Lot 1141 Proposed 4+1

Project Specification

Lot 1141, Hanleys Farm, Queenstown, New Zealand
Project Ref: 1141
Date: 23 October 2026

DKDESIGNS

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

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1013 DOCUMENT CONTROL

1 DOCUMENT CONTROL

Document Control

1.1 PREPARED BY

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1.2 DOCUMENT DETAILS

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Client:	Lisa Milliken & Josh Scott
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3155FR FIRTH RIBRAFT® FLOOR SYSTEMS

1 GENERAL

This section relates to the supply and installation of **Firth Industries** RibRaft® floor system and RibRaft® X-Pod® floor system.
It includes:

- a non-specific design reinforced concrete waffle raft floor slab-on-ground (RibRaft®) system without any additional insulation.
- a non-specific design reinforced concrete waffle raft floor slab-on-ground (RibRaft®) system with integrated HotEdge® thermal edging and underslab insulation

- a specific design reinforced concrete waffle raft floor slab-on-ground (RibRaft® X-Pod®) system without any additional insulation.
- a specific design reinforced concrete waffle raft floor slab-on-ground (RibRaft® X-Pod®) floor system with integrated HotEdge® thermal edging, and underslab insulation.

- a specific design reinforced concrete waffle raft floor slab-on-ground (RibRaft®) system without any additional insulation.
- a specific design reinforced concrete waffle raft floor slab-on-ground (RibRaft®) system with integrated HotEdge® thermal edging, and underslab insulation.

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following definitions apply specifically to this section:

ACRS	Australian Certification Authority for Reinforcing Steels - An independent certification scheme for reinforcing steel and structural steel, by product and manufacturer/processor. Certifies compliance with Australia/New Zealand Standards. ACRS Web site - www.steelcertification.com

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 G13/AS1	Foul Water
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber-framed buildings
NZS 3631	NZ Timber grading rules
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4671	Steel reinforcing materials
CodeMark™ CMNZ70056 ver5	Firth Ribraft® Floor System

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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Firth RibRaft Technical Manual October 2024
Firth RibRaft HotEdge Installation Guide February 2024
Firth RibRaft X-Pod Installers Guide November 2021
Firth RibRaft X-Pod Structural Design Guide October 2024
Firth RibRaft HotEdge Base BPIR
Firth RibRaft HotEdge and HotEdge Extra BPIR
Firth RibRaft, RibRaft X-Pod, RibRaft TC2 and RibRaft TC3 BPIR

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BRANZ test STI8050-01-03 using ECKO M10 155mm screw bolt with 90mm timber framing and HotEdge Extra.

Manufacturer/supplier contact details

Company:	**Firth Industries**
Web:	www.firth.co.nz
Email:	info@firth.co.nz
Telephone:	0800 FIRTH1 (0800 347841)

Further information and/or names of tradespeople who have installed Firth RibRaft® floors are available by phoning Firth Information Service 0800 347841.

Requirements

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Firth RibRaft® Floor System, Firth HotEdge® and Firth RibRaft® X-Pod® Floor System product or component, or associated Firth products.

Concrete used for the construction of Firth RibRaft® Floor System and Firth RibRaft® X-Pod® Floor Systems must be supplied by Firth. RibRaft® & RibRaft® X-Pod® formers are only available from Firth Industries and are only supplied on a project with confirmation of an order for Firth Concrete.

1.5 QUALIFICATIONS GENERALLY

Tradespeople to be competent, experienced, and familiar with the Firth RibRaft® Floor System and Firth RibRaft® X-Pod® Floor System materials and techniques specified. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.6 STEEL REINFORCING COMPLIANCE

Steel reinforcing materials for concrete to AS/NZS 4671. Steel to be manufactured in New Zealand, or by an overseas manufacturer holding a current valid (or equivalent) NZ S Mark or ACRS certificate for that type of steel. Confirm compliance and provide evidence if requested.

1.7 QUALITY RECORDS

Keep accurate records relating to strength and quality of materials used during construction. Include records of workmanship during construction and photographs of as-built details. Make the information available to the Building Consent Authority inspector on request.

Compliance Information

1.8 COMPLIANCE - CODEMARK CERTIFICATE

The Firth Ribraft® Floor System meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ70056.

1.9 SPECIFIC DESIGN DOCUMENTATION

Refer to SELECTIONS for project specific design documentation.

2 PRODUCTS

Materials

2.1 BLINDING

50mm maximum compacted GAP 7.

2.2 TIMBER FORMWORK

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

2.3 DAMP-PROOF MEMBRANE

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

2.4 REINFORCEMENT

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

2.5 TYING WIRE

Mild drawn steel wire not less than 1.2mm diameter.

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Materials – RibRaft® Floor System

2.6 POLYSTYRENE PODS FORMERS– RIBRAFT® FLOOR SYSTEM

Firth RibRaft® proprietary purpose made polystyrene pods, 1100mm x 1100mm x 220mm and 300mm thick. Refer to SELECTIONS.

2.7 INTERNAL CORNER REINFORCEMENT – RIBRAFT® FLOOR SYSTEM

Minimum 2 x HD12 bars Grade 500E to AS/NZS 4671.

2.8 MESH – RIBRAFT® FLOOR SYSTEM

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

2.9 CONCRETE 20Mpa – RIBRAFT® FLOOR SYSTEM

Firth Raftmix, a 20 MPa 100mm slump mix in either 13mm or 19mm nominal aggregate size, supplied by Firth Industries.

Firth Raftmix™ for direct placement and Firth Raftmix™ Pump for pump applications.
For RIBRAFT® FLOOR SYSTEM using Cleva Pod® use Firth Mix code RC2019/13AW.

2.10 SPACERS

Firth proprietary spacers. Refer to SELECTIONS for size.

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.

Application -General

3.3 SITE CLEARANCE

Clear the slab area of any vegetation and topsoil down to the subgrade level.

3.4 BUILDING PLATFORM

Create a building platform to a level surface to the required depth below finished floor level to suit the RibRaft® or RibRaft® Xpod system. Cut and/or fill sloping sites. Confirm finished floor level.

3.5 POST-CUT INSPECTION – RIBRAFT® FLOOR SYSTEM

Inspect and confirm that the soil conditions are as anticipated by the geotechnical investigation and report and conform to the requirements of the Firth RibRaft® manual. Refer to Firth RibRaft® Technical Manual Section 1 - Design Information, 3.5 Foundation Requirement and 3.6 Foundation Soils.

3.6 TEMPORARY BUILDING PLATFORM DRAINAGE

Construct suitable drainage to keep excessive ground water off the building platform during and after construction as required.

3.7 HARDFILL

Place hardfill and ensure it is spread and compacted with mechanical compaction.

3.8 GRAVEL RAFT

Place gravel raft, systematically spread and mechanically compact in layers in accordance with the engineer's requirements, to the extent specified by the engineer.

3.9 BLINDING LAYER

Spread GAP 7 blinding layer to a minimum 500mm past the outside edge of the slab, compact to a level layer no greater than 50mm thick and no higher than 305mm below finished floor level.

3.10 FORMWORK

Construct formwork as required, well braced, and tied to remain in position, straight and plumb during construction. Ensure formwork will provide for the topping depth, including rebates and the required concrete finish.

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3.11 INSTALL DAMP-PROOF MEMBRANE

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

Application - RibRaft® floor system

3.12 PIPED SERVICES – BELOW SLAB INSTALLATION

Ensure piped and cabled underfloor services are installed in the subsoil or hardfill in locations as shown on the drawings and according to Firth RibRaft® floor system requirements. Refer to Firth RibRaft® Technical Manual Section 2 - Installation Information, 3.4 Plumbing and Services.

3.13 PLACE POLYSTYRENE PODS

Place polystyrene pods in a regular waffle pattern using the spacers in the specified grid pattern to fit the floor plan. Cut pods on site with a saw or suitable hot wire as required. Cut holes for services and trim around piles as required on site.

3.14 INSTALL SPACERS

Install spacers and locations to the Firth RibRaft® floor system requirements.

Form standard ribs between pods using Firth 100mm spacers. Place the spacers at a minimum of one spacer along each edge of each pod or part pod. The ribs in both directions form a waffle pattern throughout the slab.

Form the edge beam using Firth 300mm spacers. Place the spacers at 1200mm centres maximum along the perimeter of the slab at least and one spacer per pod or part pod.

Form ribs to support loadbearing walls using Firth 300mm spacers. Place the spacers at a minimum of one spacer along the edge of each pod or part pod.

3.15 PLACE REINFORCING STEEL: RIB STEEL

Place rib reinforcing steel in the bottom of the internal ribs and supported in the correct position by the Firth spacers. Lap all steel 720mm minimum and hook all plain bars. At the junction with the edge beam, each rib steel bar shall sit on top of the edge beam bars and extend to the outermost bar. Allow for 75mm cover to the edge of the beam. Place 1 x HD12 bar in each 100mm wide rib and 2 x HD12 bars in each 300mm wide rib.

3.16 PLACE REINFORCING STEEL: EDGE BEAM STEEL

Place the two edge beam reinforcing bars in the bottom of the edge beam and supported in the correct position by the Firth spacers. Tie one edge beam bar below the mesh at the perimeter of the area covered by the polystyrene pods. Lap all steel 720mm minimum and hook all plain bars. At corners, the inner bottom bars and the top bars cross each other and extend to 75mm from the outside face of the edge beam. Tie these bars together where they cross.

3.17 PLACE REINFORCING STEEL: RE-ENTRANT CORNER STEEL

Place two HD12 bars, 1200mm in length across the corner. Tie to the top of the mesh at re-entrant corners at 200mm centers with 50mm side cover from the internal corner.

Install specified steel to Firth RibRaft® Technical Manual Section 2 - Installation Information, 3.9 Reinforcing Steel. Ensure specified minimum cover requirements are maintained.

3.18 PLACE REINFORCING MESH AND CHAIRS

Place reinforcing mesh over the polystyrene pods and support on the mesh chairs spaced at 1200mm centers minimum, with two mesh chairs minimum placed per pod and with one mesh chair minimum per part pod.

3.19 MESH LAPS

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

- the spacing of the cross wires plus 50mm
- 225mm or
- manufacturer's requirements

Do not count bar extensions beyond the outermost cross wire.

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Application - General

3.20 FORM SLAB AND OPENING REBATES

Form rebates, as detailed on drawings.

Form a minimum 50mm rebate in slab for masonry veneer construction with a width dependent on the veneer width, cavity width and overhang. Waterproof the rebate with a bituminous sealer on both the vertical and horizontal faces.

3.21 TOPPING SLAB DEPTH

Refer to SELECTIONS for required topping slab depth.

3.22 PRE-PLACEMENT INSPECTION

Arrange for excavations, formwork and reinforcement to be inspected and passed by the Building Consent Authority.

3.23 EQUIPOTENTIAL BONDING REINFORCING

If it is a project requirement, ensure that reinforcing is electrically equipotential bonded (or at least conductor cable attached) before the concrete is poured. For bonded reinforcing ensure all reinforcing is interconnected with good contact at joints and tight conductive ties.

3.24 CONCRETE PLACEMENT AND COMPACTION

Ensure the rib and edge beam canals are clean, free of debris. Pour the floor in a single pour using only Firth Raftmix™, Firth X-Pod® Raftmix™, Firth Raftmix™ Pump or Firth X-Pod® Raftmix™ Pump concrete and ensuring that the pods remain in position during placing. Pour concrete onto the top of each pod prior to filling the ribs around the pod to help prevent them from floating and lifting.

Use Firth Raftmix™ or Firth X-Pod® Raftmix™ for placement in the floor directly from the concrete truck chute or Firth Raftmix™ Pump or Firth X-Pod® Raftmix™ Pump concrete for placement in the floor by concrete pump.

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

3.25 CONCRETE FINISHING

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

3.26 CONCRETE CURING

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

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

3.27 SHRINKAGE CONTROL JOINTS

Cut shrinkage control joints as shown on the plans after hardening to a depth of 25mm within 24 hours in summer or 48 hours in winter.

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

Bay dimensions formed by the shrinkage control joints to be limited to a maximum ratio of length to width of 2 to 1 with a maximum dimension of 6 meters. Place the shrinkage control joints over the 100mm wide internal ribs wherever possible. Where a shrinkage control joint runs along the line of a 300mm wide loadbearing rib, locate the cut directly above one edge of the 300mm rib.

3.28 CLEAN OUT SHRINKAGE CONTROL JOINTS

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

Finishing

3.29 STRIKE FORMWORK

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

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3.30 SURFACE DEFECTS

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

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

Materials

4.1 HARDFILL

Location:	As per Geotech report

4.2 DAMP-PROOF MEMBRANE

Location:	Under slab
Brand/type:	Thermathene Black
Thickness:	0.25

Materials - RibRaft® Floor System

4.3 FIRTH RIBRAFT® POD FLOOR SYSTEM

Brand:	Firth Ribraft® Floor System
Pod type/Size:	1100x1100mm
Concrete mix:	Firth, 20MPa
Topping thickness:	100mm
Mesh:	Class E, Grade 500E, minimum SE62 or equivalent

4.4 FIRTH SPACERS

Brand:	Firth
Size:	100mm and 300mm

Finishing

4.5 CONCRETE SURFACE FINISH - FLOORS

Finish class:	U3 (interior)

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3820 CARPENTRY

1 GENERAL

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

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

1.2 DOCUMENTS

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

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

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

1.3 QUALIFICATIONS

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

1.4 DIMENSIONS

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

2 PRODUCTS

2.1 TIMBER FRAMING, TREATED

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

2.2 TIMBER TRUSSES

To FTMA CoP. Moisture content 16% at supply.

2.3 WALL DWANGS, NOGS AND BLOCKING

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

2.4 EXTERIOR CAVITY WALL BATTENS - TIMBER - NON-STRUCTURAL

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

2.5 EXTERIOR CAVITY WALL BATTENS - PROPRIETARY - NON-STRUCTURAL

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

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Components

2.6 NAILS

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

2.7 SCREWS

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

2.8 BOLTS AND COACH SCREWS

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

2.9 NAIL PLATES

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

2.10 CONNECTORS

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

2.11 CORROSION RISKS

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

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

2.12 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

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3 EXECUTION

3.1 EXECUTION GENERALLY

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

3.2 SEPARATION

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

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

3.3 ATTENDANCE

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

3.4 MOISTURE CONTENT

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

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

3.5 SET-OUT

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

3.6 FRAMING WALLS

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

3.7 FRAMING ROOFS

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

3.8 FRAMING CEILINGS

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

3.9 INSTALLING WALL UNDERLAYS

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.10 FIT CAVITY BATTENS

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

3.11 DPC TO LOSP TREATED TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

3.12 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

4 SELECTIONS

4.1 EXTERIOR WALL FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Exterior walls:	Radiata pine	SG8	H1.2
Nogs	Radiata pine	SG8	H1.2
Wall battens (not cavity):	Radiata pine	Merch	H1.2
Jamb battens:	Radiata Pine	Merch	H3.1

4.2 CAVITY BATTENS

Cavity battens	Species	Grade	Treatment

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Timber - Non Structural:	Radiata pine	Merchantable	H3.1

4.3 ROOF FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Rafters:	Radiata pine	SG8	H1.2
Trusses:	Radiata pine	SG8	H1.2
Purlins:	Radiata pine	SG8	H1.2
Ceiling joists and battens:	Radiata pine	SG8	H1.2
Valley boards:	Radiata pine	Merchantable	H1.2

4.4 INTERIOR FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Non structural walls:	Radiata pine	SG8	H1.2
Structural and braced walls:	Radiata pine	SG8	H1.2

4.5 EXTERIOR EXPOSED TIMBERS

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

Note all CCA to be preservative code 01 or 02

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4161MP MASONS UNDERLAYS, DPM & DPC

1 GENERAL

This section relates to the application of Masons NZ Limited products. It includes:

- DPM & DPC
- Roof underlays
- Wall underlays
- Installation 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:

COP	NZ Metal Roof and Wall Cladding Code of Practice
DPC	Damp-proof course
DPM	Damp-proof membrane
EPDM	Ethylene propylene diene monomer
FAB	Flexible Air Barrier
GSM	Grams per Square Metre
LOSP	Light Organic Solvent Preservative
LRV	Light reflectance value
MRM	NZ Metal Roofing Manufacturers Association Inc.
NASH	National Association of Steel Framed Housing Inc.
PEF	Polyethylene foam
PET	Polyethylene Terephthalate
VHP	Very High Permeability

The following definitions apply specifically to this section:

Wall underlay	As defined in NZBC E2/AS1 and in NZBC E2/AS4 - NASH Building Envelope Solutions - A building paper, synthetic material or rigid sheathing used as part of the wall cladding system to assist the control of moisture by ensuring moisture which occasionally penetrates the wall cladding is directed back to the exterior of the building.
Roof underlay	As defined in NZS 2295 - An absorbent permeable building underlay, used as part of the building's water management system in the roof cladding system, that absorbs or collects condensation or water that may penetrate the roof cladding.

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
NZBC C/AS2	Protection from fire
NZBC E2/AS1	External moisture
NZBC E2/AS4	External moisture - Light steel framing weathertight solution for buildings up to 3 storeys or of 10m or less in height with a floor area not exceeding 300m²
NZS/AS 1530.2	Methods of fire tests on building materials - Components and structures - Test for flammability of materials
NZS 2295	Pliable, permeable building underlays
AS/NZS 2904	Damp-proof courses and flashings
NZS 3604	Timber-framed buildings
AS/NZS 4201.4	Pliable building membranes and underlays - Methods of test - Resistance to water penetration
AS/NZS 4389	Roof safety mesh
AAMA 711-13	Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products
MRM CoP	NZ Metal roof and wall cladding code of practice

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NASH Building Envelope Solutions 2019 Light Steel Framed Buildings
NASH Standard Part 2 May 2019 Light Steel Framed Buildings

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Masons Hydro™ Seal Bituminous Masonry Sealer
- Product brochure and specification
- Material safety data sheet

Masons Dry Fix™ Damp-Proof Course
- Product brochure and specification

Masons Roof Underlays - VHP® Maxi, VHP® Ultra, VHP® Strong, VHP® Value:
- CodeMark CMNZ70098 Version 4 - Masons Roof Underlays - VHP® Value, VHP® Strong, VHP® Ultra, VHP® Maxi
- Product brochure
- Installation instructions V3.0 Feb 2024
- Material data safety sheet

Masons White-Faced Foil:
- CodeMark CMNZ70172 ver0 - White-faced Foil Composite Underlay
- Masons White-Faced Foil, Design and Installation Guide V1.2 October 2024

Masons Barricade™ FR Fire Retardant Building Wrap:
- CodeMark CMNZ70072 Version 4 - Masons Barricade FR
- Product brochure
- Installation instructions May 2019
- Material safety data sheet

Masons Barricade WD Self-Adhesive Weather Resistive Barrier:
- CodeMark CMNZ70142 Version 1 - Masons Barricade WD Self-Adhesive Weather-Resistive Barrier
- Product brochure
- Installation guide V1.0 August 2022 and Visual Installation Guide
- Technical data sheet

Masons UNI® Flexible Air Barrier:
- CodeMark CMNZ70116 Version 2 - Masons UNI® and UNI® PLUS Flexible Air Barriers
- Product brochure and specification
- Design and installation guide V1.0 Oct 2021
- Technical data sheet and UV exposure report
- Material Safety data sheet and on-site checklist
- Alternative Solution documents: Product Assurance Supplier Statement (PASS™ No. 19154) and Standards Comparison Report

Masons UNI® PLUS Flexible Air Barrier:
- CodeMark CMNZ70116 Version 2 - Masons UNI® and UNI® PLUS Flexible Air Barriers
- Product brochure
- Design and installation guide V2.0 Mar 2022
- Material Safety data sheet
- Alternative Solution documents: Product Assurance Supplier Statement (PASS™ No. 19192) and Standards Comparison Report

Masons UNI® PRO Flexible Air Barrier:
- CodeMark CMNZ70117 Version 1 - Masons UNI® PRO Flexible Air Barrier
- Product brochure
- Design and installation guide V1.0 Nov 2021
- Material safety data sheet

Masons Insul-Baffle, Design and Installation Guide V1.0 August 2024
Masons Insul-Baffle, Data Sheet V1.0 November 2024

Masons 40 Below™ Flashing Tapes:
- CodeMark CMNZ70075 Version 3 - Masons Flashing Tapes
- Product brochure and specification
- Installation instructions

Masons Hydro™ Flashing Tape & Corner Guards:
- CodeMark CMNZ70075 Version 3 - Masons Flashing Tapes
- Product brochure and specification
- Installation instructions

Masons UNI® FAB Seam & Repair Tape:
- Product brochure

Masons PEF Backing Rod:

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- Product brochure and specification

Masons Penetration Seals:

- Product brochure & durability appraisal

Masons WrapStrap™ House Wrap Strapping:

- Product brochure & specification

Masons Insulation Strap

- Product brochure

Manufacturer/supplier contact details

Company:	Masons NZ Limited
Web:	www.mpb.co.nz
Email:	info@mpb.co.nz
Telephone:	0800 522 533

Requirements

1.4 QUALIFICATIONS - GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 NO SUBSTITUTIONS

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

1.6 CODEMARK CERTIFICATE

Refer to MANUFACTURER/SUPPLIER DOCUMENTS for individual CodeMark certificate numbers.

