Lot 1190 - Proposed 4 bedroom residential unit with 2 bedroom residential flat

Project Specification

Lot 1190, Hanleys Farm, Queenstown, New Zealand
Project Ref:
Date: 05 November 2026

DKDESIGNS
Danny Kissell | Architectural Designer
021 110 9163 | danny@dkdesigns.co.nz
PO Box 91005 | Wakatipu 9349

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

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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

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

3.24 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.

Specific Design

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:	1100x1100
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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3811M MITEK (GANG-NAIL) PREFABRICATED TIMBER TRUSSES

1 GENERAL

This section relates to the supply and installation of MiTek New Zealand Limited prefabricated timber trusses.

1.1 RELATED WORK

Refer to 3821M MITEK TIMBER FRAMING for general timber framing, bracing, lintels, beams etc.

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:

DPC	Damp proof course

Documents

1.3 DOCUMENTS

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

NZBC B1/VM1	Structural design of buildings
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3640	Chemical preservation of round and sawn timber

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:
MiTek® (GANG-NAIL®) Roof Truss System Residential Manual (March 2024)
MiTek® (GANG-NAIL®) XPOTRUSS Roof Truss System (September 2002)
MiTek® (GANG-NAIL®) Posi-STRUT™ Design Manual (April 2019)
MiTek® Structural Fixings On-Site Guide (2024 Edition)

Manufacturer/supplier contact details

Company:	MiTek New Zealand Limited
Web:	www.miteknz.co.nz
Email:	design.miteknz@mii.com
Telephone:	0800 4 64835

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

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

1.7 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Post fabrication truss layout including fixings and lateral support
- Manufacturing statement issued by the fabricator identifying the trusses have been manufactured in accordance with the design statement and buildable truss layout
- Other information required by the BCA in the Building Consent Approval documents.

Compliance Information

1.8 COMPLIANCE - PRODUCER STATEMENT DESIGN

Accredited MiTek fabricator's Buildable Truss Layouts prefabricated timber truss systems are designed to NZBC B1/VM1 using MiTek® 20/20 and MiTek Sapphire® certified design software.

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2 PRODUCTS

Materials

2.1 MITEK PREFABRICATED TIMBER TRUSSES

Prefabricated and precambered timber trusses from structural grade timber to NZS 3603, with 18% maximum moisture content to NZS 3602, treated to NZS 3640, jointed with proprietary GANG-NAIL components and marked with identification labels by accredited fabricators as required by NZS 3604.

Components

2.2 MITEK GANG-NAIL POSI-STRUT METAL WEB

1.0mm thick Z275 zinc coated steel folded to form a truss web with integrated toothed nail plates.

Accessories

2.3 LUMBERLOK TIMBER CONNECTORS

Timber connection hardware including joist hangers, ceiling ties, cyclone ties, multigrips, cleats, and nailon plates. Available in zinc coated, hot dip galvanized or stainless steel.

2.4 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Moisture content timber:	18% maximum

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install and fix trusses plumb and true to line and face without overstressing or deformation to accredited MiTek fabricator's Buildable Truss Layout and design statement, MiTek New Zealand Limited installation instructions, and NZS 3604 Section 10.2.2 Roof Trusses.

3.6 INSTALLATION FLOOR TRUSSES

Lift and place trusses onto supporting structure to the required spacing. Fix trusses to the supporting structure and provide strongback stability bracing and end support bracing.

3.7 SEPARATION

Lay DPC between all timber frames and concrete, where applicable, in a single layer with 50mm overlaps at joints.

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.miteknz.co.nz.

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

4.1 MITEK POSI-STRUT FLOOR TRUSSES

Location:	See plans
Brand:	MiTek® (GANG-NAIL®) Posi-STRUT™ prefabricated timber floor trusses
Fabricator:	Accredited MiTek fabricator
Timber species:	Radiata pine
Timber grade:	SG8
Timber treatment:	H1.2
Connector material:	Zinc coated



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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 LAMINATED TIMBER

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

2.3 TIMBER TRUSSES

To FTMA CoP. Moisture content 16% at supply.

