76 Hunter Crescent

Project Specification

76 Hunter Crescent, Wanaka, Wanaka, New Zealand

Project Ref: 25_742

Date: 27 August 2026

salmond architecture



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

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1210 PROJECT.

1 GENERAL

1.1 PROJECT

Street address:	76 HUNTER CRESCENT, WANAKA 9305
Legal description:	Lot 1 DP 22428
Site area:	1,282m²
Project type:	Addition / Internal alteration / Demolition
Intended use:	Single residential building
Intended life:	Indefinite but not less than 50 years

1.2 PROJECT DESCRIPTION

Internal and external alterations, including but not limited to new entry and dining room extensions, rebuilt back deck, new fireplace

1.3 LBP REQUIREMENT

Any site license LBP's shall have a minimum:

Site license in area of practice 1

Blocklaying 2: Structural masonry
Carpentry
Foundations 1: Concrete foundation walls and concrete slab-on-ground
Roofing 2: Profiled metal roof and/or wall cladding
Roofing 4: Roof membrane

1.4 OWNER

Name:	Nicky McArthur
Mailing address:	76 Hunter Crescent, Wanaka
Telephone:	+64 21 351 355
Email:	nickymcarthur007@gmail.com

1.5 DESIGNER

Name:	Salmond Architecture
Mailing address:	21M Gordon Road, Wanaka
Telephone:	0212462688
Email:	simon@salmondarchitecture.co.nz

1.6 ENGINEER

Name:	ENGCO
Mailing address:	20 Brownston Street, Wānaka 9305
Telephone:	0277474359
Email:	Fraser.McDougall@engco.co.nz

1.7 CONTRACTOR

Name:	Bailey Builders Ltd
Mailing address:	13 Mount Linton Ave, Northlake, Wanaka
Telephone:	027 4386 838
Email:	roy@baileybuilders.co.nz

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1212 COMPLIANCE

1 GENERAL

1.1 SITE DATA

Exposure zone:	Zone B (to NZS 3604, 4.2 **Exposure zones** or E2/AS1 Zone E severe marine)
Wind zone:	High (to NZS 3604, table 5.4 **Determination of Wind Zone**)
Earthquake zone:	Zone 3 (to NZS 3604, figure 5.4 **Earthquake zones**)

1.2 PRODUCER STATEMENTS

Provide Producer Statements for the following

- Wet area interior waterproofing
- Aluminium, PVC-U joinery
- Glazing
- Fireplace

Provide Producer Statements in the required form. Where no form is specified provide in the industry/trade standard form. Provide all Producer Statements before the Building Consent Authority carries out the final inspection.

1.3 RECORDS OF WORK

Provide Records of Work for Restricted Building Work:

- Masonry veneer
- Structural masonry
- Carpentry
- Roofing
- Membrane roof
- Foundations

Refer to the Building Consent for specific requirements. Provide Records of Work in the required form. Provide all Records of Work before the Building Consent Authority carries out the final inspection.

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1213 SELECTIONS

The following selections are to be read in conjunction with the related work sections, where they are available, and the general sections.

2 SITE

<< 2100 DEMOLITION WORK >>

2.1 DEMOLITION ITEMS FOR REUSE

~

2.2 DEMOLITION ITEMS FOR RETURN TO THE OWNER

~

<< 2200 GROUNDWORKS AND PREPARATION >>

2.3 FILL FOR GROUNDWORK

Type: ~

2.4 BACKFILL TO HOUSE RETAINING WALLS

Type: ~
Drainage coil: ~

3 STRUCTURE

<< 3110 CONCRETE WORK >>

3.1 DAMP-PROOF MEMBRANE - UNDER SLAB

Type/thickness: Thermakraft or sim.

3.2 INSULATION - UNDER SLAB

MAXSlab - refer drawings

3.3 CONCRETE REINFORCEMENT

Type: ~

3.4 CONCRETE

Location: ~
Strength: ~ MPa
Surface finish: ~

<< 3320 CONCRETE BLOCK MASONRY >>

3.5 CONCRETE BLOCK MASONRY

Brand/Type: ~
Bond: Stretcher bond
Pointing: ~

3.6 WATERPROOFING TO OPENINGS - CONCRETE MASONRY

Type: ~

<< 3410 STRUCTURAL STEELWORK >>

There is no work section specification relating to the following selections

3.7 STEELWORK

Item: ~
Finish: ~

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<< 3800 TIMBER FRAMING >>

3.8 SUB FLOOR TIMBER FRAMING

Type/treatment:	Radiata pine, Grade SG8, Treated H1.2 (minimum 150mm above ground)

3.9 FLOOR TIMBER FRAMING

Type/treatment:	Radiata pine, Grade SG8, Treated H1.2
Cantilevered deck joists:	Radiata pine, Grade SG8, Treated H3.2

3.10 EXTERIOR WALL TIMBER FRAMING

Type/treatment:	Radiata pine, Grade SG8, Treated H1.2
Cavity battens:	Radiata pine, Treated H3.1 (non-structural)
Jamb battens:	Radiata pine, Treated H3.1

3.11 ROOF TIMBER FRAMING

Type/treatment:	Radiata pine, Grade SG8, Treated H1.2

3.12 ROOF TRUSSES

Type/treatment:	Radiata pine, Grade SG8, Treated H1.2
Truss supplier:	~

3.13 INTERIOR WALL TIMBER FRAMING

Type/treatment:	Radiata pine, Grade SG8, Treated H1.2

3.14 EXTERIOR EXPOSED TIMBER

Cladding & trim:	Radiata pine, Dressing, Treated H3.1
Structure:	Radiata pine, Grade SG8, Treated H3.2 CCA (preservative code 01 or 02)
Deck framing & joists:	Radiata pine, Grade SG8, Treated H3.2 CCA (preservative code 01 or 02)

3.15 ENGINEERED TIMBER

Location:	~
Type/treatment:	~

4 ENCLOSURE

<< 4110 TANKING >>

There is no work section specification relating to the following selections

4.1 TANKING

Brand/Type:	Viking Peel & Stick
Protection:	Manufacturer recommended protection board.

<< 4160 DAMP-PROOFING, UNDERLAYS AND RIGID AIR BARRIERS >>

There is no work section specification relating to the following selections

4.2 DAMP-PROOF COURSE

Brand/Type:	~

4.3 WALL UNDERLAY/ROOF UNDERLAY

Brand/Type:	Proclima Extasana / Proclima Solitex

4.4 RIGID AIR BARRIER

Brand/Type:	~

4.5 WINDOW FLASHING TAPE

Brand/Type:	~

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<< 4220 WALL CLADDING >>

4.6 WEATHERBOARD CLADDING

Brand/Type:	Timber weatherboards to match existing
Fixings:	~
Jointers:	~
Finish:	Stained to match existing

4.7 STONE CLADDING

Brand/Type:	Schist veneer (50mm)

<< 4239 SOFFIT LINING >>

4.8 SOFFIT

Brand/Type/thickness:	~ / ~ mm
Fixings:	~
Jointers:	~
Finish:	~

<< 4310 ROOFING >>

4.9 ROOFING

Brand/Type:	~
Flashings:	~
Colour:	~

<< 4337 TIMBER & PLYWOOD, DECKING & ROOFING >>

4.10 ROOFING SUBSTRATE

Type/grade:	~ plywood, CD grade minimum, H3 CCA treatment
Thickness:	~mm
Fixing:	Adhesive and screw fixed with stainless steel screws

4.11 DECKING SUBSTRATE

Type/grade:	~ plywood, F11, CD grade minimum, H3 CCA treatment
Thickness:	17.5mm
Fixing:	Adhesive and screw fixed with stainless steel screws

4.12 TIMBER SPACED BOARD DECKING

Brand/size:	~ / ~mm x ~mm
Species/grade:	Radiata pine, dressed, Treated H3.2 CCA (preservative code 01 or 02)
Textured face:	up

<< 4400 MEMBRANE ROOFING >>

4.13 ROOF MEMBRANE

Brand/type/layers:	Viking Enviroclad TPO
Vents/accessories:	~
Coating:	~

4.14 DECK MEMBRANE

Brand/type/layers:	Viking Enviroclad TPO
Accessories:	~
Coating:	~

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<< 4520 ALUMINIUM WINDOWS AND DOORS >>

4.15 ALUMINIUM WINDOWS AND DOORS

Brand/Type:	APL Thermal Heart
Finish/colour:	TBC by owner
Jamb liners:	~
Flashings:	~
Hardware:	~

<< 4540 PVC-U WINDOWS AND DOORS >>

4.16 PVC-U WINDOWS & DOORS

Brand/Type:	APL Klima
Finish/colour:	to match exisitng
Jamb liners:	~
Hardware:	~

4.17 FLASHINGS FOR PVC-U WINDOWS & DOORS

Material:	Aluminium
Finish/colour:	~

<< 4610 GLAZING >>

4.18 GLAZING - ORDINARY

Location:	~
Type:	~

4.19 GLAZING - SAFETY

Location:	~
Type:	~

4.20 GLAZING - INSULATING GLASS UNITS

Location:	~
Type:	~

4.21 GLAZING - SHOWER SCREENS

Brand/Type:	~
Hardware:	~

4.22 GLAZING - MIRRORS

Location:	~
Type:	~

<< 4710 THERMAL INSULATION >>

4.23 UNDERFLOOR INSULATION

Brand/Type:	Expol Black
R value/Thickness:	R3.1 / 100mm

4.24 WALL INSULATION

Brand/Type:	Pink Batts
R value/Thickness:	R2.8 / 90mm

4.25 ROOF INSULATION

Brand/Type:	100mm total PIR (2x50mm?)
R value/Thickness:	R4.5 / 100mm

4.26 CEILING INSULATION

Brand/Type:	Pink Batts
R value/Thickness:	Varies - Refer drawings

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5 INTERIOR

<< 5110 INTERIOR LININGS AND TRIM >>

5.1 WALL LININGS

Location: ~
Brand/Type/thickness: ~ / ~ / ~mm
Finish: ~

5.2 WALL LININGS - PREFINISHED

Location: ~
Brand/Type/colour: ~
Jointer: ~

5.3 CEILING LININGS

Location: ~
Brand/Type/thickness: ~ / ~ / ~mm
Finish: ~

5.4 INTERIOR TRIM

Skirtings: ~
Architraves: ~
Scotia: ~

<< 5230 INTERIOR DOORS & FRAMES >>

5.5 INTERIOR DOORS

Location: ~
Leaf type/finish: ~
Frame type/finish ~
Hardware: ~

<< 5410 FLOORS >>

5.6 FLOOR

Location: ~
Brand/Type/thickness: ~ / ~ / ~mm
Fixing method: ~

<< 5510 JOINERY FIXTURES AND FITTINGS >>

5.7 FABRICATED JOINERY ITEMS

Location/item: ~
Carcass/finish: ~
Bench top: ~

5.8 PROPRIETARY JOINERY ITEMS

Location/item: ~
Assemble/install: Assemble, install

5.9 FABRICATED TIMBER STAIRS

Stair: ~
Balustrade/handrail: ~
Finish: ~

<< 5520 HARDWARE >>

There is no work section specification relating to the following selections



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5.10 HARDWARE BRAND TYPE
~

6 FINISH

<< 6200 TILING >>

6.1 TILES

Location: ~
Floor Tile/substrate: ~ / ~
Wall Tile/substrate: ~ / ~
Grout/colour: ~

<< 6300 FLOOR COVERING >>

6.2 TIMBER OVERLAY FLOORING

Location: ~
Brand/Type/finish: ~
Laying method: ~

6.3 RESILIENT FLOORING (VINYL, LINOLEUM OR RUBBER)

Location: ~
Brand/Type: ~
Jointing method: ~
Skirting or coving: ~
Trim or edging: ~

6.4 CARPET

Location: ~
Brand/Type: ~
Underlay: ~
Trim: ~
Laying method: ~

<< 6700 PAINTING >>

6.5 EXTERIOR PAINTING

Roof: ~
Walls ~
Timber joinery: ~
Pergola: ~

6.6 INTERIOR PAINTING

Walls ~
Ceiling: ~
Doors ~
Cabinetry: ~
Trim: ~

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7 SERVICES

<< 7120 WATER SYSTEM >>

7.1 WATER SYSTEM

Pipework concealed: ~
Exposed internal pipe finish: ~
Water heater type: ~
Water heater brand/model: ~

<< 7150 SANITARYWARE, TAPWARE & ACCESSORIES >>

7.2 REFER BAILEY BUILDERS' SCHEDULES

<< 7410 RAINWATER SPOUTING SYSTEM >>

7.3 SPOUTING

Brand/type/size: ~

7.4 DOWNPIPES

Brand/type/size: Powdercoated to match roofing

<< 7420 SANITARY WASTE SYSTEM >>

7.5 FINISHES - EXPOSED SANITARY WASTE ITEMS

Exposed traps: ~
Exposed pipe: ~
Floor waste grates: ~

<< 7430 DRAINAGE SYSTEMS >>

7.6 CHANNEL DRAIN

Type: ~

<< 7550 HEATING >>

There is no work section specification relating to the following selections

7.7 FIREPLACE

Brand/type/reference: Pyroclassic

7.8 SPACE HEATING

Brand/type/reference: Heatpumps TBC

<< 7700 ELECTRICAL >>

7.9 ELECTRICAL OUTLETS AND SWITCHES

Brand/type/reference: ~
Brand/type/reference: ~

7.10 LIGHT FITTINGS

Brand/type/reference: ~
Brand/type/reference: ~

7.11 SMOKE ALARMS

Brand/type/reference: ~

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7.12 EXTRACT SYSTEMS

Kitchen extract: ~
Bathroom extract: ~
Toilet extract: ~
Laundry extract: ~

7.13 ELECTRICAL APPLIANCES AND EQUIPMENT

Brand/type/reference: ~
Brand/type/reference: ~

8 EXTERNAL

<< 8000 LANDSCAPE >>

There is no work section specification relating to the following selections

8.1 DRIVEWAY

Type/finish: Exposed Aggregate Concrete

8.2 PATHS

Type/finish: Exposed Aggregate Concrete

8.3 GARDEN RETAINING STRUCTURES

Retaining type: ~
Drainage coil: ~

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1220 GENERAL REQUIREMENTS

1 GENERAL

1.1 THE WORKS

The works are as described in this specification and shown on the drawings.

1.2 PERSONNEL

Owner: The person defined as "owner" in the New Zealand Building Code.

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

1.3 THE SITE

The site of the works, the site address and the legal description are listed under the sections 1210 PROJECT. Confine access and work to the area of site indicated on the drawings.

1.4 SPECIFICATION SECTIONS

Sections are for reference and convenience only and do not constitute individual trade sections or work elements. Read all sections together and read this section with all other sections.

1.5 INTERPRETATIONS

Required:	Required by the documents, or by a statutory authority.
Proprietary:	Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
Approval:	Approval in writing.
Direction:	Direction in writing.
Notified:	Notified in writing.

1.6 ABBREVIATIONS

The following abbreviations are commonly used throughout the specification:

AS	Australian Standard
AS/NZS	Joint Australian/New Zealand Standard
BCA	Building Consent Authority
BRANZ	Building Research Association of New Zealand
LBP	Licensed Building Practitioner
NZBC	New Zealand Building Code
NZS	New Zealand Standard
NZS/AS	Joint New Zealand/Australian Standard
NUO	Network Utility Operator
OSH	Occupational Safety and Health
RBW	Restricted Building Work
TA	Territorial Authority

1.7 INCONSISTENCIES

If there are any inconsistencies, errors or omissions in or between documents, the contractor must seek direction in resolving it. Figured dimensions take precedence over scaled dimensions; drawings to a larger scale take precedence over drawings to a smaller scale and drawings take precedence over specification.

1.8 SUBSTITUTIONS

A substitution may be proposed where specified products are not available, or if substitute products are brought to the attention of and are considered by the owner as equivalent or superior to those specified. Except where a specified product is not available, the owner is not bound to accept any substitutions.

Notify proposed substitution of specified products. Include sufficient information to allow the owner to confirm that the substitution is equivalent or superior to that specified. Advise the owner whether an amendment will or may be required to the Building Consent and the expected costs of such amendment.



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1.9 THE WORDS "PROVIDE" OR "FIX"

The words "provide" (or "supply") or "fix" if used separately mean "provide and fix" unless explicitly stated otherwise.

1.10 MANUFACTURERS AND SUPPLIERS

Manufacturers and suppliers requirements, instructions, specifications or details are those issued by them for their particular material, product or component and are the latest edition.

1.11 REFERENCED DOCUMENTS

Reference is made to various New Zealand Building Code (NZBC) acceptable solutions (AS) and verification methods (VM) for criteria and/or methods used to establish compliance with the Building Act 2004. Reference is also made to various Standards produced by Standards New Zealand (NZS, AS/NZS) 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. Documents cited both directly and within other cited publications are part of this specification.

1.12 PRECEDENCE OF REFERENCED DOCUMENTS

This specification takes precedence in the event of it being at variance with and requiring a higher standard than, the cited documents. Resolution of any variance must be confirmed in writing and where Building Consent is affected, the change notified to the BCA for advice as to whether an amendment is required to the Building Consent Authority.

1.13 BUILDING CONSENT COMPLIANCE

It is an offence under the Building Act 2004 to carry out any work not in accordance with the Building Consent. Refer the resolution of matters concerning compliance to the owner for a direction. Where Building Consent is affected refer any change to the BCA for advice as to whether an amendment is required to the Building Consent.

1.14 STATUTORY OBLIGATIONS

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

1.15 BUILDING CONSENT

Obtain the original or copies of the Building Consent form and documents from the owner and keep on site. Liaise with the BCA and/or the building certifier for all required notices and all inspections required during construction to ensure compliance. Return the consent form and documents to the owner on completion.

1.16 INSPECTIONS

Do not proceed with work noted on the Building Consent for inspection until it has been inspected and passed by the BCA inspector.

1.17 KEY PERSONNEL

Provide names and contact detail of LBP's/ key personnel. Prior to Restricted Building Work being carried out, provide names, registrations numbers (where appropriate) and contact detail of LBP's that are required for RBW by the Building Consent Authority as part of the Building Consent.

Include the following as applicable:

- Person with the appropriate site license
- Carpenter
- Registered drainlayer
- Registered plumber
- Registered gasfitter
- Registered electrician
- Roofer
- Block layer
- Bricklayer
- External plasterer
- External window manufacturer
- Waterproof membrane applicator

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1.18 PRODUCER STATEMENTS AND LBP DOCUMENTATION

When Records of Work or producer statements verifying construction are required, for the application for the Code Compliance Certificate, provide copies to both the BCA and the owner. Provide LBP documents and producer statements in the form required by the BCA.

1.19 CERTIFICATE OF COMPLIANCE

Provide Certificates of Compliance for electrical and gas work carried out.

1.20 CODE COMPLIANCE CERTIFICATE

Provide documentation that the Owner requires in order to obtain a Code Compliance Certificate for the consented work.

1.21 TRADE GUARANTEES AND WARRANTIES

Where specific trade guarantees/warranties are offered covering materials and/or execution of proprietary products or complete installations, or are required as a condition of Building Consent, provide guarantees/warranties to the owner.

1.22 SITE ACCOMMODATION

Provide, erect and maintain scaffolding, sheds, toilets, water, power and hoardings. Allow for cartage, craneage, plant hire and storage. Arrange for temporary works and services necessary for the completion of the works.

1.23 HEALTH AND SAFETY

Make the works safe and provide and maintain a safe working environment, to the requirements of the Health and Safety at Work Act 2015. 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.

1.24 PROTECT THE WORKS

Protect parts of the work liable to damage until completion of the works. Take all precautions necessary to protect the works from damage by unauthorised entry or inclement weather. Brace and support all parts of the works against damage during construction.

1.25 STORAGE AND PROTECTION

Provide temporary storage areas and protective covers and screens. Fillet stack and protect all framing and structural members from moisture and contamination. Completely protect finishing materials from the weather and damage and store in accordance with the manufacturer's requirements. Protect fabricated elements from the weather and damage, and store in accordance with suppliers requirements.

1.26 ANTIQUITIES AND ITEMS OF VALUE AND INTEREST

Report immediately the finding of any fossils, antiquities, pre-1900 items, or objects of value. Ensure they remain undisturbed until approval is given for their removal.

1.27 MEANS OF COMMUNICATION

All directions and approvals in writing.

1.28 WORKING HOURS

Work on site is restricted to between 0800 to 1800, Monday to Friday, excluding statutory holidays. Work outside these hours may be permitted, with prior approval in writing by the owner.

1.29 RESTRICTIONS

Do not:

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

1.30 QUALITY ASSURANCE

Carry out and record regular checks of material quality and accuracy. Provide all necessary materials, equipment, plant, attendances, supervision, inspections and programming to ensure required standards are met.

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1.31 DAMAGE AND NUISANCE

Prevent damage and nuisance from water, fire, smoke, vehicles, dust, rubbish, noise and other causes resulting from the contract works. Comply with the requirements of the TA and relevant Acts and Standards.

1.32 SET-OUT AND DATUM

Set out the works to conform with the drawings. Establish a permanent site datum to confirm the existing ground floor level and its relationship to other existing and new building levels.

1.33 EXECUTION OF THE WORK

Conform to the requirements of this specification. Ensure work is level, plumb, and true to line and face. Employ only experienced workers familiar with the materials and techniques specified.

1.34 MATERIALS AND PRODUCTS

Use only new materials and products, unless stated otherwise, of the specified quality and complying with cited documents.

1.35 COMPATIBILITY

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.

1.36 COMPLETE ALL SERVICES

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

1.37 CLEAR AWAY

Regularly clear away trade debris, unused materials and elements from the site. On completion of the work leave the building clean and ready for occupancy, with all services operating and mechanical parts in good working order. Remove temporary markings, coverings and protective wrappings.

1.38 CLEAN

Clean and wash down external surfaces to remove dirt, debris and marking. Clean interior surfaces including floors, glass, cabinetwork, joinery, sanitary and hardware items.

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1233 DOCUMENTS REFERENCED

1 GENERAL

Documents listed below are, when referred to in the text, part of this specification. However, this specification takes precedence in the event of it being at variance with and requiring a higher standard than any cited document.
The latest edition of the cited document (including amendments and provisional editions) at the date of this specification applies unless stated otherwise.