Masons wall and roof underlays, and flashing tapes meet the requirements of the NZBC when used within the Conditions and Limitations of their Certificates of Conformity.

2 PRODUCTS

Masons Wall Underlays

2.1 MASONS UNI® FLEXIBLE AIR BARRIER

Absorbent, water-resistant, 180 GSM, synthetic wall underlay, comprising two outer layers of nonwoven polypropylene with a middle layer of a functional-technical film. CodeMark certified. The outer face is blue and marked “UNI® Flexible Air Barrier” or "UNI® SOFFIT" the underside is black.

Masons Flexible Air Barriers - Fastening Systems

2.2 MASONS UNI® FASTENERS FOR TIMBER FRAME

25mm galvanized or stainless steel ring shank nail fasteners with 32mm diameter plastic domed washer for use with a hammer, or with 25mm diameter plastic washer collated for use with the UNI (stinger) nailgun.

Masons Flashing Tapes & Corner Guards

2.3 MASONS 40 BELOW™ PLATINUM FLASHING

Self-adhesive flexible polyacrylic flashing tape with silver foil facing. Tape thickness 0.3mm, available in roll width 75mm - 230mm. 180days UV resistance. CodeMark certified, nail and screw sealability to AAMA 711-13.

2.4 MASONS 40 BELOW™ FLEX FLASHING TAPE

Self-adhesive flexible acrylic flashing tape with white facing. Tape thickness 0.3mm, available in roll width 75mm - 230mm. 270days UV resistance. CodeMark certified, single layer nail and screw sealability to AAMA 711-13.

2.5 MASONS HYDRO™ CORNER GUARDS

Flexible plastic mouldings for protection of wall underlay where dressed into openings in framing. Provides edge reinforcement of sills, for fixing flashing tape.

Masons Seam & Repair Tapes

2.6 MASONS UNI® FAB SEAM & REPAIR TAPE

Waterproof seaming tape with pressure-sensitive polyacrylic adhesive and a central filament layer of reinforcement. Available in roll form, 0.5mm thick x 60mm wide x 25m long. Black or white.

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Masons Sealing & Underlay Accessories

2.7 MASONS™ PEF BACKING ROD

Cylindrical, flexible, extruded closed cell polyethylene foam rod. Available in 6-50mm diameter rods.

2.8 MASONS PENETRATION SEALS

Flexible, conical moulded EPDM nozzle, on adhesive carrier base of flexible woven synthetic waterproof flashing. Two sizes available, to be trimmed to suit diameter of pipe penetration

2.9 MASONS WRAPSTRAP™ HOUSE WRAP STRAPPING

Blue embossed polythene strap, 19mm or 25mm wide.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 GENERAL REQUIREMENTS

Design, application and installation of Masons NZ products to NZBC E2/AS1, NZBC E2/AS4, CodeMark™ certification, Masons NZ Limited technical literature and MRM Code of Practice.

3.4 INSPECT SUBSTRATE

Before starting work, ensure that the substrate will allow work of the required standard. Carry out remedial work identified prior to installation.

Application - Masons Wall Underlays

3.5 MASONS FLEXIBLE AIR BARRIERS - TIMBER FRAME

Fix horizontally as per Masons installation instructions, and NZBC E2/AS1, 9.1.7. to outside face of framing (printed side facing out) in true alignment, with succeeding sheets overlapping 150mm. Ensure underlay is taut and extends from upper side of top plate to a minimum of 50mm below the bottom plate or bearer. Fix using UNI® fasteners and optionally with timber cavity battens according to Masons installation and fixing guides. Keep clean and undamaged until closed in.

UNI® FAB Soffit -
UNI® FAB Soffit is an optional 600mm width sheet fitted first along the upper section of walls. Sheet laps over lower sheets 150mm and is sealed with a built-in adhesive strip.

3.6 WALL OPENINGS

Run the underlay over opening and leave covered until windows and doors are ready to be installed. Form openings in the membrane, fold into the opening and fix to the framing. Cut off excess.

Follow Masons specified installation method, using flashing tape (Masons 40 Below™ Platinum / Flex) and Masons corner guard mouldings to provide a weathertight seal.
For UNI® PRO installations, or optionally for other UNI® applications, install Masons Dry Fix DPC up the jamb and under the head flashing.

3.7 EXPOSURE LIMIT AND TEMPORARY WEATHER PROTECTION

Install exterior cladding over Masons wall underlays as soon as practicable.

- Masons UNI® and UNI® PLUS Flexible Air Barriers may be exposed to the weather & ultra-violet light for up to 90 days.
- Masons UNI® PRO Flexible Air Barrier may be exposed to the weather & ultra-violet light for up to 150 days

During this time, Masons wall underlays may be used as a temporary weather protection sheathing. Ensure all joins are sealed using Masons UNI® FAB Seam and Repair Tape for UNI® and UNI® PLUS or using Masons 40 Below™ Platinum / Flex Flashing tape for UNI® PRO, and all penetrations sealed with Masons Penetration Seals. Roof cladding, soffit linings, windows and doors must be installed.

3.8 WEATHER CONDITIONS

When fixing the underlay in windy conditions, extra care must be taken due to the large sail area created by wide rolls.

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3.9 REPAIR DAMAGE

Repair any damaged areas of the underlay, such as tears, holes or gaps around service penetrations. Repair damaged areas by covering with new material lapping the damaged area by at least 150mm and taping, or by taping small tears using appropriate Masons Seam and Repair Tape.

Application - Masons Flashing Tapes & Corner Guards

3.10 MASONS 40 BELOW™ FLASHING TAPES & CORNER GUARDS

Install Masons 40 Below™ Flashing Tape and if required, Corner Guards to NZBC E2/AS1, 9.1.5 for timber framing, or to NZBC E2/AS4, 9.1.5 for light steel framing and in accordance with Masons instructions.

3.11 FIXING OVER LOSP TIMBER

When applying Mason flashing tapes over LOSP treated timber, ensure the solvent has been allowed to flash off for a minimum of one week prior to the installation.

Application - Masons Seam & Repair Tapes

3.12 MASONS UNI® FAB SEAM & REPAIR TAPE

Install Masons UNI® FAB Seam and Repair Tape for lapped seams and repairs to:

- Masons UNI® and UNI® PLUS flexible air barriers
- Masons VHP® roof underlays

all in accordance with Masons installation instructions.

Application - Masons Sealing & Underlay Accessories

3.13 MASONS PEF BACKING ROD

Install Masons PEF backing rod to NZBC E2/AS1 or E2/AS4, 9.1.6 and in accordance with Masons instructions. Diameter of foam backing rod to be sized 25% - 30% larger than the width of the gap requiring filling.

3.14 MASONS PENETRATION SEALS

Install, in accordance with Masons installation instructions, select appropriately sized Masons Penetration Seals, and trim to suit pipe or wires penetrating wall underlay.

3.15 MASONS WRAPSTRAP™ HOUSE WRAP STRAPPING

Over wall underlay, install 19mm or 25mm wide WrapStrap horizontally at 300mm centres, draw taut and fix to studs with staples, screws or nails to prevent insulation bulging into cavity.

Completion

3.16 COMPLETION MATTERS

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

4 SELECTIONS

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

Masons Wall Underlays

4.1 MASONS UNI® FLEXIBLE AIR BARRIER

Location:	Wall wrap
Brand/Type:	Masons UNI® flexible air barrier
Order Code:	UNI2.74X50; UNISOFFIT

Masons Flexible Air Barriers - Fastening Systems

4.2 MASONS UNI® NAIL FASTENERS - TIMBER FRAME

Frame type:	Timber
Brand/Type:	Masons UNI® Nail Fasteners

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Masons Flashing Tapes & Corner Guards

4.3 MASONS 40 BELOW™ PLATINUM FLASHING TAPE
Thickness: 0.3mm
Facer type: Aluminium foil

4.4 MASONS 40 BELOW™ FLEX FLASHING TAPE
Thickness: 0.3mm
Facer type: Compound flexible, white

4.5 MASONS HYDRO™ CORNER GUARDS
Brand/Type: Masons Hydro™ Corner Guards, blue plastic

Masons Seam & Repair Tapes

4.6 MASONS UNI® FAB SEAM & REPAIR TAPE
Brand/Type: Masons UNI® FAB Seam & Repair Tape
Thickness: 0.5mm approx.
Roll size: (W x L) 60mm x 25m
Order code: UNISEAMTPE60MM

Masons Sealing & Underlay Accessories

4.7 MASONS PEF BACKING ROD
Brand/Type: Masons PEF backing rod

4.8 MASONS PENETRATION SEALS
Brand/Type: Masons Penetration Seals

4.9 MASONS WRAPSTRAP™ HOUSE WRAP STRAPPING
Brand/Type: Masons WrapStrap™ house wrap strapping

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

1 GENERAL

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

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

The following definitions apply specifically to this section:

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

Documents

1.2 DOCUMENTS

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

AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials
AS/NZS 2904	Damp-proof courses and flashings
NZS 3604	Timber-framed buildings
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4347	Damp-proof courses and flashings - Methods of test
AS/NZS 4389	Roof safety mesh
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire

CodeMark CMNZ10002 ver04 - Watergate Plus Wall Underlay
CodeMark CMNZ30028 (Rev J) - Thermakraft Covertek 407 Roof and Wall Underlay
CodeMark CMNZ30030 (Rev J) - Thermakraft Covertek 405 Roof and Wall Underlay
CodeMark CMNZ30069 (Rev I) - Thermakraft Covertek 403 Roof and Wall Underlay

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Thermakraft's Product Data Sheets
Thermakraft's Installation Guides
BRANZ Appraisal 329 (2022) - Supercourse 500 Damp-Proof Course and Concealed Flashing - Amendment 29.08.2023
BRANZ Appraisal 651 (2024) - Thermakraft Covertek 407 Roof and Wall Underlay - Amended 01.07.2025
BRANZ Appraisal 695 (2023) - Watergate Plus Wall Underlay - Amended 01.07.2025
BRANZ Appraisal 743(2025) - Thermakraft Covertek 405 Roof and Wall Underlay
BRANZ Appraisal 878 (2025) - Thermakraft Aluband Window Flashing Tape
BRANZ Appraisal 912 (2021) - Thermakraft 220 Synthetic Wall Underlay - Amended 01.07.2025
BRANZ Appraisal 917(2025) - Thermakraft Covertek 403 Roof and Wall Underlay
BRANZ Appraisal 942 (2022) - OneSeal Multi-fit Pipe and Cable Penetration Seals - Amendment 04.06.2024
BRANZ Appraisal 943 (2021) - Thermakraft Covertek 401 Roof and Wall Underlay - Amended 01.07.2025
BRANZ Appraisal 1000 (2023) - Thermakraft Thermabar 397 Light Diffusing Reflective Underlay - Amended 01.07.2025
BRANZ Appraisal 1029 (2023) - Thermakraft Ausnet Hexagonal Wire Mesh
BRANZ Appraisal 1104 (2020) - Thermathene Orange Concrete Underlay - Amendment 06.09.2024
BRANZ Appraisal 1122 (2020) - Thermaflash Flashing Tape - Amendment 02.09.2024
BRANZ Appraisal 1229 (2023) - Thermakraft Covertek 215 Roof Underlay - Amended 19.06.2025

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BRANZ Appraisal 1277 (2025) - Thermakraft RainArmor Self Adhesive Roof Underlay and Wall Underlay

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For Kingspan Thermakraft product range.

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

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

Compliance information - BRANZ appraised

1.7 BRANZ APPRAISED - THERMAKRAFT SUPERCOURSE 500

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

1.8 BRANZ APPRAISED - THERMAKRAFT COVERTEK 401

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

2 PRODUCTS

DPC

2.1 THERMAKRAFT SUPERCOURSE 500

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

DPM

2.2 THERMAKRAFT THERMATHENE BLACK

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

Synthetic underlays - not fire retardant

2.3 THERMAKRAFT COVERTEK 401

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

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Components - sealing

2.4 THERMAKRAFT WHITE GENERAL PURPOSE TAPE

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

Fixings

2.5 FIXINGS - TO TIMBER

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation/application - generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Installation - DPC

3.5 INSTALL DPC

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

Installation - DPM

3.6 INSTALL DPM - CONCRETE FLOOR

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

3.7 APPLY TAPE TO LAPPED DPM JOINTS

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

Installation - roof underlay

3.8 INSTALL ROOF UNDERLAY - HORIZONTAL

Install underlay to the Installation Guide horizontally and in true alignment over exterior face of roof framing. Place first sheet overlapping guttering (max. 20mm) or if eaves flashing is used terminate on the upper side of the flashing, draw sheet taut and fix at maximum 300mm centres to roof framing members. Install additional sheets in row repeating the process for the first sheet with sheet end laps to be of at least 150mm. Install sheets up to and over the ridge repeating the installation process for the first row and overlapping higher over lower sheets by at least 150mm.

3.9 INSTALL ROOF UNDERLAY - VERTICAL

Install underlay to the Installation Guide vertically and in true alignment over exterior face of roof framing. Place first sheet up the slope to the ridge overlapping guttering (max. 20mm) or if eaves flashing is used terminate on the upper side of the flashing, draw sheet taut and fix at maximum 300mm centres to roof framing members. Install additional sheets repeating the process for the first sheet lapping joints by at least 150mm.

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Completion

3.10 COMPLETION MATTERS

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

4 SELECTIONS

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

DPC

4.1 DPC - THERMAKRAFT SUPERCOURSE 500

Location:	Under bottom plates
Manufacturer:	Thermakraft
Brand:	Supercourse 500
Type:	Damp proof course

DPM

4.2 DPM - THERMAKRAFT THERMATHENE BLACK

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

Synthetic underlays - not fire retardant

4.3 ROOF & WALL UNDERLAY - THERMAKRAFT COVERTEK 401

Location:	Roof underlay
Manufacturer:	Thermakraft
Brand:	Covertek 401
Type:	Synthetic roof and wall underlay
Maximum UV exposure:	Walls - 60 days Roofs - 7 days

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4171GR GIB WEATHERLINE RIGID AIR BARRIER

1 GENERAL

This section relates to the supply and fixing of GIB Weatherline® Rigid Air Barrier to residential and commercial buildings.
It incudes;

- GIB Weatherline® Rigid Air Barrier Structural batten, screw and tape; and screw and tape systems
- GIB Weatherline® Rigid Air Barrier bracing systems
- GIB Weatherline® Rigid Air Barrier fire rated systems

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

AWCINZ	Association of Wall and Ceiling Industries New Zealand

Documents

1.2 DOCUMENTS

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

NZBC B1/AS1	Structural provisions for buildings
NZBC B2/AS1	Durability provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 2589	Gypsum linings - Application and finishing
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
BS EN 13501-1	Fire classification of construction products and building elements - Classification using test data from reaction to fire tests
BRANZ Technical Paper P21	BRANZ Technical Paper P21: A wall bracing test and evaluation procedure (2010)

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

GIB® Site Guide (April 2024)
GIB® Noise Control Systems (September 2017)
GIB® Fire Rated Systems (September 2024)
GIB Ezybrace® Systems (August 2016)
GIB Ezybrace® Bracing Design Software
GIB Ezybrace® Bracing Supplement Document (December 2016)
GIB Ezybrace® for Light Steel Frame Systems (March 2017)
GIB Weatherline® Rigid Air Barrier Systems Design and Construction Manual (March 2021)
GIB Weatherline® Rigid Air Barrier Systems Supplement (November 2021)
BRANZ Appraisal 1048 (2025)- GIB Weatherline® Rigid Air Barrier Systems

Manufacturer/supplier contact details

Company:	Winstone Wallboards
Web:	www.gib.co.nz
Telephone:	0800 100 442

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	For GIB® products and/or systems for a minimum of 10 years from the date of purchase

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

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS
Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS
Substitutions are not permitted to any specified GIB® systems, GIB® system components, associated GIB® products or GIB® accessories.

Compliance information

1.7 INFORMATION REQUIRED FOR CODE COMPLIANCE
Provide the following compliance documentation: -

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

Performance - Wind (design by contractor)

1.8 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR
Design the installation to the manufacturer's requirements and as appropriate for the project wind design stated in the general section 1220 PROJECT.

Performance - Fire

1.9 EXTERNAL FIRE SPREAD - NON-COMBUSTIBLE MATERIAL
GIB Weatherline® classifieds as A1 in accordance with BS EN 13501-1.

Performance - General

1.10 FIRE RATED SYSTEM
Provide GIB Weatherline® Rigid Air Barrier fire rated system. Refer to SELECTIONS for system/FRR.
Fire Rated Systems:

Two-way FRR - Timber frame

Specification	LB/NLB	Insulation	FRR	Lining requirements
GWTLE 30	LB	optional	30/30/30	Internal: 10mm GIB Fyreline® Exterior: 10mm GIB Weatherline®
GWTLE 60a	LB	optional	60/60/60	Internal: 13mm GIB Fyreline® Exterior: 13mm GIB Weatherline®
GWTLE 60b	LB	optional	60/60/60	Internal: 10mm GIB Fyreline® Exterior: 2/10mm GIB Weatherline®
GWTLP 30	LB	optional	30/30/30	10mm GIB Weatherline® both sides
GWTLP 60	LB	optional	60/60/60	13mm GIB Weatherline® both sides
GWTE120	NLB	optional	-/120/120	Internal: 2 x 13mm GIB Fyreline® Exterior: 2 x 13mm GIB Weatherline®

2 PRODUCTS

Materials

2.1 GIB WEATHERLINE® RIGID AIR BARRIER
Exterior grade, glass-fibre fleece wrapped modified gypsum core sheet.
Meets NZBC requirements for Rigid Air Barriers as an Alternative Solution Proprietary System as per NZBC E2/AS1, 9.1.3 Barriers to airflow, paragraphs 9.1.6.2 - 9.1.6.4, and Table C.2.1.1: Properties of roof underlays and wall underlays.
Complies with NZBC B2/AS1 Durability.

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Sizes;

Standard lengths:	2750mm and 3000mm (2450 available but in 10mm thickness only)
Width:	1200mm
Thicknesses:	10mm and 13mm
Colour:	Purple

Components

2.2 SCREWS

GIB® Grabber® 41mm x 6g Ceramic Coated High Thread Screws.

GIB® Grabber® 63mm x 8g Ceramic Coated High Thread Screws.
GIB® Grabber® 32mm x 8g Ceramic Coated Drill Point Screws.
GIB® Grabber® 47mm x 8g Ceramic Coated Drill Point Screws.
Refer to GIB® requirements for appropriate details.

2.3 GIB WEATHERLINE® FLASHING TAPE

Flashing tape available in 30mm, 60mm, 100mm, 150mm and 200mm widths x 30m roll length.

2.4 GIB WEATHERLINE® SILL TAPE

Sill tapes available in 150mm and 200mm widths x 20m roll length.

2.5 STRUCTURAL CAVITY BATTENS

45mm x 18mm H3.1 Merchant Grade Pinus Radiata cavity battens.

2.6 FIRE/ACOUSTIC SEALANT

GIB Fire Soundseal® ultra low VOC, multi use fire and acoustic sealant that resists passage of smoke and fire.