2.4 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.

2.5 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.

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2.6 EXTERIOR CAVITY WALL BATTENS - PROPRIETARY - NON-STRUCTURAL

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

Components

2.7 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.

2.8 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.

2.9 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.

2.10 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.

2.11 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.

2.12 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).

2.13 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

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3 EXECUTION

3.1 EXECUTION GENERALLY

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

3.2 SEPARATION

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

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

3.3 ATTENDANCE

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

3.4 MOISTURE CONTENT

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

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

3.5 SET-OUT

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

3.6 FRAMING FLOORS

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

3.7 FRAMING WALLS

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

3.8 FRAMING ROOFS

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

3.9 FRAMING CEILINGS

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

3.10 INSTALLING WALL UNDERLAYS

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.11 FIT CAVITY BATTENS

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

3.12 DPC TO LOSP TREATED TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

3.13 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

4 SELECTIONS

4.1 FLOOR FRAMING - RADIATA PINE

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

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4.2 EXTERIOR WALL FRAMING - RADIATA PINE

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

4.3 CAVITY BATTENS

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

4.4 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

4.5 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

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4161MP MASONS UNDERLAYS & DPC

1 GENERAL

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

- 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
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 provisions for building elements
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC 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
CodeMark™ CMNZ70072 ver 4	Masons Barricade FR
CodeMark™ CMNZ70075 ver 4	Masons Flashing Tapes
CodeMark™ CMNZ70098 ver 4	Masons Roof Underlays - VHP® Value, VHP® Strong, VHP® Ultra, VHP® Maxi
CodeMark™ CMNZ70116 ver 2	Masons UNI® and UNI® PLUS Flexible Air Barriers
CodeMark™ CMNZ70117 ver 1	Masons UNI® PRO Flexible Air Barrier
CodeMark™ CMNZ70142 ver 1	Masons Barricade WD Self-Adhesive Weather-Resistive Barrier
CodeMark™ CMNZ70172 ver 0	White-faced Foil Composite Underlay

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

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

Masons Roof Underlays - VHP® Maxi, VHP® Ultra, VHP® Strong, VHP® Value:
- Product brochure
- Installation instructions V4.0 May 2025
- Material data safety sheet

Masons White-Faced Foil:
- Design and Installation Guide V1.2 October 2024
- Material Safety Data Sheet

Masons Barricade™ FR Fire Retardant Building Wrap:
- Product brochure
- Design and Installation Guide V2.0 May 2025
- Material safety data sheet
- Specification Guide V2.0 March 2024

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

Masons UNI® PLUS Flexible Air Barrier:
- Specification Guide V1.0 January 2022
- Design and installation guide V2.2 May 2026
- Material Safety data sheet
- Alternative Solution documents: Product Assurance Supplier Statement (PASS™ No. 19192) and Standards Comparison Report

Masons UNI® PRO Flexible Air Barrier:
- Specification Guide V1.0 January 2022
- Design and installation guide V2.0 May 2025
- Material safety data sheet
- Technical data sheet V1.0 January 2022

Masons Insul-Baffle,
- Design and Installation Guide V1.1 February 2025
- Data sheet V1.1 February 2025

Masons 40 Below™ Flashing Tapes:
- Specification guide V3.0 March 2024
- Installation instructions
- Material safety data sheet

Masons Hydro™ Window Flashing Tape & Corner Guards:

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- Specification guide V2.0 March 2024
- Installation instructions

Masons PEF Backer Rod:

- Specification guide V2.0 March 2024

Masons Penetration Seals:

- Product brochure
- Durability appraisal

Masons WrapStrap™ House Wrap Strapping:

- Product brochure
- Specification guide

Masons Insulation Strap

- Product brochure

Manufacturer/supplier contact details

Company:	Masons NZ Limited
Web:	www.mpb.co.nz
Email:	specify@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.