1.1 ACTS AND REGULATIONS

Building Act 2004

Gas (Safety and Measurement) Regulations 2010
Health and Safety at Work Act 2015
Health and Safety at Work (Asbestos) Regulations 2016
Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).
Plumbers, Gasfitters and Drainlayers Act 2006

1.2 NEW ZEALAND BUILDING CODE VERIFICATION METHODS

NZBC E2/VM1	Cladding systems of buildings up to 10 m in height – including junctions with windows, doors and other penetrations

1.3 NEW ZEALAND BUILDING CODE ACCEPTABLE SOLUTIONS

NZBC B1/AS1	Structural provisions for buildings
NZBC B2/AS1	Durability provisions for building elements
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC D1/AS1	Access routes
NZBC E1/AS1	Surface water
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC E2/AS3	External moisture provisions for concrete and concrete masonry buildings
NZBC E3/AS1	Internal moisture
NZBC F2/AS1	Hazardous building materials
NZBC F4/AS1	Safety from falling
NZBC G1/AS1	Personal hygiene
NZBC G10/AS1	Piped services - Gas
NZBC G11/AS1	Gas as an energy source
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
NZBC G13/AS1	Foul water - Sanitary plumbing
NZBC G13/AS2	Foul water - Drainage
NZBC G13/AS3	Foul water - sanitary plumbing and drainage
NZBC H1/A1	Energy efficiency
NZBC H1/AS2	Energy efficiency

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1.4 NEW ZEALAND STANDARDS

AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
NZS/AS 1884	Floor coverings - Resilient sheet and tiles - Installation practices
AS/NZS 2269.0	Plywood - Structural - Specifications
AS/NZS 2455.1	Textile floor coverings - Installation practice - General
AS/NZS 2455.2	Textile floor coverings - installation practice - Carpet tiles
AS/NZS 2492	Cross-linked polyethylene (PE-X) pipes for pressure applications
AS/NZS 2537.1	Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications -Plastics piping systems for hot and cold water installations – Crosslinked polyethylene (PE-X) - General
AS/NZS 2537.2	Mechanical jointing 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 crosslinked polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations – Crosslinked polyethylene (PE-X) -Fitness for purpose of the system
AS/NZS 2537.4	Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations – Crosslinked polyethylene (PE-X) -Guidance for the assessment of conformity
AS/NZS 2589	Gypsum linings - Application and finishing
AS/NZS 2642.1	Polybutylene pipe systems - Polybutylene (PB) pipe extrusion compounds
AS/NZS 2642.2	Polybutylene pipe systems - Polybutylene pipe for hot and cold water applications
AS/NZS 2642.3	Polybutylene pipe systems - Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications
AS/NZS 2699.1	Built-in components for masonry construction Wall ties
AS/NZS 3000	Electrical installations (known as the Australian/NZ Wiring Rules)
NZS 3101.1	Concrete structures standard
NZS 3103	Sands for mortars and plasters
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Concrete surface finishes
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
NZS 3501	Specification for copper tubes for water, gas and sanitation
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 national timber grading rules
NZS 4210	Masonry construction materials and workmanship
NZS 4211	Specification for the performance of windows
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.2	Glazing in buildings - Insulating glass units
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live actions
NZS 4229	Concrete masonry buildings not requiring specific engineering design
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
NZS 4251.1	Solid plastering - Cement plasters for walls, ceilings and soffits

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NZS 4514	Interconnected smoke alarms for houses
AS/NZS 4666	Insulating glass units
AS/NZS 4671	Steel for the reinforcement of concrete
AS/NZS 4858	Wet area membranes
AS/NZS 5601.1	Gas installations - general installations
NZS 6803	Acoustics - Construction noise

1.5 OVERSEAS STANDARDS

AS 1432	Copper tubes for plumbing, gasfitting and drainage applications
AS 2345	Dezincification resistance of copper alloys
AS 3688	Water supply and gas systems - Metallic fittings and end connectors
EN 513	Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors. Determination of the resistance to artificial weathering
EN 12608	Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors. Classification, requirements and test methods

1.6 BUILDING RESEARCH ASSOCIATION OF NEW ZEALAND (BRANZ)

Weathertight Solutions Vol. 2: Stucco

Good practice guide: Membrane roofing
Bulletin 519 - Fasteners selection
Bulletin 601 - Sealed for Cladding Joints

1.7 OTHER DOCUMENTS

Concrete NZ

- CCANZ CP 01: Code of practice for weathertight concrete and concrete masonry construction

WorkSafe New Zealand (OSH)

- Good Practice Guidelines - Excavation Safety
- Repainting lead based paints
- Management and Removal of Asbestos (Approved CoP)

Waterproofing Membrane Association Inc.

- WMAI Code of Practice for Below-Grade Tanking Membranes
- WMAI Code of Practice for Interior Wet Area Membranes
- WMAI Code of Practice for Reinforced Modified Bitumen Membrane (RMBM) Systems for Roofs and Decks

New Zealand Demolition and Asbestos Association (NZDAA)

- Best Practice Guideline for Demolition in New Zealand.

New Zealand Metal Roofing Manufacturers Inc

- NZMRM COP: NZ Metal roof and wall cladding: Code of practice

Window & Glass Association NZ (WGANZ)

- PQAS: Powder Coating Quality Assurance System
- Window Installation Guide: Guide to Window Installation as described in E2/AS1.

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2100 DEMOLITION WORK

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work using persons competent and experienced in the trade.

1.2 SURVEY EXISTING BUILDING

Carry out a thorough survey and examination of the building to ensure the extent, sequence, technique and method of demolition proposed can be safely and efficiently carried out.

1.3 HEALTH AND SAFETY

Conform with the Health and Safety at Work Act 2015 and WorkSafe - Management and Removal of Asbestos (Approved CoP)

1.4 NUISANCE

Take all precautions necessary to minimise nuisance caused by dust, dirt, rubbish and water.

1.5 NOISE

Refer to NZS 6803, table 2, **Recommended upper limits for construction noise…** for the allowable upper limits of construction work noise in residential areas over the various time periods. Use silenced and noise insulated plant to ensure compliance.

2 PRODUCTS

2.1 MATERIAL FROM DEMOLITION

Material from the demolition becomes the property of the contractor except for items designated for reuse or removal by others. Remove redundant materials from the site as work proceeds.

3 EXECUTION

3.1 DISCONNECT SERVICES

Before commencing demolition, disconnect services and remove associated fittings and equipment.

3.2 PROTECTION

Protect retained parts of existing buildings, site and site structures, trees and shrubs.

3.3 SUPPORT

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

3.4 TEMPORARY SCREENS

Erect screens to maintain security and to prevent penetration of weather, dust and dirt.

3.5 SITE SAFETY

Prevent access by unauthorised persons. Illuminate and protect all holes, unsafe buildings and other hazards. Leave site and buildings safe at the close of each day's work.

3.6 ASBESTOS

Where demolition work includes contact with or removal of material containing asbestos, conform with the, Health and Safety at Work (Asbestos) Regulations 2016, WorkSafe requirements including WorkSafe Management and Removal of Asbestos (Approved CoP).

3.7 SALVAGE ITEMS

Carefully dismantle and safely store salvage items where directed; for removal, use on the site, or until completion of the works.

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2200 GROUNDWORKS & PREPARATION

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work using persons competent and experienced in the trade.

1.2 SITE SAFETY

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

2 PRODUCTS

2.1 FILLING MATERIALS

Volcanic tuff:	Scoriaceous tuff of variable grading excluding silt or clay material, capable of being placed and compacted as specified.
Rock fill:	Hard material comprising rock, broken stone, hard brick, concrete, run of pit scoria, or other comparable inert material capable of being placed and compacted as specified.
Sand fill:	Clean sand of such grading in particle size as to allow for mechanical compaction to 90% maximum density.
Hardcore:	Scoria or crushed rock to GAP (General All Passing) 40 grading.
Granular base:	Screened crushed gravel or scoria graded in size from 20mm to 7mm, clean. When tested with a standard sieve of 4.75 opening no material is to pass.
Dressing course:	Scoria to GAP 20 grading, or "dirty footpath scoria", or equivalent "all in" graded crushed metal aggregate.
Free-draining aggregate:	Scoria or crushed gravel graded 50 to 14 clean.

3 EXECUTION

3.1 EXCAVATION GUIDELINES

Carry out excavation to the guidelines set in WorkSafe, Good Practice Guidelines - Excavation Safety.

3.2 PROTECT EXISTING

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

3.3 PROTECT TREES

Protect from damage all trees, shrubs, natural site features and existing landscaped areas nominated on the drawings as being retained, throughout the course of the work.

3.4 SURFACE PREPARATION

To NZS 3604, 3.5 **Site preparation**, remove all turf, vegetation, trees, topsoil, stumps and rubbish from the area being built on.

3.5 UNDERGROUND ELEMENTS AND SERVICES

Break out and remove underground elements and redundant services. Report for instructions when unexpected voids, made-up ground or services are encountered. Seal off the ends of drains or remove to NUO approval.

3.6 GENERAL EXCAVATION

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

3.7 EXCAVATION FOR FOUNDATIONS

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

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3.8 INADEQUATE BEARING

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

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

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

3.9 GRANULAR BASE FOR SLABS

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

3.10 GENERAL BACKFILLING

Compact backfilling in 150mm layers, with the last 200mm in clean topsoil, lightly compacted and neatly finished off.

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3110 CONCRETE WORK

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work using persons competent and experienced in the trade. Structural and foundation work to be carried out by or supervised by the appropriate LBP.

2 PRODUCTS

2.1 REINFORCEMENT

Bars to AS/NZS 4671, grade 300E deformed, other than for ties, stirrups and spirals, unless shown otherwise on the drawings. Welded reinforcing mesh to AS/NZS 4671 Class E. Mild drawn steel tying wire not less than 1.2mm diameter.

2.2 MESH FOR SLABS TO NZS 3604 OR NZS 4229

For slabs on ground, welded reinforcing mesh to AS/NZS 4671, minimum to NZBC B1/AS1 - Grade 500E, 2.27kg/m2 (1.14kg/m2 in each direction).

2.3 SPACERS AND CHAIRS

Precast concrete or purpose made moulded PVC. Use concrete spacer blocks only where the concrete surface is not exposed in the finished work.

2.4 CONCRETE

Strength as selected. Ready-mix normal concrete, maximum aggregate size 19mm to NZS 3104. Site mixed prescribed mix concrete, using either separate batching of sand and coarse aggregate, or builder's mix, to NZS 3104.

3 EXECUTION

3.1 HANDLE AND STORE REINFORCING

Handle and store reinforcing steel and accessories without damage or contamination. Ensure reinforcement is clean and remains clean and free of contamination that may reduce bonding capacity.

3.2 FALSEWORK AND FORMWORK

Use falsework and formwork of sufficient strength to retain and support the wet concrete to the required profiles and tolerances. Select formwork finish to produce the specified finished quality.

3.3 CUT AND BEND

Cut and bend bars using proper bending tools to avoid notching and to the requirements of NZS 3109. Do not rebend bars without written approval. Bend main reinforcing bars, stirrups and ties to the former pin diameters as given in NZS 3109, figure 3.1, **Standard bend, hook and stirrup**.

3.4 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 laid down in NZS 3109, 3.3.**Hooks and bends**.

3.5 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.

3.6 MESH LAPS FOR SLABS TO NZS 3604 OR NZS 4229

For slabs on ground, mesh to be lapped and tied, so the outermost wires overlap by the greater of:- the spacing of the cross wires plus 50mm or, 150mm or, manufacturer's requirements. Do not count bar extensions beyond the outermost cross wire.

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3.7 REINFORCEMENT COVER TO NZS 3604

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 3604 requirements.

3.8 REINFORCEMENT COVER TO NZS 4229

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 4229 requirements.

3.9 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.

3.10 EQUIPOTENTIAL BONDING REINFORCING

If it is an electrical requirement, ensure that reinforcing is equipotential bonded (or at least conductor cable attached) before the concrete is poured.

3.11 CONCRETE PLACEMENT

To comply with NZS 3109.

3.12 SURFACE FINISHES

To comply with NZS 3114, section 105 **Specification of finishes**, or as denoted on the drawings. Formwork linings and surface finishes as nominated for both fair face and concealed or exposed surfaces. Surface tolerances to comply with NZS 3114, section 104 **Surface tolerances** and 105.3.2.

3.13 DAMP-PROOF MEMBRANE

Apply membrane to prepared basecourse with 150mm laps between sheets. Tape seal laps and penetrations with 50mm wide pressure sensitive plastic tape. Refer to drawings for perimeter details.

3.14 CASTING IN

Build in grounds, bolts and fixings for wall plates and bracing elements, holding down bolts, pipes, sleeves and fixings as required. Form pockets, chases and flashing grooves as required. No grounds exceeding 100mm in length. Minimum cover on conduits 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. Wrap all pipes embedded in concrete with tape to break the bond and to allow for expansion.

3.15 FLOOR SLABS TO NZS 3604

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. Tolerance on flatness: maximum 3mm gradual deviation over a 3 metre straight-edge, to NZS 3114, 304, **Surface tolerances**. Allow for free joints maximum 24m centres to NZBC B1/AS1, paragraph 2.3.7.6, NZS 3604 **New clause**.

In the Canterbury Earthquake Region comply with the changes to NZS 3604 in NZBC B1/AS1.

3.16 FLOOR SLABS TO NZS 4229

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. Tolerance on flatness: maximum 3mm gradual deviation over a 3 metre straight-edge, to NZS 3114, 304, **Surface tolerances**. Allow for free joints maximum 18m centres to NZS 4229, 7.8.5.3 **Free joints**.

In the Canterbury Earthquake Region comply with the changes to NZS 4229 in NZBC B1/AS1.

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3.17 SAW CUTS TO NZS 3604

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 after it has hardened (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). If saw cuts are not indicated on the drawings, than provide saw cuts as per the requirements for shrinkage control joints in NZS 3604.

For saw cuts filled with sealant, increase width of cut to suit sealant.

3.18 SAW CUTS TO NZS 4229

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 after it has hardened (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). If saw cuts are not indicated on the drawings, than provide saw cuts as per the requirements for shrinkage control joints in NZS 4229.

For saw cuts filled with sealant, increase width of cut to suit sealant.

3.19 SAW CUTS

Cut slabs where indicated on the drawings 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. For saw cuts filled with sealant, increase width of cut to suit sealant.

3.20 SURFACE REPAIRS

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

3.21 CURING OF CONCRETE

Keep damp for not less than seven days. Ensure curing of slabs commences as soon as possible after final finishing, by the use of continuous water sprays, or ponding. Alternately, apply a curing membrane. Ensure any membrane used will not affect subsequent applied finishes.

3.22 STRIKE FORMWORK

Strike formwork without damaging or overloading structure.

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3320 CONCRETE BLOCK MASONRY

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

The work is to be carried out by workers who are experienced, competent and familiar with the materials and the techniques specified. Work to be carried out or under supervision of a Licensed Building Practitioner (LBP) with the relevant license class.

1.2 INSPECTION

Call for inspection of the work at critical stages including set out, reinforcing, and the time prior to and during grouting. All as set out in NZS 4210, section 1.4 **Inspection**.

1.3 TESTS AND RECORDS

Carry out required tests in accordance with NZS 4210, appendix 2A, **Compressive strength tests for mortar and grout**. Keep accurate records relating to strength and quality of materials used in the construction, and make the information available to the BCA inspector on request.

1.4 DURABILITY

Ensure that, mortar, built in components and reinforcement cover are to NZS 4210, table 2.E1 **Masonry durability requirements**, for the location and the Exposure Zone (refer 1212 COMPLIANCE). To use the table, exposure zones in NZS 3604 comparable with NZS 3101.1 (in brackets) are;

Zone D (B2), Zone C (B1), Zone B (A2), Closed Interior (A1), Walls against earth (B2), Geothermal hotspots (U), and NZBC E2/AS1 Zone E (C).

2 PRODUCTS

2.1 ACCESSORIES

Reinforcement:	To AS/NZS 4671 minimum 300E deformed mild steel except for ties in plain round mild steel and as detailed. For slab mesh refer to Concrete Work section.
Mortar:	Sand to NZS 3103. Chloride levels not exceeding 0.04% by dry weight of sand. Mortar to NZS 4210, section 2.2 **Mortar**. Compressive strength of not less than 12.5 MPa.
Grout:	To NZS 4210, section 2.3 **Grout**. Spread value 450 - 530mm.
Water:	From local authority supply.

3 EXECUTION

3.1 STORAGE

Store masonry clear of the ground, under cover and well ventilated until placed in the work. Ensure masonry units are air dry prior to laying.

3.2 CHECK BASE CONCRETE

Ensure the base concrete is true to line and level, requiring a base mortar bed of 10mm (minimum) to 20mm (maximum).

3.3 STARTER POSITIONS

Before commencing masonry laying check the location of starter reinforcement by measure or by a dry trial lay up of the first course. Do not correct misplacement by cranking bars; obtain direction.

3.4 INSTALL REINFORCEMENT

Detailed, bent and placed in accordance with NZS 4210. Refer to drawings for details of reinforcement and extent of grout filling. Minimum cover as required for reinforced concrete, with grout and masonry work treated as a homogeneous material. Maintain reinforcing bars for retaining walls a minimum of 15mm and for other concrete masonry, a minimum of 6mm, from the masonry face, with the space filled with grout. For slab mesh refer to Concrete Work section.

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3.5 EQUIPOTENTIAL BONDING REINFORCING

If it is an electrical requirement, ensure that reinforcing is equipotential bonded (or at least conductor cable attached) before laying/grouting.

3.6 TOLERANCES

Construct within the tolerances set out in NZS 4210, clauses 2.6.5 **Tolerances** and 2.7.1 **General**. Lay masonry units with bedding of consistent thickness throughout.

3.7 LAY MASONRY UNITS

Execution generally to NZS 4210, NZS 4229 as modified by NZBC E2/AS3 (CCANZ CP 01). Ensure consistent, fully filled and tooled joints. Where walls are reinforced, prevent mortar droppings from entering the cells being grouted. Provide clean out holes at base of wall, unless "low lift" (NZS 4210) grouting is used. Ensure reinforcement is accurately placed and tied. Lay in regular stretcher bond with all necessary special units and sill units. Cut masonry, if necessary, true and square without chipping.

3.8 PROTECTION

Protect fair-faced masonry walls, keeping them clear of mortar droppings, grout splashes, or stains.

3.9 MASONRY JOINTS

Not exceeding 10mm thick, or less than 8mm when the masonry units are bedded in. Joints tooled concave.

3.10 CONTROL JOINTS

Locate at major changes of wall height or thickness, at openings, and at not more than 6 metre centres, or, as shown on the drawings.

3.11 BRACING

Provide sufficient temporary lateral bracing to ensure stability until the final construction is in place.

3.12 GROUTING OF CELLS

Inspect walls prior to grouting. Ensure cells are clean and reinforcement is correctly placed. Grout all masonry cells below finished grades, all cells in retaining walls and all cells containing reinforcing. Use procedures set out in NZS 4210.

3.13 CONSTRUCTION JOINTS

Form and treat construction joints between grout pours and between masonry walls and hardened concrete work to ensure bonding occurs. Comply with NZS 4210, section 2.16 **Horizontal construction joints**.

3.14 BUILD IN

Mortar in components such as sills, copings, lintels, and steps, as work proceeds. Build in plugs, bolts, ties, metal flashings, dowels, fastenings and fixings as required and as shown on the drawings.

3.15 CLEANING

Clean off mortar splashes and grout spills as they occur, making good any damage at the same time. Clean down masonry and remove waste material from adjoining surfaces and floors.

3.16 WATERPROOFING EXTERIOR OPENINGS

Apply a waterproofing of unreinforced wet area membrane to AS/NZS 4858 for waterproofing around openings for windows, doors, meters and other services openings, at or above floor level, also parapets and ends of masonry walls abutting other claddings, to CCANZ CP 01.

Do not use bituminous coatings.



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3800 TIMBER FRAMING

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

Use experienced competent carpenter familiar with the materials and techniques specified. Work to be carried out by or supervised by the appropriate LBP.

2 PRODUCTS

2.1 TIMBER FRAMING GENERALLY

Species, grade and level of treatment to NZBC B2/AS1, NZS 3602, tables 1 to 3 **Requirements for wood-based building components**…, and moisture content to NZS 3602, table 4 **Allowable moisture content**….. Structural Grade (SG) to NZS 3604, NZS 3622 with properties to NZS 3603.

2.2 ACCESSORIES

Damp-proof course:	High impact embossed polyethylene
Stud straps	Polypropylene tape run horizontal at 300mm centres over flexible wall underlay, for drained cavities with stud spacings greater than 450mm.
Nails, bolts and screws:	Steel, stainless steel, galvanized steel of pattern to suit the location and to BRANZ BU 519: Fasteners selection. To NZS 3604, 4 **Durability** and NZBC E2/AS1.
Nail plates connectors:	Stainless steel and/or galvanized steel toothed or nailed plates to the plate manufacturer's design for the particular locations as shown on the drawings and to NZS 3604, 4 **Durability**. Galvanized steel and stainless steel connectors and brackets to the connector manufacturer's design for locations shown on drawings and to NZS 3604, 4 **Durability** and NZBC E2/AS1
Corrosion risk	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). For interior timber, treated with copper-based timber preservatives (H3.2 or higher), use a minimum of hot-dipped galvanized steel fixings and fasteners.

3 EXECUTION

3.1 ATTENDANCE

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

3.2 MOISTURE CONTENT

Maximum allowable moisture content to NZS 3602, table 4 **Allowable moisture content…**, for framing supporting interior linings:

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

3.3 EXECUTION GENERALLY

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

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3.4 INSTALL SUB-FLOOR FRAMING

Frame up off foundation walls and piles, all fabricated, fastened and braced to NZS 3604, 6 **Foundation and subfloor framing**.

3.5 INSTALL FLOOR, WALL AND ROOF FRAMING

Floors and bottom plates framed and fastened to NZS 3604, 7 **Floors**. Frame walls to required loading and bracing complete with lintels, sills and nogs, all fabricated and fastened to NZS 3604, 8 **Walls**. Frame roof to required loading and bracing complete with valley boards, ridge boards and purlins to NZS 3604, 10 **Roof framing**. Design and fit roof trusses complete with anchorage. All fabricated and fastened to NZS 3604, 9 **Posts**, and NZS 3604, 10 **Roof framing**.