2.7 GAP FILLER

GIB® Gap Filler ultra low VOC multi-purpose acrylic flexible filler.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

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

Framing substrates shall be in accordance to AS/NZS 2589 and Weatherline® Rigid Air Barrier Systems requirements. Refer to GIB® Site Guide.

Timber framing moisture content is in accordance with requirements of AS/NZS 2589. Refer to NZBC E2/AS1 and GIB® Site Guide.

Timber framing:	18% maximum for fixing plasterboard to timber (8-12% recommended for fixing plasterboard to timber framing if air conditioning and/or central heating are to be installed.)

Installation

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 SCREW, TAPE AND STRUCTURAL BATTEN INSTALLATION

Fix GIB Weatherline® Rigid Air Barrier System in accordance with GIB Weatherline® Rigid Air Barrier Systems Specification and Installation Manual, Section 2.

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3.6 BOARD ORIENTATION

Minimise joints by careful sheet layout using the largest sheet sizes possible. Sheets may be installed vertically or horizontally, however horizontal fixing is not acceptable when Structural Bracing or Fire Rated Systems are specified. Refer to GIB Weatherline® Rigid Air Barrier Systems Specification and Installation Manual.

3.7 INSTALL FLASHING AND SILL TAPE

Install flashing and sill tape in accordance with GIB Weatherline® Rigid Air Barrier Systems Specification and Installation Manual.

3.8 LINING WALLS AND CEILINGS GENERALLY

Form to GIB® Site Guide. Ensure bulk insulation thickness shall not exceed that of the wall framing.

3.9 FORM FIRE RATED SYSTEMS

Form fire rated systems in accordance with GIB Weatherline® Rigid Air Barrier Systems Design & Construction Manual and GIB Weatherline® Rigid Air Barrier Systems Supplement.

Finishing

3.10 FINISHING GENERALLY

To GIB® Site Guide (September 2018) and AS/NZS 2589.

Completion & Commissioning

3.11 COMPLETION MATTERS

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

4 SELECTIONS

GIB Weatherline® Rigid Air Barrier

4.1 STRUCTURAL BATTEN, SCREW & TAPE NZS 3604 - GIB WEATHERLINE® RIGID AIR BARRIER

Location:	See plans
Product:	Weatherline® Rigid Air Barrier
Sheet width:	1200mm
Thickness:	10mm

4.2 GIB WEATHERLINE® RIGID AIR BARRIER - 2-WAY FIRE RATED SYSTEM TIMBER FRAME

Specification Number	LB/NLB	Insulation	FRR
GWTLE30	LB	R2.8	30/30/03

Components

4.3 GIB WEATHERLINE® FLASHING TAPE

Brand/type: GIB Weatherline® flashing tape

4.4 GIB WEATHERLINE® SILL TAPE

Brand/type: GIB Weatherline® sill tape

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4221HV HERMPAC VERTICAL WEATHERBOARD CLADDING SYSTEM

1 GENERAL

This section relates to the supply and fixing of **Hermpac** Vertical cladding:

- Vertical Shiplap weatherboards
- Board and Batten weatherboards
- Fascia
- Mouldings
- Proprietary flashing systems
- Vertical Shiplap 'Vertibat' cavity batten systems

1.1 RELATED WORK

Refer to painting sections for finishes to weatherboard cladding.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3617	Profiles of weatherboards, fascia boards and flooring

JAS-ANZ CodeMark Certification CMNZ30036 - Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Hermpac Construction Drawings

Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System installation Specifications
Hermpac Vertical Shiplap Weatherboard Direct Fix System Installation Specifications
Hermpac Product Technical Statement (PTS) – VertiLine Vertical Shiplap Weatherboard Cavity System (July 2023)
Hermpac Product Installation Checklist – VertiLine Vertical Shiplap Weatherboard Cavity System (Jan 2023 V2)

Hermpac Board and Batten Weatherboard Cavity System Installation Specifications
Hermpac Board and Batten Weatherboard Direct Fix System Installation Specifications
Hermpac Product Technical Statement (PTS) – Board and Batten Weatherboard Cavity System (July 2023)
Hermpac Product Installation Checklist – Board and Batten Weatherboard Cavity System (Jan 2023 V2)

Hermpac Standard and Custom profiles
Hermpac Profile Portfolio
Hermpac Grade descriptions
Hermpac Nail/Screw fixings
Hermpac Legal and / or Sustainable Certification
Machinecoat - Flood Coat Inundation versus Spray Application
Maintenance of selected Wood Oil/Oil Based Stain Finishes
Hermpac WRC Information Sheet – cuts and characteristics
Hermpac WR & Yellow Cedar cuts and characteristics

BRANZ Appraisal 650 - Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System

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Manufacturer/supplier contact details:

Company:	**Hermpac Ltd**
Contacts:	Kyle Deans - 021 771 857, kyle.deans@hermpac.co.nz
	Carmen Hansen - 027 809 4588, carmen@hermpac.co.nz
Web:	www.hermpac.co.nz
Email:	technical@hermpac.co.nz
Telephone:	09 421 9840 Auckland
	04 586 9674 Wellington
	03 341 2163 Christchurch

Warranties

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years For installation of Hermpac vertical weatherboard cladding systems

- 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.

Compliance information

1.7 CODEMARK CERTIFICATE

Hermpac vertical weatherboard cladding systems meet the requirements of the NZBC when used within the Conditions and Limitations of their Certificate CMNZ30036.

1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

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

Performance

1.9 FIXINGS, WIND

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

1.10 PERFORMANCE

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

2 PRODUCTS

Materials

2.1 WESTERN RED CEDAR

Hermpac Canadian Western Red Cedar (Thuja plicata) supplied from sustainably managed forests of British Columbia, Canada and available with PEFC or FSC certification.

2.2 VERTICAL SHIPLAP

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

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

- Vertical Standard Shiplap and Hermpac Custom Profiles
- Vertical Standard Board and Batten and Hermpac Custom Profiles

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A selection of the above profiles are also available in Western Red Cedar and Yellow Cedar finger-joint (CedarOne Evolve and CedarLine Evolve). CedarOne Evolve is quarter-sawn cut Cedar. CedarLine Evolve is primarily flat-sawn cut Cedar. Evolve profiles are available across most standard and custom profiles. The timber is machined with a “combed” finish to the front face and the boards are finished with an oil or stain as per Hermpac literature.

Regular paint finish finger-joint (CedarOne Mantle and CedarLine Mantle) is also available in Western Red Cedar and Yellow Cedar. Profiles are machined with a “dressed” finish to the front face and the exposed corners are machined to paint quality - PQ (ie. rounded edges for paint adherence). Boards are supplied pre-primed and undercoated, sanded and/or de-nibbed/buffed between coats.

2.3 COVER BOARDS, SMART CORNERS, MOULDINGS AND SCRIBERS

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

2.4 FASCIA BOARDS

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

2.5 WALL UNDERLAYS

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

2.6 VERTIBAT PINE EXTERIOR CAVITY WALL BATTENS - NON STRUCTURALLY FIXED

Vertibat Radiata Pine, H3.1 and H3.2 treated castellated and double bevelled cavity battens, available in a range of sizes. Refer to SELECTIONS.

2.7 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Aluminium, PVC or stainless steel cavity closure strip, punched with 3mm-5mm holes or slots to provide a minimum ventilation opening area of 1000mm² per lineal metre of wall. Length and width to suit cavity. To NZBC E2/AS1: clause 9.1.8.3 and figure 66.

Components

2.8 NAILS, SILICON BRONZE

Hermpac Crown, Rose or Flat Head, Annular Grooved Silicon Bronze fixings to NZBC E2/AS1 Table 24. Refer to Hermpac Construction Drawings for fixing details and to SELECTIONS for fixing sizes.

2.9 NAILS, STAINLESS STEEL

Hermpac Crown, Rose or Flat Head, Annular Grooved Grade 316 Stainless Steel fixings to NZBC E2/AS1 Table 24. Refer to Hermpac Construction Drawings for fixing details and to SELECTIONS for fixing sizes.

2.10 SCREWS, STAINLESS STEEL

Hermpac Starcap Grade 316 Stainless Steel fixings to NZBC E2/AS1 Table 21. Refer to Hermpac Construction Drawings for fixing details and to SELECTIONS for fixing sizes and colours.

2.11 JOLT HEAD NAILS, STAINLESS STEEL

Hermpac Jolt Head, Annular Grooved Grade 316 Stainless Steel fixings to NZBC E2/AS1 Table 24. Refer to Hermpac Construction Drawings for fixing details and to SELECTIONS for fixing sizes.

2.12 CLINCH NAILS, STAINLESS STEEL

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

2.13 FLASHINGS GENERALLY

To NZBC E2/AS1, 4.0 **Flashings**. Material, grade and colour as detailed and scheduled and to NZBC E2/AS1; Table 21: Compatibility of materials in contact and table 22: Compatibility of materials subject to run-off. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.

2.14 SEALANT

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

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Finishes

2.15 FACTORY PRE-FINISHING - MACHINECOAT (NZ) - PENETRATING WOOD OIL / OIL BASED STAIN

Flood Coat Inundation: Factory application of selected oil-based stain finishes by flood inundation and enhanced penetration of timber surface by roller pressure and fibre saturation.

Refer to: www.hermpac.co.nz/our-products/coatings

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

Site applications to manufacturers specifications. All Hermpac weatherboards and mouldings must be coated all six sides prior to installation.

2.16 SITE APPLICATION OF WOOD OIL/OIL BASED STAIN & PAINTS

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

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

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

Application - generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 APPLICATION GENERALLY

Application in accordance with Hermpac Installation Specifications.

Application - preparation

3.6 SITE STAINING - WOOD OIL/OIL STAIN FINISH

If not pre-finished before delivery, prepare and coat all faces and edges with one coat of premium wood oil or oil stain to coating manufacturers specifications immediately on opening block stack. Once coated, open stack each board to dry (or penetrate) with back facing downwards ensuring faces remain well finished, untouched and unblemished during drying. Once the coating is dry (Resene Woodsman) or penetrated (Wood-X wood oil), stack the boards face to face and back to back in subsequent layers, so as not to damage the face and finish. Keep dry and undamaged.

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

Application - vertical cladding over cavity battens

3.7 VERTIBAT PINE DRAINED CAVITY / NON STRUCTURALLY FIXED

Install 20mm minimum thickness drained cavity. Fit Vertibat cavity battens horizontally over wall underlay to wall framing, centred over nogs at 400mm - 480mm vertical centres with top edge sloping away from wall underlay and nail tack in place.

3.8 CAVITY CLOSER / VERMIN PROOFING

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

3.9 PENETRATIONS

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

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

Hermpac Construction Drawings call for a compressible bond breaker, closed cell PVC foam seal to NZBC E2/AS1 9.1.10.7.

3.10 SET-OUT

Use a string line, laser or mechanical device to set out all fixing that will be visible in the finished work. Align accurately in straight lines. Refer to relevant Hermpac Installation Specification and Construction Drawings to establish correct angle of fixing and consistent, accurate placement relative to visible edge of board. For vertical shiplap boards, where possible the exposed lap should face away from the prevailing wind.

Application - fixing

3.11 FIXING - OIL / STAIN FINISH

Install level, true to line and face, to NZBC E2/AS1: 9.4 Timber weatherboards. Double coat all cut ends before fixing. Provide one face fixing per weatherboard at each Vertibat cavity batten over nogging or structurally fixed cavity batten location. Pilot drill all fixings slightly smaller than gauge of fixing to ensure a snug fit and to minimise risk of moisture entry. Finish the heads of Hermpac Crown, Rose and Flat head nails, or Hermpac Starcap screws, flush onto and not into the board surface. Do not over drive the nail/screw head and crush the timber surface beneath and surrounding the nail/screw.

3.12 FIXING/FINISH - WIND ZONE

Hermpac Western Red Cedar, Yellow Cedar or DuraLarch™ weatherboards fixed with Stainless Steel or Silicon Bronze Hermpac Crown, Rose and Flat Head nails or Hermpac Starcap screws and Kanda weatherboards fixed with Hermpac Starcap screws are limited to use in NZS 3604 Wind Zones up to and including Extra High when dwangs or structurally fixed Vertibat cavity battens are at maximum 480mm centres.

Hermpac Western Red Cedar weatherboards fixed with stainless steel jolt head nails are limited to use in NZS 3604 Wind Zones up to and including Medium when dwangs or structurally fixed Vertibat cavity battens are at maximum 480mm centres, and NZS 3604 Wind Zones up to and including Very High when dwangs or structurally fixed Vertibat cavity battens are at maximum 400mm centres.

Hermpac Yellow Cedar and DuraLarch™ weatherboards fixed with jolt head nails are limited to use in NZS 3604 Wind Zones up to and including Extra High when dwangs or structurally fixed Vertibat cavity battens are at maximum 480mm centres.

Refer to Hermpac Construction Drawings for fixing details and to SELECTIONS for fixing sizes.

3.13 FIXING VERTICAL SHIPLAP WEATHERBOARDS

Install level, true to line and face, to NZBC E2/AS1: 9.4 **Timber weatherboards**. Single face fix weatherboards to every fixing point, clear of the adjacent lapped board. Fixing to be driven in with a slightly upward slope. Line fixings horizontally across the boards. Pilot drill all fixings slightly smaller than gauge of fixing to ensure a snug fit and to minimise risk of moisture entry. Refer to Hermpac Construction Drawings for accurate weatherboard fixing information.

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Using a Hermpac specialty clinch nail, prior to the next row of Vertical Shiplap boards being fixed alongside (nogs or dwangs at maximum 480mm centres) and at a position hard up against but not into the hidden lap board edge at every fixing point, restrain the hidden lap tongue by driving the clinch nail into the cavity batten so that the clinch head settles flush into the weatherboard's surface. The clinch nail head must not sit proud of the timber surface nor prevent the correct separation of each adjacent row of boards. Do not pin laps or weatherboard faces.

Refer to Hermpac Construction Drawings and Installation Specification for suitable face fixings (options include Hermpac Silicon Bronze nails or Grade 316 Stainless Steel nails or Starcap screws. Kanda weatherboards must be fixed with Hermpac Starcap screws), correct placement of fixings, size, length and minimum penetration requirements, and for external and internal corner construction and fixing details.

3.14 INSTALL FLASHINGS

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

3.15 SEALANT

Coated weatherboards laid over Mill Finish Grade 316 Stainless Steel:

Sika: Wipe weatherboard surfaces with a clean rag. Using an abrasive pad, rub down Stainless Steel in a single pass before cleaning with Sika Aktivator-205. Coat both weatherboards and Stainless Steel with Sika Primer 3N and apply a continuous 5mm bead of Sikaflex-11FC or Sikaflex 123 MS Bond.

Soudal: Wipe weatherboard surfaces with a clean rag before wiping Stainless Steel only with Gorilla 696 Surface Activator, being careful not to coat any powder coated surfaces. Apply a minimum 5mm thick continuous bead of Gorilla MS Sealant.

3.16 COMPLETE

Ensure the work is complete with all flashings, finishings and trim properly installed so the cladding system is completely weathertight.

Completion & Commisioning

3.17 COMPLETION MATTERS

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

4 SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise. Contact technical@hermpac.co.nz for assistance or more information.

4.1 HERMPAC - VERTICAL SHIPLAP

Location:	See plans
Species:	Cedar
Grade:	HERMPAC Premium Clears No.1 (PC1)
Profile Number/Series:	HP52
Profile type:	Vertical Shiplap
Thickness:	18.5mm
Cavity Fixing system:	Vertibat
Surface finish:	Band Sawn Face (BSF)
Moisture content:	≤18 % at fixing

4.2 WEATHERBOARD FASTENINGS - SILICON BRONZE NAILS - WOOD OIL / OIL STAIN FINISH

Nails:	Crown Head
Type:	Silicon Bronze

4.3 LAP FASTENINGS - CLINCH NAILS

Nails:	Clinch nails
Type:	Grade 316 stainless steel

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4.4 VERTIBAT PINE CAVITY BATTENS - NON STRUCTURALLY FIXED

Product:	Vertibat (V1)
Material:	Pinus radiata
Size:	45mm wide x 20mm thick x 2700mm long
Fixings:	Flat head nails
Fixing size:	40mm x 2.0mm

4.5 HERMPAC CAVITY CLOSER/VERMIN-PROOFING

Brand/type:	Sigma cavity closure
Material:	Aluminium

4.6 HERMPAC INTERNAL AND EXTERNAL CORNER BACK FLASHINGS

Material:	Aluminium
Type:	Unhemmed

4.7 FACTORY FINISH - WOOD OIL / OIL STAIN - FLOOD COAT INUNDATION

Brand:	Machinecoat (NZ) Ltd
Product:	Wood-X penetrating wood oil
Coating process:	Machinecoat (NZ) Ltd. Flood Coat Inundation
Colour:	Avalanche
Factory coats:	One
On site coats:	One, or as per coating manufacturers specification

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4231HO JAMES HARDIE® OBLIQUE™ WEATHERBOARD CLADDING

1 GENERAL

This section relates to the supply and fixing of Oblique™ Weatherboard cladding.

1.1 RELATED WORK

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:

FRR	Fire resistance rating

Documents

1.3 DOCUMENTS

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

NZBC C/AS1	Protection from fire for buildings with sleeping (residential) and outbuildings (risk group SH)
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC E2/VM1	Cladding systems of buildings up to 10 m in height – including junctions with windows, doors and other penetrations
AS/NZS 1170.2:2011	Structural design actions - Wind loads
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
CodeMark™ CMNZ30147 - ver C	Oblique™ Weatherboard by James Hardie® Cavity Cladding System

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
Oblique™ Weatherboard Horizontal Installation Technical Specification (March 2026)
Oblique™ Weatherboard Vertical Installation Technical Specification (March 2026)
Oblique™ Weatherboard Vertical Installation to Hardie™ 40mm Structural Horizontal Cavity Batten Technical Specification (March 2026)
Fire and Acoustic Design Manual by James Hardie, May 2026
James Hardie® Installation Checklist
BRANZ Appraisal 1231 (2022) - Oblique™ Weatherboard (Horizontal) Cavity Cladding - amended 31 March 2026
BRANZ Appraisal 1232 (2022) - Oblique™ Weatherboard (Vertical) Cavity Cladding - amended 31 March 2026
BRANZ Appraisal 1285 (2025) - James Hardie Fire And Acoustic Wall Systems - amended 16 June 2026

Manufacturer/supplier contact details

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

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

25 years	For Oblique™ Weatherboard products (refer to James Hardie® product warranty)
15 years	For accessories supplied by James Hardie® (refer to James Hardie® product warranty)

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

standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of purchase (check with the manufacturer/supplier).

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 SAFE WORKING
To James Hardie® requirements for safe working practices with James Hardie® products, particularly with regards to cutting and drilling.

1.9 INFORMATION FOR OPERATION AND MAINTENANCE
Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents:
Oblique™ Weatherboard Care and Maintenance guide.

Provide this information prior to practical completion.

1.10 OBLIQUE™ WEATHERBOARD INSTALLATION CHECKLIST
Installer to complete, sign and provide a James Hardie® Installation Checklist.

Compliance information

1.11 CODEMARK CERTIFICATE
James Hardie® Oblique™ Weatherboard meets the requirements of the NZBC when used within the Conditions and Limitations of its Certificate of conformity CMNZ30147.

Performance - wind

1.12 PERFORMANCE, WIND
The design wind zones are to NZS 3604, up to and including Extra High Wind Zone. James Hardie® Technical Specifications are suitable for these conditions.

Performance - fire

1.13 EXTERNAL FIRE SPREAD - CLADDING MATERIALS
James Hardie® Oblique™ Weatherboard cladding tested to AS/NZS 3837 and to specific requirements of C/AS1 or C/AS2 achieving Type A classification (peak heat release rate ≤ 100 kW/m², total heat release rate ≤ 25 MJ/m²).

2 PRODUCTS

Materials

2.1 OBLIQUE™ WEATHERBOARDS
Oblique™ Weatherboards, rusticated profile, 14mm thick, available in 200mm or 300mm widths and 3000mm or 4200mm lengths, pre-primed, manufactured to AS/NZS 2908.2 from a reduced density cellulose fibre cement formulation and cured by high pressure autoclaving. Tested to the requirements of NZBC E2/VM1 for weathertightness and complying with the NZBC.

