regulations 2010, regulation 70 High-risk prescribed electrical work to be inspected.

1.13 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010, Reg 74A, to the Contract Administrator and when required the BCA. To be provided no later than 20 working days after connection and prior to Practical Completion.

1.14 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Other information required by the BCA in the Building Consent Approval documents

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2 PRODUCTS

2.1 MAINS SUPPLY

Tough plastic sheathed neutral screened cable to AS/NZS 5000.2 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

2.2 CABLES

Tough plastic sheathed copper conductors to AS/NZS 5000.2, stranded above 1.0mm², and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the MCB rating, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.5mm² on 10 amp MCBs
Lighting circuits:	Commercial: 1.5mm² on 16 amp MCBs
Power circuits:	2.5mm² on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
	2.5mm² on 16 amp MCBs for domestic insulated construction, or filled cavity
	2.5mm² on 20 amp MCBs for unenclosed or unfilled cavity construction
	2.5mm² on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Hot water cylinder circuits:	Single phase: 2.5mm² on 20 amp MCBs
Range/oven/hob circuits:	Single phase: 6mm² high temperature cable on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions that may be above 35°C (roof spaces above insulation etc).

2.3 METER BOX

Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.

2.4 DISTRIBUTION BOARD

Flush surface mount boards manufactured to AS/NZS 61439.3, and installed in accordance with AS/NZS 3000, 2.10 Switchboards. Complete with neutral and earth busbars, and insulated comb phase bar. Distribution boards to have 20% spare capacity for future additions and alterations.

2.5 EARTH ELECTRODE

To AS/NZS 3000, 5.3.6 Earth electrodes and Table 5.2 Acceptable Earth Electrodes. Installed as a vertical-type electrode to a minimum depth of 1.8m or a strip-type electrode buried in horizontal trench with not less than 0.5m cover and minimum horizontal length of 7.5m.

2.6 CIRCUIT PROTECTION

General requirements including main switch 63A or 100A to AS/NZS 3000, 2.3.3 Main Switches and additional isolating switches to AS/NZS 3000, 2.3.4 Additional isolating switches.

Residual current protection, maximum sensitivity of 30mA, to AS/NZS 3000, 2.6 Additional Protection by Residual Current Devices, as modified by Electricity (Safety) Regulations 2010. RCD and RCCBs' to meet Type A to IEC 61009.1 / IEC 61008.1 or Type F or Type B RCD to IEC 62423.

Miniature Circuit Breakers (MCB) to AS/NZS 60898 series or AS/NZS 3111, 4.5kA domestic or 6kA for commercial.

2.7 CIRCUIT PROTECTION - ARC FAULT DETECTION DEVICES

Arch Fault Detection Devices (AFDD) to IEC 62606 and to AS/NZS 3000, 2.9 Protection against fire hazard due to Arching Faults. Provide to all final subcircuits not exceeding 20A.

2.8 SURGE PROTECTION

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Provide surge protection device(s) to AS/NZS 3000, Appendix F Surge Protection Devices. Protection for the home's 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.

2.9 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.

2.10 SWITCH UNITS

Single pole switches to be 10 amp minimum rated, double pole or intermediate to be 16 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units.
Label all switch units that control electrical equipment or special lighting circuits by proprietary engraved switch mechanisms where applicable.
Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units and 2 way units.
Refer to SELECTIONS.

2.11 SWITCHED SOCKET UNITS

To AS/NZS 3000, 4.4 Socket-Outlets, 10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters to AS/NZS 3112 clause 3.12 as modified by Electricity (Safety) Regulation, single or multi gang as detailed. Refer to SELECTIONS.

2.12 HOT WATER SYSTEM ISOLATION SWITCH

To AS/NZS 3000, 4.8.2 Water heaters, one way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

2.13 DEGREES OF PROTECTION - DAMP CONDITIONS

For electrical equipment installed in classified zones (baths, showers, and other fixed water containers), provide a degree of protection to AS/NZS 3000, clause 6.2.4.1.

Zone 0	IPX7
Zones 1 and 2	IPX4
Zone 3	no specific degree of protection

Refer to AS/NZS 3000, Table 6.1 for requirement for selection and installation of electrical equipment.

For other damp situations such pools, water features, saunas, refrigeration rooms and in areas used for sanitization or general hose down operations, refer to AS/NZS 3000, section 6 for required degree of protection.

2.14 LIGHT FITTINGS

To AS/NZS 3000, 4.5 Lighting Equipment and Accessories and if required, complete with lamps and, if required, transformer and control gear for dimming. Refer to SELECTIONS.

2.15 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.

2.16 BATTEN HOLDERS

Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.