Compliance Information

1.6 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70072

Masons Barricade FR meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ70072.

1.7 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70075

Masons Flashing Tapes meet the requirements of the NZBC when used within the conditions and limitations of their CodeMark Certificate of Conformity CMNZ70075.

1.8 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70098

Masons Roof Underlays - VHP® Value, VHP® Strong, VHP® Ultra, VHP® Maxi meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ70098.

1.9 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70116

Masons UNI® PLUS Flexible Air Barriers meet the requirements of the NZBC when used within the conditions and limitations of their CodeMark Certificate of Conformity CMNZ70116.

1.10 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70117

Masons UNI® PRO Flexible Air Barrier meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ70117.

1.11 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70142

Masons Barricade WD Self-Adhesive Weather-Resistive Barrier meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ70142.

1.12 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70172

White-faced Foil Composite Underlay meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ70172.

2 PRODUCTS

Masons Wall Underlays

2.1 MASONS UNI® PLUS FLEXIBLE AIR BARRIER

Absorbent, water-resistant, 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® PLUS Flexible Air Barrier” the underside is white.

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Masons Flexible Air Barriers - Fastening Systems

2.2 MASONS UNI® FASTENERS FOR TIMBER FRAME

25mm minimum 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 0.2mm, available in roll width 60mm - 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 0.2mm, 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 Sealing & Underlay Accessories

2.6 MASONS™ PEF BACKING ROD

Cylindrical, flexible, extruded closed cell polyethylene foam rod. Available in 6-20mm diameter rods.

2.7 MASONS PENETRATION SEALS

Flexible, conical moulded EPDM nozzle, on adhesive carrier base of flexible woven synthetic waterproof flashing. Available in 1mm - 75mm or 80mm - 170mm sizes. Trim to suit diameter of pipe penetration

2.8 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, 9.1.6 Wall underlay, to outside face of framing (printed side facing out) in true alignment, with horizontal and vertical joins 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.

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.

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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® 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 40 Below Flashing tapes for UNI® PLUS or Masons 40 Below™ Platinum 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.

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, 9.1.4 Wall underlays to wall openings, 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 Sealing & Underlay Accessories

3.12 MASONS PEF BACKING ROD

Install Masons PEF backing rod to NZBC E2/AS1, 9.1.5 Air seals, 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.

3.13 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.

3.14 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

3.15 COMPLETION MATTERS

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

4 SELECTIONS

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

Masons Wall Underlays

4.1 MASONS UNI® PLUS FLEXIBLE AIR BARRIER

Location:	Wall wrap
Brand/Type:	Masons UNI® PLUS flexible air barrier

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Masons Flexible Air Barriers - Fastening Systems

4.2 MASONS UNI® NAIL FASTENERS - TIMBER FRAME
Frame type: Timber
Brand/Type: Masons UNI® Nail Fasteners

Masons Flashing Tapes & Corner Guards

4.3 MASONS 40 BELOW™ PLATINUM FLASHING TAPE
Thickness: 0.2mm
Facer type: Aluminium foil

4.4 MASONS 40 BELOW™ FLEX FLASHING TAPE
Thickness: 0.2mm
Facer type: Compound flexible, white

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

Masons Sealing & Underlay Accessories

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

4.7 MASONS PENETRATION SEALS
Brand/Type: Masons Penetration Seals

4.8 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:

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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Thermakraft's Product Data Sheets
Thermakraft's Installation Guides
BRANZ Appraisal 329 (2022) - Supercourse 500 Damp-Proof Course and Concealed Flashing - Amendment 29 August 2023
BRANZ Appraisal 651 (2024) - Thermakraft Covertek 407 Roof and Wall Underlay - Amended 13 July 2026
BRANZ Appraisal 695 (2023) - Watergate Plus Wall Underlay - Amended 01 July 2025
BRANZ Appraisal 743(2025) - Thermakraft Covertek 405 Roof and Wall Underlay
BRANZ Appraisal 878 (2025) - Thermakraft Aluband Window Flashing Tape
BRANZ Appraisal 912 (2021) - Thermakraft 220 Synthetic Wall Underlay - Amended 01 July 2025
BRANZ Appraisal 917(2025) - Thermakraft Covertek 403 Roof and Wall Underlay
BRANZ Appraisal 942 (2022) - OneSeal Multi-fit Pipe and Cable Penetration Seals - Amended 28 July 2026
BRANZ Appraisal 943 (2021) - Thermakraft Covertek 401 Roof and Wall Underlay - Amended 01 July 2025

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BRANZ Appraisal 1000 (2023) - Thermakraft Thermabar 397 Light Diffusing Reflective Underlay - Amended 01 July 2025
BRANZ Appraisal 1029 (2023) - Thermakraft Ausnet Hexagonal Wire Mesh
BRANZ Appraisal 1104 (2020) - Thermathene Orange Concrete Underlay - Amendment 06 September 2024
BRANZ Appraisal 1122 (2026) - Thermaflash Flashing Tape
BRANZ Appraisal 1229 (2023) - Thermakraft Covertek 215 Roof Underlay - Amended 19 June 2025
BRANZ Appraisal 1277 (2025) - Thermakraft RainArmor Self Adhesive Roof Underlay and Wall Underlay

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For Kingspan Thermakraft product range.

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

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

Compliance information - 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.

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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.

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.

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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.

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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4230 WALL CLADDING

1 GENERAL

This section relates to the supply and installation of exterior cladding, including:

- associated flashings
- timber fascias
- timber barges
- timber trims
- timber beads
- timber facings

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

Documents

1.2 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 1491	Finger jointed structural timber
AS/NZS 2269.0	Plywood - Structural - Specification
AS/NZS 2908.2	Cellulose-cement products - Flat sheets
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3617	Profiles of weatherboards fascia boards and flooring
NZS 3631	New Zealand timber grading rules
BRANZ BU 601	Sealants for cladding joints

Performance

1.3 PERFORMANCE

Accept responsibility for the weathertight performance of the completed cladding system, including all penetrations.

2 PRODUCTS

2.1 WALL UNDERLAYS

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

2.2 EXTERIOR CAVITY WALL BATTENS

Radiata pine battens, minimum 20mm thickness, width and height to match timber framing studs. Treatment to NZBC B2/AS1 and NZS 3602, table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance.

2.3 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Perforated uPVC, aluminium or stainless steel trays with upstands. Upstand one side 10mm and the other 75mm. Length and width to suit cavity.

2.4 TIMBER WEATHERBOARD

Dressing grade to NZS 3631, to NZS 3617 for profile and treated to NZS 3602, table 2, reference 2.A1, Requirements for wood-based building components to achieve a 15-year durability performance.

2.5 NAILS, SCREWS AND FASTENINGS

Metal, size and pattern, to cladding manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4, Durability.

2.6 FLASHINGS

To NZBC E2/AS1, 4.0 Flashings. 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.

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3 EXECUTION

3.1 MOISTURE CONTENT

Maximum allowable moisture content to NZS 3602 for:
Equilibrium moisture content (EMC)

- Framing: 20% at closing in
- Weatherboards: 14% at time of fixing
- Exterior joinery and trim: 14%

3.2 EXECUTION METHODS AND PRACTICES

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).

3.3 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/rigid air barrier to openings finished and dressed off with flashing tape ready for the installation of window and door frames and other penetrations
- claddings neatly finished off to all sides of openings
- installation of flashings (those required to be installed prior to installation of penetrating elements).

3.4 INSTALL DRAINED CAVITY

20mm Minimum thickness drained cavity to NZBC E2/AS1, 9.0 Wall claddings, where required. Fix vertical cavity battens to wall framing studs. The battens are fixed by the cladding fixings which will penetrate the wall framing studs over the wall underlay. Seal the top of the cavity. Install cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). Do not use horizontal cavity battens. Use cavity spacers where fixing is required between cavity battens.