3.6 BATTENS

For drained cavity construction nominal 20mm H3.1 cavity battens (non-structural) to NZBC E2/AS1, 9.1.7 Drained cavities. For direct fix cladding window and door openings nominal 20mm H3.1 jamb battens to NZBC E2/AS1, Figure 9.1.9.4: General window and door opening for direct fixed.

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4131VP VIKING PEEL & STICK TANKING MEMBRANE

1 GENERAL

This section relates to the application of Viking Peel & Stick Tanking installed as a single or double layer system on below ground retaining walls with Viking Under-slab membrane installed under the slab complete with Drainage & Protection Board, all components and accessories to complete installation.

1.1 RELATED WORK

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

1.2 MANUFACTURER'S DOCUMENTS

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

BRANZ Appraisal 864 (2025) - Viking Post-Applied Tanking Membranes - Amended 17 June 2026
Viking checklist: Below Ground Tanking Site and Substrate
Viking checklist: Below Ground Tanking Installation
Viking Below Ground Tanking Methodology
Viking Peel & Stick Tanking Product Data Sheet, TP-PDS-1.1, December 2025
Viking Peel & Stick Tanking Product Technical Statement, VTS-PTS-V1.1, September 2025
Viking FleeceTank Product Data Sheet, FLT-PDS-V1.1, June 2026
Viking FleeceTank Product Technical Statement, FLT-PTS-V1.1, June 2026
Viking Tanking - Peel & Stick Viking Roofspec Details Schedule, 01 March 2022

Manufacturer/supplier contact details

Company:	Viking Roofspec Ltd.
Web:	www.vikingroofspec.co.nz
Email:	info@vikingroofspec.co.nz
Telephone:	0800 729 799
Facsimile:	0800 729 788

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years	For Viking Peel & Stick Tanking System including Viking FleeceTank and Mercury FC Under-slab membrane

- Provide this warranty on the Viking Roofspec standard form.
- Commence the warranty from the date of completed installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	For Viking Peel & Stick Tanking system installation when installed by Viking Approved Applicator

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 NO SUBSTITUTIONS

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

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1.6 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Installers to be Viking Approved Applicators, experienced in the installation of the Viking Peel & Stick tanking systems.

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.7 PRE INSTALLATION

Convene a meeting between the applicator, contractor, all associated consultants and Viking Roofspec to ensure all parties know what is required for effective performance of the system, prior to tanking installation.

1.8 SPECIFIC DETAILS

All detailing to be in accordance with Viking Roofspec standard details. Any specific details not in accordance with the Viking Roofspec standard details or methodologies must be review and approved by Viking Roofspec.

1.9 INSPECTION AND CHECKLIST

Complete Viking checklist for Below Ground Tanking Site and Substrate (by Main Contractor) and Below Ground Tanking Installation (by Installer). Checklist to be signed by applicator and main contractor and provided to Viking Roofspec for product warranty requirements.

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:

Viking Peel & Stick Tanking maintenance requirements.

Provide this information prior to practical completion.

Compliance information

1.11 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Installer's approval certificate from the manufacturer / importer / distributor
- Manufacturer's, importer's or distributor's warranty
- Installer's / applicator's warranty
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.12 PRESSURE RATING

Viking Peel & Stick Tanking is limited to 5 meters depth with the use of drainage coil at the base of the slab or footing being a requirement. Refer to SELECTIONS for the designated water pressure head.

1.13 VAPOUR FLOW RESISTANCE

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

2 PRODUCTS

Materials

2.1 TANKING MEMBRANE - WALL

Viking Peel & Stick Tanking, a 1.5mm thick, self-adhering membrane of composite materials consisting of a specially formulated rubberized asphalt laminated to a high impact resistant HDPE film with a removable release sheet to the adhesive side. Also used to create 300mm wide under-flashings and detailing around penetrations. Available in 0.914m wide x 20.4m long rolls.

2.2 UNDER-SLAB TANKING MEMBRANE - FLEECETANK

Viking FleeceTank under-slab membrane, 8mm thick SBS modified bitumen membrane with a with self-adhering lap and a factory-applied fleece on its top side. Available in 1.05m wide x 10m long rolls.

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2.3 UNDER-SLAB TANKING MEMBRANE - MERCURY FC

Viking Mercury FC Under-slab membrane, 4mm thick reinforced-polyester and fibreglass SBS (Styrene butadiene styrene) modified-bitumen. Also used to create gussets. Available in 1m wide x 10m long rolls.

Components

2.4 WALL TANKING PRIMER - FOR CONCRETE / CONCRETE MASONRY SUBSTRATES

SES301 Peel & Stick primer - Carlisle CCW-702 quick-drying, solvent-based, high-tack adhesive. Coverage approximately 4m2 per litre.

2.5 DRAINAGE & PROTECTION BOARD

Viking Drainage and Protection Board, composite of nonwoven filter fabric bonded to the dimples of a high impact moulded polystyrene core. Enhances waterproofing by channelling water away, relieving hydrostatic pressure and protecting the waterproofing system.

2.6 BITUMEN FILLET

IMT603 Bituminous Angle Fillet 25mm x 25mm x 1.2m long, used at the junction of wall and concrete footing heel.

2.7 TANKING MASTIC - WALL

SES014 Tanking Mastic (P&S) - Carlisle CCW-704, solvent-based, rubberized bitumen mastic.

Accessories

2.8 TERMINATION BAR / FLASHING

IMT708 Aluminium termination flashing, mill finish, 140mm high x 1.6mm thick x 2.4m long complete with IMT 710 External corner & IMT711 Internal corners. Designed to terminate the Viking Peel & Stick Tanking and Viking Drainage and Protection Sheet 150mm above the finished soil height.

2.9 PRESSURE BAR

IMT709 aluminium pressure bar, mill finish, 65mm high x 1.6mm thick x 2.4m long.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

Take delivery of membrane in rolls undamaged, include for site handling facilities where required. Provide dry storage off the ground on a level surface for all products. Viking Peel & Stick Tanking membrane may be stored horizontally in cartons, do not crush. Viking Under-slab or Torch-On membrane rolls store vertically only. Do not stack pallets.

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 substrate in its entirety, verify all details, penetrations and conditions. Comply with Viking Roofspec requirements prior to membrane installation. Installation of membrane indicates acceptance of substrate by installer.

Ensure substrate meets requirements of Viking Checklist- Below Ground Tanking Site & Substrate to be completed by the Main Contractor and Viking Checklist- Below Ground Tanking Installation by the tanking installer. Refer to www.vikingroofspec.co.nz for checklists.

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3.4 SUBSTRATE - PEEL & STICK

To be smooth, clean, dry and stable. Free of contaminants, voids or protrusions. Concrete & concrete masonry substrates to have a relative humidity of 75% or less. Do not work on a wet substrate.

3.5 SUBSTRATE - UNDER-SLAB

Ensure the tidy slab of site concrete for the Under-slab tanking is a minimum of 45mm thick, for any site with springs or below the water table. For sites with no springs or above the water table, compacted minimum 25mm sand or fines such as gap 7 is acceptable.

3.6 COMPLY - PEEL & STICK

Comply with current Viking Roofspec technical literature. For concrete and concrete masonry substrates comply with and BRANZ Appraisal 864 as required.

3.7 COMPLY - UNDER-SLAB

Comply with current Viking Roofspec technical literature, including relevant information contained in BRANZ Appraisal 864.

3.8 PLAN LAYOUT

Plan installation so that joints are minimised and occur in suitable locations.

3.9 COORDINATE

Coordinate all work with other trades to prevent damage to membrane. Plan work to minimise membrane exposure to sunlight or UV radiation and to comply with Viking Roofspec requirements for exposure. Viking Under-slab membrane to under slab locations must not be exposed for more than 30 days before structural concrete is placed and Viking Peel & Stick tanking membrane must not be exposed for more than 30 days before backfilling.

3.10 WEATHER CONDITIONS

Install membrane in fair weather, with substrate temperature no less than 4.5°C.

3.11 DE-WATERING

Water level to remain a minimum of 300 mm below membrane works, until installation completed.

Dig a trench and fill with scoria. Dig holes to place buckets with holes for a sump pump. This will remove any excess water. Refer to Viking Below Ground Tanking Methodology, for further details.

Application - preparation

3.12 PRELIMINARY WORK - CONCRETE / CONCRETE MASONRY

Concrete blockwork must all be flushed pointed with no voids or sharp protrusions. Fill any voids in the substrate with a compatible non-shrinking material. Smooth off or remove any ridges or rough areas of mortar or concrete which may damage the membrane.

3.13 FILLETS AND CHAMFERS

Apply Bitumen Filler IMT603 (or 25mm mortar fillet), to support membrane at internal corners and slab/wall junctions.

Chamfer external edges to minimum 10 mm width sloping edge to accommodate membrane return.

3.14 SUBSTRATE JOINTS - CONCRETE / CONCRETE MASONRY

Ensure joints have been cleaned, primed and filled with a backing rod and caulked.

3.15 REMOVE OTHER FORMWORK

Ensure formwork is not removed before the Under-Slab membrane is sealed to the footing (minimum 4 days from footing pour) or secured to the footing by mechanical fastening with a batten, which can later be removed once walls are in place and wall tanking can been installed.

Take care when removing formwork not to damage membrane or to remove membrane from poured slab.

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Application - Under slab membrane

3.16 INSTALL UNDER-SLAB MEMBRANE - FLEECETANK

Install Viking FleeceTank under-slab membrane in accordance with Viking Roofspec requirements. Unroll the membrane onto the tidy slab or compacted sand fines with fleece facing upwards, lapping self-adhesive side joints and lapping sheet ends by 150mm minimum. Tack membrane to the formwork. Remove release tapes from side laps and seal using a seam roller. Remove 140mm of fleece from end laps using a flame or straight blade utility knife and torch weld lap. Proceed with pouring of structural slab within 14 days.

3.17 INSTALL UNDER-SLAB MEMBRANE - MERCURY FC

Install Viking Mercury FC Under-slab membrane in accordance with Viking Roofspec requirements. Unroll the Viking Under-Slab membrane onto the tidy slab or compacted sand fines. At perimeter, allow adequate length of Viking Under-slab membrane to return around footing once poured, lay onto the formwork and secure.

Lap each sheet a minimum of 80 mm for side laps, and 150 mm for end laps. Torch sheet laps, ensuring 3mm-5mm consistent bitumen bleed is visible from the membrane edge at the laps. Proceed with pouring of structural slab within 14 days.

3.18 APPLY GUSSETS - UNDER-SLAB

Once Under-slab membrane is placed, install 140mm gussets to all internal and external corners.

Application - Vertical Concrete / Concrete Masonry Substrates

3.19 INSTALLATION GENERALLY - PEEL & STICK

Install Viking Peel & Stick Tanking membrane in accordance with Viking Roofspec requirements and Viking Checklist - Below Ground Tanking Installation. Refer to www.vikingroofspec.co.nz for checklist.

3.20 PRIMING SUBSTRATES GENERALLY - PEEL & STICK

Apply primer by medium nap roller or brush in an even film to recommended coverage rate. Apply only to surfaces where Peel & Stick tanking will be applied in the same day. Primers shall be allowed to dry completely (lower temperatures will extend the drying time) before additional primer coats are applied or membrane installed.

3.21 PRIMING SUBSTRATE FOR UNDER-FLASHINGS - PEEL & STICK

Prime areas requiring under-flashing first, to suit 300mm width of under-flashing.

3.22 INSTALL UNDER-FLASHING - PEEL & STICK

Centre a continuous 300mm wide strip of Viking Peel & Stick tanking on all internal and external corners, turn-up, turn-down, expansion joints, shrinkage control joints and movement joints. If joins are required to under-flashing, overlap by 150mm.

3.23 PRIMING SUBSTRATE - PEEL & STICK

Prime remaining areas for application of membrane.

3.24 LAP - PEEL & STICK

Membrane sheet laps should be staggered. Side laps to be a minimum 75mm. End laps ("head laps") overlap by minimum 150mm.

3.25 APPLY MEMBRANE TO VERTICAL SURFACES - PEEL & STICK

Commence membrane application by removing the release paper. Apply the Viking Peel & Stick Tanking, beginning at the low point and working toward the high point, ensuring laps will shed water.

Viking Peel & Stick Tanking membrane must extend 150mm minimum above finished ground level and lap minimum 100mm onto the Under-slab membrane beyond basement floor level and terminate per Viking Standard Details.

Viking Peel & Stick Tanking membrane should be firmly rolled in place immediately after its placement to ensure full adhesion to the primed substrate.

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3.26 PENETRATIONS - PEEL & STICK

All penetrations to receive a Viking Peel & Stick Tanking over-flashing to form a double layer with minimum 120mm overlap around penetration-. Complete with a trowelled bead of SES014 Tanking Mastic (P&S) and secure with a Stainless Steel hose clamp.

3.27 APPLY TANKING MASTIC - PEEL & STICK

All terminations, detail and edges of sheet laps to receive a trowelled bead of SES014 Tanking Mastic (P&S).

Application - Protection

3.28 INSTALL DRAINAGE & PROTECTION BOARD

Neatly scribe and fit Drainage & Protection Board to Viking Roofspec requirements. Boards to be installed down to the level of the coil drain. Mechanically secure the top of the Drainage & Protection Board to 150mm above finished ground level with IMT708 Termination flashing.

Backfilling

3.29 SUPERVISION OF BACKFILLING

Backfilling to take place under supervision of the membrane installer and main contractor.

Application - Terminations / Flashings

3.30 TERMINATIONS/FLASHINGS

Use a Viking Standard Tanking detail to mechanically fasten and terminate the top edge of the membrane using IMT708 Termination Flashing or IMT709 Pressure Bar.

Completion

3.31 COMPLETION MATTERS

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

4 SELECTIONS

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

Performance

4.1 PRESSURE RATING

Designated water pressure head: 2-metres

Tanking membrane - Wall

4.2 VIKING PEEL & STICK TANKING - FOR CONCRETE/CONCRETE MASONRY SUBSTRATES

Location:	To subgrade areas of new concrete blockwork
Substrate:	Masonry block
Primer:	SES301 Peel & Stick primer - Carlisle CCW-702
Tanking:	Viking Peel & Stick Tanking
Colour:	Black
Tanking sealant:	SES014 Tanking Mastic (P&S) - Carlisle CCW-704

Drainage & Protection sheet

4.3 VIKING DRAINAGE & PROTECTION BOARD

Location:	Where wall tanking is present
Brand/type:	Viking Drainage & Protection Board

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Termination bar / flashing

4.4 TERMINATION BAR

Location:	Top of tanked areas
Type:	IMT708 Termination flashing complete with IMT710 External corner & IMT711 Internal corners - to terminate tanking in visible locations or IMT709 Pressure Bar - to terminate tanking where not visible to view

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

1 GENERAL

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

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

The following definitions apply specifically to this section:

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

Documents

1.2 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F2/AS1	Hazardous building materials
AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials
NZS 2295	Pliable, permeable building underlays
NZS 3604	Timber-framed buildings
AS/NZS 4200.1	Pliable building membranes and underlays - part 1: materials
AS/NZS 4389	Roof safety mesh
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice
CodeMark™ CMNZ30032 verH	SOLITEX EXTASANA Wall Underlay

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Pro Clima documents relating to work in this section are:

SOLITEX EXTASANA® Installation Guide
SOLITEX EXTASANA ADHERO® Mass Timber Application Guide
SOLITEX® ADHERO FC & SOLITEX EXTASANA ADHERO® Wall Application Guide Version 2.0 dated January 2026
SOLITEX EXTASANA ADHERO® Mass Timber Moisture Protection
SOLITEX MENTO® Application Guide 24.06.2025
BRANZ Appraisal 815 (2024) - TESCON EXTOSEAL Sill Tape
BRANZ Appraisal 838 (2024)- TESCON EXTORA Sealing Tape
BRANZ Appraisal 855 (2025)- SOLITEX MENTO 3000 Roof and Wall Underlay
BRANZ Appraisal 876 (2020) - SOLITEX MENTO 1000 Roofing Underlay
BRANZ Appraisal 953 (2024) - KAFLEX and ROFLEX Grommets
BRANZ Appraisal 989 (2023) - SOLITEX EXTASANA ADHERO® Self-adhesive Underlay - Amendment 1
BRANZ Appraisal 1163 (2021) - SOLITEX EXTASANA® Wall Underlay

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SOLITEX MENTO® 1000 CONNECT Roof Underlay Installation Guide
SOLITEX UM CONNECT Application Instructions
Specification Guidelines 30 January 2026
Early-Close-In with SOLITEX EXTASANA®
SOLITEX EXTASANA® Early Close-In Application Guide for Brick Cladding
SOLITEX EXTASANA® Early Close-In Application Guide for Horizontal Cladding
SOLITEX EXTASANA® Early Close-In Application Guide for Vertical Cladding

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	For Pro Clima system

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

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

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer warranty:

2 years:	For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Compliance

1.6 COMPLIANCE - CODEMARK CERTIFICATE

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

1.7 COMPLIANCE - BRANZ APPRAISAL 815

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

1.8 COMPLIANCE - BRANZ APPRAISAL 953

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

1.9 COMPLIANCE - BRANZ APPRAISAL 989

SOLITEX EXTASANA ADHERO® Self-adhesive Underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 989.

1.10 COMPLIANCE - BRANZ APPRAISAL 1163

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

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Requirements

1.11 NO SUBSTITUTIONS

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

1.12 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

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

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

2 PRODUCTS

Wall underlays

2.1 WALL PROTECTION MEMBRANE - MECHANICAL FIX

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

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

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

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

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

Roofing underlays

2.3 ROOF PROTECTION MEMBRANE - PEEL AND STICK, EXTRA HIGH EXPOSURE (180 DAYS)

SOLITEX EXTASANA ADHERO® self-adhesive underlay consists of a water-resistant film laminated to two layers of polypropylene microfibre cover fleece. Coloured blue on the top surface and the bottom surface has a clear adhesive layer and a release backing paper. It is supplied in rolls 1.5m wide and 30m long and 0.5m x 30m long (15m²) for internal and external corners.

SOLITEX EXTASANA ADHERO® must be covered and protected against weather or ultraviolet light within 180 days.

Components

2.4 8mm SEPARATION MESH

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

2.5 WINDOW AND DOOR WEATHERTIGHT CONNECTION STRIP

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

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2.6 WINDOW AND DOOR CONNECTION TAPE

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

2.7 MULTI-PURPOSE ADHESIVE

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

2.8 PRIMER

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

2.9 FAÇADE CONTROL JOINT STRIP

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

Tapes

2.10 WEATHERTIGHT SEALING TAPE

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

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

2.11 SILL TAPE

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

2.12 WEATHERTIGHT JOINERY SEALING TAPE

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

2.13 NAIL & SCREW SEALING TAPE

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

2.14 DOUBLE-SIDED TAPE

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

2.15 COMPEGO TAPE

COMPEGO flexible elastic tape with high adhesion strength. Used to permanently seal overlaps, joints and connections for vapour-closed products. COMPEGO is a pressure-sensitive, self-adhering tape with an elastic PE film, solid acrylic adhesive backing and siliconized backing paper. The tape is coloured blue with the product and manufacturer’s name printed on the face in white. Supplied in rolls 60mm, 100mm, 150mm wide by 25 m long.

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Accessories

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2.22 STUD STRAPS - POLYPROPYLENE

Stud straps, 19mm wide polypropylene straps.

2.23 ROOF SARKING / SUBSTRATE

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

2.24 GUTTER AND UNDER FLASHINGS

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

2.25 CAVITY CLOSERS, EAVES FLASHINGS, RIDGE VENT FLASHINGS

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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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 GENERAL REQUIREMENTS

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

3.4 INSPECTION

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

Preparation

3.5 PREPARATION

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

Application - wall underlay - SOLITEX EXTASANA

3.6 SCOPE LIMITATIONS - TIMBER FRAMED BUILDINGS

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

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

3.7 SCOPE LIMITATIONS - STEEL FRAMED BUILDINGS

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

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

3.8 SCOPE LIMITATIONS - WALL PROTECTION MEMBRANE OVER RIGID WALL UNDERLAYS

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

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

3.9 FIX WALL UNDERLAY - TIMBER FRAMING

Fix wall underlay in accordance with SOLITEX EXTASANA® Instruction Guide and as follows:

- Apply underlay to exterior walls from below bottom plate to top plate. Fix securely with fasteners e.g. "LITTLE GRIPPERS", 6mm - 8mm staples or 20mm large head galvanized clouts at 300mm centres horizontally and vertically. Provide additional fixings around window and door openings.

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- For early close-in of building envelope, fix securely using Delfast FN-RCAP25 E-galv wire collated cap nails, incorporating plastic heads to weather-protect nail heads. Refer to Pro Clima early close-in guides.
- In sea spray zone (Zone D) all fixings to be stainless steel.
- Allow a 150mm minimum lap at joins and all vertical overlaps over studs and tape with Pro Clima TESCON EXTORA® to increase weathertightness. Repair any forced tears using TESCON EXTORA®.
- Pro Clima recommendation: Apply ORCON® Classic adhesive to perimeter at footing level to prevent wind wash over insulation.
- Pro Clima recommendation: Apply TESCON EXTORA® to horizontal laps to prevent wind wash over insulation.
- Note: Fastenings behind brick veneer must have equivalent service life of 50 years. Refer to NZS 3604 Tables 4.1, 4.2 and 4.3.
- When ready to install doors and windows cut at each opening at 45° from each corner. Pull SOLITEX EXTASANA® flaps inside and fasten to frame.
- Apply TESCON EXTOSEAL® sill tape.

Application - wall underlay - SOLITEX MENTO 3000

3.10 FIX WALL UNDERLAY - TIMBER FRAMING

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

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

Application - wall underlay - generally

3.11 INSTALL STUD STRAPS

Where studs are at greater than 450mm centres, install 19mm wide polypropylene straps horizontally at 300mm centres over wall underlay, draw taut and fix to studs.