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 SELECTIONS.

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 SELECTIONS.

2.19 EXTERIOR LIGHT FITTINGS

Using materials with superior UV protection, impact strength, and addition chemical resistance.

Weather protection minimums:

- IP54 for protected areas under eaves or verandahs etc.
- IP55 for exposed areas not subject to pressurised water (hoses).
- IP66 for areas subject to pressurised water or major splashing.
- IP67 for inground lights
- IP68 for submerged pool fittings

Refer to SELECTIONS.

2.20 SPACE HEATERS

Fixed wired room heaters radiant or convector, and compliant with Electrical (Safety) Regulations 2010, Schedule 4, 1 Household & similar appliances. Flush or surface mount, fitted with safety cut-outs. Refer to SELECTIONS

2.21 EXHAUST FANS

Ceiling, wall or duct mounted exhaust fans for ventilation to NZBC G4/AS1, and compliant with Electrical (Safety) Regulations 2010, Schedule 4, 1 Household & similar appliances. Refer to SELECTIONS.

2.22 HEATED TOWEL RAILS

Fixed wired heated towel warmers, IPX4 splash-proof, compliant with Electrical (Safety) Regulations, Schedule 4, 1 Household & similar appliances. Refer to SELECTIONS.

2.23 DOOR BELL SYSTEM

Complete with transformer for mounting on distribution board. Refer to SELECTIONS.

2.24 ELECTRICAL AUTOMATION SYSTEM

Electrical automation system designed to enable if required:

- Lighting - automated control and dimming timer control.
- Heating including heated towel rails and ventilation systems.
- Security - programmable to simulate lights and other devices to give appearance home is occupied - ability to interface with security system and smoke detectors to activate lights.
- Energy efficiency - automatically switch circuits off when not required or on during low tariff times.
- Appliances.
- Spa pools.
- Irrigation systems.

Refer to SELECTIONS.

Security system

2.25 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.

2.26 DETECTORS

Standard passive infrared sensors: Install in stable environments with no wind flow and no direct bright sunlight

or

Passive infrared/ microwave sensors: Install in area where environmental stability is an issue.

2.27 AUDIBLE DEVICES

Internal sirens can be either a 12V Piezo Siren or a Horn speaker with a sound pressure level of no less than 95dB.

External siren can be either a stainless steel design or have hardened plastic casing, fully weatherproof but not limited to IP66 Rating. The siren box to contain a strobe diffuser in either blue or red. The siren shall contain a horn speaker, 12v speaker or an electronic siren. The external siren box to have both a cover and rear wall tamper mechanism.

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2.28 CABLING

Security alarm wiring to AS/NZS 1125 for cables.

Security alarm wiring to be multi stranded and not single stranded, minimum 0.5mm².

2.29 PERIPHERALS

Fit anti-tamper devices to detectors, control panels and equipment housings, programmed to give a tamper indication when the system is unset and a tamper alarm when the system is set.

Standard keypad manufactured of moulded hardened plastic with either a LED or LCD screen, to match the style of the wiring accessories in diameter, colour and aesthetics.

2.30 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.

Signage

2.31 WARNING SIGNAGE - RECESSED LUMINAIRES

To AS/NZS 3000, 4.5.2.3.2 Warning Signs.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

Installation

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install electrical wiring and systems in accordance with Electricity (Safety) Regulations 2010, AS/NZS 3000 and other cited standards.

3.6 MAIN SUPPLY

Lay underground mains to the NUO and AS/NZS 3000, 3.11 Underground Wiring Systems requirements. Excavate trench, ensure minimum depth of cover to AS/NZS 3000 Table 3.6 Under-Ground Wiring Systems - Minimum Depth of Cover, install cable and marker tape complying with AS/NZS 2648.1 and backfill. If required, provide permanent cable marker signs to indicate the point where a cable enters or leaves a structure.

3.7 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.

3.8 DISTRIBUTION BOARD

Fit to AS/NZS 3000, 2.10 Switchboards and board manufacturer requirements. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

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3.9 LABELLING

To AS/NZS 3000, 2.10.5 Equipment identification, include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit.

3.10 CIRCUIT BREAKERS

Install MCBs at distribution board to AS/NZS 3000 to protect each final sub circuit.

3.11 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

3.12 MAIN EARTH

Install main earthing conductor to AS/NZS 3000, 5.5.1 Main Earthing conductor. Provide a plastic toby box to contain and protect the earth electrode. Fix the connecting earth wiring closely and securely against wall surfaces.