2.2 WALL UNDERLAY
For flexible wall underlays and rigid wall underlays, refer to the appropriate separate section(s).

2.3 HARDIE™ 20MM HORIZONTAL TIMBER CAVITY BATTENS
Radiata pine castellated cavity battens minimum 45mm wide x 20mm thick with bevelled edge H3.1 treated to NZS 3602. Refer to SELECTIONS.

2.4 20MM VENT STRIP/VERMIN-PROOFING
Perforated uPVC, with upstands.

2.5 HARDIE™ 14MM ALUMINIUM JAMB FLASHING
Aluminium moulding used beside window opening to end butt the Oblique™ Weatherboard.

2.6 HARDIE™ 14MM ALUMINIUM TRIMLINE JOINT FLASHING
Aluminium flashing extrusion used behind cladding joints.

2.7 TRIMLINE JOINTERS
Aluminium jointers to joint Oblique™ Trimline Joint Flashings at flashing ends, external corners and internal corners.

2.8 HARDIE™ 14MM ALUMINIUM INTERNAL CORNER
Anodised aluminium extrusion to create internal corners.

2.9 WEATHERBOARD INTERNAL "W" CORNER
Anodised aluminium extrusion to flash behind cladding at internal corners.

2.10 HARDIE™ 14MM ALUMINIUM EXTERNAL BOX CORNER
Anodised aluminium extrusion to flash behind cladding at external corners.

2.11 HARDIE™ AXENT™ TRIM
19mm thick pre-primed fibre cement trim.

2.12 FASTENER TYPE
Fasteners to minimum durability requirements of the NZBC. Refer to NZS 3604, section 4, Durability, for requirements for fixing's material to be used in relation to the exposure conditions.

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

Zone	**Fixings Material**
Zone D, Zone E / Microclimates (incl. Geothermal)	Grade 316 Stainless
Zone B, Zone C	Hot-dipped galvanized

Check against SED requirements for microclimate conditions. For fastener type refer to following clause(s).

2.13 CAVITY BATTEN NAILS
40 x 2.8mm Hardie™ Flex nails for fixing timber cavity battens and aluminium flashings.

2.14 HOT DIPPED GALVANIZED NAILS
Hot-dipped galvanized, 65 x 2.87mm D head or 65 x 2.87mm RounDrive ring shank nails for fixing Oblique™ Weatherboards over cavity battens over flexible underlay.

2.15 FLEXIBLE SEALANT
Bostik® Seal N Flex-1™ or Sikaflex® AT Facade or Sikaflex® MS sealants.

2.16 PRIMER
Refer to SELECTIONS.

2.17 EXTERIOR GRADE FILLER
CRC® ADOS® Builders Fill, two part filler to fill over nail holes.

3 EXECUTION

Conditions

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

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

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

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

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Application - particular installations

3.4 FIRE RESISTANCE RATING

Refer to project drawings for FRR system construction details and Fire and Acoustic Design Manual by James Hardie® for further information.

Application - generally

3.5 INSTALL CAVITY BATTENS - OBLIQUE™ VERTICAL WEATHERBOARDS

Install 20mm thick Hardie™ Horizontal Cavity Battens. Fix horizontal cavity battens to wall framing nogs, fix vertically to studs at corners and openings. The battens are fixed by the cladding fixings which will penetrate the wall framing nogs and studs under the wall underlay. Seal the top of the cavity and install cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc).

3.6 PENETRATIONS AND FLASHINGS

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

- Wall underlay appropriately incorporated with penetration and junction flashings.
- Materials lapped in a way that water tracks down to the exterior face of the wall underlay.
- Wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations.
- Required holes in cladding accurately formed and cut to James Hardie® requirements, ensure (if required) services penetration grommets/sleeves/seals/tapes are in place prior to cladding installation.
- Claddings neatly finished off to all sides of openings
- Installation of flashings (those required to be installed prior to installation of penetrating elements).

3.7 INSTALL OBLIQUE™ WEATHERBOARDS - VERTICAL INSTALLATION

Cut weatherboards to required lengths. Prime site cut ends that are exposed prior to installation. Fit joint flashing, internal corners and external corners and fix weatherboards as per Oblique™ Weatherboard Vertical technical specifications.

Completion & Commissioning

3.8 COMPLETION MATTERS

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

4 SELECTIONS

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

4.1 JAMES HARDIE® OBLIQUE™ WEATHERBOARDS

Location:	See plans
Type/Brand:	Oblique™ Weatherboards
Thickness:	14mm
Construction:	Cavity fix

4.2 HARDIE™ 20MM HORIZONTAL CAVITY BATTEN - FOR VERTICAL INSTALLATION

Supplier:	James Hardie®
Timber species:	Radiata pine
Treatment:	H3.1
Thickness:	20mm

4.3 HARDIE™ 14MM ALUMINIUM EXTERNAL BOX CORNER

Location:	See plans
Type/Brand:	Hardie™ 14mm Aluminium External Box Corner
Finish:	Etched primed aluminium extrusion

4.4 HARDIE™ 14MM ALUMINIUM TRIMLINE JOINT FLASHING

Location:	See plans
Type/Brand:	Hardie™ 14mm Trimline Joint Flashing
Finish:	Etched primed aluminium extrusion

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4.5 HARDIE™ 14MM ALUMINIUM INTERNAL CORNER

Location:	See plans
Type/Brand:	Hardie™ 14mm Aluminium Internal Corner
Finish:	Etched primed aluminium extrusion

Finishing

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4241NZ COLORSTEEL® WALL CLADDING

1 GENERAL

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

1.1 RELATED WORK

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
MS	Modified silicone

Documents

1.3 DOCUMENTS

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

NZBC C/VM2	Protection from fire
NZBC E2/AS1	External Moisture
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - performance requirements
AS 3566	Self-drilling screws for the building and construction industries
ISO 5660.1	Reaction to fire tests - heat release, smoke production and mass loss rate. Part 1 Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction to fire tests - heat release, smoke production and mass loss rate. Part 2 Smoke production rate (dynamic measurement)
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

- COLORSTEEL® Installers Guide
- COLORSTEEL® Design Guide
- COLORSTEEL Altimate® Installation Guide
- COLORSTEEL Altimate® Design Guide
- COLORSTEEL Dridex® Design Guide
- COLORSTEEL Dridex® Installation Guide
- COLORSTEEL® Matte Design Guide
- New Zealand Steel - Zincalume-Brochure
- COLORSTEEL® Environmental Categories & Warranty Guide
- CodeMark CM70050 (Rev 1) Colorsteel® Endura® Dridex® and Colorsteel® Maxx® Dridex®

Manufacturer/supplier contact details

Company:	New Zealand Steel Limited
Web:	www.colorsteel.co.nz
Telephone:	0800 100523
Email:	specifications@colorsteel.co.nz

Warranties

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	For workmanship

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

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS - DRIDEX®

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

1.8 NO SUBSTITUTIONS

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

1.9 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

Performance - Fire

1.10 EXTERNAL FIRE SPREAD - NON-COMBUSTIBLE MATERIAL

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

1.11 EXTERNAL FIRE SPREAD - CLADDING MATERIAL, CLASSIFICATION

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

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

1.12 INTERIOR SURFACE FIRE PROPERTIES - GROUP NUMBER

Zincalume®, COLORSTEEL® Maxam™, COLORSTEEL Altimate® and COLORSTEEL® Maxam™ Dridex® have been tested to ISO 5660.1 & ISO 5660.2 and have been assigned the following Group Numbers in accordance with Appendix A, NZBC C/VM2:

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

2 PRODUCTS

Materials

2.1 COLORSTEEL® MAXAM™ - STEEL, TYPE AM COATING (ALUMINIUM/ZINC/MAGNESIUM ALLOY), PREPAINTED

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

Fixings

2.2 FASTENERS GENERALLY

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

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2.3 FIXING SCREWS

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

2.4 RIVETS

Sealed aluminium, minimum diameter 4.0mm.

Components

2.5 FLASHINGS GENERALLY

Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.

2.6 FLASHINGS

To NZBC E2/AS1, 4.0, Flashings.

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

Flashings to framed penetrations to be in accordance with project drawings or to NZMRM CoP recommendations.

2.7 WALL AND PARAPET FLASHINGS

To NZBC E2/AS1, 4.0 Flashings.

Supplied by the cladding manufacturer to match or to suit the cladding.

2.8 EXTERIOR CAVITY WALL BATTENS

Refer to timber framing sections.

2.9 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Refer to timber framing sections.

Accessories

2.10 UNDERLAY

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.11 SEALANT

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

2.12 LAP SEALING TAPE

Closed cell self adhesive nitrile tape.

2.13 SEPARATION STRIP TIMBER CAVITY BATTENS

PVC tape.

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3 EXECUTION

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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

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

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

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

Ensure moisture content is:

Timber framing:	18% maximum
	12-16% maximum under traverse flashings

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

3.4 SEPARATION

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

Application

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.6 METAL CLADDING ON TIMBER CAVITY BATTENS

Fix PVC tape or similar to the timber batten, prior to fixing metal cladding.

3.7 INSTALLATION GENERALLY

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

3.8 PENETRATIONS

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

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

3.9 SET-OUT FOR VERTICAL CLADDING

Set cladding to vertical plumb lines and maintain verticality. Set all exposed fixings with horizontal string lines. Carefully set out sheets with side laps away from the main line of sight and to achieve uniform flashing widths where possible. Check during fixing to eliminate creep or spread and to keep fastenings in line.

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3.10 MARKING AND CUTTING

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

3.11 FIX SHEETS

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

3.12 THERMAL MOVEMENT

Fixing and jointing to conform with the cladding profile manufacturer's (roll-formers) requirements for thermal movement.

Over timber framing, transverse flashings (those running along continuous framing members) to have expansion joints at maximum 12m centres.

3.13 END LAPS

End laps are not permitted, except where specifically detailed.

3.14 FIXING GENERALLY

Install and fix in accordance with the NZMRM CoP recommendations and to cladding manufacturer's required fixing patterns and details for each area of the building cladding. Use only screws as required by manufacturer. Paint colour matched fixings and accessories before installation.

3.15 INSTALL FLASHINGS

Flash to penetrations, cap corners and edges, using sealant and rivets to detail Where no detail is provided flash to NZMRM CoP recommendations and the roofing manufacturer's and NZBC E2/AS1 requirements.

3.16 FLASHING PENETRATIONS

Flash all penetrations through the cladding as detailed and to provide a weathertight installation. Ensure that flashings are set to avoid any ponding of water.

3.17 USE OF SEALANTS

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

Completion

3.18 COMPLETION MATTERS

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

4 SELECTIONS

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

Cladding

4.1 COLORSTEEL® MAXAM™ PROFILED CLADDING

Location:	See plans
Manufacturer:	New Zealand Steel
Material:	COLORSTEEL® Maxam™
BMT:	0.4mm BMT
Colour:	Sandstone Grey
Profile:	5-Rib

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Accessories

4.2 FLASHINGS - GENERALLY

Profile:	5-Rib
BMT/material:	0.55mm BMT
Coating system:	To match roofing
Coating colour:	To match roofing

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4311NZ COLORSTEEL® ROOFING

1 GENERAL

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

1.1 RELATED WORK

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
CoP	Code of Practice for Metal Roofing
MS	Modified silicone

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External Moisture
NZBC C/VM2	Protection from fire
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 3566	Self-drilling screws for the building and construction industries
ISO 5660.1	Reaction to fire tests - heat release, smoke production and mass loss rate. Part 1 Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction to fire tests - heat release, smoke production and mass loss rate. Part 2 Smoke production rate (dynamic measurement)
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

- COLORSTEEL® Installers Guide
- COLORSTEEL® Design Guide
- COLORSTEEL Altimate® Installers Guide
- COLORSTEEL Altimate® Design Guide
- COLORSTEEL Dridex® Design Guide
- COLORSTEEL Dridex® Installers Guide
- COLORSTEEL® Matte Design Guide
- New Zealand steel - Zincalume® Brochure
- COLORSTEEL® - Environmental Categories & Warranty Guide
- CodeMark CM70050 (Rev 1) Colorsteel® Endura® Dridex® and Colorsteel® Maxx® Dridex®

Manufacturer/supplier contact details

Company:	New Zealand Steel Limited
Web:	www.colorsteel.co.nz
Email:	specifications@colorsteel.co.nz
Telephone:	0800 100523

Warranties

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	For workmanship

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

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY
Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS - DRIDEX®
Workers to be trained and accredited by New Zealand Steel Limited in the installation of COLORSTEEL Dridex® roofing materials. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 NO SUBSTITUTIONS
Substitutions are not permitted to any specified New Zealand Steel system, or associated components and products.

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

Performance - Fire

1.10 INTERIOR SURFACE FIRE PROPERTIES - GROUP NUMBER
Zincalume®, COLORSTEEL® Maxam™, COLORSTEEL Altimate® and COLORSTEEL® Maxam™ Dridex® have been tested to ISO 5660.1 & ISO 5660.2 and have been assigned the following Group Numbers in accordance with Appendix A, NZBC C/VM2:

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

2 PRODUCTS

Materials

2.1 COLORSTEEL® MAXAM™ - STEEL, TYPE AM COATING (ALUMINIUM/ZINC/MAGNESIUM ALLOY), PREPAINTED
Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397, AM150 grade. Pre-finished /pre-painted to AS/NZS 2728 to a Type 6 standard.

Fixings

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

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

2.4 RIVETS
Sealed aluminium, minimum diameter 4.0mm.

Components

2.5 FLASHINGS GENERALLY
To E2/AS1, 4.0, Flashings.

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

2.6 BOOT FLASHINGS

EPDM proprietary boot flashing designed to weatherproof cylindrical penetrations.

Accessories

2.7 WIRE NETTING AND SAFETY MESH

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.8 UNDERLAY AND REFLECTIVE FOIL

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.9 SEALANT

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

2.10 LAP SEALING TAPE

Closed cell self-adhesive nitrile tape.



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3 EXECUTION

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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

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

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

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

Ensure moisture content is:

Timber framing:	18% maximum
	12-16% maximum under traverse flashings

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

3.4 WORK SAFE

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

3.5 SEPARATION

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

Application

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 PENETRATIONS AND JUNCTIONS

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

Required work includes the following:

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

3.8 SET-OUT

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

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3.9 MARKING AND CUTTING

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

3.10 FIX SHEETS

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

3.11 THERMAL MOVEMENT

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

3.12 END LAPS

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

3.13 STOP ENDS AND DOWNTURNS

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

3.14 INSTALL FLASHINGS

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

3.15 FLASHING PENETRATIONS

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

3.16 INSTALL RIDGING

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

3.17 FLASHING TERMINATION

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

3.18 USE OF SEALANTS

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

Completion

3.19 COMPLETION MATTERS

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

3.20 PROTECT

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

4 SELECTIONS

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

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Material - Roofing

4.1 COLORSTEEL® MAXAM™ PROFILED ROOFING

Location:	See plans
Manufacturer:	New Zealand Steel
Material:	COLORSTEEL® Maxam™
BMT:	0.4mm
Colour:	Flaxpod
Profile:	5-Rib

Accessories

4.2 FLASHINGS - GENERALLY

Profile:	5-Rib
BMT/material:	0.55mm
Coating system:	To match roofing
Coating colour:	To match roofing

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4521 ALUMINIUM WINDOWS AND DOORS

1 GENERAL

This section relates to the manufacture, supply, and installation of:

- aluminium windows
- aluminium doors and frames
- hardware and furniture
- overhead glazing
- flashings

1.1 RELATED WORK

Refer to glazing sections for glass types

1.2 ABBREVIATIONS AND TERMS

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

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture
NZBC F4/AS1	Safety from falling
NZBC H1/AS1-AS2	Energy efficiency
NZBC H1/VM1-VM2	Energy efficiency
AS/NZS 1170.2:2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1580.108.1	Methods of test for paints and related materials - Determination of dry film thickness on metallic substrates - Non destructive methods
AS/NZS 1734	Aluminium and aluminium alloys - flat sheets, coiled sheet and plate
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
NZS 3604	Timber-framed buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
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.
BS 3900	Methods of tests for paints, Part C5: Determination of film thickness
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
BRANZ BU 636	Protecting Glass From Damage

Window & Glass Association NZ (WGANZ) documents:

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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)

Warranties

1.4 WARRANTY - MANUFACTURER / SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years: For fabrication

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 installer/applicator warranty:

2 years: For installation

- Provide this warranty in the installer/applicator standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

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

1.7 COMPLIANCE

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

1.8 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

1.9 PERFORMANCE - WINDOWS AND DOORS

To NZS 4211, including:

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

Refer to SELECTIONS.

1.10 PERFORMANCE - 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.

1.11 PERFORMANCE - THERMAL, HOUSING ONLY

Thermal performance of windows & doors to NZBC H1/AS1. The construction R-Value of windows & doors determined by Appendix E, Table E1.1.1 Construction R-values (R window) of selected generic windows and doors. Refer to SELECTIONS for construction R-values.

1.12 PERFORMANCE - THERMAL

Thermal performance of windows & doors to NZBC H1/AS1-AS2 & NZBC H1/VM1-VM2. The construction R-value of windows & doors determined in accordance with Appendix E, E1 Vertical windows and doors:

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

Refer to SELECTIONS for construction R-values.

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Performance - Wind (design by contractor)

1.13 WIND - NON SPECIFIC DESIGN

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

Refer to SELECTIONS for wind zone.

Finishes

1.14 CERTIFY COATINGS - POWDER COATING

Certify on request, compliance with this specification and support with control and sampling records. Test for film thickness to BS 3900, part C5, method No. 4, using method (b) or to AS/NZS 1580.108.1 for certifying thickness and method (a) where any dispute arises as to the thickness provided.

The coating should be applied by an applicator who can certify that the coating has been applied in accordance with the specification.

2 PRODUCTS

Materials

2.1 WINDOWS

Refer to SELECTIONS for type and finish.

2.2 DOORS

Refer to SELECTIONS for type and finish.

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.

2.7 REVEALS - TIMBER PAINTED

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

2.8 FLASHINGS GENERALLY

To NZBC E2/AS1, 9.1.10 **Windows and Doors**. Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

Components - for cavity systems

2.9 STANDARD CAVITY CLOSER

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

2.10 SUPPORT BAR

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

Components

2.11 GLAZING GASKETS

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

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2.12 HARDWARE AND FURNITURE

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

2.13 SAFETY STAYS

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

Sealants

2.14 STRUCTURAL SEALANT

Silicone chemically curing sealant specifically formulated and tested or approved equivalent with not less than a ± 40% movement factor complying with US Federal Specification TT-S-001543A.

2.15 WEATHERING / INSTALLATION SEALANT

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

2.16 FOAM TAPE

Foam tape to NZBC E2/AS1, 9.1.10.7 **Closed cell foam tape**.

Finishes

2.17 POWDER COATED ALUMINIUM - EXTRA-DURABLE POLYESTER

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

3 EXECUTION

Conditions - generally

3.1 DO NOT DELIVER

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

3.2 UNLOAD WINDOW JOINERY

Unload, handle and store elements in accordance with the window manufacturer's requirements.

3.3 AVOID DISTORTION

Avoid distortion of elements during transit, storage and handling.

3.4 PREVENT DAMAGE

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

3.5 PROPRIETARY ELEMENTS

Fix in accordance with the window manufacturer's requirements.

3.6 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 aluminium joinery from following trades. Remove protection on completion.

3.7 ADDITIONAL PROTECTION

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

Conditions - fixings and fastenings

3.8 SUPPLY OF FIXINGS

Use only fixings and fastenings recommended by the manufacturer of the component being fixed and to comply with the ULS wind pressure stated in SELECTIONS. Ensure fixings and fastenings exposed to the weather are of aluminium, or Type 316 stainless steel or if not exposed to the weather may they be hot-dip galvanized steel with a coating weight of 610 g/m² complying with AS/NZS 4680.

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3.9 INSTALLATION FIXING

To NZBC E2/AS1, 9.1.10.8, **Attachments for windows and doors**. 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.

Assembly

3.10 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.

3.11 TIMBER / PVC REVEALS

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

3.12 HARDWARE GENERALLY

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

3.13 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.