3.12 METAL CLADDING ON TIMBER CAVITY BATTENS

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

Application - roofing underlay

3.13 SCOPE LIMITATIONS - OVER RIGID ROOF SARKING

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

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

3.14 SCOPE LIMITATIONS - OVER ROOFS OF SIP AND CLT CONSTRUCTION

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

- The scope limitations of NZBC E2/AS1, 1.1.1 Scope of this document, regarding building

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

3.15 SCOPE LIMITATIONS - SPECIFIC DESIGN ROOFS

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

3.16 FIX SELF-ADHESIVE ROOF UNDERLAY - SOLITEX EXTASANA® ADHERO

Fix roof underlay in accordance with SOLITEX EXTASANA® ADHERO Instruction Guide and as follows:

- Apply SOLITEX EXTASANA ADHERO underlay over rigid plywood or OSB roof sarking in horizontal application only.
- Allow a 150mm minimum lap at horizontal joins.
- Press SOLITEX EXTASANA ADHERO onto substrate using a hard roller of approximately 150mm width.
- Tape vertical overlaps with Pro Clima TESCON EXTORA® to increase weathertightness. Repair any forced tears using TESCON EXTORA®
- When used on roofs at pitches below 5 degrees, overlaps must be primed with TESCON® PRIMER RP which must be allowed to dry before application of subsequent layers of SOLITEX EXTASANA ADHERO®.

3.17 GUTTER AND UNDER FLASHINGS

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

Application - tape systems

3.18 APPLY TESCON TAPE SYSTEMS

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

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

3.19 APPLY COMPEGO SEALING TAPE

Refer to the relevant section(s) for application of COMPEGO sealing tape.

Application - grommet and detail solutions

3.20 INSTALL GROMMETS AND DETAIL SOLUTIONS

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

Completion

3.21 COMPLETION MATTERS

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

4 SELECTIONS

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

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Materials

4.1 PRO CLIMA SOLITEX EXTASANA® MEMBRANE - MECHANICAL FIX

Location:	~
Manufacturer:	Pro Clima NZ Limited
Type:	SOLITEX EXTASANA® Wall Protection Membrane
Jointing & sealing tape:	TESCON EXTORA® weathertight sealing tape
	TESCON EXTOSEAL® sill tape
	~
Adhesive:	ORCON® Classic multi-purpose adhesive
Accessories:	~

4.2 PRO CLIMA SOLITEX EXTASANA® ADHERO MEMBRANE - PEEL AND STICK

Location:	~
Manufacturer:	Pro Clima NZ Limited
Type:	SOLITEX EXTASANA® ADHERO Peel and Stick Floor, Wall and Roof Protection Membrane
Jointing & sealing tape:	TESCON EXTORA® weathertight sealing tape
	TESCON EXTOSEAL® sill tape
	~
Adhesive:	ORCON® Classic multi-purpose adhesive
Accessories:	~

4.3 PRO CLIMA SOLITEX MENTO 3000 ROOF & WALL UNDERLAY

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

Accessories

4.4 STUD STRAPS

Location:	~
Type:	~ 19mm blue polypropylene tape

4.5 ROOF SARKING / SUBSTRATE

Location:	~
Brand:	~

4.6 GUTTER AND UNDER FLASHINGS

Location:	~
Brand:	~
Jointing tape:	TESCON EXTORA

4.7 COMPEGO TAPE

Location:	~
Brand:	Pro Clima NZ Limited
Jointing tape:	COMPEGO flexible elastic tape
Accessories:	TESCON® PRIMER RP (for pre-treating rough or dirty substrates)

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4161PI PRO CLIMA INTERNAL AIRTIGHTNESS SYSTEM

1 GENERAL

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

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.2 DOCUMENTS

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

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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

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

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years For Pro Clima system

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

2 PRODUCTS

DASATOP® Intelligent Air Barrier for roof retrofits

2.1 DASATOP MEMBRANE

Airtightness and vapour control membrane with high humidity-variable MVTR, comprised of a polyethylene copolymer with tear resistant PP fleece reinforcement. Supplied in rolls 1.5m wide x 50m long.

2.2 DASATOP FIX FIXING BATTEN

40mm wide x 3mm thick MDF/HDF fibreboard batten. Supplied in 1m lengths.

Components

2.3 TESCON VANA ADHESIVE TAPE

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

2.4 STAPLES

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

Accessories

2.5 KAFLEX SEALING GROMMETS

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

2.6 ROFLEX SEALING GROMMETS

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

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2.7 INSTAABOX

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Timber substrate: 20% maximum moisture content

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install in accordance with Pro Clima NZ Limited installation instructions.

3.6 INSTALL GROMMETS

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

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

3.7 INSTALL INSTAABOX

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

DASATOP® Intelligent Air Barrier for roof retrofits installation

3.8 INSTALL DASATOP MEMBRANE

Remove sharp edges (e.g. protruding nails) and clean loose material from roof framing. Install DASATOP membrane over the roofing framing from the exterior. Lay membrane horizontally (i.e. perpendicular to the roof framing) with 100mm overlap between membrane layers and 40mm overhang at edges. Fit DASATOP FIX battens over membrane along each side of roof framing members. Staple fix through batten into base of roof framing membrane.

3.9 SEAL DASATOP MEMBRANE LAPS

Seal all membrane laps with a continuous layer of TESCON VANA adhesive tape.

Seal the 40mm membrane overhang to building elements with a continuous layer of TESCON VANA adhesive tape.

Completion

3.10 COMPLETION MATTERS

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

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4 SELECTIONS

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

4.1 PRO CLIMA PENETRATION GROMMETS

Location:	~
Manufacturer:	Pro Clima NZ Limited
Grommet type:	~
Size:	~
Jointing tape:	~

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4220 WALL CLADDING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work using persons competent and experienced in the trade.

2 PRODUCTS

2.1 TIMBER WEATHERBOARD

As selected, or radiata pine to NZS 3631 for grading and to NZS 3602, table 2 **Requirements for wood-based building components…**, for selection and treatment.

2.2 FIBRE CEMENT SOFFIT LINING

Cellulose cement autoclaved sheets.

2.3 TIMBER FASCIAS AND BARGE BOARDS

As selected, or radiata pine to NZS 3631 for grading and to NZS 3602, table 2 **Requirements for wood-based building components…**, for selection and treatment.

2.4 ACCESSORIES

Wall underlay:	Breather type, waterproof.
Rigid Air Barriers:	Proprietary rigid sheet pre-cladding systems.
Jointers:	To suit cladding type and thickness.
Nails, screws, fastenings:	Metal, size and pattern, to cladding manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4: **Durability** and E2/AS1.

3 EXECUTION

3.1 MOISTURE CONTENT

Maximum allowable moisture content to NZS 3602, table 4 **Allowable moisture content….**

3.2 EXECUTION GENERALLY

To NZBC E2/AS1 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 INSTALL WALL UNDERLAY/RIGID AIR BARRIER

Fix to the manufacturer's requirements. Refer to 1213 SELECTIONS for type.

3.4 CAVITY BATTENS OR JAMB BATTENS

As specified in the section 3800 TIMBER FRAMING, to suit the selected wall cladding and construction type.

3.5 PRIME OR SEAL TIMBER WEATHERBOARDS

Prime (for opaque finish) or seal (for clear finish) front and back faces, edges and end grain (minimum 2 coats) before fixing weatherboards and exterior trim.

3.6 INSTALL TIMBER WEATHERBOARDS

Install level, true to line and face, to NZBC E2/AS1, 9.4 **Timber weatherboards**.

3.7 INSTALL FIBRE CEMENT SOFFITS

Cut sheets dry and scribe fit to fully support all edges and joints. Nail and drill for and insert fasteners to the sheet manufacturer's requirements. Fit complete with jointers and capping moulds. Refer to the cladding manufacturer's literature for fixing details and fixings durability requirements to NZS 3604, section 4 **Durability**.

3.8 INSTALL EXTERIOR TIMBER FINISHINGS

Install timber fascias, barge boards, facings, beads, trim and enclosures level, true to line and face, with all end grain sealed and joints mitred.

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3.9 INSTALL FLASHINGS

Install flashings, covers and soakers as detailed on the drawings and to NZBC E2/AS1, 4.0 **Flashings**.

3.10 USE OF SEALANTS

Selection and use of sealants to follow BRANZ BU 601: Sealants for cladding joints.

3.11 COMPLETE

Complete all flashings, finishings and trim so the cladding system is completely weathertight.

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4310 ROOFING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Use experienced competent roofers familiar with the materials and techniques specified. Work to be carried out by or supervised by the appropriate LBP.

1.2 WIND AND EARTHQUAKE LOADINGS

Use fixings and methods capable of sustaining the loads appropriate to the area as set out in NZS 3604, section 5 **Bracing design**, and confirmed under 1212 COMPLIANCE.

2 PRODUCTS

2.1 PROFILED METAL

Profile, metal and finish as selected. Accessories, cappings, flashings and fixings to match and to the roofing manufacturer's requirements.

2.2 ACCESSORIES

Roof underlays:	As selected.
Nails, screws, fastenings:	Metal, size and pattern, to roofing manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4 Durability and NZBC E2/AS1.
Flashings:	As required.

3 EXECUTION

3.1 STORAGE

Stack roofing and accessories on clean, level areas of the site. Cover and protect from damage and from weather until ready to fix in place.

3.2 SET-OUT

Set out the planned layout before fixing commences, to ensure true lines and the correct relationship to module, grid and roof features. Overlaps to face away from prevailing wind direction.

3.3 LAY ROOF UNDERLAY

Lay and fix to NZBC E2/AS1, 8.1.3 Roof Underlays.

3.4 TAKE CARE

Take care to avoid damaging pre-finished roofing both during and after fixing. Mark only with chalk or spirit-based pen. Wear only soft-soled shoes on the finished surface. Remove metal filings daily.

3.5 INSTALL PROFILED METAL

Use cutting tools recommended by the roofing manufacturer. Fold ends and seal cut edges to the roofing manufacturer's requirements. Fix complete with matching accessories, flashed to roof features and penetrations; all in accordance with NZMRM CoP and NZBC E2/AS1, 8.4 Profiled metal roof cladding.

3.6 FIXINGS AND SEALANTS

Refer to the roofing manufacturer's literature for fixing details and to NZS 3604 for fixings durability requirements. Select and use sealants only as recommended by the roofing manufacturer.

3.7 INSTALL COVERS AND FLASHINGS

Provide apron, verge and ridge flashings. Install and fix as detailed and to the roofing manufacturer's details and to comply with NZBC E2/AS1, 4.0 Flashings, NZBC E2/AS1, 5.0 Roof/wall junctions, and NZBC E2/AS1, 6.0 Parapets.

3.8 PENETRATIONS

Flash and overflash penetrations through the roof. Fit proprietary boots to pipework penetrations.

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3.9 COMPLETE

Ensure the work is complete with flashings, undercloaks, valleys, ridges and hips properly installed so the finished roof is completely weathertight.

3.10 CLEAR

Clear trade debris and unused materials from the roof and surrounds regularly during the work and at completion. Sweep down the completed roof and flush out spoutings, gutters and rainwater pipes.

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4337 TIMBER & PLYWOOD, DECKING & ROOFING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

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

2 PRODUCTS

2.1 TIMBER SPACED BOARDING FOR EXTERIOR DECKS

Selected radiata pine, treated to H3.2 to NZS 3602, table 2A. Dressed four sides and with arrises.

2.2 FIXINGS FOR DECKING

Galvanised 60mm X 3.15mm annular grooved jolt head nails for up to 21mm thick boards, 75mm nail length for boards over 21mm.

Use stainless steel nails for Exposure Zones D & E, refer to section 1212 COMPLIANCE for project zone.

2.3 PLYWOOD MEMBRANE SUBSTRATE

Radiata pine veneer ply to AS/NZS 2269.0, face sanded, 17 to 25mm thick, CD grade as scheduled. H3 CCA treated to AS/NZS 1604.1. Stress grade F11 for decks.

2.4 FIXINGS FOR PLYWOOD

Stainless steel, counter-sunk No.10 X 50mm screws. Or to the plywood manufacturer requirements for size and use. Single pack waterproof general purpose construction adhesive.

3 EXECUTION

3.1 LAY TIMBER DECKING

Drill for all fixings. Stagger end joints. Space boards a minimum of 2mm apart in general conditions, or minimum 3mm apart if boards are likely to swell after fixing. Leave a 12mm minimum gap between the exterior wall and the adjacent timber slat. Fix using annular grooved jolt head nails, heads driven flush with the board surface.

3.2 SUPPORT PLYWOOD EDGES AND JOINTS

Fully support edges and joints of sheets.

3.3 FIXING PLYWOOD UNDER MEMBRANES

To NZBC E2/AS1, 8.5 **Membrane roofs and decks**. Screw and adhesive fix sheets for membrane type roofing to the plywood and membrane manufacturers' requirements. Provide a 5mm radius chamfer to external edges where the membrane is to be wrapped over. Fix H3.2 CCA treated internal corner fillets.

Provide the required falls.

3.4 PROTECT PLYWOOD

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

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4381VB VIKING BUZON DECK SUPPORT SYSTEM

1 GENERAL

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

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

EPDM	Ethylene propylene diene monomer
PP	Polypropylene
UV	Ultraviolet

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS.

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

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

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

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

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year	For workmanship

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

Refer to the general section 1237 WARRANTIES for additional requirements.

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Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

2 PRODUCTS

Materials

2.1 BUZON PEDESTALS

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

2.2 BUZON UPADS

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

Components

2.3 COUPLERS

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

2.4 UPAD GROUND PADS

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

2.5 SLOPE CORRECTOR

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

2.6 BATTEN HOLDER

UV resistant high-density copolymer polypropylene batten holder to support battens up to 65mm wide.

Accessories

2.7 SCREWS

10G x 75mm stainless steel screws.

3 EXECUTION

Conditions - general

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

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Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

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

Installation - Buzon Pedestal Support System for timber/composite decking

3.6 INSTALL BUZON PEDESTAL SYSTEM FOR DECKING

Establish and mark the location of the supporting bearers/joists. Place Buzon Pedestals on the substrate along the marked location. Adjust pedestal height to adjust for slope. Screw fit couplers to pedestal base and secure position with locking keys where additional height is required.

3.7 FIT SLOPE CORRECTOR

Fit Slope Corrector to pedestal. Adjust to appropriate slope.

3.8 FIT BATTEN HOLDER

Fit Batten Holder to top of pedestals.

3.9 LEVEL BEARERS

Level bearers/joists by adjusting the pedestal heights. Screw fix bearers/joists into batten holder with stainless steel screws.

Installation - Buzon UPad Support System for timber/composite decking

3.10 INSTALL BUZON UPAD SUPPORT SYSTEM FOR DECKING

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

3.11 FIT BATTEN HOLDER

Fit Batten Holder into the ground pad. Screw fix bearers/joists into batten holder with stainless steel screws. Level bearers/joists with UPad Ground Pads.

3.12 INSTALL CLEAN OUT MANHOLES / HATCHES

Install removable screw-fixed access panels.

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

4.1 VIKING BUZON PEDESTAL SUPPORT SYSTEM - DECKING

Location:	~
Supplier:	Viking Roofspec Ltd
Type:	Buzon Pedestal Support System
Pedestals:	~
Couplers:	~
Slope corrector:	~
Batten holder:	~

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4.2 VIKING BUZON UPAD SUPPORT SYSTEM - DECKING

Location:	~
Supplier:	Viking Roofspec Ltd
Type:	Buzon UPad Support System
Support pads:	~
Ground pads:	UPad Ground Pads
Batten holder:	KIT001

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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 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

1.2 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 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
AS/NZS 1859.1	Reconstituted wood based panels - Specifications - Particle board
AS/NZS 2269.0	Plywood - Structural - Part 0: Specifications
CodeMark™ CMNZ30058 verH	Viking Enviroclad Roofing and Deck Membrane System
CodeMark™ CMNZ70176 ver0	Viking Enviroclad "Sure-Weld TPO" Waterproofing membrane

1.3 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
BRANZ Appraisal 713 (2018) - Viking WarmRoof / WarmSpan System - Amended 16 April 2025
BRANZ Appraisal 946 (2022) - Strandsarking® for Low Slope Membrane Roofs

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Manufacturer/supplier contact details;

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years:	For 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.

1.5 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

1.6 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.

1.7 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

1.8 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

1.9 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

1.10 TEST - FLOOD

Where practicable, flood test horizontal applications to the overflow height for minimum 2 hours. Ensure that an overflow is incorporated during the flood testing and that there are no load limitations that might prevent testing. Make good any lack of watertightness when the surface is completely dry. Repeat flood test process after making repairs.

Refer to Viking Technical Note Flood Testing for further information.

1.11 PERFORMANCE

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

2 PRODUCTS

Materials

2.1 ENVIROCLAD (SURE-WELD TPO) WATERPROOFING MEMBRANE

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

Components

2.2 ADHESIVE

Sureweld Bonding Adhesive - proprietary solvent based contact adhesive.

2.3 ADHESIVE, LOW TEMPERATURES /LOW VOC

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

2.4 MECHANICAL FIXING PLATES

RhinoBond mechanical fixing plates – 80mm TPO coated plates for mechanical fixing method.

2.5 ENVIROCLAD CUT EDGE SEALANT (CLEAR)

Proprietary sealant for sealing cut edges.

2.6 WATER CUT-OFF MASTIC

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

2.7 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.

2.8 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.

2.9 HP SPLICE WIPES

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

2.10 ENVIROCLAD OUTSIDE AND INSIDE CORNERS

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

2.11 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.

2.12 ENVIROCLAD T-JOINT COVERS

Proprietary unreinforced TPO disks.

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2.13 ENVIROCLAD PIPE SEAL

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

2.14 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

2.15 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.

2.16 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.

2.17 PRIMER

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

2.18 LAPTAPE

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

Accessories

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 AFS LOW PROFILE BARGE FLASHING

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

2.22 DRIP EDGE PROFILE

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

2.23 PEDESTAL SYSTEM – FLOATING DECK

Buzon Pedestals supplied by Viking Roofspec for use over Enviroclad membrane to support a floating trafficable deck. Refer to 4381VB VIKING BUZON DECK SUPPORT SYSTEM for details.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

Take delivery of 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.



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Confirm the moisture content of substrates:

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

3.4 WEATHER

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

3.5 EQUIPMENT

Equipment to be used:

- Suitable welding equipment
- Hand rollers for welding
- Seam probe
- 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 ACCEPTANCE OF SUBSTRATE - LOW SLOPE APPLICATIONS

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 roofs & decks to a minimum fall of 1:80 (0.75°) to CodeMark™ CMNZ70176
- Ensure gutters to a minimum fall of 1:100 (0.5°) to NZBC E2/AS1, paragraph 8.5.1.2c

3.11 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.

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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.

3.12 INSTALL DRAINAGE ACCESSORIES

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

3.13 INSTALL DRIP EDGE / FASTENING BAR

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

Application - laying

3.14 GENERAL

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

3.15 SUBSTRATE PREPARATION

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

3.16 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.

3.17 LAP JOINTS

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

3.18 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).

3.19 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).

3.20 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.

3.21 INSTALL RHINOBOND PLATES

Install RhinoBond plates in accordance to manufacturer’s requirements and to fixing Viking Detail RB01 RhinoBond Plate Fixing Pattern for Enviroclad TPO up to (ULS) 2.7kPa. Secure with selected fixings to substrate, do not overdrive.

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3.22 INSTALL MEMBRANE SHEETS – ENVIROCLAD OVER RHINOBOND PLATES

Install in accordance with Viking Product Data Sheet – RhinoBond Mechanical Fastening to Enviroclad TPO.
Calibrate RhinoBond induction welder with a 5 plate test to determine correct settings. Calibrate each morning and afternoon or if ambient temperature changes by 7°C.
Lay Enviroclad membrane over the substrate to clean RhinoBond plates, if required wipe plates using Viking TPO Weathered Membrane Cleaner with HP Splice Wipes. Weld all sheet laps prior to induction welding to plates.
Centre RhinoBond induction welder over each RhinoBond plate, activate induction welder and leave in place until heating cycle is complete (approximately 5 seconds). Immediately after, place clean magnet over the plate and leave for 45-60 seconds.

Refer to Viking PDS - RhinoBond Mechanical Fastening to Enviroclad TPO for installation instructions.

3.23 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.

3.24 HOT AIR WELD

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

3.25 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.

3.26 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.

Finishing

3.27 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.

3.28 ACCEPTANCE

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

3.29 SUBSEQUENT WORK

Make good any damage and repair to Viking Roofspec specifications.

Completion

3.30 COMPLETION - TESTS & CERTIFICATION

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

Carry out required testing procedures - ~.



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4520 ALUMINIUM WINDOWS & DOORS

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

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

1.2 CERTIFICATION

Provide documentation that the windows and doors comply with NZS 4211 and safety glass complies with NZS 4223.3.

1.3 WIND LOADINGS

Refer to section 1212 COMPLIANCE for wind zone.

2 PRODUCTS

2.1 WINDOW AND DOOR REVEALS

As selected, manufactured to comply with NZS 4211. Timber jamb liners to NZS 3602.

2.2 FLASHINGS

To NZBC E2/AS1, 9.1.9 Windows and doors, and as required.

2.3 POWDER COATING FINISH

To Window & Glass Association NZ: Powder Coating Quality Assurance System. All finished surfaces to show uniformity of gloss and colour (to match sample) free of all coating defects.

2.4 SEALANT, GLAZING TAPE AND GASKETS

To the window manufacturer's requirements.

2.5 FIXINGS

Ensure fixings and bracketing are compatible with aluminium. Do not use electroplated zinc fasteners or brass fastenings.

3 EXECUTION

3.1 OPENING PREPARATION

Confirm framing openings (including jamb battens for direct fix cladding) on site for dimension, plumb and straightness prior to fabrication or ordering of aluminium joinery. Prepare and trim to Window & Glass Association NZ: Guide to Window Installation requirements. For openings over 600mm wide on cavity construction provide sill support bars.

3.2 EXECUTION GENERALLY

To NZBC E2/VM1 and NZBC E2/AS1. Install to the Window & Glass Association NZ: Guide to Window Installation requirements.