3.13 ARC FAULT DETECTION DEVICE (AFDD)

To AS/NZS 3000 clause 2.9, AFDD on all final sub-circuits not exceeding 20A. Install to AS/NZS 3000, Appendix O, Installation of Arc Fault Detection Devices (AFDD'S)

3.14 SURGE PROTECTION

Install surge protection devices to manufacturer requirements and in accordance with AS/NZS 3000, Appendix F, F1.2.2 Installation.

3.15 RCD - RESIDENTIAL INSTALLATIONS

Install 30mA RCD protection at the switchboard for all final sub circuits to control outlets (except for fixed or stationary cooking equipment), lighting & directly connected handheld electrical equipment, to AS/NZS 3000, 2.6.3.3.1 Residential installations - New Zealand only.

3.16 RCD - DAMP SITUATIONS

Install 30-mA RCD protection as required to AS/NZS 3000, section 6 for damp situations, including in the following higher risk areas:

- Wet areas: bathrooms, laundries, kitchens.
- Near pools and water features.
- Where intended for use with cleaning equipment.

3.17 SET-OUT - OUTLETS & EQUIPMENT

The position of outlets and equipment shown on drawings is indicative of requirements. Confirm documents and site conditions are not in conflict with other services or features. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

3.18 CABLING

Install wiring systems to AS/NZS 3000, Section 3 Selection and Installation of Wiring Systems. All cabling run concealed fix in position by suitable clips, saddles or clamps. Where possible, run cabling horizontally / vertically in straight line.

Locate holes in timber framing for the passage of cables at the centre line of member ensuring structural strength in maintained to NZS 3604 requirements. In steel studs/ structural steel, ensure aperture is brushed and shaped to minimize abrasion of cable. Cables may be supported by suspended ceiling systems unless not permitted by suspended ceiling manufacturer. Install cable in conduits where required to pass through concrete or underground.

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3.19 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.

3.20 OUTDOOR/EXTERIOR SERVICES

Provide circuits and connections for exterior installations, including ELV 12/24 Volt path lighting and electronic irrigation systems, in accordance with AS/NZS 3000 and the fixture/fitting manufacturer's recommendations.

Where underground, ensure appropriate protection, such as thickness of sheathing, conduit, depth of cabling, and proximity to other services to AS/NZS 3000, 3.11 Underground Wiring Systems.

Use the appropriate rated fittings for power control and power supply. Weather protected switches and sockets to IP56 minimum. Install to manufacturer specifications using recommended fittings and sealants to maintain the products integrity.

Earth leakage protection to be provided for in areas where there is increased risk to human safety in the form of either RCDs at the distribution board, or socket outlet.

3.21 PROTECTION OF CABLING NEAR BUILDING SURFACES

Protect concealed wiring to AS/NZS 3000, 3.9.4 Protection against mechanical damage, where wiring is fixed in position by fastening, or held in position by thermal insulation or passes through an opening in a structural member and they are located within 50mm from the surface of a wall, roof, ceiling or floor.

3.22 WALL BOXES

Mount flush in cavity construction size to fit products selected. Fix vertically mounted wall boxes to studs. Screw fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

3.23 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.

3.24 ISOLATING SWITCHES

Locate isolating switches in positions as confirmed by the Contract Administrator, when not specifically shown on the drawings.

3.25 LIGHT FITTINGS

Install light fittings in locations and at heights as confirmed by the Contract Administrator, when not specifically shown on the drawings. Install to the luminaire manufacturer's requirements (including clearances) and to AS/NZS 3000, 4.5 Lighting Equipment & Accessories, in correct orientation for light output, complete with lamps.

Fix through linings to structure or framing, provide additional nogs, trim and packing if required. Ensure transformers/drivers and luminaires are adequately ventilated and clear of any building elements, to AS/NZS 3000.

3.26 INSULATION CLEARANCES

Refer to relevant INSULATION section.

3.27 INSULATION CLEARANCES – RETROFIT RECESSED LUMINAIRES

For retrofitting or replacement recessed luminaire applications, check insulation clearances to NZS 4246, AS/NZS 3000, 4.5.2.3 and, where allowed by these standards, to the light manufacturers stated insulation clearances.

3.28 ELECTRIC HOT WATER SYSTEM

Install to manufacturer's requirements and to AS/NZS 3000, 4.8.2 Water heaters. Wire as a separate circuit through a wall-mounted, lockable, isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end. Hot water cylinders, thermostats and 3000 watt element supplied and fitted under the hot and cold water system section.

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3.29 SPACE HEATERS

Install to the heater manufacturer requirements, and to AS/NZS 3000, 4.9 Room Heaters. Fit neatly and without damage to surrounding finishes. Ensure control switches and thermostats are fitted to appliance or otherwise connect to a control switch located adjacent to the heater and a remote thermostat. Isolation switch shall be provided adjacent to entrance of room or area the heating system is located or installed in switchboard.