Installation - windows and doors

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 CONFIRM PREPARATION OF EXTERIOR WALL OPENINGS

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

Required preparatory work includes the following:

- wall underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames to NZBC E2/AS1:9.1.5 **Wall underlays to wall openings**.
- Full height 20mm jamb battens to NZBC E2/AS1 figure 72A (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).

3.16 INSTALLATION

Fix to comply with the reviewed shop drawings and installation details including flashings and bedding compounds, pointing sealants and weathering sealants.

3.17 INSTALLATION CAVITY CONSTRUCTION

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

For thresholds with support bars fixed through membranes, pre-fill support bar screw holes with silicone sealant to NZBC E2/AS1, figure 62(d).

3.18 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 minimum plus any jamb scriber width at each end.

3.19 COMPLETE AIR SEAL

To NZBC E2/AS1:9.1.6 Air seals. Form an air-tight seal by means of a proprietary expanding foam or sealants used with 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.

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3.20 FIX HARDWARE

Fix all sash and door hardware and furniture as scheduled.

Application - jointing and sealing

3.21 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. 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.

3.22 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.

3.23 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.

3.24 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.

Completion - cleaning

3.25 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.

3.26 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

3.27 PROTECTIVE COVERINGS

Retain protective coverings and coatings 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 aluminium joinery from following trades.

3.28 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.

3.29 IN SITU TOUCH-UP TO POWDER COATED ALUMINIUM

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

3.30 REMOVE

At the appropriate stage of the project, remove safety indicators and protective coverings and wipe down all joinery thoroughly.

3.31 REPLACE

Replace damaged, cracked or marked elements.

3.32 MANIFESTATIONS

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



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4 SELECTIONS

Performance

4.1 THERMAL PERFORMANCE - VERTICAL WINDOWS & DOORS

Window /Door Number:	Construction R-value:
Window and doors	0.50

Performance - Wind (design by contractor)

4.2 WIND - NON SPECIFIC DESIGN

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

Window and door system

4.3 ALUMINIUM WINDOWS

Manufacturer: To be confirmed
Type / location: See plans

4.4 VENTILATORS

Brand / type: PVC

4.5 TIMBER REVEALS

Timber species: Pinus radiata
Grade / Treatment: H3.1
Thickness: 20mm

4.6 FLASHINGS

Pattern: Formed to suit details provided

4.7 WEATHERING SEALANT

Brand/type: 1-part polyurethane moisture curing, elastic joint sealant

Finishes - Powder Coating

4.8 POWDER COATED ALUMINIUM - EXTRA-DURABLE POLYESTER

Type: Polyester organic powder coating
Thickness: Average of 90 microns with a minimum of 50 microns

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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

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

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 04 November 2024
BRANZ Appraisal 632 (2023) - Pink® Batts® SnugFloor® Insulation - Amended 12 August 2024
BRANZ Appraisal 767 (2023) - Pink® Batts® Skillion Roof Insulation - Amended 04 November 2024

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.

Compliance information

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

Performance

1.10 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.

Components

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

2.3 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.

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3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation - 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

Install insulation with clearances to mechanical and electrical services and equipment, including ducts, chimneys and other heat sensitive materials in accordance with tables below based on NZS 4246, or to equipment manufacturers requirements if they require larger clearances. Installed clearances not to be more than 50mm larger than the required clearance. Smaller clearances that are required by manufacturer can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings).

The following installation clearances tables are subject to:

- Requirements of NZS 4246
- Insulation is exposed to the source of heat or equipment etc.
- Insulation has passed the needle flame test to AS/NZS 60695.11.5 and/or is non-combustible.
- Clearances to hot surfaces may have to be increased with non-compliant insulation and plastic/ polymeric type insulation (EPS, XPS, PIR, etc), check with insulation manufacturer.
- Clearances to hot surfaces may be able to be reduced with non-combustible insulation, check with equipment manufacturer.
- "Secure insulation" if required means, glue, mechanical fix, or provide fixed barriers at gap edge of insulation to hold in place. Rigid or semi rigid insulation may only need a firm friction fit (secure loose pieces).
- Loose fill insulation require fixed barriers to NZS 4246 to maintain clearances.

(1) CLEARANCES TO LIGHT FITTINGS :

Type of fitting	Minimum insulation clearance	Comments
Recessed, marked NON-IC, or unmarked	100mm (increase if over 100W)	NON-IC fittings and new or old unmarked & unknown fittings, and/or insulation. Secure insulation.
Recessed, CA 80, CA 90 or CA 135	Abut fittings	Do NOT cover the fittings
Recessed, IC, IC-F or IC-4	Abut & cover fittings	Ensure insulation complies
Recessed, marked Do-Not-Cover	Manufacturer clearances	Do not cover the fittings
Independent control gear	Place on top of insulation & 50mm from fitting	If not on top allow 50mm clearance to insulation, do not cover. Includes, transformers, ballasts & drivers etc.
Surface fittings not exposed to insulation	Nil	Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings.
Surface fittings & exposed insulation	200mm	This is exposed insulation to any part of the exposed fitting & bulb/tube (e.g. exposed light in an unlined basement). Secure insulation.

(2) CLEARANCES TO RECESSED HOT APPLIANCES:

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Appliance	Minimum insulation clearance	Comments
Electrical heaters	100mm	Clearance may be able to be reduced with non-combustible insulation. Secure insulation.
Gas appliance exposed flame	200mm	Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Excludes uncommon appliances, refer NZS 4246.
Gas appliance flues	75mm	Clearance may be able to be reduced with non-combustible insulation. Secure insulation. Excludes uncommon appliances refer NZS 4246.
Oil-fired appliances and flues	230mm	Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Secure insulation.
Open fireplace opening	200mm	Clearance may be able to be reduced with non-combustible insulation. Secure insulation.
Brick masonry chimneys	50mm	Clearance may be able to be reduced with non-combustible insulation. Secure insulation.
Metal chimneys & flues	75mm	Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Secure insulation.
Solid fuel appliance	600mm	Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Secure insulation.
Solid fuel appliance flue	600mm	Clearance may be able to be reduced with non-combustible insulation or with specific details from the appliance manufacturer. Secure insulation.

(3) CLEARANCES TO EXTRACTS, VENTS, PIPES & ROOF UNDERLAY:

Application	Minimum insulation clearance	Comments
Ducted fan motors	50mm	Includes ducted rangehoods, extractors etc. Applies to the motor unit and electrical enclosures (not the ducts)
Ducted fan ducts	Abut	Excludes motor unit and electrical enclosures.
Unducted fan motors usually discharging to ceiling space	200mm	Includes unducted, rangehoods, extractors etc, discharging into roof space. To prevent debris falling into motor. Clearance may be able to be reduced, by providing a fixed barrier around the vent.
Passive vents (still in use)	200mm	To prevent debris falling through. Clearance may be able to be reduced, with more cohesive insulation, like some of the rigid plastic types or providing a fixed barrier around the vent.
Plumbing penetrations through floors	100mm	Keep gap between pipe penetration and floor insulation in case of leaks.
Roofing material/underlay	25mm	From underside of roofing or flexible roofing underlay, to prevent wicking

3.7 RECESSED LIGHT FITTINGS - RESIDENTIAL

Residential recessed light fittings to AS/NZS 3000, 4.5.2.3.5;

- Existing fittings or retrofit situations, fittings maybe unmarked
- New fittings can only be labelled - CA 80, CA 90, CA 135, IC, IC-F & IC-4

Refer to clause INSULATION CLEARANCES for clearances.

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.

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3.10 PREPARATION INSULATION

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

3.11 CUTTING INSULATION TO SIZE

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

Installation - thermal insulation

3.12 INSTALL PINK® BATTS® TIMBER WALL INSULATION

Friction fit insulation slabs between framing.

3.13 INSTALL PINK® BATTS® INTERIOR SECONDARY WALL INSULATION LAYER

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

3.14 INSTALL PINK® BATTS® CEILING INSULATION

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

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

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

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

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

Completion

3.17 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials - thermal insulation

4.1 PINK® BATTS® TIMBER WALL INSULATION

Location:	External walls
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts®
R-value:	4.0
Nominal stabilised thickness:	140mm

4.2 PINK® BATTS® CEILING INSULATION

Location:	Ceilings
Supplier:	Comfortech Building Performance Solutions®
Brand/Type:	Pink® Batts®
R-value:	7.0
Nominal stabilised thickness:	260mm

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5113G GIB® PLASTERBOARD LININGS

1 GENERAL

This section relates to the supply, fixing and jointing of GIB® plasterboard linings and accessories to timber and steel framed walls and ceilings to form:

- standard systems
- superior finish quality systems
- bracing systems
- fire rated garage boundary wall systems
- wet area systems
- GIBFix® Framing systems

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

AWCINZ	Association of Wall and Ceiling Industries New Zealand

Documents

1.2 DOCUMENTS

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

NZBC C/AS2	Protection from fire
NZBC E2/AS1	External moisture
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
NZS 3604	Timber-framed buildings
ISO 5660.1	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 1: Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 2: Smoke production rate (dynamic measurement)
BRANZ Technical Paper P21	BRANZ Technical Paper P21: A wall bracing test and evaluation procedure (2010)

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

GIB® Site Guide (April 2024)
GIB® Noise Control Systems (September 2017)
GIB® Fire Rated Systems (September 2024)
GIB® Wet Area Systems (February 2021)
GIB Toughline® Aqua (July 2018)
GIB Ezybrace® Systems (August 2016)
GIB Ezybrace® Bracing Design Software
GIB Ezybrace® Bracing Supplement Document (December 2016)
GIB Ezybrace® for Light Steel Frame Systems (March 2017)
GIBFix® Framing System (August 2016)
GIB Rondo® Metal Batten System (September 2024)
GIB-Cove®
GIB RocTape®
GIB® Goldline™ Platinum Tape-on Trims
GIB® UltraFlex high impact corner mould
GIB® Tough Systems (November 2014)
BRANZ Appraisal 289 (2024) GIB® Fire Rated Systems
BRANZ Appraisal 394 (2025) GIB® Noise Control Systems
BRANZ Appraisal 427 (2021) GIB® Wet Area Systems
BRANZ Appraisal 928 (2021) GIB EzyBrace® Systems

Manufacturer/supplier contact details

Company:	Winstone Wallboards

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Web: www.gib.co.nz
Telephone: 0800 100 442

Requirements

1.4 NO SUBSTITUTIONS
Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

1.5 QUALIFICATIONS
Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 INSPECTIONS AND ACCEPTANCE
Allow for inspection of the finished plasterboard surface:

- before applying sealer and
- before applying finish coatings or decorative papers,

so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

Compliance

1.7 COMPLIANCE - BRANZ APPRAISAL 427
GIB® Wet Area Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 427.

1.8 COMPLIANCE - BRANZ APPRAISAL 928
GIB EzyBrace® Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 928.

Performance

1.9 BRACING REQUIREMENTS
Braced wall systems to NZS 3604 when tested to BRANZ Technical Paper P21, using:

- GIB Ezybrace® Systems and/or GIB Ezybrace® Bracing Design Software
- GIB Ezybrace® Bracing Supplement Document
- GIB Ezybrace® for Steel Frame Housing (NASH) Software (to NASH Residential and Low-Rise Steel Framing Part 1 2010 Design Criteria)

Refer to drawings for location and type.

2 PRODUCTS

Materials

2.1 GIB® PLASTERBOARD
Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to AS/NZS 2588. Refer to SELECTIONS for location, type, thickness and finish.
GIB® Standard plasterboard
GIB Wideline® plasterboard
GIB Ultraline® high quality surface plasterboard
GIB Fyreline® fire resistant plasterboard
GIB Braceline® & GIB® Noiseline® dual purpose wall bracing & noise control plasterboard
GIB Aqualine® wet area plasterboard
GIB Toughline®
GIB Toughline® Aqua

Components

2.2 CEILING BATTENS
GIB® Rondo® metal ceiling battens, batten joiners and perimeter channel.

2.3 SCREWS
GIB® Grabber® drywall type screws as follows:

Grabber® type	Used for fixing:
High Thread	GIB Ezybrace® or Standard systems to timber
Self Tapping	Standard systems to light gauge steel or timber

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Dual Thread Screws	GIBFix®, GIB Ezybrace®, or Standard systems, to light gauge steel or timber
Wafer Head Needle Tip	Light gauge metal to timber not directly under plasterboard
Pancake Head Drill Tip	Light gauge metal to light gauge metal directly under plasterboard

Refer to GIB® requirements for appropriate details.

2.4 TAPE ON TRIMS AND EDGES

GIB® Goldline™ tape-on trims

GIB® UltraFlex® high impact corner mould
GIB® Levelline® Tape on Trim

2.5 METAL ANGLE TRIMS

GIB® galvanized steel slim angle trims.

2.6 CONTROL JOINTS

GIB® Rondo® P35 control joints.

GIB® Goldline™ tape-on trims
GIB® plastic W-profile control joints.

Accessories

2.7 ADHESIVE

Timber frame and/or steel frame:

GIBFix® One ultra low VOC water based wallboard adhesive
GIBFix® All-Bond solvent based wallboard adhesive

2.8 JOINTING COMPOUND

Bedding compound:	GIB Tradeset®, GIB Lite Blue®, GIB MaxSet®, GIB ProMix® All Purpose, GIB Plus 4®
Finishing compound:	GIB ProMix® All Purpose, GIB® Trade Finish®, GIB® Trade Finish® Lite, GIB ProMix® Lite, GIB® U-Mix, GIB Plus 4®, GIB Trade Finish® Multi
Cove:	GIB-Cove® Bond

2.9 JOINTING TAPE

GIB® jointing tape.

2.10 GAP FILLER

GIB® Gap Filler ultra low VOC multi-purpose acrylic flexible filler

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 LEVELS OF PLASTERBOARD FINISH

Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in AS/NZS 2589.

3.4 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

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

Framing substrates shall be in accordance to AS/NZS 2589, GIB® Site Guide and GIB X-Block® Radiation Shielding Systems literature.

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Check timber framing moisture content is in accordance with requirements of AS/NZS 2589. Refer to NZBC E2/AS1 and GIB® Site Guide.

Timber framing:	18% maximum for fixing plasterboard to timber (8-12% recommended for fixing plasterboard to timber framing if air conditioning and/or central heating are to be installed)

If GIB EzyBrace® systems are used in conjunction with GIBFix® Framing System, ensure that the positioning of the GIB HandiBrac® panel hold-down brackets are to the manufacturers recommended placements for the GIBFix® Framing System.

3.5 PRE-INSTALLATION REQUIREMENTS - STEEL FRAMING

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

Framing substrates shall be in accordance to AS/NZS 2589, GIB® Site Guide and GIB X-Block® Radiation Shielding Systems requirement. Refer to GIB® Site Guide.

3.6 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE

Before commencing work, agree in writing upon the surface finish assessment procedure towards ensuring that the quality of finish expectations are reasonable and are subsequently obtained and acceptable.

Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the specified plasterboard Level of Finish has been achieved.

"Levels of plasterboard finish" is a tool for specifying the required quality of finish when installing and flush stopping GIB® plasterboard **prior** to the application of a range of decorative finishes under various lighting conditions. Refer to **AS/NZS** 2589.

3.7 PROTECTION

Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB® Site Guide.

Application

3.8 INSTALL CEILING BATTENS

Install to GIB® Rondo® Ceiling Batten Systems requirements.

3.9 LINING WALLS AND CEILINGS GENERALLY

Form to GIB® Site Guide. Ensure bulk insulation thickness shall not exceed that of the wall framing.

3.10 BOARD ORIENTATION

Minimise joints by careful sheet layout using the largest sheet sizes possible, and generally fixing horizontally. Where part sheets are required for various stud heights they should be positioned so the cut sheet is as low as possible to keep joints below eye level.

3.11 FORM WET AREA SYSTEMS

Form to GIB Aqualine® Wet Area Systems requirements.

3.12 FORM BRACING SYSTEMS

Form bracing systems to:

- GIB Ezybrace® Systems

3.13 FORM CONTROL JOINTS

Form control joints to GIB® Site Guide requirements.

3.14 INSTALL TAPE-ON TRIMS

Install to GIB® Goldline™ Tape-on trims literature and/or GIB® Ultraflex high impact corner mould literature.

Finishing

3.15 FINISHING GENERALLY

To GIB® Site Guide and AS/NZS 2589.

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Completion & Commissioning

3.16 COMPLETION MATTERS

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

4 SELECTIONS

Plasterboard

4.1 GIB® STANDARD SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness
Walls	GIB® Standard plasterboard	10mm

4.2 GIB® WATER RESISTANT SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness
Wet area walls	GIB Aqualine® plasterboard	10mm

4.3 GIB® STANDARD SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness
Ceilings	GIB® Standard plasterboard	13mm

4.4 GIB® WATER RESISTANT SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness
Wet area ceilings	GIB Aqualine® plasterboard	13mm

4.5 GIB® BRACING SYSTEMS

Refer to:

- GIB Ezybrace® Systems

For bracing element location refer to drawn documentation.

Accessories

4.6 GIB® RONDO® CEILING BATTENS

Brand/type: GIB® Rondo® Ceiling battens
Batten type: Gib Rondo GR

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5171RI RCS INTEGRA LIGHTWEIGHT CONCRETE INTERTENANCY SYSTEM

1 GENERAL

This section relates to the supply and installation of Resene Construction Systems INTEGRA Central Barrier Intertenancy System.

It includes:

- Integra Aerated Autoclaved Concrete (AAC) panels
- Adhesive plaster
- Aluminium brackets
- Components and accessories to complete the installation

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

AAC	Autoclaved aerated concrete
FRR	Fire Resistance Rating
STC	Sound transmission class
Rw	Sound Reduction Index

Documents

1.2 DOCUMENTS

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

AS 1530.4	Methods for fire tests on building materials, components and structure - Fire-resistance tests for elements of construction
ISO 10140-2:2010	Acoustics - Laboratory measurement of sound insulation of building elements - Measurement of airborne sound insulation

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

BRANZ Appraisal 1064 (2025) - Integra Central Barrier Intertenancy System
Integra Central Barrier Intertenancy System Technical Manual, Version 3 - February 2025
Integra Lightweight Concrete Intertenancy System, Timber Frame drawing register 34.00.00, 6 June 2025
Integra Lightweight Concrete Intertenancy System, Steel Frame drawing register 33.00.00, 21 May 2025
Resene Construction Systems Trade Spec™
Resene Construction Systems Project Guide

Manufacturer/supplier contact details

Company:	Resene Construction Systems
Web:	www.reseneconstruction.co.nz
Email:	help@reseneconstruction.co.nz
Telephone:	0800 50 70 40

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	For INTEGRA Central Barrier Intertenancy System components supplied by Resene Construction Systems

- Provide this warranty on the Resene Construction Systems standard form (if unavailable, use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of Practical Completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

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Requirements

1.5 QUALIFICATIONS GENERALLY
Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS
Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

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

Compliance Information

1.8 COMPLIANCE - BRANZ APPRAISAL
The INTEGRA Central Barrier Intertenancy System has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 1064.

Performance

1.9 SOUND RATING
The INTEGRA Central Barrier Intertenancy System has been tested to ISO 10140-2. Refer to SELECTIONS.

1.10 FIRE RATING
The INTEGRA Central Barrier Intertenancy System has been tested to AS 1530.4 and achieve FRR of 120/120/120.

2 PRODUCTS

Materials

2.1 INTEGRA AAC 50MM PANEL
50mm thick fibre-reinforced aerated concrete, 2200mm x 600mm panel.

2.2 PLASTERBOARD
Refer to relevant plasterboard section.

2.3 TIMBER FRAMING
Refer to relevant timber framing section.

Components

2.4 FIXINGS - TIMBER FRAMING
Resene Construction Systems 12g x 45mm and 75mm Galvanised screws with EPDM washer.

2.5 INTERTENANCY BRACKETS
Aluminium brackets, 50mm wide x 3mm thick with 75mm x 50mm legs and a sound & heat resistant dampener.

2.6 PSL AAC ADHESIVE
Plaster used for bonding AAC panels together, patching panels, and securing the panel to a concrete foundation. Supplied in 20kg bags.