3.3 HANDLING

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

3.4 CORROSION PROTECTION

Seal or suitably coat cut ends and holes drilled in aluminium before the frames are installed. Before fixing, apply bituminous coatings, slips or underlays between dissimilar metals in contact, or aluminium in contact with concrete.

3.5 FIX FRAMES

Fix frames rigidly in place without distortion, to the window manufacturer's requirements and to NZBC E2/AS1, paragraph 9.1.9.10, plumb, true to line and face, weathertight and with all openings operating freely.

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3.6 DRAINAGE

Anti-condensation channels to sills. All sills to sashes and fixed lights to incorporate positive drainage to the exterior.

3.7 GLAZING INSTALLATION

All glass held in aluminium beads and black PVC gaskets.

3.8 SAFETY GLASS INSTALLATION

Use in doors, sidelight panels, low level windows and all other locations to comply with NZS 4223.3.

3.9 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 on head flashings to match window finish.

3.10 SEAL FRAMES ON SITE

Seal frames to each other and to adjoining structure and finishes, all as required by the window manufacturer and to make the installation weathertight. Provide a continuous internal air seal between reveals and framing, using sealant over a backing rod.

3.11 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. Permanent manifestations, if required, to NZS 4223.3, 2.2 Manifestation (making glass visible).

3.12 CLEAN GLASS AND FRAMES

Clean off or remove glass indicators at completion of the building. Clean glass inside and out to a shining finish. Clean down both sides of window and door frames using the methods required by the window and door manufacturer.



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4521AR APL RESIDENTIAL ALUMINIUM WINDOWS & DOORS

1 GENERAL

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

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F4/AS1	Safety from falling
NZBC G4/AS1	Ventilation of buildings
NZBC H1/AS1	Energy efficiency for all housing and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
NZBC H1/VM1	Energy efficiency for all housing and buildings up to 300m²
NZBC H1/VM2	Energy efficiency for buildings greater than 300m²
AS/NZS 1734	Aluminium and aluminium alloys - Flat sheet, coiled sheet and plate
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
BS EN 673	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
AAMA 2603	Voluntary specification, performance requirements, and test procedures for pigmented organic coatings on aluminium extrusions and panels (with coil coating appendix)
AAMA 2604	Voluntary specification, performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels
AAMA 2605	Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminium extrusions and panels
ISO 10077-1	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - General
ISO 10077-2	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Numerical method for frames

Window & Glass Association NZ (WGANZ) documents:

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

US Federal Specification:

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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

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

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

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

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

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years:	For installation

- Provide this warranty on the installer/applicator standard form (if not available then use the

standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

1.8 DESIGN PARAMETERS - WIND

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

1.9 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:
Fully dimensioned elevations of all elements
Construction details (minimum scale 1:5) showing the interface between joinery elements and the building structure including:
- Jointing details and method of fixing between individual elements and between this installation and adjacent work
- Interaction between claddings and linings
- Flashing details
- Sealants and air seals
- Non standard fixing details including bracketing

If requested provide the following additional information:
- Design calculations
- Producer Statement in the form PS1 Producer Statement Design
- Rebate sizes
- Dimensions of all typical elements and of any special sizes and shapes
- Provision for the exclusion and/or drainage of moisture
- Provision for adjustment of fixings to ensure true alignment of windows and doors
- Sealant types and full size sections of all sealants and backing rods
- Provision for thermal movement
- Provision for seismic movement and movement under wind loads
- Sequence of installation
- Glazing specification and details
- Information of Professional Indemnity Insurance held by the person providing the calculations and shop drawings

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.

1.10 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.

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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)

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.

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Components for installation - direct fix systems

2.9 SILL PAN FLASHING

To NZBC E2/AS1, paragraphs 9.1.10.3 - 9.1.10.6. Flashing for direct fix claddings to collect and drain water that may penetrate through the window or door unit. Size to extend from the inner most point of the aluminium frame out over the external face of the cladding.

2.10 SUPPORT ANGLE

WGANZ aluminium support angle for use below the sill pan for deeper claddings to transfer the weight of the window back to the frame. Size to suit cladding thickness.

Components for installation - cavity systems

2.11 STANDARD CAVITY CLOSER

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

2.12 SUPPORT BAR

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

Components

2.13 GLAZING GASKETS

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

2.14 HARDWARE AND FURNITURE

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

2.15 SAFETY STAYS

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

2.16 FIXING BRACKETS

Designed by manufacturer to specific design.

2.17 WEATHERING/INSTALLATION SEALANT

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

Finishes

2.18 DURATEC POWDER COATED ALUMINIUM

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

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

Fabrication

3.6 FABRICATION

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

3.7 TIMBER REVEALS

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

3.8 HARDWARE GENERALLY

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

3.9 SAFETY STAYS

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

3.10 PASSIVE VENTILATION

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

Installation - windows and doors

3.11 SUPPLY OF FIXINGS

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

3.12 EXPOSED FIXINGS AND FASTENINGS

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

3.13 PROTECTED FIXINGS AND FASTENINGS

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

3.14 CORROSION PROTECTION

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

3.15 INSTALLATION FIXING

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

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

3.16 INSTALLATION CAVITY CONSTRUCTION

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



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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.

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.

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4540 PVC-U WINDOWS & DOORS

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

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

1.2 CERTIFICATION

Provide documentation that the windows and doors comply with NZS 4211 and safety glass complies with NZS 4223.3.

1.3 WIND LOADINGS

Refer to section 1212 COMPLIANCE for wind zone.

2 PRODUCTS

2.1 WINDOWS AND DOORS

As selected, manufactured to comply with NZS 4211.

2.2 PVC-U EXTRUSIONS

PVC-U extrusions made of weather-proofed, impact modified material to EN 12608 and EN 513 for severe climates with the addition of a required minimum Rutile Titanium Dioxide content of 8phr. Section reinforcement to be durable, nonferrous metals or plastics.

2.3 SAFETY STAYS

When required in 1213 SELECTIONS, Stainless steel non releasable restrictors to limit window opening to NZBC F4/AS1 2.0 Opening windows.

2.4 FLASHINGS

To NZBC E2/AS1, 9.1.9 Windows and doors, and as required.

2.5 POWDER COATING FINISH - EXPOSED ALUMINIUM COMPONENTS

To Window & Glass Association NZ: Powder Coating Quality Assurance System. All finished surfaces to show uniformity of gloss and colour (to match sample) free of all coating defects.

2.6 SEALANT, GLAZING TAPE AND GASKETS

To the window manufacturer's requirements.

2.7 FIXINGS

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

3 EXECUTION

3.1 OPENING PREPARATION

Confirm framing openings (including jamb battens for direct fix cladding) on site for dimension, plumb and straightness prior to fabrication or ordering of PVC-U joinery. Prepare and trim to Window & Glass Association NZ: Guide to Window Installation requirements. For openings over 600mm wide on cavity construction provide sill support bars.

3.2 EXECUTION GENERALLY

To NZBC E2/VM1 and NZBC E2/AS1. Install to the Window & Glass Association NZ: Guide to Window Installation and manufacturers requirements.

3.3 HANDLING

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

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3.4 PROTECTION

Retain protective coverings and keep in place during the fixing process and remove protection on completion.

Before fixing, apply bituminous coatings, slips or underlays between dissimilar metals in contact, or aluminium in contact with concrete.

3.5 FIX FRAMES

Fix frames rigidly in place without distortion, to the window manufacturer's requirements and to NZBC E2/AS1, paragraph 9.1.9.10, plumb, true to line and face, weathertight and with all openings operating freely.

3.6 DRAINAGE

Anti-condensation channels to sills. All sills to sashes and fixed lights to incorporate positive drainage to the exterior.

3.7 GLAZING INSTALLATION

Glaze to manufactures instructions.

3.8 SAFETY GLASS INSTALLATION

Use in doors, sidelight panels, low level windows and all other locations to comply with NZS 4223.3.

3.9 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.

3.10 SEAL FRAMES ON SITE

Seal frames to each other and to adjoining structure and finishes, all as required by the window manufacturer and to make the installation weathertight. Provide a continuous internal air seal between reveals and framing, using sealant over a backing rod.

3.11 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. Permanent manifestations, if required, to NZS 4223.3, 2.2 Manifestation (making glass visible).

3.12 CLEAN GLASS AND FRAMES

Clean off or remove glass indicators at completion of the building. Clean glass inside and out to a shining finish. Clean down both sides of window and door frames using the methods required by the window and door manufacturer.

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4541AK APL KLIMA UPVC WINDOWS & DOORS

1 GENERAL

This section relates to the fabrication, supply and installation of **APL Window Solutions** window and door systems constructed from uPVC supplied by either **Altherm**, **First** or **Vantage**.
It includes:

- APL Klima Series uPVC windows and doors with 'Aluclip'
- hardware and furniture
- flashings and sealants

1.1 RELATED WORK

Refer to appropriate AGP glazing sections for glass types.

~

1.2 ABBREVIATIONS

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

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

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F4/AS1	Safety from falling
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
NZBC H1/VM1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/VM2	Energy efficiency for buildings greater than 300m²
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
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 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
EN 513	Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors. Determination of the resistance to artificial weathering
BS EN 673	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
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

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ISO 10077-2	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Numerical method for frames
EN 12608	Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors. Classification, requirements and test methods
BRANZ BU 636	Protecting Glass From Damage

Window & Glass Association NZ (WGANZ) documents:

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

US Federal Specification:

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

APL Klima Series Technical Brochure
APL Window Energy Efficiency Rating System (WEERS) Report Series

Manufacturer/supplier contact details

Company:	**APL Window Solutions**
Web:	www.altherm.co.nz www.firstwindows.co.nz www.vantage.co.nz www.aplnz.co.nz
Email:	specifiersguide@aplnz.co.nz
Telephone:	07 849 2113

Warranty

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.
- 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 SHOP DRAWINGS

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

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

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

And where required the following: -

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

Where requested provide the following additional information

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

Submit shop drawings for review to ~.

~ 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 NO SUBSTITUTIONS

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

1.9 QUALIFICATIONS

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

1.10 COMPLIANCE

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

1.11 CERTIFICATION

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

Performance

1.12 STRUCTURAL/WEATHER-TIGHTNESS

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

1.13 PERFORMANCE - WINDOWS AND DOORS

To NZS 4211, including:

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

Refer to SELECTIONS.

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.

1.15 THERMAL PERFORMANCE - WINDOWS & DOORS

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

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

Refer to SELECTIONS for construction R-values.

Performance - Wind (design by contractor)

1.16 DESIGN PARAMETERS - NON SPECIFIC DESIGN

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

Refer to SELECTIONS for wind zone.

2 PRODUCTS

2.1 APL KLIMA SERIES UPVC WINDOWS

Refer to SELECTIONS for type and finish.

2.2 APL KLIMA SERIES UPVC DOORS

Refer to SELECTIONS for type and finish.

Materials

2.3 UPVC EXTRUSIONS

uPVC extrusions made of weather-proofed, impact modified material to EN 12608 and EN 513 for severe climates with the addition of a required minimum Rutile Titanium Dioxide content of 8phr.

2.4 FRAME REINFORCEMENT

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

2.5 ALUMINIUM EXTRUSIONS

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

2.6 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

2.7 GLASS

Refer to the glazing section for glass types and installation.

Reveals

2.8 REVEALS - TIMBER PAINTED

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

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Flashings

2.9 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 direct fix systems

2.10 SILL PAN FLASHING

To NZBC E2/AS1, paragraphs 9.1.10.3 - 9.1.10.6. Flashing for direct fix claddings to collect and drain water that may penetrate through the window or door unit. Size to extend from the inner most point of the uPVC frame out over the external face of the cladding.

2.11 SUPPORT ANGLE

WGANZ support angle, for use below the sill pan, for deeper claddings to transfer the weight of the window back to the frame. Size to suit cladding thickness.

Components

2.12 FIXINGS

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

2.13 GLAZING GASKETS

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

2.14 WINDOW HARDWARE

Fasteners, stays, locks, vents and other hardware as scheduled. Where hardware is not scheduled, use hardware from window manufacturer's standard range. Key alike all lockable window hardware able to be keyed alike.

Refer to SELECTIONS for type and finish.

2.15 DOOR HARDWARE

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

Refer to SELECTIONS for type and finish.

2.16 SAFETY STAYS

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

2.17 WEATHERING/INSTALLATION SEALANT

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

2.18 FOAM TAPE

Foam tape to NZBC E2/AS1, paragraph 9.1.9.9.

Finishes

2.19 DURATEC POWDER COATED ALUMINIUM

Polyester powder organic coating in accordance with WGANZ PQAS and AAMA 2604.

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3 EXECUTION

3.1 CONFIRM

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

Assembly

3.2 FABRICATION

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

3.3 HARDWARE GENERALLY

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

3.4 SAFETY STAYS

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

Conditions

3.5 DO NOT DELIVER

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

3.6 AVOID DISTORTION

Avoid distortion of elements during transit, storage and handling.

3.7 UNLOAD WINDOW JOINERY

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

3.8 UNLOAD DOOR JOINERY

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

3.9 PREVENT DAMAGE

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

3.10 PROTECTIVE COVERINGS

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

3.11 ADDITIONAL PROTECTION

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

Installation

3.12 CONFIRM PREPARATION OF WALL OPENINGS

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

Required preparatory work includes the following:

- wall underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames to NZBC E2/AS1, 9.1.4 Wall underlays to wall openings.
- Full height 20mm jamb battens to NZBC E2/AS1, Figure 9.1.9.4: General window and door opening for direct fixed (direct fix only)
- claddings neatly finished off to all sides of openings.
- installation of flashings (those which are required to be installed prior to frames).

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- application of waterproof sealer to all door and window sills in concrete floor or concrete sill situations. To door sills only, apply a suitable membrane over the sealer.

3.13 RETAIN PROTECTIVE COVERINGS

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

3.14 FIX FRAMES

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

3.15 INSTALLATION DIRECT FIX

Install to WGANZ Window Installation Guide and the fabricators details and drawings including sill pans to window and door units.

3.16 INSTALL FLASHINGS

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

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

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

3.17 COMPLETE AIR SEAL

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

Application - sealants

3.18 SEAL FRAMES ON SITE

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

3.19 PREPARE JOINTS

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

3.20 BACK UP

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

3.21 SEALANT FINISH

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

Cleaning

3.22 REMOVE TRADE DEBRIS

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

3.23 CLEANING GENERALLY

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

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3.24 TRADE CLEAN

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

Completion

3.25 REPLACE

Replace damaged, cracked or marked elements.

3.26 PROTECTIVE COVERINGS

Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect uPVC joinery from following trades.

Anodised finishes should be protected from cement products and requires immediate clean-up of cement splashes. Only use tapes that have passed WGANZ testing on powder coated products. Remove protection on completion.

3.27 REPLACE

Replace damaged, cracked or marked elements.

3.28 CONFIRM

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

3.29 SAFETY

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

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4553PD PARKWOOD EXTERIOR DOORS

1 GENERAL

This section relates to the supply and manufacture of Parkwood Products Ltdexterior entrance doors and frames.
It includes:

- Doors and frames
- Components and accessories to complete the installation

1.1 RELATED WORK

Refer to GLAZING sections for glazing
Refer to PAINTING section/s for paint finishes
Refer to HARDWARE section for door hardware

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
NZBC H1/VM1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/VM2	Energy efficiency for buildings greater than 300m²
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3610	Specification for profiles of mouldings and joinery
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
NZS 4214	Methods for determining the total thermal resistance of parts of buildings
NZS 4223.3	Glazing in buildings - Human impact safety requirements
BS EN 673	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
ISO 10077-1	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - General
ISO 10077-2	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Numerical method for frames

Window & Glass Association NZ (WGANZ) documents:

PQAS	Powder Coating Quality Assurance System

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

- Parkwood Doors The Home Collection - Catalogue
- Parkwood Door Furniture - Brochure

Manufacturer/supplier contact details

Web:	www.parkwooddoors.co.nz
Email:	sales@parkwooddoors.co.nz
Telephone:	0800 101028

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER - WARRANTY PLUS

Provide a material manufacturer/supplier warranty:

5 years	For Parkwood solid timber doors
10 years	For Duramax fibreglass doors
10 years	For Parkwood aluminium doors
10 years	For powder coating on aluminium

- Provide this WARRANTY PLUS full cover warranty on the manufacturer/supplier standard form (if not available use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Warranty Plus includes the following; Standard door repair or replacement, plus door fitting, door finishing and re-fitting of hardware.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Parkwood warranties are void if the ‘Guarantee of Quality’ requirements are not followed (refer to the tag on all doors or the Parkwood website).

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 Parkwood specified systems, components and associated products listed in this section.

Performance - thermal

1.7 THERMAL PERFORMANCE - DOORS

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

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

Refer to SELECTIONS for construction R-values.

Finishes

1.8 IN-SITU TOUCH-UP

In-situ touch-up of coating is only permitted after receiving written direction from the Contract Administrator. Replace damaged material not able to be restored to as-new condition.

2 PRODUCTS

Solid timber doors

2.1 TIMBER EXTERIOR DOOR LEAF

Parkwood solid timber door leaf to NZS 3602. Kiln-dried timber to 16% moisture content ex-factory. Available in a range of styles, colours, and sizes, with optional glazed vision panels. Refer to SELECTIONS.

2.2 PAINT - COMPOSITE DURAMAX DOORS

Refer to PAINTING sections.

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Frames

Components

2.3 DOOR HARDWARE - GENERAL

Refer to 5521 HARDWARE section.

2.4 DOOR HARDWARE - PARKWOOD RANGE

Parkwood door hardware, including gripsets, handles and locks. Refer to SELECTIONS.

2.5 GLASS

Refer to GLAZING sections for glass type and thickness. To NZS 4223.3 for human impact safety requirements.

2.6 EXTERIOR FACINGS AND SCRIBERS

Treated H3.1 facings and scribers to NZS 3610, to profiles as detailed.

2.7 FLASHING GENERALLY

Head, jamb and sill flashing material to be compatible with door frame, fixings, and cladding materials.

2.8 METAL FASTENINGS

Stainless steel or non-corrodible metal.

2.9 SCREWS

Stainless steel or other non-corrodible metal. Length sufficient to penetrate into the background support up to the shank. Screws for fixing hinges, hardware or furniture to match the item being attached.

2.10 NAILS

Length sufficient to penetrate into the background support at least half the nail length, except if into Radiata pine, then three-fifths their length.

2.11 HINGES

Size and gauge appropriate to carry door size and weight. Refer to SELECTIONS.

Finish - timber

2.12 STAIN - TIMBER DOORS AND FRAMES

A film-forming product to be used on all 6 sides of the door to Parkwood recommendations. Refer to appropriate PAINTING sections.

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 CHECK ALL OPENINGS

Check all openings on site for size and standard of execution before installing Parkwood door frames.

3.4 CONFIRM PREPARATION OF EXTERIOR WALL OPENINGS

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

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Required preparatory work includes the following:

- Wall underlay/building wrap to openings finished and dressed off ready for the installation of door frames to NZBC E2/AS1, 9.1.4 Wall underlays to wall openings.
- Full height 20mm jamb battens to NZBC E2/AS1, Figure 9.1.9.4: General window and door opening for direct fixed, (direct fix only).
- Claddings neatly finished off to all sides of openings
- Installation of flashing (that which is required to be installed prior to frames).

Assembly

3.5 FABRICATION GENERALLY

Manufacture and fabricate Parkwood frames and doors as detailed. Install hinges and running gear as scheduled.

3.6 HINGES

Fit hinges to Parkwood doors appropriate to support the door size and weight - minimum of;

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

3.7 FACTORY FINISHING

Before delivery to site:

- Prime all rebates, and concealed faces with a suitable material-compatible primer.
- Brace square and provide protection to assemblies during delivery to site. Where factory glazed, indicate the presence of transparent glass with whiting, tape or signs compatible with the glass type.

3.8 ON SITE FINISHING

Before installation:

- Prime assemblies scheduled for paint finish not already primed with a material appropriate primer.
- Prime all rebates and concealed faces of beads of assemblies scheduled for clear finish with a material appropriate primer.
- Re-prime/seal any subsequently cut edge.
- Refer to PAINTING sections for finishing.

Installation - frames

3.9 FIXING FRAMES

Fit flashings to frame and framing as required. Fix with corrosion resistant fixings and assemble frames rigidly in place, plumb, level and true to line and face without distortion and with all Parkwood doors fully and easily operating. Ensure fixings are adequate in vicinity of hinges and opposite lock / latch. Fit facings, scribers, draught-stopping and sealants.

Installation - doors

3.10 INSTALL GLAZING 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.

3.11 INSTALL HARDWARE

Install latches, locks and door hardware in accordance with manuacturers requirements.

3.12 CHECK

Check the operation of all Parkwood doors and hardware before completion of installation and adjust if required.

Completion

3.13 COMPLETION MATTERS

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

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3.14 COMPLETION - TESTS & CERTIFICATION

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

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4 SELECTIONS

For further details on selections go to www.parkwooddoors.co.nz
Contractor to confirm door panel style with Owner.

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4610 GLAZING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

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

1.2 CERTIFICATION

If not supplied with windows, provide documentation that the safety glass complies with NZS 4223.3.

2 PRODUCTS

2.1 GLAZING TAPE

Pressure sensitive, self-adhesive vinyl foam tapes, selected to suit the glazing detail.

2.2 GLASS THICKNESS

As selected and to NZS 4223.1, NZS 4223.3, NZS 4223.4.

2.3 LAMINATED GLASS

To NZS 4223.3.

2.4 TOUGHENED GLASS

To NZS 4223.3.

Heat soaked toughened glass to NZS 4223.1, Appendix E required for critical areas (balustrades etc) to reduce inclusion failure.

2.5 INSULATED GLASS UNITS

As selected and to AS/NZS 4666. and NZS 4223.2

2.6 MIRROR GLASS

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

2.7 SETTING BLOCKS

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

3 EXECUTION

3.1 EXECUTION GENERALLY

To NZS 4223.1, and for human impact safety glazing to NZS 4223.3. Insulating glass units to AS/NZS 4666 and NZS 4223.2.

3.2 INSTALL GLASS TO ALUMINIUM FRAMES

Install glass to NZS4223.1.

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

3.3 SAFETY GLASS INSTALLATION

Use in doors, sidelight panels, low level windows, bathrooms and all other locations to comply with NZS 4223.3.