3.30 ELECTRICAL HEATING CABLES

Install to the heating cable manufacturer requirements and to AS/NZS 3000, 4.10 Electrical heating cables for floors and ceilings and trace heating applications.

Install a 30mA RCD to heating cables and refer to AS/NZS 3000, 4.10.5 for earthing requirements, for conductive cable covering or a metallic grid.

3.31 AIR CONDITIONING & HEAT PUMP SYSTEMS

Connect to electricity supply to manufacturer's requirements and to AS/NZS 3000, 4.19 Air Conditioning & Heat Pump Systems. Any system incorporating a compressor shall be provided with a lockable isolating switch installed adjacent to the unit.

3.32 COOKING APPLIANCES

Install cooking appliances to manufacturer's requirements and to AS/NZS 3000, 4.7 Cooking appliances. Provide a switching device to all cooking appliances that have an open cooking surface such as a hob in a visible and accessible position within 2m of appliance, but not in prohibited location, refer to Figure 4.17.

3.33 GAS APPLIANCES

Connect gas appliances to electricity supply to manufacturer's requirements and to AS/NZS 3000, 4.18 Gas Appliances and Equipment as modified by Electricity (Safety) Regulations 2010. Refer to 7221 GAS APPLIANCE.

3.34 EV CHARGING STATIONS

Connect EV charging station to electricity supply to manufacturer's requirements and to AS/NZS 3000, 7.9 Supplied for Electric Vehicles. Install a 30mA RCD Type B for Mode 3 EV car charger circuits for domestic applications and for all EV car charging circuits in other electrical installations. Refer to relevant 7765 ELECTRIC VEHICLE (EV) CHARGING STATIONS.

3.35 ELECTRICAL FIXTURES

Install all electrical fixtures and wire to AS/NZS 3000, 4.3 Connection of Electrical Equipment, and manufacturers requirements. Refer to SELECTIONS. If required, provide operating or isolating switches.

3.36 ELECTRICAL AUTOMATION SYSTEM

Fit distribution cabinet in wall, cut-out to finish flush with the wall surface, or surface mounted. Configure installation to manufacturer instructions. Provide adequate user training and operating manual to the owner.

Security system

3.37 SECURITY SYSTEM

Install to the system manufacturer requirements, control panel, detectors and associated equipment fitted neatly and without damage to surrounding finishes. Installation of security equipment to AS/NZS 2201.1 Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance. All 230v mains power connections to the security panel are to be in accordance with AS/NZS 3000. The 230V power is to be switched using a dedicated single gang Isolator switch or similar.

Completion & Commissioning

3.38 WARNING SIGNS - RECESSED LUMINAIRES

Where recessed luminaires are installed in an accessible roof space, install warning sign to AS/NZS 3000 requirements.

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3.39 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

3.40 COMPLETION - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

Testing:	To Electricity (Safety) Regulations 2010 and AS/NZS 3000, 8.3 testing
Certificate of Compliance:	To Electricity (Safety) Regulations 2010 and ensure Verification Records supplied to AS/NZS 3000, clause 8.4
Submit results to:	~

3.41 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

~ ~

4 SELECTIONS

Materials

4.1 METER BOX

Location:	~
Brand / type:	~

4.2 DISTRIBUTION BOARD

Location:	~
Brand / type:	~

4.3 FIRE & SMOKE ALARM SYSTEM

Refer to appropriate fire and smoke alarm section:

~

4.4 ELECTRICAL AUTOMATION SYSTEM

Location:	~
Brand / type:	~

4.5 SECURITY SYSTEM

Location	Brand / type	Detector
~	~	~
~	~	~

Electrical outlets, fittings & fixtures

4.6 INTERIOR SWITCHES AND SWITCHED SOCKET UNITS

Location	Refer to drawings
Type/Brand:	~
Colour:	~

4.7 INTERIOR LIGHT FITTINGS

Location:	Refer to drawings
Type/Brand:	~
Controls:	~

4.8 EXTERIOR LIGHT FITTINGS

Location:	refer to drawings
Type/Brand:	~
IP Rating:	
Controls:	~



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4.9 HEATING SYSTEM

Location: ~

Brand / type: ~

4.10 ELECTRICAL APPLIANCES

Item	Brand / type
~	~
~	~

4.11 MISCELLANEOUS ELECTRICAL ITEMS

Item	Brand / type
~	~
~	~

4.12 OWNER SUPPLY ELECTRICAL ITEMS

Item	Brand / type
~	~
~	~

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