2.7 FIRE RESISTANT MINERAL WOOL PACKING
Resene Construction Systems FireWool™, fire resistant mineral wool.

2.8 INSULATION
Refer to relevant insulation section.

Accessories

2.9 ANTI-CORROSION COATING
Resene Galvo-Prime; brush-applied waterborne galvanised iron primer or Zinc-rich spray primer; solvent borne spray application.

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3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Timber framing: 18% maximum moisture content

Installation - Generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install in accordance with Integra Central Barrier Intertenancy System Technical Manual.

3.6 SERVICES

Conceal services within the timber framed section of the wall system, subject to the following constraints:

- A minimum of 10mm clearance to be maintained between any penetrations and the central barrier
- Penetrations to be no larger than 65mm diameter or 90mm x 50mm through the plasterboard lining
- No more than two penetrations per 600mm bay of framing to be made.

3.7 CUT PANELS

Cut panels using a circular saw with diamond tipped blade. Prime any exposed reinforcing steel using Resene Galvo-Prime, in accordance with manufacturer's instructions.

3.8 SETOUT INTEGRA PANELS

Setout INTEGRA panels prior to commencing installation. With panels oriented horizontally, setout in stacker bond or stretcher bond pattern.

Installation

3.9 FIT INTERTENANCY BRACKETS TO TIMBER WALL FRAMING

Following erection of framing to first side of the intertenancy wall install 2 Intertenancy Brackets per INTEGRA panel. Commencing from one end of the wall, position and screw fix first row of Intertenancy Brackets to every second stud using 12g x 45mm Galvanised screws with EPDM washer, brackets 300mm from finished floor level with face of bracket dampener set off the framing to the required cavity depth. Continue with subsequent rows of brackets at 600mm vertical centres.

3.10 INSTALL INTEGRA PANELS

With panel oriented horizontally, apply AAC adhesive to underside of first panel using a spatula or broadknife. Lift and position panel against Intertenancy Brackets plumb and true to line. Drill 2mm - 3mm pilot hole through INTEGRA panel at each bracket and screw fix through panel into bracket with 12g x 75mm Galvanised screw with EPDM washer. Continue with next panels in the first row and subsequent rows above, applying AAC adhesive to underside and side faces of each adjoining panel and screw fixing to Intertenancy Brackets. Finish top row of panels as close to top plate as possible.

3.11 FIT INTERTENANCY BRACKETS TO SECOND SIDE WALL FRAMING

Following erection of second side of wall framing to enclose the INTEGRA panels, setout and fix Intertenancy Brackets staggered from brackets on the opposing side.

3.12 FIT FIREWOOL

Fill voids between INTEGRA panels and roofing underlay/sheathing with FireWool.

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3.13 FIT WALL INSULATION
Refer to relevant insulation section.

3.14 INSTALL PLASTERBOARD WALL LININGS
Refer to relevant plasterboard section.

Completion & Commissioning

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

4 SELECTIONS

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

RCS INTEGRA Central Barrier Intertenancy System - Timber framing

4.1 RCS INTEGRA CENTRAL BARRIER INTERTENANCY SYSTEM - INTA120a

Location:	See plans
Type/brand:	Resene Construction Systems INTEGRA Central Barrier Intertenancy System
System:	INTA120a
FFR:	120/120/120
STC:	64
Rw:	62
Cavity depth:	90mm
Framing:	Timber
Lining:	1 layer 10mm standard plasterboard each side
Insulation:	R2.8

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6211AW ARDEX WALL TILING

1 GENERAL

This section relates to the supply and installation of ARDEX New Zealand Ltd internal and external wall tiling systems.

It includes:

- Primers
- Waterproofing systems
- Adhesives
- Sealants
- Grouts

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

PVC	Polyvinyl chloride
WMAI	Waterproofing Membrane Association (NZ) Incorporated
WPM	Waterproofing membrane

Documents

1.2 DOCUMENTS

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

AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
ISO 13007.1	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for adhesives
ISO 13007.3	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for grouts
WMAI CoP	Code of Practice for Internal Wet Area Membrane Systems

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
ARDEX Tiling and Substrate Preparation Systems (October 2023)
ARDEX Product Technical Data Sheets
ARDEX Technical Tiling Systems Bulletins
ARDEX Product Building Product Information Sheets
ARDEX Tiling General Care information sheet
BRANZ Appraisal 472 (2022) - ARDEX Undertile Internal Liquid Waterproofing Membranes - Amended 24 May 2024
BRANZ Appraisal 473 (2022) - ARDEX Undertile External Liquid Waterproofing Membranes - Amended 24 May 2024
BRANZ Appraisal 727 (2023) - ARDEX Undertile Sheet Membrane (WPM 750 and WPM 1000)

Manufacturer/supplier contact details

Company:	ARDEX New Zealand Ltd
Web:	www.ardex.co.nz
Email:	info@ardexnz.com
Telephone:	0800 227339

Warranties

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	For installation

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

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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.

1.6 QUALIFICATIONS WORKERS - MANUFACTURER / SUPPLIER REQUIREMENTS
Waterproofing applicators to be approved by ARDEX New Zealand. Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS
Substitutions are not permitted to any specified systems, components and associated products listed in this section.

1.8 INFORMATION FOR OPERATION AND MAINTENANCE
Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents:
ARDEX Tiling General Care

Provide this information prior to practical completion.

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE
Provide the following compliance documentation:

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

2 PRODUCTS

Materials - patching compound

2.1 ARDEX A 46
Rapid setting and drying, slump free cement-based mortar.

Materials - substrate preparation

2.2 ARDEX MULTIPRIME
One part, water-based primer for porous substrates.

2.3 ARDEX P 9
One part, water-based primer for non-porous substrates.

2.4 ARDEX P 51
One part water-based, primer, pre-coat, and bonding agent for porous substrates.

Materials - waterproofing

2.5 ARDEX WPM 002
Two component, fibre reinforced, acrylic polymer, liquid waterproofing membrane.

2.6 ARDEX WPM 155 RAPID
One component, polyurethane-acrylic, fast drying, liquid waterproofing membrane.

2.7 ARDEX WPM 750
Fleece-lined, synthetic rubber sheet membrane, 0.75mm thick, 1.4m wide x 20m long rolls.

Materials - adhesives

2.8 ARDEX X 17
Flexible, polymer modified, cement-based adhesive, formulated with non-slumping mastic type properties. Classified C2TES1 to ISO 13007.1.

2.9 ARDEX X 18
Flexible, polymer fortified, fibre reinforced, cement-based adhesive, formulated with non-slumping mastic type properties. Classified C2TES1 to ISO 13007.1.

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2.10 ARDEX X 77
Fibre reinforced, polymer modified adhesive. Classified C2FTES1 to ISO 13007.1.

Materials - grout

2.11 ARDEX FG 8
Fine sanded, cement-based, standard grout for joints 1mm to 8mm wide. Classified CG2W to ISO 13007.3.

2.12 ARDEX FS-DD
Non-sanded, cement-based grout for joints 1mm to 4mm wide. Classified CG1 to ISO 13007.3.

2.13 ARDEX EG 15
Three part stain and chemical resistant epoxy grout for joints 1.5mm to 15mm wide. Classified RG to ISO 13007.3.

Materials - additives

2.14 ARDEX E 90
Synthetic dispersion additive for use with ARDEX cement-based adhesives, to increase bond strength, elasticity and water resistance.

2.15 ARDEX ABALASTIC
Liquid polymer additive for use with cement-based adhesive to improve adhesion, water resistance and flexibility.

2.16 ARDEX GROUT BOOSTER
Water-based synthetic polymer grout additive for use with cement-based grouts to improve adhesion strength, flexibility and abrasion resistance.

Components

2.17 ARDEX ST TAPE
Uncured, self-adhesive butyl tape, fleece lined one side.

2.18 ARDEX CA 750 CONTACT ADHESIVE
Water-based contact adhesive.

2.19 ARDEX CA 20 P PLUS CONSTRUCTION ADHESIVE
One part, flexible, silane modified polymer adhesive.

2.20 TRIMS
Tile trims and edge strips. Available in aluminium, brass and stainless steel. Refer to SELECTIONS.

2.21 MOVEMENT JOINT - ANGLE
Metal or PVC angle. Refer to SELECTIONS.

2.22 MOVEMENT JOINT - INSERT
Polyurethane or neoprene insert. Refer to SELECTIONS.

2.23 MOVEMENT JOINT - SEALANT
One part, flexible acetic or neutral cure silicone sealant for joints 1mm to 30mm. Refer to SELECTIONS.

2.24 MOVEMENT JOINT - BACKING ROD
Polyethylene foam (PEF) backing rod. Refer to SELECTIONS.

3 EXECUTION

Conditions

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

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

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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.

Moisture content concrete:	75% maximum relative humidity, minimum 28 day cured

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 APPLICATION GENERALLY

To AS 3958.1, ARDEX New Zealand Ltd instructions, and to WMAI CoP recommendations. Surfaces to be clean, sound and free of dust, oil, grease, curing compounds or release agents.

Installation - patching compound

3.6 APPLY PATCHING COMPOUND

Mix patching compound to ARDEX instructions. Trowel onto prepared substrate to required thickness.

Installation - substrate preparation

3.7 APPLY PRIMER

Sponge, brush or roll primer liberally over entire substrate.

Installation - waterproofing

3.8 APPLY ARDEX LIQUID WPM

Reinforce corners and penetrations with ARDEX ST TAPE. Mix waterproofing components to ARDEX instructions. Brush or roll on liquid waterproofing membrane over prepared substrate. Apply two coats to achieve required minimum total dry film thickness to ARDEX product technical data sheet.

3.9 APPLY ARDEX SHEET WPM

Lay sheet membrane allowing for 50mm overlap with adjacent sheet. Working in rows lengthwise, fold back half of the width of the membrane sheet. Brush ARDEX contact adhesive to substrate and underside of membrane, avoiding the 50mm overlap. Unfold the membrane and press onto the substrate. Heat weld the 50mm overlapped membranes together.

Installation - adhesive

3.10 TILE SETTING OUT

Confirm the layout and bond pattern. Cut tiles to tile manufacturer's recommendations. Provide joint widths to the tile manufacturer's instructions.

3.11 MOVEMENT JOINTS GENERAL

Provide movement joints to AS 3958.1:

Depth:	Movement joints to go right through the tile and bed to the background.
Width:	6mm
Locations:	At junctions with floors, columns, nibs, and similar.
	Around sanitary fixtures.
	Around fixtures interrupting the tile surface (e.g. at junctions with joinery fixtures, window/door frames, and built in cupboards).
	At changes in substrate.
Large areas:	Provide vertical joints at not less than 3.5 metres spacing along the length of a wall.
	Provide horizontal joints at each storey rise in the height of a wall.
	Provide joints over existing joints in the substrate.

3.12 ADHESIVE APPLICATION GENERAL

For general wall tiling, use a 6mm x 6mm x 6mm notched trowel.

For mosaics, use a 4.5mm x 4.5mm x 4.5mm notched trowel.

Remove a tile periodically during installation to check for correct adhesive coverage. Do not fix tiles over skinned adhesive.

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3.13 APPLY ADHESIVE

Mix adhesive to ARDEX instructions. Spread adhesive over prepared substrate with a notched trowel to ARDEX recommended bed thickness.

3.14 INSTALL TRIM

Press trim into wet adhesive.

3.15 INSTALL MOVEMENT JOINT ANGLE

Press angle into wet adhesive.

3.16 LAY TILES

Firmly press tiles into the adhesive bed for full contact between tile and adhesive with no voids. Butter the back of tiles with ribbed or keyed underside before laying into adhesive bed by spreading a thin layer of adhesive on the back of the tile. Remove surplus adhesive from tile surfaces before adhesive sets.

Installation - grout

3.17 APPLY GROUT

Mix grout to ARDEX instructions. Work grout into joints with a rubber trowel. Allow the grout to firm up in the joint before wiping tile surface with a damp, dense sponge.

Installation - movement joint

3.18 INSTALL MOVEMENT JOINT INSERT

Place insert between movement joint angles.

3.19 INSTALL MOVEMENT JOINT BACKING ROD & SEALANT

Place PEF backing rod into movement gap. Apply a continuous bead of silicone sealant over PEF backing rod.

Completion & Commissioning

3.20 COMPLETION MATTERS

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

4 SELECTIONS

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

ARDEX Tiled Internal Walls

4.1 ARDEX INTERNAL WET AREA WALL TILING SYSTEM OVER CONCRETE

Substrate:	Concrete
WPM:	WPM002

4.2 ARDEX INTERNAL WET AREA WALL TILING SYSTEM OVER PLASTERBOARD

Substrate:	Plasterboard
Primer:	ARDEX Multiprime
WPM:	WPM002

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6221A ARDEX FLOOR TILING SOLUTIONS

1 GENERAL

This section relates to the supply and installation of ARDEX New Zealand internal and external floor tiling systems.

It includes:

- Acoustic underlays
- Levelling screeds
- Primers
- Waterproofing systems
- Adhesives
- Sealants
- Grouts

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

CFC	Compressed fibre cement
PVC	Polyvinyl chloride
WMAI	Waterproofing Membrane Association (NZ) Incorporated
WPM	Waterproofing membrane

Documents

1.2 DOCUMENTS

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

NZBC D1/AS1	Access routes
NZBC E2/AS1	External moisture
NZBC E3/AS1	Internal moisture
NZBC G3/AS1	Food preparation and prevention of contamination
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
ISO 13007.1	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for adhesives
ISO 13007.3	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for grouts
NZS 4121	Design for access and mobility - Buildings and associated facilities
WMAI CoP	Code of Practice for Internal Wet Area Membrane Systems

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

ARDEX Tiling and Substrate Preparation Systems (October 2023)
ARDEX Product Technical Data Sheets
ARDEX Technical Tiling Systems Bulletins
ARDEX Product Building Product Information Sheets
ARDEX Tiling General Care information sheet
BRANZ Appraisal 472 (2022) - ARDEX Undertile Internal Liquid Waterproofing Membranes - Amended 24 May 2024
BRANZ Appraisal 473 (2022) - ARDEX Undertile External Liquid Waterproofing Membranes - Amended 24 May 2024
BRANZ Appraisal 727 (2023) - ARDEX Undertile Sheet Membrane (WPM 750 and WPM 1000)
BRANZ Appraisal 925 (2024) - ARDEX WPM 1000 External Deck Membrane

Manufacturer/supplier contact details

Company:	ARDEX New Zealand Ltd
Web:	www.ardex.co.nz
Email:	info@ardexnz.com
Telephone:	0800 227339

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Warranties

1.4 WARRANTY - INSTALLER/APPLICATOR
Provide an installer/applicator warranty:

2 years	For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS WORKERS
Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS
Waterproofing applicators to be approved by ARDEX New Zealand. Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS
Substitutions are not permitted to any specified systems, components and associated products listed in this section.

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

- ARDEX Tiling General Care

Provide this information prior to practical completion.

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE
Provide the following compliance documentation:

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

Performance - Slip resistance

1.10 SLIP RESISTANCE - SURFACES EXEMPT FROM TESTING
Walking surfaces comply with NZBC D1/AS1, Table 2 for slip resistance requirements and are exempt from testing.

2 PRODUCTS

Materials - underlay

2.1 FLOORING UNDERLAY
Fibre cement board to AS/NZS 2908.2 manufactured from cellulose fibre, Portland cement, sand and water, or glass-mat gypsum board manufactured from gypsum core with coated fiberglass mat facing.

2.2 ARDEX DS 70 ACOUSTIC UNDERLAY
Recycled rubber drainage mat, 5mm thick, 1.2m wide x 9.1m long roll.

Materials - levelling screeds

2.3 ARDEX A 46
Rapid setting and drying, slump free cement-based mortar.

2.4 ARDEX K 65
One part, fibre reinforced, polymer modified levelling compound.

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Materials - substrate preparation

2.5 ARDEX P 9
One part, water-based primer for non-porous substrates.

2.6 ARDEX WPM 300 MOISTURE BARRIER
Two-component, water-based, epoxy polyamide membrane/barrier hydrostatic pressure resistant coating.

Materials - waterproofing

2.7 ARDEX WPM 001
One component, fibre reinforced, acrylic polymer, liquid waterproofing membrane.

2.8 ARDEX WPM 002
Two component, fibre reinforced, acrylic polymer, liquid waterproofing membrane.

2.9 ARDEX WPM 155 RAPID
One component, polyurethane-acrylic, fast drying, liquid waterproofing membrane.

2.10 ARDEX WPM 750
Fleece-lined, synthetic rubber sheet membrane, 0.75mm thick, 1.4m wide x 20m long rolls.

Materials - adhesives

2.11 ARDEX X 17
Flexible, polymer modified, cement-based adhesive, formulated with non-slumping mastic type properties. Classified C2TES1 to ISO 13007.1.

2.12 ARDEX X 18
Flexible, polymer fortified, fibre reinforced, cement-based adhesive, formulated with non-slumping mastic type properties. Classified C2TES1 to ISO 13007.1

2.13 ARDEX X 56
Highly-flexible and fast setting polymer modified adhesive. Classified C1ES2 to ISO 13007.1.

2.14 ARDEX OPTIMA
Highly-flexible, two part adhesive with high initial grab qualities. Classified C2TS2 to ISO 13007.1.

2.15 ARDEX X 10 GREY
Flexible, polymer fortified, cement-based adhesive, formulated with non-slumping mastic type properties. Classified C1TES1 to ISO 13007.1.

2.16 ARDEX WA 100
Two part epoxy adhesive. Classified R2T to ISO 13007.1.

Materials - grouts

2.17 ARDEX FG 8
Fine sanded, cement-based standard grout for joints 1mm to 8mm wide. Classified CG2W to ISO 13007.3.

2.18 ARDEX FS-DD
Non-sanded, cement-based grout for joints 1mm to 4mm wide. Classified CG1 to ISO 13007.3.

2.19 ARDEX EG 15
Three part stain and chemical resistant epoxy grout for joints 1.5mm to 15mm wide. Classified RG to ISO 13007.3.

Materials - additives

2.20 ARDEX GROUT BOOSTER
Water-based, synthetic polymer grout additive for use with cement-based grouts to improve adhesion strength, flexibility and abrasion resistance.

Undertile heating

2.21 UNDERTILE HEATING
Refer to appropriate underfloor heating section for electric heating systems under tiles.

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2.22 ARDEX ST TAPE
Uncured, self-adhesive butyl tape, fleece lined one side.

2.23 ARDEX CA 750 CONTACT ADHESIVE
Water-based contact adhesive.

2.24 TRIMS
Tile trim, edge strips, floor finish divider strips and weather bars. Available in aluminium, brass and stainless steel. Refer to SELECTIONS.

2.25 MOVEMENT JOINT - SEALANT
One part, flexible acetic or neutral cure silicone sealant. Refer to SELECTIONS.

2.26 MOVEMENT JOINT - BACKING ROD
Polyethylene foam (PEF) backing rod. Refer to SELECTIONS.

3 EXECUTION

Conditions

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

3.2 ROUTINE MATTERS
Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

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

Moisture content concrete:	75% maximum relative humidity, minimum 28 day cured
Moisture content plywood:	18% maximum
Moisture content particleboard:	16% maximum

Installation/application

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

3.5 APPLICATION GENERALLY
To AS 3958.1, ARDEX New Zealand Ltd instructions, and to WMAI CoP recommendations.
Surfaces to be clean, sound and free of dust, oil, grease, curing compounds or release agents.

3.6 APPLY LEVELLING SCREED
Mix levelling screed to ARDEX instructions. Trowel onto prepared substrate to required thickness and fall, where required:

1:40 minimum	deck acting as a roof to NZBC E2/AS1
1:40 minimum	accessible showers to NZBC G1/AS1
1:50 minimum	shower bases to NZBC E3/AS1
1:50 minimum	shower bases for people with disabilities to NZS 4121
1:50 minimum	food processing areas (e.g. commercial kitchens) to G3/AS1
1:50 maximum	cross fall for outdoor accessways in public areas to NZS 4121

3.7 FLOORING UNDERLAY
Lay and fix flooring underlay to the manufacturer's instructions. Fill gaps between sheets and corners with a neutral cure silicone sealant.