3.4 INSTALL MIRRORS

Install mirrors as detailed. Seal to vanities and basins where required.

3.5 SAFETY

Indicate the presence of transparent glasses, with whiting, tape or signs compatible with the glass type. Do not apply indicators other than whiting to the glass surface. Permanent manifestations if required, to comply with NZS 4223.3, 2.2 Manifestation (making glass visible).

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3.6 CLEAN

Clean off or remove indicators at completion of the building. Clean glass inside and out to a shining finish.

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4610AG AGP® GLAZING RESIDENTIAL

1 GENERAL

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

- Window and door glazing

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

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

IGU	Insulating Glass Units
PVB	Polyvinyl Butyral
uPVC	Unplasticised polyvinyl chloride

Documents

1.2 DOCUMENTS

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

NZBC B1/AS1	Structural provisions for buildings
NZBC B2/AS1	Durability provisions for building elements
NZBC F2/AS1	Hazardous building materials
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/VM1	Energy efficiency for buildings greater than 300m²
AS/NZS 1170.2:2011	Structural design actions - Wind actions
AS/NZS 2208	Safety glazing materials in buildings
AS/NZS 4667	Quality requirements for cut and processed glass
NZS 4211	Specification for performance of windows
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.Supp1	Glazing in buildings - Supplement 1 to NZS 4223.1:2008 and NZS 4223.4:2008
NZS 4223.2	Glazing in buildings - Insulating glass units
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live action
BPS	Building Product Specifications

1.3 MANUFACTURER'S DOCUMENTS

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

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

Manufacturer/supplier contact details

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

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

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

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 NO SUBSTITUTIONS

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

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 INFORMATION FOR OPERATION AND MAINTENANCE

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

- Care and maintenance of your AGP glass
- Condensation guide

Provide this information prior to practical completion.

Compliance information

1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

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

Performance

1.9 THERMAL STRESS ANALYSIS

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

1.10 THERMAL PERFORMANCE - EXTERNAL GLAZING

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

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

Performance – Wind (design by contractor)

1.11 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR

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

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2 PRODUCTS

Materials, windows and doors

2.1 CLEAR FLOAT GLASS

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

2.2 OBSCURE GLASS

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

2.3 LAMINATED GLASS

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

2.4 TOUGHENED GLASS

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

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

2.5 TINTED FLOAT GLASS

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

2.6 REFLECTIVE AND COATED FLOAT GLASS

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

2.7 INSULATING GLASS UNITS (IGU'S)

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

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

Components, aluminium and uPVC glazing

2.8 GLAZING TAPE AND GASKETS

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

2.9 SETTING BLOCKS

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

3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

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

3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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.

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3.4 PRE-INSTALLATION REQUIREMENTS

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

3.5 GLASS CONDITION

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

3.6 GLASS THICKNESS

Whether stated in a glazing schedule or not, confirm glass thicknesses to NZS 4223.1, NZS 4223.3, NZS 4223.4. For windows tested to NZS 4211, ensure glass meets the requirements of the window testing.

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

3.7 REBATE DIMENSIONS

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

Conditions - human impact safety requirements

3.8 SAFETY GLAZING, GENERAL REQUIREMENTS

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

3.9 SAFETY GLAZING MATERIAL

Use only safety glazing materials defined in NZS 4223.3, that also comply with the relevant requirements of AS/NZS 2208. Ensure material is permanently marked and if cut by the distributor or installer mark each piece to NZS 4223.3, 2.8 Identification.

3.10 CONTAINMENT

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

Assembly

3.11 WORKING OF GLASS

All working of glass as required in NZS 4223.1.

3.12 EDGE WORK

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

Installation/application

3.13 STANDARDS AND TOLERANCES

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

3.14 INSTALL SAFETY GLASS

To NZS 4223.3.

3.15 INSTALLING INSULATING GLASS UNITS

Refer to the APL branded window manufacturer's requirements and before glazing ensure that the materials forming the opening are strong enough to accept the weight, the rebates are the correct size and prepared to receive the units to the manufacturers requirements. Fit setting and location blocks and bead glaze units using a compatible sealant.

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.

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Application aluminium

3.17 INSTALL GLASS TO ALUMINIUM FRAMES

Install glass to NZS 4223.1.

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

Application uPVC

3.18 INSTALL GLASS TO uPVC FRAMES

Install glass to NZS 4223.1.

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

Finishing

3.19 SAFETY

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

3.20 MANIFESTATIONS

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

Completion & Commissioning

3.21 COMPLETION MATTERS

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

3.22 COMPLETION - TESTS & CERTIFICATION

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

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4710 THERMAL INSULATION

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

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

2 PRODUCTS

2.1 THERMAL INSULATING PADS

Rectangular insulating pads manufactured from fibreglass, polyester, wool or similar.

2.2 CELLULAR PLASTIC RIGID BOARD

Polystyrene foam board manufactured from fire retardant grade resin.

3 EXECUTION

Conditions

3.1 INSTALL INSULATION - GENERAL

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

3.2 FIT THERMAL INSULATING PADS

Friction fit insulating pads in place to completely fill the whole of the cavities. Carefully scribe cut insulating pads slightly oversize to maintain friction fit to each other, to smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating pads over the whole of the installation. Do not cover vents.

3.3 FIT CELLULAR PLASTIC RIGID BOARD

Friction fit board after roof and wall claddings have been installed. Cut oversize lengthways for a tight compression fit between framing. Leave no gaps between, and maintain full thickness of the insulating segments over the whole of the installation. Fit board between floor joists and timber framing using proprietary fixing clips. Ensure separation from electric cabling. Do not cover vents. Leave a 200mm clear gap around recessed light fittings and metal flues. In windy locations secure floor insulation with proprietary support brackets.

3.4 INSULATION CLEARANCES

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

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4710P PINK® BATTS® THERMAL & ACOUSTIC INSULATION

1 GENERAL

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

1.1 RELATED WORK

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

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

Manufacturer/supplier contact details

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

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

50 years For Pink® Batts® insulation products

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

1.9 SOUND CONTROL SITE TEST

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

Compliance information

1.10 COMPLIANCE - BRANZ APPRAISAL 238

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

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 - NON COMBUSTIBLE

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

2 PRODUCTS

Materials - thermal insulation

2.1 PINK® BATTS® THERMAL INSULATION BATTS

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



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Materials - acoustic insulation

2.2 PINK® BATTS® SILENCER® ACOUSTIC INSULATION BATTS

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

Components

2.3 WIRE NETTING

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

2.4 PLASTIC STRAPPING TAPES

Proprietary plastic strapping tape.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation - general

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALL INSULATION - GENERALLY

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

3.6 INSULATION CLEARANCES

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

3.7 LAY WIRE NETTING - UNDER JOISTS / PURLINS

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

3.8 LAY WIRE NETTING - OVER PURLINS

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

3.9 LAY PLASTIC STRAPPING TAPE

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

3.10 PREPARATION INSULATION

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

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3.11 CUTTING INSULATION TO SIZE

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

Installation - thermal insulation

3.12 INSTALL PINK® BATTS® TIMBER WALL INSULATION

Friction fit insulation slabs between framing.

3.13 INSTALL PINK® BATTS® INTERIOR SECONDARY WALL INSULATION LAYER

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

3.14 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.

3.15 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.

3.16 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.

Installation - acoustic insulation

3.17 INSTALL PINK® BATTS® SILENCER® WALL INSULATION

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

3.18 INSTALL PINK® BATTS® SILENCER® MIDFLOOR INSULATION

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

Completion

3.19 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials - thermal insulation

4.1 PINK® BATTS® TIMBER WALL INSULATION

Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® Ultra Wall
R-value:	2.8
Nominal stabilised thickness:	90

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4.2 PINK® BATTS® SKILLION ROOF INSULATION

Location:	~
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® ~
R-value:	~
Nominal stabilised thickness:	~
Batt size:	~

Materials - acoustic insulation

4.3 PINK® BATTS® SILENCER® WALL INSULATION

Location:	Interior Walls
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® Silencer® Wall
Nominal stabilised thickness:	100mm
Batt size:	1140mm x 560mm

4.4 PINK® BATTS® SILENCER® MIDFLOOR INSULATION

Location:	Midfloor
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts® Silencer® MidFloor
System IIC:	32
Nominal stabilised thickness:	150mm
Batt size:	1140mm x 432mm

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4711E EXPOL UNDERFLOOR INSULATION

1 GENERAL

This section relates to the supply and installation of Expol insulation foam panels fitted as underfloor thermal insulation to suspended timber framed floors.

It includes:

- EPS underfloor insulation panels
- Components and accessories to complete installation

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

CA	Closed abutted
EPS	Expanded polystyrene
IC	Insulation contact
IC-F	Insulation contact - Fire rated

Documents

1.2 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
AS 1366.3	Rigid cellular plastic sheets for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS - M)
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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Expol UnderFloor Insulation brochure
Expol Technical Product Guide
BRANZ Appraisal 256 (2026) - EXPOL Underfloor Insulation

Copies of the above literature are available from:

Web:	www.expol.co.nz
Email:	tech@expol.co.nz
Telephone:	09 634 3449 / 0800 863373
Facsimile:	09 634 0756

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

50 years	For materials

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

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Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Compliance Information

1.6 COMPLIANCE - BRANZ APPRAISAL

EXPOL Underfloor Insulation has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 256.

Performance

1.7 DURABILITY

Expol EPS insulation to comply with NZBC B2/AS1, Table C.1.1.1, Durability requirements of nominated building elements.

50 years	For Expol UnderFloor thermal insulation panels

Refer to the Manufacturer's literature for additional requirements.

2 PRODUCTS

Materials

2.1 EXPOL BLACK UNDERFLOOR INSULATION

Expol black rigid EPS foam panel with pre-cut concertina cuts to both edges. Manufactured from flame retardant beads with added graphite to AS 1366.3 and AS/NZS 4859.1. Available in a range of thicknesses and sizes. Refer to SELECTIONS.

Components

2.2 EXPOL WIRE GUARD

Expol Wire Guard, a waxed paper strip used to separate exposed electrical cables from Expol underlloor insulation.

2.3 EXPOL JOIST SADDLE

Expol proprietary non corrosive nylon joist saddle for installations to new timber floors.

2.4 EXPOL Z CLIPS

Expol proprietary no nail, push fit, non corrosive nylon clips for retrofit installations to existing timber floors.

2.5 EXPOL STYROFIX ADHESIVE

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

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.

3.4 PROTECT

Do not subject the polystyrene to prolonged saturation or exposure to sunlight. Do not allow the polystyrene to come into contact with solvents.

Installation - generally

3.5 INSTALL INSULATION - GENERAL

Lay, install, fit and fix insulation without gaps and over compaction to NZBC H1/AS1 or AS2 and insulation manufacturer's requirements. For all housing and buildings up to 300m², install in accordance to NZS 4246.

3.6 INSULATION CLEARANCES

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

Installation

3.7 INSTALL PANELS TO NEW TIMBER FLOOR - EXPOL JOIST SADDLE

Place Expol joist saddles over the timber joists, with two joist saddles per insulation panel, positioned diagonally in opposite corners on opposite floor joists, 200mm from the panel end. Trim edges of panel when oversize by cutting one or more of the concertina edges. Place panels on the joist saddles flush with the top of joists.

3.8 INSTALL PANELS TO EXISTING TIMBER FLOOR - EXPOL Z CLIPS

Friction fit Expol underfloor insulation panels between floor joists with the top face touching the underside of the floor. Place two Z clips per insulation panel, positioned diagonally in opposite corners, 200mm from the panel end. Push Z clips up on the sides between the floor joists and insulation panel to hold it in place.

3.9 INSTALL PANELS TO EXISTING TIMBER FLOOR - EXPOL STYROFIX ADHESIVE

Apply a continuous bead of Expol StyroFIX to one side of the underfloor insulation panel in a zic zac pattern between the top and bottom edge and along the full length of the panel. Fit to the underside of the floor ensuring full contact and no air gap.

3.10 ELECTRICAL CABLES

Separate all electrical cables from Expol UnderFloor insulation using Expol Wire Guard, applied to the joist area to separate the cables from polystyrene. Take extreme caution when working around electrical cables.

CAUTION: Electrical cables and equipment partially or completely surrounded with bulk thermal insulation may overheat and fail. For cables installed prior to 1989 ensure all insulation is fitted leaving the cables exposed.

3.11 PIPES AND PLUMBING

Cut the panel and notch around difficult areas to accommodate obstacles. A polyurethane foam material may be used to seal off more difficult areas. Ensure all air gaps are sealed around the outside perimeter to retain maximum insulation.

Completion

3.12 COMPLETION MATTERS

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

4 SELECTIONS

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

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Materials

4.1 EXPOL R3.1 BLACK UNDERFLOOR INSULATION

Location:	Under living, dining, kitchen
Brand:	Expol Black
Size:	To suit joist spacings
Thickness:	100mm
Compressive resistance at 10%:	105kPa
R value:	3.1
Fixing method:	Expol Z clips - for installation to existing timber floor

Components

4.2 WIRE GUARD

Type/Brand:	Expol Wire Guard

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4711OI OUTRIGHT ENERTHERM PIR INSULATION

1 GENERAL

This section relates to the supply and installation of **Outright Continuous Insulation** IKO Enertherm PIR continuous thermal insulation for pitched warm roofs, exterior wall applications, behind external wall linings and basement areas.
It includes:

- IKO Enertherm PIR Insulation Boards
- and associated componentry necessary to complete the installation.

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
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
AS/NZS 3000	Electrical installations (Known as the Australian/New Zealand Wiring Rules)
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential building
AS/NZS 4859.1	Thermal insulation materials for buildings - General criteria and technical provisions

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

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

IKO Enertherm Product Literature on Outright Continuous Insulation website

Manufacturer/supplier contact details

Company:	**Outright Continuous Insulation**
Web:	www.outright.co.nz
Email:	info@outright.co.nz
Telephone:	09 579 2046

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For IKO Enertherm

- 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

1.4 QUALIFICATIONS GENERAL

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 NO SUBSTITUTIONS

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

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Performance

1.6 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.

2 PRODUCTS

Materials

2.1 IKO ENERTHERM ALU - INSULATION BOARD FOR WALLS & ROOFS

IKO Enertherm ALU Board, a high performance, fibre-free rigid PIR insulation, faced on both sides with a low emissivity composite foil bonded to the insulation during manufacture. Designed to provide continuous thermal insulation to floors, pitched roofs, concrete, concrete block, timber and steel framed walls, and engineered timber (CLT) structures.

Supplied in a straight edge board, 2270mm x 1200mm or 2400mm x 1200mm and available in a range of thicknesses and R values. Refer to SELECTIONS for options.

Components

2.2 FASTENERS - GENERALLY

Fasteners to suit the particular application in accordance with Outright installation instructions.

2.3 TAPE

IKO Foil Tape, aluminium foil tape, minimum of 48mm and 96mm wide.

2.4 EXPANDING FOAM

IKO Expanding foam, compatible with IKO Enertherm ALU boards.

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 - generally

3.3 INSTALL INSULATION - GENERAL

Lay, install, fit and fix insulation without gaps, tucks, folds and over compaction to NZBC H1/AS1 or AS2 and insulation manufacturer's requirements. For all housing and buildings up to 300m install in accordance to NZS 4246 sections 5 Walls, 6 Ceilings & Roofs, 7 Underfloor - Suspended Framed Floors and 10 Concrete Slab-on-Ground Insulation, for residential light timber or steel framed buildings. Do not cover vents. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath.

3.4 INSULATION CLEARANCES

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

3.5 PIPES AND PLUMBING

Cut holes in the IKO Enertherm board with a sharp knife and notch around obstacles such as pipes and plumbing.

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3.6 ELECTRICAL CABLES

Fit IKO Enertherm Board behind or in front of electrical wiring and plumbing. Ensure there are no gaps or undesirable compression at edges.

Use extreme caution when working around electrical cables.

3.7 CHECK FOILS

Ensure foils are dry, clean, bright, undamaged and free of debris before being covered.

3.8 CHECK WALL AND ROOF UNDERLAYS

Ensure these are dry, clean, undamaged and free of debris before being covered.

3.9 CHECK VAPOUR BARRIERS

Ensure these form one homogeneous sheet vapour barrier and remain as such throughout the ensuing construction process.

3.10 INSULATION BOARD - CUTTING

Cut IKO Enertherm Board by using a fine-toothed saw or by scoring with a sharp knife, snapping the board over a straight edge and then cutting the facing on the other side. Ensure joints are close-butted to maintain continuity of insulation.

Installation - IKO Enertherm ALU board, warm pitched roofs

3.11 INSTALL INSULATION BOARD – WARM PITCHED ROOF, EXTERNAL SIDE OF ROOF STRUCTURE

Install IKO Enertherm ALU Board to warm pitched roof to Outright installation instructions and as follows:

- Rafter spacing to be maximum of 600mm centres.
- After roof metal underlay or plywood diaphragm has been installed, fix IKO Enertherm ALU Board to external face of rafter or engineered timber (CLT) structure with vertical joints to coincide with studs, where appropriate.
- Slot boards together to provide a continuous insulation layer and air barrier.
- Install a maximum of three IKO Fix fixing per sheet to hold boards in place temporarily.
- Use expanding foam to full all gaps between the boards, or between the boards and the structure so a complete air barrier is created.
- Ensure straight edge board is selected.

3.12 APPLY TAPE TO INSULATION BOARD

Tape all board joints with a minimum 96mm wide foil tape.

- Remove dust, dirt or oil and clean surface of board with a dry cloth before applying tape.
- Remove liner on tape 500mm at a time and press adhesive firmly on to the insulation. Do not stretch tape.
- Ensure tape is applied over the centre of the join so that there is adequate area on both sides of the joint.
- Wipe tape firmly from the centre out (like wallpaper) with a plastic squeegee. The more pressure applied, the greater the bond surface.
- Cut and fit tape with a knife and scissors. Repeat wiping instructions as above.

3.13 INSTALL ROOFING AND ROOFING BATTENS/PURLINS

Install roof material as follows:

- Screw fix roofing battens/purlins through the insulation board, to the rafters to support roofing material.
- Construct roof material to the appropriate metal roof section(s) specification or metal roof manufacturers code of practice, as appropriate.

Completion

3.14 COMPLETION MATTERS

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

4 SELECTIONS

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

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Substitutions are not permitted to the following.

Materials

4.1 OUTRIGHT CONTINUOUS INSULATION - IKO ENERTHERM ALU, STRAIGHT EDGE BOARD

Location:	Roof
Manufacturer:	IKO Enertherm
Supplier:	Outright Continuous Insulation
Brand/type:	IKO Enertherm ALU Board
Construction type:	~
Thickness:	100mm (or 2x50mm - staggered joints)
R value:	R4.55

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5110 INTERIOR LININGS & TRIM

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 FRAMING MOISTURE CONTENT

Maximum allowable moisture content to NZS 3602, table 4 **Allowable moisture content…**.

1.2 PROTECT

Protect joinery, fittings and finishes already in place from water staining or damage from lining installation. Ensure building is weatherproof before lining work commences.

2 PRODUCTS

2.1 PLASTERBOARD

Gypsum plaster core encased in a durable face and backing paper formed for standard use, bracing use, fire rated use and water resistance use.

2.2 PLASTERBOARD ACCESSORIES

External angles:	Slim type 0.5mm galvanized steel.
Casing bead:	Slim type 0.5mm galvanized steel or PVC.
Cornice:	Plasterboard scotia type.
Nails:	Galvanized clouts 40mm x 2.5mm.
Screws:	40mm x 6 gauge zinc electro-plated bugle head gypsum drywall screws
Jointing compound & paper tape:	To the board manufacturer's requirements.
Adhesive:	Multi-purpose water based wallboard adhesive.

2.3 FIBRE CEMENT SHEET

Cellulose cement autoclaved sheets.

2.4 NAILS

Zinc-plated steel, stainless steel and galvanized steel of pattern to suit location and to BRANZ BU 519: **Fasteners selection**.

2.5 INTERIOR FINISHING TRIM

Timber selection to NZS 3602, table 3 **Requirements for wood-based building components….** Profile as selected or to match existing. Jointer profiles to suit location.

3 EXECUTION

3.1 SUBSTRATE

To NZS 3604, section 8 **Walls**, section 10 **Roof framing**, section 12 **Interior linings**, section 13 **Ceilings**, and the standard required by the lining manufacturer's requirements. Ensure moisture content of timber framing is at or below specified levels.

3.2 CONFIRM LEVELS OF PLASTERBOARD FINISH

Before commencing work, confirm the surface finish assessment procedures necessary to ensure the specified levels of finish will be obtained. Provide levels of finish as laid down in AS/NZS 2589.

3.3 LINE PLASTERBOARD CEILINGS AND WALLS

Line walls and ceilings with plasterboard sheets, fastened to the plasterboard manufacturer's requirements.

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3.4 SPECIAL PLASTERBOARD LININGS

Line wet area walls with water resistant plasterboard sheets using adhesive and nail fixing to studs at centres to suit the surface finish. Form bracing panels using high density plasterboard sheets fixed with clout-washers and clouts and to conform to NZS 3604, 5.4 **Wall bracing design**, and 13.5 **Structural ceiling diaphragms**. Form sound rated panels following the sheet manufacturer's specifications and details for the required sound rating. Form fire rated panels following the sheet manufacturer's specifications and details for the required fire rating.

3.5 FIX PLASTERBOARD EXTERNAL ANGLES

Fix full length to external corners, with clouts at 100mm each side staggered.

3.6 PLASTERBOARD JOINTING AND STOPPING

Fill joint recess with bedding compound, centre the paper tape, apply second coat of bedding compound followed by a coat of finishing compound. Allow to dry and lightly sand off. Fill nail holes and flush up external angles with two successive coats of bedding compound followed by a coat of finishing compound. Allow to dry and lightly sand off. All to the plasterboard manufacturer's requirements.

3.7 LEVELS OF FINISH

Provide levels of finish to standards laid down by AS/NZS 2589 as follows:

Level 4:	For thin coating finishes (paint) and surfaces receiving light texture or wall covering finishes
Level 5:	Where specifically detailed for surfaces receiving thin coating finishes (paint).

3.8 INSTALL FIBRE CEMENT SHEET LININGS

Fix to timber framing with jointing as detailed and to the panel manufacturer's requirements.

3.9 INSTALL TRIM

Scribe and fit reveal linings to exterior timber joinery, architraves to interior joinery, skirtings to walls and timber beads to wall/ceiling junctions, and other trim as detailed.

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5230 INTERIOR DOORS & FRAMES

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Trades people qualified or experienced in those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, and stairs).

2 PRODUCTS

2.1 DOORS GENERALLY

As selected.

2.2 GLAZED DOORS

Solid timber framed and bead glazed.

2.3 INTERIOR CAVITY SLIDERS

Hollow core door within a proprietary cavity slider frame, with brand-matched sliding door gear.

2.4 INTERNAL JOINERY FRAMES

Fabricate as detailed.

2.5 DOOR HINGES

Type:	loose-pin zinc-plated steel
Size:	89mm
Material:	zinc-plated steel
Number:	3 hinges per door

2.6 DOOR HARDWARE

As selected.

2.7 NAILS

Zinc-plated steel, stainless steel and galvanized steel of pattern to suit location and to BRANZ BU 519: **Fasteners selection**.

3 EXECUTION

3.1 PROTECT

Protect joinery, fittings and finishes already in place from water staining or damage from lining installation. Ensure building is weatherproof before lining work commences.

3.2 FIT INTERNAL JOINERY FRAMES

Wedge and rigidly fix in place without distortion, plumb, and true to line and face.

3.3 INTERNAL CAVITY SLIDERS

Install in accordance with the door manufacturer's requirements.

3.4 FIT HARDWARE

Fit hardware selected and provided, all in accordance with the hardware manufacturer's requirements.

3.5 CHECK

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

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5410 FLOORS

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

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

2 PRODUCTS

2.1 PLYWOOD FLOORING

Structural plywood for bracing and floors, F11, CD grade, sanded face, H3.2 CCA.

2.2 NAIL FIXING PARTICLEBOARD OR PLYWOOD

Hand-driven 60 x 3.15mm hot-dipped galvanized csk annular grooved flooring nails, or power-driven 65 x 2.87mm hot-dipped galvanized annular grooved flooring nails, along with one-component polyurethane based construction adhesive or elastomeric construction adhesive. Increase nail lengths for flooring over 21mm thick.

2.3 SCREW FIXING PARTICLEBOARD OR PLYWOOD

Sure-fast type countersunk 50mm x 10 gauge screws, with one-component polyurethane based construction adhesive or elastomeric construction adhesive. Increase screw lengths for flooring over 21mm thick.

3 EXECUTION

3.1 LAY PLYWOOD FLOORING

Fix to the plywood manufacturer's requirements and to NZS 3604, 7.2.3 **Wood-based sheet flooring**. Punch nails, fill holes, then sand , hand sanding into corners.

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5510 JOINERY FIXTURES & FITTINGS

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

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).

2 PRODUCTS

2.1 TIMBER 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 MEDIUM DENSITY FIBRE BOARD

Resin bonded wood fibre sheet with selected finish.

2.3 STAIRCASE ELEMENTS

Exposed stairs to NZS 3602, table 1 **Requirements for wood-based building components…**, and protected stairs to NZS 3602, table 2 **Requirements for wood-based building components…**.

3 EXECUTION

3.1 TRANSIT AND DELIVERY

Load, transport and unload fittings without distortion or damage and keep covered to protect from the weather. Do not deliver fittings until floor, wall and ceiling surfaces are in place and the fittings can be placed in their final location.

3.2 FABRICATION QUALITY

Check site dimensions. Carry out machining within the practices required for the particular timber or wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's requirements. Work accurate, square and true to line and face.

3.3 FABRICATE JOINERY FITTINGS

Carry out jointing, dowelling and other operations necessary for the proper assembly of the fittings as detailed, with fixings concealed unless otherwise detailed. Use glue joints where provision for shrinkage is not required, with contact surfaces, glueing and pressure all applied to the glue manufacturer's requirements. Locate and drive connectors and fasteners to the bolt manufacturer's requirements. Scribe fit adjustable shelves with 4 shelf pins and locate force fit pin holes at 50mm maximum centres in solid cheeks. Hang doors on concealed hinges.

3.4 FABRICATE TIMBER STAIRS

To NZBC D1/AS1, 4.0. **Stairways, closed type**, unless detailed otherwise. Fabricate and install the handrails and balustrading as detailed, complete with associated metal componentry and hardware.

3.5 ASSEMBLE PROPRIETARY ITEMS

Check all components are included. Assemble to manufacturer's instructions to achieve finished item.

3.6 INSTALL FITTINGS

Scribe fit on site and install level, square, plumb and true to line and face.

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6200 TILING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Use tilers experienced with the materials and techniques specified.

1.2 SLIP RESISTANCE

Accessible routes slip resistance to NZBC D1/AS1, 2.1 Slip resistance.

2 PRODUCTS

2.1 ADHESIVES COMPATIBILITY

On proprietary substrates or waterproof membranes use only adhesives with documented compatibility approval from the respective manufacturers.

2.2 ACCESSORIES

Waterproofing membranes:	As selected.
Cement-based screed:	Mix of 3:1 Portland cement, wash-mix sand, gauged with liquid polymer additive to the tile manufacturer's requirements.
Tile adhesive:	To the tile manufacturer's requirements.
Grout:	Cement based, compressible and to suit the particular location and use.
Control joint sealant:	To BRANZ Good practice guide: Tiling, section 5.0.

3 EXECUTION

3.1 HANDLING AND STORAGE

Handle tiles with care to avoid chipping, soiling and damage. Store on hard, level standings in non-traffic, non-work areas that are enclosed, clean and dry. Reject all damaged tiles.

3.2 SUBSTRATE

Ensure all services and accessories are in place, located to suit the tile layout, with the substrate required for tiling work.

3.3 TEMPERATURE

Do not carry out tiling where the ambient temperature is below 5°C, or onto a substrate with a temperature higher than 40°C.

3.4 LAYOUT

Obtain confirmation of the proposed layout of tiles, expansion joints and other visual considerations.

3.5 EXECUTION GENERALLY

Prepare surfaces and carry out the tiling work in accordance with BRANZ Good practice guide: Tiling.

3.6 SURFACE PREPARATION

To BRANZ Good practice guide: Tiling, section 4.0.

3.7 LAY PROPRIETARY SCREED

Apply a proprietary cement slurry bond coat over the whole of the floor. Mix and place a 40mm thick mortar bed over the bond coat and firmly tamp, screed and compact to the required level. In waterproofed areas where the cement screed has been laid over the waterproofing membrane, prepare the screed surface by applying a further waterproof coating before laying tiles.

3.8 LAY SHEET WATERPROOFING MEMBRANE

Apply the selected sheet waterproof membrane system to the membrane manufacturer's requirements. Flood test shower cubicle floors.

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3.9 APPLY LIQUID WATERPROOFING MEMBRANE

Apply the selected liquid waterproof membrane system to the membrane manufacturer's requirements. Flood test shower cubicle floors.

3.10 INSTALL UNDER TILE ELECTRIC HEATING

Install to the membrane manufacturer's requirements. Arrange for electrician to connect power supply.

3.11 TILE FIXING, RIGID SHEET

Prime the surface after the curing of any waterproof membrane. Spread adhesive to a uniform minimum thickness of 3mm and rib it with a notched trowel to the tile manufacturer's requirements. Press the tile and beat it into place to obtain the required coverage by adhesive on the back of each tile.

3.12 TILE FIXING, INTERIOR TIMBER FLOORS

Install underlay to the tile manufacturer's requirements. After the curing of any waterproof membrane, prime the surface, spread adhesive to a uniform minimum thickness of 3mm and rib it with a notched trowel to the tile manufacturer's requirements. Press the tile and beat it into place to obtain the required coverage by adhesive on the back of each tile.

3.13 GROUTING

Remove spacers. Prepare joints, mix and apply proprietary grout and finish off the grout uniform in colour, smooth and without voids, pinholes or low spots.

3.14 MOVEMENT CONTROL JOINTS

Minimum width of 6mm, carried through tile and bedding. Where substantial movement is anticipated, carry through the rigid sheet to the structure. Ensure joints are clean, formed, filled, and the sealant inserted to the sealant manufacturer's requirements.

3.15 CLEAN

Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave clean and free of blemish. Finally polish tiles with a clean, dry cloth.

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6300 FLOOR COVERING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Use flooring trades people appropriately experienced with the materials and techniques specified.

2 PRODUCTS

2.1 ADHESIVES COMPATIBILITY

Use only compatible adhesives approved by the respective manufacturers.

2.2 RESILIENT FLOOR COVERING

Includes vinyl, linoleum or rubber, either sheet or tile

2.3 ACCESSORIES - RESILIENT FLOOR COVERING

Rigid sheet underlay:	Wood based sheet overlays for uneven timber floors
Primer and sealers:	To the adhesive manufacturer's requirements for the particular substrate.
Adhesive:	To the manufacturer's requirements.
Trims and edging:	As supplied by the manufacturer to complete the work.

2.4 CARPET

Textile floor coverings to, AS/NZS 2455.1 for broadloom or AS/NZS 2455.2 for tiles.

2.5 ACCESSORIES - CARPET

Rigid sheet underlay:	Wood based sheet overlays for uneven timber floors
Underlay:	To AS/NZS 2455.1 Soft underlay and underlays manufacturer's requirements.
Adhesives:	To the manufacturer's requirements.
Edge grippers:	To the manufacturer's requirements.
Tape:	To the manufacturer's requirements.
Trims and edging:	Binder bars, divider strips and nosings to complete the work.

2.6 TIMBER OVERLAY FLOORING

Laminated timber overlay flooring strips/planks for floating floor installation.

2.7 ACCESSORIES - TIMBER OVERLAY FLOORING

Rigid sheet underlay:	Wood based sheet overlays for uneven timber floors
Primer and sealers:	To the adhesive manufacturer's requirements for the particular substrate.
Adhesive:	To the manufacturer's requirements.
Foam underlay	2mm thick, closed cell foam underlay to provide a moisture membrane.
Trims and edging:	As supplied by the manufacturer to complete the work.

3 EXECUTION

3.1 HANDLING AND STORAGE

Maintain materials and accessories undamaged and dry. Store any rolls and other material to manufacturers requirements, on level surfaces, in non-work areas that are enclosed, clean and dry. Avoid distortion, marking and damage to edges while shifting and handling materials and accessories. Do not use faulty or damaged material.

3.2 SUBSTRATE

Ensure the building is enclosed, wet work complete, finishes and trim complete, and good lighting available. Inspect the substrate to ensure it is of the standard required for work in this section.

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3.3 TEMPERATURE

Acclimatize flooring to a room temperature above 16°C to manufacturer's requirements. In air-conditioned buildings run air-conditioning to flooring manufacturer's requirements. Turn off floor heating for at least 48 hours before and after laying.

3.4 LAYOUT

Before beginning the installation confirm the proposed layout of material, location of joins and other visual considerations of the finished work.

3.5 SURFACE PREPARATION - RESILIENT FLOORING

To NZS/AS 1884 including necessary repairs and sealing. Check for moisture content to NZS/AS 1884, Appendix A, and do not commence final sanding or laying until readings for the whole area show a maximum moisture content of, 75% RH for concrete, 14% for timber or 12% for timber with air conditioning. Clean surface.

3.6 SURFACE PREPARATION - CARPET

To AS/NZS 2455.1, section 2. including necessary repairs and sealing. Check for moisture content to AS/NZS 2455.1, Appendix B, and do not commence laying until readings for the whole area show a maximum moisture content of, 75% RH for concrete, 14% for timber or 12% for timber with air conditioning. Clean surface.

3.7 SURFACE PREPARATION - TIMBER OVERLAY FLOORING

To manufacturer's requirements. Clear substrate of debris, repair and sand/grind as necessary. Check moisture content and do not commence final sanding or laying until readings for the whole area show a maximum moisture content of, 60/70% RH for concrete, 14% for timber or 12% for timber with air conditioning. For concrete apply sealer if necessary. Clean surface.

3.8 INSTALLING RIGID SHEET UNDERLAY

Over rough or uneven timber floors, lay sheet overlay 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.

3.9 RESILIENT FLOOR LAYING

Carry out the whole of the work to NZS/AS 1884, and the flooring manufacturer's requirements.

3.10 RESILIENT FLOOR JOINTING

Provide the joints/seams described in 1213 SELECTIONS or the drawings, to NZS/AS 1884, and the flooring manufacturer's requirements.

3.11 RESILIENT FLOOR COVES

Pencil cove flooring to the specified height and finish off as detailed. Perform butterfly method to internal and external mitres. Joints to manufacturers requirements.

3.12 FIT RESILIENT SKIRTING

Fit skirting in accordance with the skirting manufacturer's requirements.

3.13 CARPET INSTALLATION, CONVENTIONAL SYSTEM

Install underlay to manufacturer's requirements, and lay at right angles to the carpet direction.

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. Fix trim.

3.14 CARPET INSTALLATION, DIRECT STICK SYSTEM

Direct stick, install to AS/NZS 2455.1, section 3. Apply adhesive evenly over the entire substrate surface to the carpet manufacturer's requirements. Lay carpet with all edges, selvages and joins tightly butted and completely bonded to the floor surface. Roll the carpet with a clean 25 kg roller and ensure complete contact with adhesive. Fix trim.

3.15 TIMBER OVERLAY FLOORING, INSTALLATION, FLOATING

Install 2mm foam underlay to the total floor area, in long, continuous runs, allowing to cove up walls 50mm. Tape joints using moisture resistant tape, to create an impervious membrane. Install the timber floor strictly in accordance with the flooring manufacturer's requirements. Ensure the required expansion gap is left at perimeters and around fixed obstacles. Adhesive fix flooring to stair treads, risers and landings, to manufacturer's requirements.

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3.16 TIMBER OVERLAY FLOORING, INSTALLATION, DIRECT STICK

Apply adhesive approved by the flooring manufacturer, at the required spread rate. Install the flooring to the manufacturer's requirements. Ensure the required expansion gap is left at perimeters and around fixed obstacles.

3.17 CLEAN

Upon completion clean to manufacturer's requirements.

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6700 PAINTING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work using competent and experienced painters.

1.2 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety at Work Act 2015 and if elimination or isolation is not possible, then minimise the hazards in this work. Refer to WorkSafe publication, Repainting lead based paints, for the required procedures and precautions when treating or removing lead based paint, burning or sanding off paint, or using solvent based paint removers.

1.3 SELECTIONS

Confirm all selections, colours and finishes with the owner.

2 PRODUCTS

2.1 PAINT

As selected and to the paint manufacturer's standards for exterior and/or interior primers, undercoats, sealers, stains, clear coatings, solvent-borne and water-borne paints.

2.2 GAP FILLERS

Linseed oil, putty, plastic wood, wood filler or plastic filler, to suit and to match the surface being prepared.

3 EXECUTION

3.1 INSPECT SURFACES

Inspect surfaces being painted and report to the owner any that will not, after the preparatory work laid down by the paint manufacturer, allow work of the required standard. Confirm that all areas have adequate lighting and are sufficiently free of other construction activities to enable painting work to proceed.

3.2 EXISTING FINISHED SURFACES

Ensure that all surfaces are sound, remove any, blistered, drummy, chalky, powdery, loose, soft or corroded material and make good. Remove or treat any surface contaminates or moss and mould to manufacturer's requirements.

3.3 PROTECT

Cover up adjoining surfaces and areas liable to damage or over-painting.

3.4 REMOVE HARDWARE

Remove hardware and door/window furniture and replace on completion. Do not paint over permanently attached hinges, or any hardware items which cannot be removed.

3.5 PRIMING AND SEALING

Ensure that priming and sealing work needed before or during construction is carried out when required.

3.6 ENVIRONMENTAL CONDITIONS

Carry out work within acceptable temperature and humidity limits, with timber dry, all to the requirements of the paint manufacturer.

3.7 SHARP EDGES, CRACKS AND HOLES

Repair as required by the paint manufacturer.

3.8 PREPARE SURFACES

Prepare surfaces as required by the paint manufacturer. Make good all damage and defects.



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3.9 PAINT APPLICATION

Apply paint by brush and/or roller to suit the location of the coating and to the paint manufacturer's requirements. Do not spray on site without express permission.

3.10 MANUFACTURER'S MANUALS

Refer to the paint manufacturers' manuals and follow their preparation, sequence and application requirements applying to each system. Ensure all paint coats in any system are supplied by the same manufacturer.

3.11 SCUFF BETWEEN COATS

Scuff between all coats to remove any dust pick-up, protruding fibres and coarse particles.

3.12 FINISHED PAINT SURFACES

Finished paint surfaces to show uniformity of gloss and colour, with the correct thickness for each coat, and freedom from painting defects. Ensure finished work is clean and free of any disfigurement.

3.13 CLEAN

Clean adjoining surfaces, glass and fittings of any paint contamination.

3.14 REFIT HARDWARE

Refit hardware without damage to the hardware or the adjoining surfaces.



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7120 WATER SYSTEM

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work by or under the direct supervision of a certifying person under the Plumbers, Gasfitters and Drainlayers Act 2006.

2 PRODUCTS

2.1 COPPER WATER 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 POLYBUTYLENE WATER PIPE

To NZBC G12/AS1, 2 Materials. Polybutylene tubing complete with fittings and accessories brand-matched to AS/NZS 2642.1, AS/NZS 2642.2 and AS/NZS 2642.3

2.3 CROSS LINKED POLYETHYLENE WATER PIPE

To NZBC G12/AS1, 2 Materials. Proprietary high-density cross-linked polyethylene composite pipe and fittings to AS/NZS 2492 for pipes and AS/NZS 2537.1, AS/NZS 2537.2, AS/NZS 2537.3 and AS/NZS 2537.4 for fittings.

2.4 INSULATION FOR HOT WATER PIPES

Preformed closed cell foam.

2.5 EXPOSED PIPES

As selected, chrome plated copper, stainless steel or white polybutylene, pipework finish to include escutcheon plates, accessories, bends and elbows protruding from walls or fittings.

2.6 DE-ZINCIFICATION RESISTANT WATER SUPPLY SYSTEM COMPONENTS

All copper alloy components to comply with G12/AS1 clause 2.2.3 and AS 2345.

2.7 VALVES AND FITTINGS

All valves and fittings required for the system, to NZBC G12/AS1.

2.8 WATER HEATERS

Generally to NZBC G12/AS1, 6.0 Hot Water Supply Systems as applicable. Refer to 1213 SELECTIONS/drawings for specific water heater.

3 EXECUTION

3.1 EXECUTION GENERALLY

Carry out work and tests as applicable to NZBC G12/AS1.

3.2 INSTALL COPPER WATER SUPPLY

Size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Run pipes in straight runs, firmly fixed to falls, with long radius bends and jointed by brazing or with crox fittings, all to NZBC G12/AS1, 5.0 **Water supply**. Conceal piping, insulate hot water pipework and pressure test before the wall linings are fixed.

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.

3.3 INSTALL POLYBUTYLENE/ CROSS LINKED POLYETHYLENE WATER SUPPLY

Type as selected. Size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Run pipes complete with all fittings, support and fixing, and jointed to the pipe manufacturer's specifications, all to NZBC G12/AS1, 5.0 **Water supply**. Conceal pipework and pressure test before wall linings are fixed.

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3.4 OUTLET LOCATIONS

Ensure wall outlets for exposed pipes are level and centred on the fixture to ensure the neat installation of exposed pipework.

3.5 BACKFLOW PREVENTION

Fit back flow prevention devices to all outlets where it is possible for water or contaminants to backflow in to the potable water supply system.

3.6 INSTALL HOT WATER PIPE INSULATION

Insulate hot water pipes in accordance with the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of steel studs. Where hair felt is used, wrap around pipes in two layers in opposite directions and secure with galvanized steel wire ties.

3.7 INSTALL WATER HEATER

Install where shown complete with all the necessary fittings to the water heater manufacturer's requirements and NZBC G12/AS1, 6.11 **Water heater installation**. Gas water heaters also to NZBC G11/AS1 and AS/NZS 5601.1.

3.8 PENETRATIONS

Provide and fit collars and escutcheon plates to match pipework at penetrations through constructions.

3.9 COMPLETION

Pressure test to ensure no leakage and leave in proper working order. Clean tapware and fittings.

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7150 SANITARYWARE, TAPWARE & ACCESSORIES

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work by or under the direct supervision of a certifying person under the Plumbers, Gasfitters and Drainlayers Act 2006.

2 PRODUCTS

2.1 SANITARY FIXTURES, TAPWARE, APPLIANCES AND ACCESSORIES

Refer to 1213 SELECTIONS and drawings for product selections.

3 EXECUTION

3.1 EXECUTION GENERALLY

Carry out installation work and tests to G1/AS1, E3/AS2, G12/AS1 or AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 and NZBC G13/AS1 or AS/NZS 3500.2 as modified by NZBC G13/AS3, as applicable and to the fixture manufacturers requirements.

3.2 INSTALL SANITARYWARE

Fit and install sanitaryware and associated screens, elements and hardware, plumb, true to line and rigid, to the fixture manufacturer's requirements. Supply standard chrome plated brass wastes and plastic plugs on chrome plated chains with all basins, tubs and baths. Seal between all sanitary fixtures and floors, wall linings, fixtures and the tops they are in, the tops of wall linings to NZBC E3/AS1, 3.2.

3.3 INSTALL TAPWARE

Install tapware in accordance with the tap manufacturer's requirements. Flush out on completion. Check that washers or ceramic discs are operating correctly.

3.4 INSTALL SHOWER CUBICLE

Install to NZBC G1/AS1, NZBC E3/AS1 and in accordance with shower manufacturer's details and requirements. Ensure that screens and doors fit closely and accurately. Test for water egress around sides and base. Seal shower wall lining penetrations (shower head, shower hose, mixer, taps etc) to NZBC E3/AS1, Fig 6.

3.5 TEST

Test soil and waste disposal systems to ensure no leakage exists and leave in working order.

3.6 ENSURE

Ensure all sanitary plumbing fittings and pipework are complete and operational.