3.8 ARDEX DS 70 ACOUSTIC UNDERLAY
Temporarily fasten ARDEX PERIMETER ISOLATION STRIP along base of wall to entire perimeter of floor with masking tape. Lay ARDEX DS 70 over primed substrate, perpendicular to the subsequent installation of finished floor covering. Butted edges of adjacent underlay. Working in rows lengthwise, fold back half of the underlay width and trowel on ARDEX AF 180 MS flooring adhesive. Unfold the underlay and press into adhesive. Fill gaps between underlay and between wall and underlay with ARDEX ST.

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Trim ARDEX PERIMETER ISOLATION STRIP flush with the finished floor covering when installed.

3.9 APPLY ARDEX WPM 300 MOISTURE BARRIER

Spray fine mist of water over substrate. Spread barrier evenly over entire substrate with a stiff nylon broom. Apply second coat with a long nap roller.

3.10 APPLY PRIMER

Sponge, brush or roll primer liberally over entire substrate.

3.11 APPLY ARDEX LIQUID WPM

Reinforce corners and penetrations with ARDEX ST TAPE. Mix waterproofing components to ARDEX instructions. Brush or roll on liquid waterproofing membrane over prepared substrate. Apply two coats to achieve required minimum total dry film thickness to ARDEX product technical data sheet.

3.12 APPLY ARDEX SHEET WPM

Lay sheet membrane allowing for 50mm overlap with adjacent sheet. Working in rows lengthwise, fold back half of the width of the membrane sheet. Brush ARDEX contact adhesive to substrate and underside of membrane, avoiding the 50mm overlap. Unfold the membrane and press onto the substrate. Heat weld the 50mm overlapped membranes together.

3.13 INSTALL UNDERTILE HEATING

Refer to appropriate underfloor heating section for electric heating system under tiles.

3.14 SETTING OUT

Confirm tile layout and bond pattern. Cut tiles to tile manufacturer's recommendations. Lay tiles level, maintaining falls to drainage where required (e.g. floor wastes). Provide joint widths to the tile manufacturer's recommendations.

3.15 MOVEMENT JOINTS GENERAL

Provide movement joints to AS 3958.1:

Depth:	Movement joints to go right through the tile and bed to the background.
Width:	6mm
Locations:	At walls, columns, nibs, hobs and similar.
	Around sanitary fixtures.
	Around fixtures interrupting the tile surface (e.g. at junctions with joinery fixtures, window/door frames, and built in cupboards).
	At changes in substrate.
Large areas:	Provide joints at not less than 4.5 metres spacing in both directions for internal floors.
	Provide joints at not less than 3.5 metres spacing in both directions for external floors.
	Provide joints over existing joints in the substrate.

3.16 ADHESIVE APPLICATION GENERAL

For general floor tiling, use a 10mm x 10mm x 10mm notched trowel.

For large format tiles, use a 12mm x 12mm x 12mm notched trowel.
For mosaics, use a 4.5mm x 4.5mm x 4.5mm notched trowel.
Remove a tile periodically during installation to check for correct adhesive coverage. Do not fix tiles over skinned adhesive.

3.17 APPLY ADHESIVE

Mix adhesive to ARDEX instructions. Spread adhesive over prepared surface with a notched trowel to ARDEX recommended bed thickness.

3.18 INSTALL TRIM

Press trim into wet adhesive.

3.19 LAY TILES

Firmly press tiles into the adhesive bed for full contact between tile and adhesive with no voids. Butter the back of tiles with ribbed or keyed underside before laying into adhesive bed by spreading a thin layer of adhesive on the back of the tile. Remove surplus adhesive from tile surfaces before adhesive sets.

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3.20 APPLY GROUT

Mix grout to ARDEX instructions. Work grout into joints with a rubber trowel. Allow the grout to firm up in the joint before wiping tile surface with a damp, dense sponge.

3.21 INSTALL MOVEMENT JOINT BACKING ROD

Place PEF backing rod into movement gaps. Apply a continuous bead of silicone sealant over PEF backing rod.

Completion & Commissioning

3.22 COMPLETION MATTERS

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

4 SELECTIONS

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

ARDEX Tiled Internal Floors

4.1 ARDEX INTERNAL TILING SYSTEM - HEATED WET AREA

WPM: WPM002

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7126RH RINNAI HOT WATER SYSTEMS

1 GENERAL

This section relates to the supply and installation of Rinnai New Zealand Limited hot water systems. It includes:

- Rinnai continuous flow gas water heating units
- Rinnai continuous flow electric water heaters
- Rinnai storage and electric water heaters
- Rinnai supplied storage and electric water heaters
- Rinnai hot water heat pumps.

1.1 RELATED WORK

Refer to the hot and cold water system section for pipe systems

Refer to 7211 GAS SYSTEM UTILITY NETWORK for piped gas supply
Refer to 7212 GAS SYSTEM LPG CYLINDERS for cylinder gas supply
Refer to 7554RS RINNAI SPACE HEATING SYSTEMS for space heating

Documents

1.2 DOCUMENTS

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

NZBC G11/AS1	Gas as an energy source
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
AS/NZS 1596	Storage and handling of LP Gas
AS/NZS 3500.1	Plumbing and drainage - Water services
AS/NZS 3500.4	Plumbing and drainage - Heated water services
AS/NZS 5125.1	Heat pump water heaters - performance assessment - part 1: air source heat pump water heaters
AS/NZS 5149	Refrigerating systems and heat pumps - safety and environmental requirements - part 1: definitions, classification and selection criteria
AS/NZS 60335.1	Household and similar electrical appliances - Safety - Part 1: General requirements
NZS 4305	Energy efficiency - domestic type hot water systems
NZS 4602	Low pressure copper thermal storage electric water heaters
NZS 4607	Installation of thermal storage electric water heaters: valve vented systems
AS/NZS 5601.1	Gas installations Part 1: General installations

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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Rinnai Operation and Installation Guides

Manufacturer/supplier contact details

Company:	Rinnai New Zealand Limited
Web:	www.rinnai.co.nz
Email:	info@rinnai.co.nz
Telephone:	0800 RINNAI (0800 746 624)

Requirements

1.4 NO SUBSTITUTIONS

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

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1.5 COMPLY

Comply with the Gas (Safety and Measurement) Regulations 2010, Electricity (Safety) Regulations 2010 and the network utility operator's requirements. Give notices for inspections and carry out tests as required.

1.6 QUALIFICATIONS

Gasfitters to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a Certifying Gasfitter under the Plumbers, Gasfitters and Drainlayers Act 2006.

1.7 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

1.8 HOT WATER TEMPERATURES

To NZBC G12/AS1,6.14

Storage water heaters to store water at not less than 60ºC.

Hot water piping system, with temperature controls where necessary (tempering valve etc), to provide water at the outlet at the following temperatures:

For personal hygiene fixtures (showers, baths, wash hand basins etc.) temperatures to be close to but not to exceed:

- 45ºC - for early child hood centres, schools, elderly facilities, hospitals, psychiatric or disabled institutions.
- 50ºC - for personal hygiene fixtures in all other buildings.

For non-personal hygiene fixtures (kitchen sinks and equipment, laundry tubs, cleaners' sinks, industrial fixtures etc) temperatures are:

- Unrestricted - direct from water heater, approx. 60°C, must be less than 65°C (for kitchen sinks and equipment, laundry tubs, cleaners sinks etc.) - in all buildings.
- Unrestricted - direct from water heater not tempered (for industrial fixtures and specific items etc.) - in all buildings.

This clause excludes boiling units.

Performance

1.9 FINAL INSPECTION AND TEST

Submit the work for inspection and test and prove to the satisfaction of the network utility operator that the installation complies with all Acts and Regulations and has been tested for leakage and proved to be sound.

Testing should be at the time of completion. Confirm this timing before carrying out any tests. Test and demonstrate the system according to manufacturer's specification.

2 PRODUCTS

Materials - hot water electric heating units

2.1 ELECTRIC HOT WATER STORAGE CYLINDER, MAINS PRESSURE

Rinnai vitreous enamel mains pressure hot water cylinder constructed from enamel inner and galvanized steel outer casing, complete with fittings, to NZS 4305. Refer to SELECTIONS for element sizes, configurations and thermostat options.

3 EXECUTION

Installation - general

3.1 HANDLE AND STORE

Handle and store units, cylinders, pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress. Store according to manufacturer's instructions.

3.2 CONCEAL

Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

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3.3 CORROSION
Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

3.4 THERMAL MOVEMENT
Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

3.5 PIPE SIZE
Plumber to check and confirm adequate pipe size, incoming mains and meter on site as a part of the installation. Pipe sizing calculation to NZBC G12/AS1, table 4 Tempering valve and nominal pipe diameters or AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3.

Installation - general, hot water cylinders

3.6 HOT WATER CYLINDER INSTALLATION - GENERALLY
Install hot water cylinders complete to the manufacturer's requirements and to NZBC G12/AS1, 6.11, Water heater installation or AS/NZS 3500.4 as modified by NZBC G12/AS3 or to NZS 4607 for Valve-vented systems.

3.7 SEISMIC RESTRAINTS - NON-GAS WATER HEATING APPLIANCES
Non-gas (electric, wet-back, solar etc.) water heating appliances to be restrained to manufacturer's requirements and NZBC G12/AS1, 6.11, Water Heater Installation or AS/NZS 3500.4, 5.5.4 Seismic restraints.

3.8 INSTALL STORAGE HOT WATER CYLINDER OVERFLOW TRAY
Install drained overflow tray to storage hot water cylinder to NZBC G12/AS1.

3.9 INSTALL TEMPERING VALVE
Install one metre minimum from outlet of hot water cylinder and to manufacturer's instructions.

Installation - hot water electric heating units

3.10 INSTALL ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE
Install where shown complete with all the necessary fittings to Rinnai requirements and in accordance with NZBC G12/AS1: 6.11. Valve-vented systems to NZS 4607.

Completion

3.11 REPLACE
Replace damaged or marked elements.

3.12 LEAVE
Leave work to the standard required by following procedures.

3.13 REMOVE
Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

Electric hot water units

4.1 RINNAI ELECTRIC HOT WATER ENAMEL CYLINDER, MAINS PRESSURE, INDOOR OR OUTDOOR

Location:	See plans
Cylinder type:	Indoor / Outdoor
Construction:	Enamel inner, corrosion resistant outer casing with polyurethane foam insulation
Brand:	Rinnai
Capacity/element /model:	300L
Thermostat range:	60° - 75°C

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7430 DRAINAGE

1 GENERAL

This section relates to the supply and laying of gravity foul water (sewage), stormwater and groundwater drainage.

1.1 DOCUMENTS

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

NZBC B1/AS1	Structure
NZBC E1/AS1	Surface water
NZBC E1/AS2	Surface water
NZBC E1/VM1	Surface water
NZBC G1/AS1	Personal hygiene
NZBC G13/AS1	Foul water - sanitary plumbing
NZBC G13/AS2	Foul water - drainage
NZBC G13/AS3	Foul water - sanitary plumbing and drainage
AS/NZS 1254	PVC-U pipes and fittings for Stormwater and Surface Water applications
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 2033	Installation of polyethylene pipe systems
AS 2439.1	Perforated Plastics Drainage and Effluent Pipes and Fittings - Perforated drainage pipe and associated fittings
AS/NZS 2566.1	Buried Flexible Pipelines - Structural Design
AS/NZS 2566.2	Buried Flexible Pipelines - Installation
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
NZS 3104	Specification for concrete production
NZS 3111	Method of test for water and aggregate for concrete
AS/NZS 3500.2	Plumbing and drainage - sanitary plumbing and drainage
NZS 3604	Timber-framed buildings
NZS 4229	Concrete masonry buildings not requiring specific engineering design
NZS 4402 (set)	Method of testing soils for civil engineering purposes
AS/NZS 4671	Steel reinforcing materials
AS/NZS 5065	Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications
NZCMM	NZ Concrete Masonry Manual section 6.1 Masonry Retaining Walls
NZTA F2	Specification for pipe subsoil drain construction

Plumbers, Gasfitters and Drainlayers Act 2006

1.2 AS BUILT DOCUMENTS

Supply a 1:100 scale as-built drawing of drains and fittings to the territorial authority and to the owner on completion.

1.3 QUALIFICATIONS

Drainlayers to be experienced, competent and familiar with the materials and techniques specified. Carry out all work under the direct supervision of a certifying drainlayer under the Plumbers, Gasfitters and Drainlayers Act 2006.

2 PRODUCTS

2.1 CONCRETE

17.5 MPa prescribed mix to NZS 3104.

2.2 REINFORCEMENT

Plain round and/or deformed steel bars, Grade 300 to AS/NZS 4671.

Components

2.3 PVC-U PIPES

PVC-U pipes bends, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260.

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Underground PVC-U pipe to be classified as follows:

Classification:	Use:
SN4 - SN6	Domestic & light load areas
SN8 - SN10	Commercial & Industrial medium load areas
SN16	Public roads & high load areas

2.4 GULLY TRAPS - AS/NZS 3500.2

Gully traps complete with grating to AS/NZS 3500.2, 4.6 Gullies, as modified by NZBC G13/AS3.

2.5 SURFACE WATER SUMP GRATINGS

Cast iron frame with lift-up grating.

2.6 STRIP DRAIN CHANNEL

Proprietary, modular, variable invert, plastic, steel (various types), or polymer concrete drainage channel sections and drainage sump, embedded in site concrete and fitted with selected metal gratings.

2.7 INSPECTION COVERS

Cast iron frame with screw-down cover.

Foul water

2.8 TRENCH BACKFILLING MATERIAL, FOUL WATER - AS/NZS 3500.2

Bedding and backfilling material to AS/NZS 3500.2, 5.4, Bedding of drains, and for concrete, if required, AS/NZS 3500.2, 5.3 Concrete Support.

Surface water

2.9 TRENCH BACKFILLING MATERIAL, SURFACE WATER - AS/NZS 3500.3

Bedding and backfilling material to AS/NZS 3500.3, section 6.2.10, 6.2.11 and 6.3.5, as modified by NZBC E1/AS2.



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3 EXECUTION

3.1 EXCAVATE

Excavate for drains to a firm even base with correct gradients set in straight runs.
Trenches running parallel, below and close to foundations of buildings to NZS 3604 or NZS 4229 to be separated to:

- NZBC E1/AS1, 3.9.7, Proximity of Trench to Building, for stormwater and subsoil drains.
- AS/NZS 3500.3, 6.2.8, Installation near and under buildings, as modified by NZBC E1/AS2.
- NZBC G13/AS2, 5.6, Proximity of Trench to Building, for foul water drains.

3.2 MANUFACTURER'S REQUIREMENTS

All drainage installations to the pipe and fitting manufacturer's requirements.

3.3 FOUL WATER DRAINAGE GENERALLY - AS/NZS 3500.2

Carry out this work to AS/NZS 3500.2 and complete all tests to AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations.
Lay uPVC pipe systems to relevant sections of AS/NZS 2032. Lay polyethylene pipes and fittings to relevant sections of AS/NZS 2033.

3.4 SURFACE WATER DRAINAGE GENERALLY - AS/NZS 3500.3

Carry out stormwater drainage work to AS/NZS 3500.3, and complete all tests to AS/NZS 3500.3, section 9, as modified by NZBC E1/AS2.
Lay uPVC pipe systems to relevant sections of AS/NZS 2032, AS/NZS 2566.1 and AS/NZS 2566.2. Lay polyethylene pipes and fittings to relevant sections of AS/NZS 2033 and AS/NZS 2566.1.

3.5 LAY FOUL WATER DRAINS

Lay drains in straight runs to correct gradients, to discharge into the network utility operator's sewer. Set inspection fittings on a concrete base.

3.6 CONSTRUCT GULLY TRAPS - AS/NZS 3500.2

Set in a minimum 100mm thick concrete with top surround 25mm above paving and 75mm above other surfaces, to AS/NZS 3500.2, section 4.6, Gullies.

3.7 LAY STORMWATER DRAINS

Confirm the required location of downpipes and finished ground levels before commencing pipework. Set downpipe bends in concrete with the concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the network utility operator's stormwater system.

3.8 INSTALL STRIP DRAIN CHANNEL

Excavate trench and form site concrete base to fall. Set interlocking channel sections, sumps and accessories in place, all in accordance with the channel manufacturer's requirements. Check falls and install gratings and covers.

3.9 INSTALL SURFACE WATER SUMP

To NZBC E1/AS1 or to AS/NZS 3500.3 section 7 as modified by NZBC E1/AS2, complete with ceramic half-siphon pipe and cast iron frame with a lift out grating.

3.10 INSTALL STORMWATER INSPECTION CHAMBERS

Construct as detailed on a poured concrete footing to NZBC E1/AS1, 3.7, Access for maintenance, or to AS/NZS 3500.3, section 7 as modified by NZBC E1/AS2. Provide all necessary haunching to channels. Fit a cast iron cover and frame.

3.11 INSTALL FOUL WATER INSPECTION CHAMBERS - AS/NZS 3500.2

Construct as detailed on a poured concrete footing to AS/NZS 3500.2, 4.7 Inspection openings and 4.8 Inspection chambers, as modified by NZBC G13/AS3. Provide all necessary haunching to channels. Fit a cast iron cover and frame.

3.12 TESTING - FOUL WATER

Confirm timing before carrying out any tests. Supply potable water and apparatus needed.
Test to NZBC G13/AS1, 7.1 Test Methods or AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations, as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

3.13 TESTING - SURFACE WATER

Confirm timing before carrying out any tests. Supply potable water and apparatus needed.
Test to NZBC E1/VM1, 8.0 Drain Leakage Tests or AS/NZS 3500.3, section 9, as modified by NZBC E1/AS2 as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

Backfilling and encasement - Foul water and surface water

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3.14 CONCRETE ENCASEMENT

Concrete encase shallow drains and drains under driveways, on a 100mm deep 17.5 MPa concrete bed reinforced with three 10mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100mm 17.5 MPa concrete.

3.15 TRENCH BACKFILLING GENERALLY - FOUL WATER

Granular bedding and selected fill shall be placed in layers no greater than 100 mm loose thickness and compacted. Base bedding (beneath the pipe) shall be placed and compacted before pipes are laid. Up to 300mm above the pipe, compaction shall be by tamping by hand tool over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing or distorting the drain. Run marker tape along line of the pipe on top of the bedding.

Up to 300mm above the pipe, compaction shall be by tamping by hand using a rod with a pad foot (having an area of 75 ± 25 mm by 75 ± 25 mm) over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing the drains.

More than 300 mm above the pipe, compaction shall be by at least four passes of a mechanical tamping foot compactor (whacker type) with a minimum weight of 75 kg. For plastic based pipes, ensure care taken to avoid impact loading of the pipe.

3.16 TRENCH BACKFILLING GENERALLY - SURFACE WATER - AS/NZS 3500.3

Trench fill to be placed in loose layers not more than 200 mm thick and compacted to not less than 90% or 95% under pavements of the standard maximum dry density specified in AS 1289.5.4.1 or AS 1289.5.6.1, in such a way that the pipes are neither dislodged nor damaged.

The finished surface (top of trench fill) and the trench surround shall be restored, as near as practicable, to the level and condition of the existing surface before commencement of the excavation.

3.17 FOUL WATER TRENCH BACKFILLING - AS/NZS 3500.2

Carry out foul water trench backfilling to AS/NZS 3500.2, 5.1, 5.2 and 5.5 as modified by NZBC G13/AS3.

PVC-U pipe to AS/NZS 2032 and polyethylene pipes to AS/NZS 2033.

3.18 SURFACE WATER TRENCH BACKFILLING - AS/NZS 3500.3

Carry out surface water trench backfilling to AS/NZS 3500.3, 6.3.5.2.

PVC-U pipe to AS/NZS 2032 and polyethylene pipes to AS/NZS 2033.