3.7 EQUIPOTENTIAL BONDING METALLIC FIXTURES

Before enclosing, co-ordinate with electrician to provide for equipotential bonding to metallic water pipes and metallic sanitary fixtures using an earth bonding conductor to requirements of NZBC G12/AS1, 9.0 Equipotential Bonding and/or AS/NZS 3000, 5.6 Equipotential Bonding.

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7410 RAINWATER SPOUTING SYSTEM

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 LIAISON

Ensure liaison with associated installations to ensure material selections are compatible and required flashing work is completed.

1.2 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

2 PRODUCTS

2.1 ALUMINIUM/ZINC ALLOY COATED PRE-PAINTED STEEL SPOUTING

Profile, jointing, brackets and fittings brand matched and complete to the spouting manufacturer's specifications.

2.2 ALUMINIUM/ZINC ALLOY COATED PRE-PAINTED STEEL DOWNPIPES

Seam jointed and complete with stand-off brackets, galvanized screw fixed.

3 EXECUTION

3.1 INSTALL ALUMINIUM/ZINC ALLOY COATED STEEL PRE-PAINTED SPOUTING AND DOWNPIPES

Screw fix brackets, set to falls to outlets, with spouting joints silicone sealed and pop-riveted to the spouting manufacturer's requirements. Screw fix stand off brackets, set pipes plumb and clear of the wall, with joints silicone sealed. Discharge into stormwater bends.

3.2 ENSURE

Ensure rainwater services are operational, flashings complete and the building weathertight.

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7441 GROUNDWATER DRAINAGE

1 GENERAL

This section relates to the supply and laying of gravity flow groundwater drains for:

- ground water removal

1.1 RELATED WORK

Refer to 7431 DRAINAGE COMMON REQUIREMENTS for general matters

Refer to 7451 SURFACE WATER DRAINAGE for storm/surface water drainage
Refer to 7461 FOUL WATER DRAINAGE for waste/foul water drainage
Refer to 7462 WASTEWATER TREATMENT SYSTEM for waste water disposal

Documents

1.2 DOCUMENTS

Documents referred to in this and the above sections are:

AS 2439.1	Perforated Plastics Drainage and Effluent Pipes and Fittings - Perforated drainage pipe and associated fittings
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
NZS 3111	Methods of test for water and aggregate for concrete
NZS 4402.2	Methods of testing soils for civil engineering purposes - Soil classification tests
NZTA F2	Specification for pipe subsoil drain construction

2 PRODUCTS

Materials

2.1 PERFORATED GROUNDWATER PIPING

Perforated corrugated coil high density polyethylene groundwater drainage pipe to AS 2439.1 with polypropylene geotextile filter sock over.

Accessories

2.2 FILTER FABRIC

Polymeric fabric formed from a plastic yarn or a long chain synthetic polymer composed of at least 85% by weight of propylene, ethylene, amide, ester or vinylidene chloride. Fibres to be rot proof, chemically stable and have low water absorbency.

The filter network, (woven or non-woven) must be dimensionally stable and resistant to delamination.

2.3 DRAINAGE MATERIAL

Free draining crushed stone, 7mm to 20mm in size.

2.4 DRAINAGE MATERIAL - SIMPLE STANDALONE CONCRETE MASONRY RETAINING WALLS

Free draining imported hardfill to the NZTA F2 specification.

Filter material comprised of clean, durable stone having a crushing resistance of not less than 100 kN when tested in accordance with NZS 3111, or a mixture of such material with clean hard sand. The filter material when tested in accordance with NZS 4402.2, shall comply with the following gradings:

TEST SIEVE APERTURE	PERCENTAGE PASSING
26.5mm	100
13.2mm	85-100
9.5mm	80-95
4.75mm	65-85
2.36mm	50-70

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1.18mm	35-55
600µm	18-40
300µm	3-25
150µm	8 maximum
75µm	0

2.5 TRENCH BACKFILLING MATERIAL

Free draining crushed stone, 7mm to 20mm in size.

3 EXECUTION

Conditions

3.1 EXISTING DRAINS/SERVICES

Report existence of existing drains/services to the contract administrator for direction.

Application

3.2 HANDLING

Store and handle perforated groundwater drainage piping as per the manufacturer's requirements. Reject any damaged product.

3.3 SETTING OUT

Use string line, boning rod or laser equipment methods.

3.4 APPLICATION GENERALLY

To AS/NZS 3500.3, 6.4 Subsoil Drains.

3.5 FILTER FABRIC TO DRAINAGE MATERIAL

Where details require drainage material to be encapsulated in filter fabric to prevent fines from blocking the aggregate, place fabric and carefully hold in place by pinning and/or by controlled use of aggregate as ballast. After drain installation and required backfilling, complete encapsulation with fabric. Ensure filter fabric is correctly placed, sufficiently overlapped and pinned and/or secured.

3.6 LAY PERFORATED DRAINAGE PIPING

Lay perforated groundwater drainage piping with filter sock, firmly on a bed of drainage material screeded to the required gradient. Lay in straight runs to discharge into surface water drainage system. The pipe must not excessively elongate during installation. Carry drainage material up and over the pipes without disturbing them. Extend the high end of all lines up to the surface in capped, solid pipe to provide for flushing out.

3.7 LAY PERFORATED DRAINAGE PIPING TO BASEMENT WALLS

Ensure any required waterproofing and protection sheets are in place before starting work.

Lay perforated groundwater drainage piping with filter sock, firmly on a bed of drainage material screeded to the required gradient. The pipe must not excessively elongate during installation. Lay in straight runs to 1:150 gradients with invert of the highest horizontal point 50mm minimum below floor slab level, discharging into surface water drainage system. Carry drainage material up and over the pipes without disturbing them. Carry the high end of all lines up to the surface in capped, solid pipe to provide for flushing out.

3.8 LAY PERFORATED DRAINAGE PIPING TO RETAINING WALLS

Lay perforated groundwater drainage piping with filter sock, firmly on a bed of drainage metal comprising of filter material to the NZTA F2 specification. Pipe bedding not less than 75mm deep. Backfill not less than 300mm deep. The pipe must not excessively elongate during installation. Lay in straight runs to correct gradients , discharging into surface water drainage system. Carry drainage material up and over the pipes without disturbing them. Place granular fill in layers not exceeding 150 mm thick loose depth, to full height of wall, with an allowance for the thickness of the surface finish. Compact to provide support of not less than that of the adjacent material. Where geocomposite drain is used, the backfill shall follow the manufacturer's recommendations. Carry the high end of all lines up to the surface in capped, solid pipe to provide for flushing out.

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3.9 BACKFILLING

Complete backfilling with drainage material.

3.10 CLEAN OUT PIPING INSTALLATION

Clean and flush out the whole piping installation and remove silt and debris before handing over.

4 SELECTIONS

4.1 PERFORATED DRAINAGE PIPING

Pipe brand/type:	Marley Drainflo or similar approved
Diameter:	110mm

4.2 DRAINAGE MATERIAL

Location:	Behind all retained areas - to be wrapped in geotextile fabric
Type:	Crushed (adn washed) rock or scoria to NZTA F2 specification

4.3 FILTER FABRIC

Brand:	TBC
Type:	Non-woven geotextile fabric

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7700 ELECTRICAL

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 COMPLY

Comply with the Electricity (Safety) Regulations 2010, AS/NZS 3000 for listed and prescribed work and with the NUO's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.2 QUALIFICATIONS

Carry out work by or under the direct supervision of an electrical licensed supervisor under the Electricity (Safety) Regulations 2010.

1.3 ELECTRICAL CERTIFICATE OF COMPLIANCE

Provide, prior to connection, a Certificate of Compliance (CoC) as required by the Electricity (Safety) Regulations 2010, to the owner and if required to the NUO. Allow the NUO to view before the meter installation, listed work inspection, polarity check and livening of supply.

1.4 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010, to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.

1.5 SAFETY OF INSTALLATION

When required by the Electrical (Safety) Regulations 2010, before installation work commences, provide a Certified Design to Electrical (Safety) Regulations 2010, regulations 58. This will may not be required for domestic installations or Low Risk Work.

2 PRODUCTS

2.1 METER BOARD / DISTRIBUTION BOARD / SUB BOARD

Proprietary manufactured meter board complete with flashing kit. Proprietary manufactured distribution board, zinc plated powder coated, or heavy duty plastic, fire resistant enclosed construction, complete with neutral and earth busbars, MCB's, RCD's and main switch. All protective devices: 6kA MCB's of the appropriate rating. Fit to board manufacturer's requirements where detailed. Recess into wall and ensure fire containment properties of the enclosure is maintained.

2.2 MAIN SUPPLY

Excavate, lay underground mains to NUO requirements, install cable marker, back fill. Public roads and footpaths to be made good to the controlling authority requirements.

2.3 CABLES

Tough plastic sheathed copper conductors. Minimum sizes are indicated below. Increase these as necessary due to method of installation, cable length or load.

Lighting circuits:	1.5mm2 on 10 amp MCBs for domestic construction
Power circuits:	2.5mm2 on 16 amp MCBs for domestic construction

2.4 ELECTRICAL ACCESSORIES

As selected and to the following details:

Switch units	Minimum 16 amp, 230 volt flush polycarbonate units. For number of switches per unit, dimmer units, neon (indicator or toggle) units, locator units and 2-way units refer to the electrical drawings.
Switched socket units:	10 amp, 230 volt flush polycarbonate 3 pin combined switch units.
Hot water system switch:	One way 20 amp switch complete with clamp for flexible PVC conduit.

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Stove/range socket outlet and switch:	32 amp, 230 volt flush polycarbonate 3 pin combined switch unit, with remote isolating switch.

3 EXECUTION

3.1 CABLING

Install with a maximum of 10 light outlet units or 6 switched socket units on any circuit. Separate circuits for all electric heating appliances. All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Provide main earth and equipotential bonding to AS/NZS 3000, section 5, including (if in project) for at risk; structural steel, light steel framing, concrete reinforcing (if bath, shower, swimming/spa pool involved), conductive pipes (& connected metalwork like SS sinks), conductive elements within 1.25m of swimming/spa pool edge.

3.2 INSTALL SWITCH AND SOCKET UNITS

Fit single and double switch units and socket units level and plumb where shown on the drawings. Install at the following heights (to the centre of the unit) unless shown otherwise on the drawings or to match existing.

Switch Units:	1000mm above floor
Socket Units:	400mm above floor
	150mm above work benches

Mount switches vertically and socket units horizontally. Label switch units which control electrical equipment by engraving on the rocker switch.

3.3 INSTALL LIGHT FITTINGS

Install selected light fittings in the locations and heights shown on the drawings and in accordance with the fitting manufacturer's requirements. Recessed fittings to AS/NZS 3000, and NZS 4246, types IC-F, IC, CA-80, CA-90, IC-4, or CA-135 only (no clearance to insulation required for these types).

3.4 ELECTRIC HOT WATER SYSTEM

Wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end.

3.5 WIRE FOR PLUMBING FITTINGS

Wire for fittings to the Electricity (Safety) Regulations 2010 and to the fitting manufacturer's requirements.

3.6 INSTALL DOMESTIC SMOKE ALARMS

Install Type 1 domestic smoke alarm system to NZS 4514 and to manufacturer's requirements, fitted neatly and without damage to the surrounding finish.

3.7 INSTALL EXTRACT SYSTEMS

Install extract fans, rangehoods, ducts and grilles to NZBC G4/AS1 and manufacturer's requirements.

Household extracts for cooktops, showers and baths to have a minimum flow rate (in fans and ducts) to NZBC G4/AS1 of:

- 25 L/s for showers and baths
- 50 L/s for cooktops

3.8 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire selected fittings and equipment to the Electricity (Safety) Regulations 2010 and the individual fittings and equipment manufacturer's requirements. Refer to the drawings for required layouts and locations for equipment.

3.9 COMPLETION

Leave all fittings, lamps and tubes operational, with equipment and diffusers clean.

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7717 PHOTOVOLTAIC POWER SYSTEM

1 GENERAL

This section relates to design, supply and installation of a photovoltaic module power generation system incorporating the following:

- Photovoltaic array
- storage batteries
- inverter
- controls
- generating sets
- ancillary equipment
- connection to low voltage power supply.

1.1 RELATED WORK

Refer to the appropriate electrical section(s) for general electrical requirements.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

PV	Photovoltaic
SEANZ	Sustainable Electricity Association New Zealand

The following definitions apply specifically to this section:

PV module	An assembly of several PV cells electrically connected to form a larger photovoltaic conversion device and which are encapsulated together to protect them from the environment.
PV array	An electrically integrated assembly of PV modules, and other components to form a d.c. power supply unit.

Documents

1.3 DOCUMENTS REFERRED TO

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

NZBC B1/VM1	Structural design of buildings
NZBC G12/AS2	Solar water heaters
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
AS/NZS 1170.3	Structural design actions - Snow and ice actions
AS 2676.2	Guide to the installation, maintenance, testing and replacement of secondary batteries in buildings - Sealed cells
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3010	Electrical installations - Generating sets
AS/NZS 3100	Approval and test specification - General requirements for electrical equipment
NZS 3604	Timber-framed buildings
AS 4086.1	Secondary batteries for use with stand-alone power systems - General requirements
AS 4086.2	Secondary batteries for use with stand-alone power systems - Installation and maintenance
AS/NZS 4509.1	Stand-alone power systems - Safety and installation
AS/NZS 4509.2	Stand-alone power systems - System design
AS/NZS 4777.1	Grid connection of energy systems via inverters - Installation requirements
AS/NZS 4777.2	Grid connection of energy systems via inverters - Inverter requirements

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AS/NZS 5033	Installation and safety requirements for photovoltaic (PV) arrays
AS/NZS 60335.1	Household and similar electrical appliances - Safety - General requirements
IEC 61215	Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval
IEC 61646	Thin-film terrestrial photovoltaic (PV) modules - Design qualification and type approval
IEC 61836	Solar photovoltaic energy systems - Terms, definitions and symbols
ISO 9001	Quality management systems - requirements

Electricity (Safety) Regulations 2010

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

PV Cells:	20 years 80% output from date of commissioning of the installation.
PV components:	5 years from date of commissioning of the installation
Inverter:	5 years from date of commissioning of the installation.
Batteries:	2 years from date of commissioning of the installation.

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

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an accredited installer warranty:

Installation:	5 years from date of commissioning of the installation.

- Provide this warranty in the installer standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

The installation of the system to be carried out by a manufacturer's approved installer or by a SEANZ accredited installer. Electrical installation to be undertaken by a registered electrician. Electricians working on a grid-tied Photovoltaic systems to have endorsement for mains parallel generation systems. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.7 OPERATION AND MAINTENANCE MANUALS

Refer to the general section 1239 OPERATION & MAINTENANCE for the requirements for submission and review of operation and maintenance manuals.

Provide the following:
Manufacturer ongoing operating and maintenance manual
Maintenance Schedule detailing maintenance activities appropriate to the location, size and design of the PV array.

1.8 ELECTRICAL CERTIFICATE OF COMPLIANCE

At the completion of electrical work provide a Certificate of Compliance (CoC) to Electricity (Safety) Regulations 2010, sections 65-67 Supplier declarations. Provide a copy to the Contract Administrator and NUO prior to connection and when required to the building consent authority 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, section 70 High-risk prescribed electrical work to be inspected.

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1.9 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010 Reg 74A, to the Contract Administrator and when required to the BCA. To be provided no later than 20 working days after connection and prior to Practical Completion.

Performance

1.10 DESIGN

Design of PV system to AS/NZS 5033. Locate the PV modules installation where they:

- can achieve optimum orientation to the sun
- have nil or minimal shading
- can be supported to resist static and dynamic loads acting on the structure
- are as close as possible to the electricity storage system to reduce power losses within the system
- provide the least negative impact.

1.11 DEMAND ASSESSMENT

Provide demand assessment before the start of the project to determine required energy generation and energy storage needs. Refer to AS/NZS 4509.2 clause 3.1. Assessment to provide:

- the average daily needs
- the maximum power demand, both AC and DC
- the surge demand

1.12 FIXINGS, WIND - SNOW

Design and use the fixings appropriate for the wind load to AS/NZS 1170.2 and for the snow load to AS/NZS 1170.3. Confirm with the manufacturer the fastener type and fixing pattern for the load capacity required.

1.13 PRODUCER STATEMENT - INSTALLATION

Provide a producer statement - Design and producer statement - Construction in the form acceptable to the Building Consent Authority for the complete electrical installation. Where the scope has involved system design provide a producer statement - Design, covering relevant works.

2 PRODUCTS

Materials

2.1 CRYSTALLINE PHOTOVOLTAIC (PV) MODULE

High - efficiency monocrystalline and polycrystalline cells laminated between sheets of ethylene vinyl acetate and high - transmissivity low - iron 3mm tempered glass set into Anodised or powder coated aluminium frame. To be manufactured in ISO 9001 certified factories to IEC 61215. General requirements for components used in the array to comply with AS/NZS 5033. Refer to SELECTIONS.

2.2 AMORPHOUS SILICON THIN FILM PHOTOVOLTAIC (PV) MODULE

Amorphous silicon thin film cells have silicon in a thin film as the semi-conductor. The silicon thin cells are deposited on a low cost substrate such as glass or thin metal substrate. The coating on top may be a flexible material and may use a flexible mounting system. To be manufactured in ISO 9001 certified factories to IEC 61646. General requirements for components used in the array to comply with AS/NZS 5033.

2.3 PHOTOVOLTAIC (PV) ARRAYS

2.4 INVERTER

To AS/NZS 4777.2. A microprocessor based bi-directional inverter with software to fully manage the system. Automatic shutdown for DC over voltage, overload, DC under voltage, over temperature, AC over frequency, AC over volts, AC under frequency and AC under volts. Complete with failure mode diagnostics, LED status indicator, grid connected operation, computer logging facilities, data logging, event register, data integrity, remote and local parameterisation, RFI suppression, controls, alarm output and with a liquid crystal display. Waveform - True Sine wave. Refer to SELECTIONS.

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2.5 CHARGE CONTROLLER

To AS/NZS 4509.2. Controls the charge cycle the batteries receive and is installed between the PV module and the batteries.

2.6 BATTERIES

Batteries to AS 2676.2, AS 4086.1 and AS/NZS 4509.2 clause 3.4.7.1 to 3.4.7.8. To meet the performance criteria.

2.7 ENCLOSURE

Dedicated individual enclosures and enclosure for assemblies to AS/NZS 5033.

2.8 SMART METER

To NUO requirements. 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 CONFIRM LAYOUT

Before commencing work confirm the proposed location of PV array system.

3.4 BUILDING STRUCTURE

Confirm the building structure is to the standard required by the manufacturer's accredited installer for the installation of the PV array system. Install the PV array system on a roof area that has been constructed to NZS 3604, section 10, **Roof framing** and NZBC B1/VM1, and be capable to take the total weight of the array.

3.5 CO-ORDINATE SERVICES

Co-ordinate and co-operate with other sub-trades to avoid any conflict with the installation of the system with other subcontractors work.

3.6 PROTECT SURFACES

Protect surfaces, equipment and finishes already in place from the possibility of damage during the installation process.

Application

3.7 INSTALLATION GENERALLY

Install stand-alone power system to AS/NZS 4509.1. Install PV array system to required configurations. Complete installation of the PV array system to AS/NZS 5033, and to manufacturer's installation instructions.

3.8 POSITIONING OF PV MODULE ARRAY

Locate the PV module array so as to be clear of shade 3 hours either side of solar noon at any time of the year. Install to AS/NZS 4509.1 and AS/NZS 4509.2, at an angle between 20 and 40 degrees to the horizontal and facing as close as possible to true North. Refer to NZBC G12/AS2 4.2 Solar orientation and inclination for recommendation location.

3.9 MOUNTING OF PV MODULE / ARRAY FRAME

To AS/NZS 5033. Install the PV module array to the manufacturer's installation manual and to AS/NZS 4509.2, either directly to the roof structure or on a suitable designed frame fixed to the roof structure.

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To fix the unit to a roof in non-cyclonic conditions, select a position on the roof, free of shade. To NZBC G12/AS2 6.2 General requirements, 6.5 Collector support rails and 6.6 Mounting collectors at a different pitch to the roof cladding.
For fixing PV module array in cyclonic locations use brackets that comply with AS/NZS 1170.2 and manufacturer's installation details.

3.10 INVERTER INSTALLATION

Install inverter(s) to AS/NZS 4777.1.

3.11 BATTERY INSTALLATION

Install batteries in enclosure to AS/NZS 4509.1 clause 7.5, and AS/NZS 4509.2 clause 4.6, to prevent unauthorised access, to locate and to protect the batteries from the environment. Ventilate the enclosure to AS 4086.2. Mount batteries in proprietary battery holders or on purpose-built stands constructed of timber or other non-corrosive material.

3.12 ELECTRICAL CONNECTIONS

Connect the PV modules with a fixed wiring connection to the weatherproof junction box positioned at the top of the installation. Run wiring in either metal or uPVC conduit. The electrical circuit to have an isolating switch fitted at the electrical switch board to provide a means of isolating the installation in compliance with AS/NZS 60335.1. The installation to comply with AS/NZS 3000 and AS/NZS 5033.

3.13 ARRAY WIRING AND PROTECTION

Ensure electrical protection and wiring is correctly designed and installed to the manufacturer's recommendations. Protection requirements to AS/NZS 5033, section **3 Safety issues**, and AS/NZS 3000.

3.14 IP RATING

Provide and maintain IP ratings to AS/NZS 5033.

3.15 MARKING

Provide, marking and labelling to the completed system, to manufacturer's installation manual, AS/NZS 5033 and AS/NZS 3100.

Maintenance

3.16 GRID CONNECTED POWER SYSTEMS:

Maintain the system to AS/NZS 5033, Appendix C **Maintenance Recommendations** during the defects notification/liability period.

3.17 CALL OUTS

Respond to call outs for breakdowns or other faults requiring corrective maintenance. Attend on site within 24 hours of notification. Rectify faults and replace faulty materials and equipment during the defects notification/liability period.

Completion & Commissioning

3.18 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion and commissioning requirements. Commissioning to the completed system, to manufacturer's installation manual, AS/NZS 5033 and AS/NZS 3100.

3.19 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning. Test and commission the completed system to manufacturer's installation manual and to AS/NZS 5033, Appendix D **Testing and commissioning**.

4 SELECTIONS

Refer to Think Solar documentation

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