4 SELECTIONS

4.1 PVC-U PIPES

Brand/type: 100mm PVC 1:60 Gradient



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7701PC PDL & CLIPSAL ELECTRICAL

1 GENERAL

This section relates to the wiring for **Schneider Electric** domestic and small scale commercial installations, including:

- power
- lighting
- electrical automation
- Phone / Data / TV Wiring (VDI Systems)
- security system
- complete with componentry
- electrically-powered fittings

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

AFDD	Arc Fault Detection Device
ELV	extra low voltage
GLS	general lighting service
IP	international (ingress) protection classification
NUO	Network Utility Operator
PCB	printed circuit board
PIR	passive infrared
SIA	security integration architecture
TPS	tough plastic sheathed
TCF	Telecommunications Carriers' Forum

Documents

1.2 DOCUMENTS

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

NZBC G9/AS1	Electricity
AS/NZS 1125	Conductors in insulated electric cables and flexible cord
AS/NZS 2201.1	Intruder alarm systems - Client premises - Design, installation, commissioning and maintenance
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3008.1.2	Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions
AS/NZS 3100	Approval and test specification - general requirements for electrical equipment
AS/NZS 3112	Approval and test specification - Plugs and socket-outlets
AS/NZS 3133	Approval and test specification - Air-break switches
AS/NZS 3190	Approval and test specification - Residual current devices (current-operated earth - leakage devices)
AS/NZS 3439.3	Low - voltage switchgear and controlgear assemblies - Particular requirements for low - voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
NZS 4961	Electric cables - Polymeric insulated - For distribution and service applications
AS/NZS 5000.2	Electric cables - Polymeric insulated - For working voltages up to and including 450/750 V
AS/NZS 60335.1	Household and similar electrical appliances - Safety - General requirements
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance.

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AS/NZS 61008.1	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - General rules
AS/NZS 61009.1	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - General rules
AS/NZS 61439.3	AS/NZS 61439.3 Low-voltage switchgear and controlgear assemblies - Part 3: Distribution boards intended to be operated by ordinary persons (DBO).
AS/NZS 11801.1	Information technology - Generic cabling for customer premises - General requirements (ISO/IEC 11801-1:2017, MOD)
PTC 225	Star-wiring boxes and small office/home office (SOHO) cabling installations

TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services
Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).

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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

PDL	PDL Iconic Series
PDL	PDL Iconic Styl Series
PDL	PDL 600 series
PDL	PDL Iconic Essence Series
PDL	PDL Pro Series
PDL	Electrical Solutions Guide
PDL & Clipsal	Catalogue and Price Guide
Clipsal	Solis Series
Clipsal	Solis T Series

Manufacturer/supplier contact details

Company:	**Schneider Electric New Zealand Ltd**
Web:	www.pdl.co.nz www.clipsal.com www.schneider-electric.co.nz
Email:	sales@nz.schneider-electric.com
Telephone:	0800 741 303

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

1 year	Warranty applies to materials under normal environmental and use conditions against failure of materials and execution

Refer to SENZ standard terms and conditions of supply for further details.

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 COMPLY

Comply with the Electricity (Safety) Regulations (2010), AS/NZS 3000, AS/NZS 3008.1.2 and TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services for listed and prescribed work and with the utility network operator requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Carry out work under the supervision of an electrical licensed supervisor.

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1.7 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

Workers and supervisors to be appropriately qualified to applicable legislative requirements.

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 PDL SELECTIONS - FITTINGS AND HARDWARE

Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.

1.9 SAFETY OF INSTALLATION - DESIGN BY ELECTRICIAN

Before installation work commences provide a Certified Design. The Certified Design is to comply with the Electricity (Safety) Regulations (2010), regulations 58. It must be signed by the designer of the installation.

1.10 ELECTRICAL CERTIFICATE OF COMPLIANCE

Supply a certificate of compliance (CoC) to the owner, and if required the NUO, as required by the Electricity (Safety) Regulations 2010, prior to connection.

- Arrange for the NUO to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.
- Arrange for an inspector to inspect high-risk electrical work as required by Regulation 70.

1.11 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010, Reg 74A, to the owner and when required the BCA. To be provided no later than 20 working days after connection and prior to Practical Completion.



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2 PRODUCTS

2.1 MAINS SUPPLY

Tough plastic sheathed neutral screened cable to AS/NZS 5000.2 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

2.2 CABLES

Tough plastic sheathed copper conductors to AS/NZS 5000.2, stranded above 1.0mm², and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the connected load, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.0mm² on 10 amp MCBs
Lighting circuits:	Commercial: 1.5mm² on 16 amp MCBs
Power circuits:	2.5mm² on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction 2.5mm² on 16 amp MCBs for domestic insulated construction, or filled cavity 2.5mm² on 20 amp MCBs for unenclosed or unfilled cavity construction 2.5mm² on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Range circuits:	Single phase: 6mm² high temperature cable on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions that may be above 35°C (roof spaces above insulation etc).

2.3 METER BOX

Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.

2.4 WALL BOXES

Single grid size or equivalent to be manufactured from either plastic or metal, with 2 or more gang sizes to be manufactured in metal.

2.5 SWITCH UNITS - PERSON WITH DISABILITIES

In addition to clause SWITCH UNITS above, units shall comply with NZBC G9/AS1, 2.0.1.b) and d).

2.6 SWITCH UNITS - PDL ICONIC SERIES / ICONIC STYL / ICONIC ESSENCE

Single pole switches to be 10 Amp minimum rated, double pole or intermediate to be 10 Amp minimum rated. All switches to be 230 Volt AC flush-plate units. Refer to drawings/schedules for number of switches per unit, dimmer units, LED (indicator or toggle) units, locator units and 2 way units.

2.7 HOT WATER SYSTEM SWITCH

One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

2.8 SWITCHED SOCKET UNITS

10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters and manufactured to AS/NZS 3133, AS/NZS 3100, and AS/NZS 3112, single or multi gang as detailed.
For mounting height and orientation, refer to SELECTIONS.

2.9 CEILING ROSES

White plastic mounting base with screwed cover, manufactured to AS/NZS 3113. Terminal type. Suspended fittings to have sheathed round flexible cord to AS/NZS 3008.1.2. Refer to SELECTIONS.

2.10 DATA WIRING

To AS/NZS 11801.1.

2.11 SUSPENDED FITTING CHORD

Suspended fittings to have sheathed round flexible cord to AS/NZS 3008.1.2. Refer to SELECTIONS.

2.12 LIGHT FITTINGS

Install LED fittings – dimmable where desired. Ensure control gear is suitable for dimming if this is required.

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2.13 RECESSED LIGHT FITTINGS - RESIDENTIAL

Residential recessed light fittings to AS/NZS 3000, 4.5.2.3.5:

- Existing fittings or retrofit situations, fittings maybe unmarked.
- New fittings can only be labelled - CA 80, CA 90, CA 135, IC, IC-F, & IC-4.

Refer to clause INSULATION & GENERAL CLEARANCES for clearances from insulation and other elements.

2.14 BATHROOM FAN HEATERS

Fixed wired compact bathroom fan heater. Automatic step-down thermostat, built-in safety cut-outs, and compliant to AS/NZS 60335.1.

2.15 EXTRACT FANS

Ceiling or Wall mounted extract/exhaust fans for controlled replacement of surrounding air, and compliant with AS/NZS 60335.1, externally ducted.

2.16 HEATED TOWEL RAILS

Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with AS/NZS 60335.1, scratch resistant finish.

2.17 OUTDOOR SWITCHES & SOCKETS

Using materials with superior UV protection, impact strength, and addition chemical resistance when compared with interior polycarbonate fittings. Weather protected, switches and sockets to IP56 minimum. Sockets fitted with safety shutters behind socket pins, and all products able to be padlocked off or on.

2.18 OUTDOOR LIGHT FITTINGS

Using materials with superior UV protection, impact strength, and addition chemical resistance.

Weather protection minimums:

- IP54 for protected areas under eaves or verandahs etc.
- IP55 for exposed areas not subject to pressurised water (hoses).
- IP66 for areas subject to pressurised water or major splashing.
- IP67 for inground lights
- IP68 for submerged pool fittings

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation

3.4 MAIN SUPPLY

Lay underground mains to the network utility operator requirements. Excavate trench, install cable and marker tape and backfill.

3.5 METER BOX

Fit to meter box manufacturer and network utility operator requirements where detailed. Recess into external wall in sheltered area and flashed to weatherproof to NZBC E2/AS1 fig 69. Arrange for meter installation inspection and connection.

3.6 EARTHING CONDUCTIVE STRUCTURE & MATERIALS

Earth all at risk structural metalwork and conductive building materials to AS/NZS 3000, 5.4.6, and the Electricity (Safety) Regulations 2010.

If they form part of the building, this includes:

- Structural steel frames or members
- Light steel framing
- Exposed conductive materials, like metal sink/tub or vanity benches etc, with attached electrical units or equipment

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3.7 EQUIPOTENTIAL BONDING

Equipotential Bond extraneous conductive parts together and to the electrical installation earthing system to AS/NZS 3000, 5.6, and the Electricity (Safety) Regulations 2010 and the fitting manufacturer's requirements.

If they form part of the building, this includes:

- Conductive water piping (including tap etc) and exposed related connected conductive surfaces (like metal sink benches or metal cladding etc). Not required where isolated by non-conductors (plastic pipe etc) from the mass of earth.
- Other conductive piping (not earthed by other means) and exposed related connected conductive surfaces.
- Concrete reinforcing - for floor or wall forming part of a room with a shower or bath, or the shell and surround of a swimming/spa pool
- Built-in Swimming pool and spa pool - exposed conductive parts of electrical equipment, as well as exposed conductive, fixtures, fittings and pool structures within 1.25m of pool edge

3.8 MAIN EARTH

Provide a plastic toby box or uPVC tube to contain and protect the earth pin. Fix the connecting earth wiring closely and securely against wall surfaces.

3.9 ARC FAULT DETECTION DEVICE (AFDD)

To AS/NZS 3000 clause 2.9, AFDD on all final sub-circuits not exceeding 20A.

3.10 EARTH LEAKAGE PROTECTION

RCD protection installed to AS/NZS 3000.

3.11 RCD - RESIDENTIAL INSTALLATIONS

Install 30mA RCD protection at the switchboard for all final sub circuits to control outlets and lighting except for fixed or stationary cooking equipment, to AS/NZS 3000.

3.12 RCD-AFDD COMBINED - RESIDENTIAL INSTALLATIONS

Install a 30mA RCD - AFDD combined device (RCD Type II) at the switchboard for all final sub circuits not exceeding 20A, to control and protect outlets and lighting to AS/NZS 3000, (2018, 2.6 & 2.9). Protect over 20A to 32A final sub circuits with separate RCD and to AS/NZS 3000.

3.13 RCD - NON-RESIDENTIAL INSTALLATIONS

Install 30mA RCD Type II protection at the switchboard to suit location and use, to AS/NZS 3000.

3.14 RCD - AFDD COMBINED - NON-RESIDENTIAL INSTALLATIONS

Install a 30mA RCD - AFDD combined device (RCD Type II) at the switchboard for all final sub-circuits not exceeding 20A, to suit location and use, to AS/NZS 3000, (2018, 2.6 & 2.9). Protect over 20A to 32A final sub-circuits with separate RCD and to AS/NZS 3000.

3.15 HIGH RISK AREA INSTALLATIONS

Use fixed wired RCD protected socket outlets to 30mA or 10mA in areas that may represent increased risk of electric shock to the user:

- Areas frequented by infants (AS/NZS 3000 recommends 10mA)
- Wet areas: bathrooms, laundries, kitchens
- Near pools and water features
- Where intended for use with cleaning equipment
- Hand held tools subject to movement in use, i.e. workshops, garages

3.16 SET-OUT

Unless specifically detailed, the position of outlets and equipment shown on drawings is indicative of requirements. Study documents and site conditions to ensure no conflict with other services or features will arise. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

3.17 CABLING

Install wiring systems to AS/NZS 3000.

Adhere to this standard at all times to all requirements.

Basic requirements or recommendations:
All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.

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3.18 CABLING CIRCUITS

Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.

3.19 WALL BOXES

Flush mounted in cavity construction and selected as appropriate to fit products to be mounted. Fix vertically mounted wall boxes to studs. Fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

3.20 SWITCH AND SOCKET UNITS

Fit all switch units and socket units to the manufacturer requirements with heights and mounting directions as indicated in SELECTIONS.

3.21 SWITCH AND SOCKET UNITS - FOR PERSON WITH DISABILITIES

Fit all switch units and socket units to the manufacturer requirements with heights (& mounting direction) and location to NZBC G9/AS1 and SELECTIONS.

3.22 ISOLATING SWITCHES

Locate isolating switches in agreed positions when not specifically shown on the drawings.

3.23 LIGHT FITTINGS

Install light fittings in locations and at heights detailed, and in accordance with the fitting manufacturer requirements.

3.24 INSULATION & GENERAL CLEARANCES

Some electrical and mechanical services, and equipment may need to have a gap to insulation and some building elements. The gaps should be to the NZS 4246 based tables below or to the equipment manufacturers requirements if they require larger gaps. Smaller gaps to manufacturers requirements can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings).

Installed gap not to be more than 50mm bigger than the required gap.

The following tables are subject to:
- The requirements of NZS 4246 for insulation.
- The insulation is exposed to the source of heat or equipment etc.
- Insulation, has passed the needle flame test to AS/NZS 60695.11.5 and/or is non-combustible.
- Gaps to hot surfaces may have to be increased with non-compliant insulation and plastic/polymeric type insulation (EPS, XPS, PIR, etc), check with insulation manufacturer.
- Gaps to hot surfaces may be able to be reduced with non-combustible insulation, check with equipment manufacturer.
- "Secure insulation" if required means, glue, mechanical fix, or provide fixed barriers at gap edge of insulation to hold in place. Rigid or semi rigid insulation may only need a firm friction fit (secure loose pieces).
- Loose fill insulation will require fixed barriers to NZS 4246 to maintain gaps.

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3.25 LIGHT FITTINGS TO INSULATION

Type of fitting	Minimum insulation clearance	Comments
Recessed, marked NON-IC, or unmarked	100mm (increase if over 100W)	To NZS 4246. NON-IC fittings and new or old unmarked & unknown fittings, and/or insulation. Insulation to be secured.
Recessed, CA 80, CA 90, or CA 135.	Abut fittings	To NZS 4246. Do not cover the fittings.
Recessed, IC, IC-F, or IC-4.	Abut & cover fittings.	To NZS 4246. Ensure insulation complies.
Recessed, marked Do-Not-Cover	Manufacturer clearances	To NZS 4246. Do not cover the fittings.
Independent control gear	Place on top of insulation & 50mm from fittings	To NZS 4246. If not on top allow 50mm clearance to insulation, do not cover. Includes, transformers, ballasts & drivers etc.
Surface fittings not exposed to insulation	Nil	To NZS 4246. Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings.
Surface fittings & exposed insulation	200mm	To NZS 4246. This is exposed insulation to any part of the exposed fitting & bulb/tube (e.g. exposed light in an unlined basement). Insulation to be secured.

3.26 RECESSED LIGHT FITTINGS TO COMBUSTIBLE BUILDING ELEMENTS

Type of recessed fitting	Minimum building element clearance**	Comments
Marked NON-IC, or unmarked, ≤100W	100mm, vertical & horizontal	To AS/NZS 3000:2018
Marked NON-IC, or unmarked, >100W	200mm, vertical & horizontal	To AS/NZS 3000:2018
CA 80, CA 90 or CA 135	100mm, vertical & horizontal	To AS/NZS 3000:2018
IC, IC-F or IC-4	100mm, horizontal NA, vertical	To AS/NZS 3000:2018 To be NA vertical, fitting must be covered by insulation. If not covered use 100mm clearance.
Marked Do-Not-Cover	100mm, vertical & horizontal	To AS/NZS 3000:2018. Manufacturer clearances if greater than 100mm

**Combustible building elements exclude metal elements, but include timber framing or other timber based elements, and normal linings etc. Highly flammable materials & those likely to melt will need more clearance.

3.27 INBUILT RECESSED HOT APPLIANCES TO INSULATION

Appliance	Minimum insulation clearance	Comments
Electrical heaters	Manufacturer clearances	To NZS 4246.
Electrical heaters	100mm	Manufacturer clearances not known. To NZS 4246. Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.
Heat producing appliances & equipment	Manufacturer clearances	To NZS 4246.
Heat producing appliances & equipment	50mm	Manufacturers clearances not known. To NZS 4246. Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.

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Note - Appliances and equipment excludes cables, junction boxes, light switches & power sockets etc

3.28 EXTRACTS, VENTS & ROOF UNDERLAY TO INSULATION

Appliance	Minimum insulation clearance	Comments
Ducted fan motors	50mm	To NZS 4246. Includes ducted rangehoods, extractors etc. Applies to the motor unit and electrical enclosures (not the ducts).
Ducted fan ducts	Abut	To NZS 4246. Excludes motor unit and electrical enclosures.
Unducted fan motors usually discharging to ceiling space	200mm	To NZS 4246. Includes unducted, rangehoods, extractors etc, discharging into roof space. To prevent debris falling into motor. Clearance may be able to be reduced, by providing a fixed barrier around the vent.
Roofing material/underlay	25mm	To NZS 4246. Maintain clearance from underside of roofing or flexible roofing underlay, to prevent wicking.

3.29 ELECTRIC HOT WATER SYSTEM

For storage heaters, wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end. Hot water cylinders, thermostats and 3000 watt element supplied and fitted as specified under the hot and cold water system section.

3.30 DATA WIRING

Install data wiring to outlet positions shown on the drawings. Install in conduit for outlets on masonry surface.

3.31 SURGE PROTECTION

Install surge protection devices to manufacturer requirements and in accordance with AS/NZS 3000. When fitting medium protection at the switchboard, protect the device by a dedicated MCB.

3.32 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire fittings and equipment to individual fittings and equipment manufacturer requirements. Refer to the drawings for required layouts and locations for equipment. Refer to SELECTIONS for schedules of fittings.

3.33 BATHROOM ELECTRICAL FIXTURES

Install electrical fixtures specified in other parts of this specification. Connect the following bathroom and toilet electrical items:

Heated towel rails:	Install to manufacturers requirements and installed in accordance with AS/NZS 3000 and NZBC G9/AS1.
Mirror demisters:	Locate centrally above the wash hand basin(s). Connect wiring to room lighting unless specified otherwise.
Extract fans:	Install exterior ducted fans to manufacturer requirements. Installed in accordance with AS/NZS 3000 and NZBC G4/AS1.
Bathroom fan heaters:	Install to manufacturers requirements and installed in accordance with AS/NZS 3000.

3.34 OUTDOOR/EXTERIOR SERVICES

Install all wiring systems in accordance with section 3 of AS/NZS 3000.

Adhere to this standard at all times to all requirements.

Basic requirements or recommendations:
Provide circuits and connections for exterior installations, including ELV 12/24 Volt path lighting and electronic irrigation systems. Refer to drawings for connection points. Where underground, ensure appropriate protection, such as thickness of sheathing, conduit, depth of cabling, and proximity to other services.

Use the appropriate rated fittings for power control and power supply. Weather protected switches to IP56. Install to manufacturer specifications using recommended fittings and sealants to maintain the products integrity.

Earth leakage protection to be provided for in areas where there is increased risk to human safety in the form of either RCDs at the distribution board, or socket outlet. RCDs are recommended for visible awareness of protection.

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Refer to SELECTIONS.

Completion & Commissioning

3.35 COMPLETION MATTERS

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

- Leave installation operating correctly, with equipment clean and all lamps operational.

4 SELECTIONS

For further details on selections go to www.pdl.co.nz, www.clipsal.com, www.schneider-electric.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 METER BOX

Location:	refer to drawings
Brand / type:	PDL Superboard

Interior outlets - PDL

4.2 PDL INTERIOR OUTLETS - ICONIC SERIES

Switch / socket outlets	PDL Iconic Series
Switch - Height to centre of unit:	1000mm above FFL
Orientation:	Horizontal

Exterior switches and sockets - PDL

4.3 PDL EXTERIOR SWITCHES AND SOCKETS

Weatherproof socket outlets:	PDL WP / 56 series; Clipsal - WS Range
Timer switch:	PDL WP / 56 series
Weatherproof switch:	PDL WP / 56 series; Clipsal WS Range
Daylight switch:	PDL WP / 56 series

Light fittings

4.4 INTERNAL LIGHT FITTINGS

Pendant lights:	~
Pendant cord:	~
Ceiling lights:	~
Wall lights:	~
Spotlights:	~
LED Downlights:	Clipsal LED Downlight

Miscellaneous electrical items

4.5 MISCELLANEOUS ELECTRICAL ITEMS

Smoke alarms:	Clipsal Fire Tek range

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