3.5 PRIME OR SEAL TIMBER WEATHERBOARDS AND TRIM

Prime or seal all front and back faces, edges and end grain before fixing weatherboards and exterior trim, to the finish and quality specified in painting sections.

3.6 FIXINGS TO TIMBER CLADDINGS

3.7 INSTALL TIMBER WEATHERBOARDS

Install level, true to line and face, to NZBC E2/AS1, 9.4 Timber weatherboards. Refer to NZS 3604 for fixings durability requirements for specific provisions.

3.8 INSTALL EXTERIOR TIMBER FINISHINGS

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

3.9 INSTALL FLASHINGS

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

3.10 USE OF SEALANTS

Selection and use of sealants to follow BRANZ BU 601.

3.11 COMPLETE

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

3.12 REPLACE

Replace damaged or marked elements. Remove unused materials from the site.

4 SELECTIONS

4.1 CAVITY BATTENS

Timber species:	Radiata Pine
Timber grade:	Merchantable
Treatment:	H3.1 (non-structural)

4.2 CAVITY CLOSER/VERMIN-PROOFING

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4.3 TIMBER WEATHERBOARD

Location:	See plans
Species and grade:	Radiata Pine
Treatment	H3.1
Priming	Factory Primed

4.4 NAILS, SCREWS AND FASTENINGS

Cladding	**Fixing/fastening (metal/finish)**	**Fixing/fastening (type, gauge and length)**	**Centres (general and edge)**
Weatherboard	Hot dipped galv nails	75 x 3.15	Single on every nog 35mm from the side of the lap

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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 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

1.2 DOCUMENTS

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

BPS	Building Product Specifications
NZBC C/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
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
CodeMark™ CMNZ70050 ver2	Colorsteel® Dridex®

1.3 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

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	For workmanship



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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS - 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.

1.7 NO SUBSTITUTIONS

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

1.8 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

Compliance Information

Performance - Fire

1.9 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.

1.10 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).

1.11 INTERIOR SURFACE FIRE PROPERTIES - GROUP NUMBER

Zincalume®, COLORSTEEL® Maxam™, COLORSTEEL Altimate® and COLORSTEEL® Maxam™ Dridex® have been tested to ISO 5660.1 & ISO 5660.2 and have been assigned the following Group Numbers in accordance with BPS, 8.5.1 Group Numbers:

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

2 PRODUCTS

Materials

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

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

Fixings

2.2 FASTENERS GENERALLY

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

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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:	Ironsand
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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4271 NATURAL STONE VENEER CLADDING

1 GENERAL

This section relates to the installation of natural stone as a mechanically anchored masonry veneer cladding.

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

kPa	Kilopascal
MPa	Megapascal

The following definitions apply specifically to this section:

Masonry	To NZS 4210, any construction in units of stone laid to a bond in, and joined together with, mortar
Pointing	To NZS 4210, finishing of previously raked joints of masonry with mortar
Veneer	To NZS 4210, a single skin of non-loadbearing masonry which is attached to and laterally supported by a structural element
Wall tie	To NZS 4210, a tie, together with its fixings or anchorages, used to transfer face loads from a veneer to a structural wall, or between skins of a cavity wall, while being capable of accommodating differential inplane horizontal and vertical deflections between the attached elements

Documents

1.2 DOCUMENTS

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

AS/NZS 2699.1	Built-in components for masonry construction - Wall ties
AS/NZS 2699.3	Built-in components for masonry construction - Lintels and shelf angles (durability requirements)
NZS 3404.1-2	Steel structures standard
NZS 4210	Masonry construction - Materials and workmanship
AS/NZS 4456	Masonry units, segmental pavers and flags - Methods of test
AS/NZS 4600	Cold-formed steel structures

Requirements

1.3 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.4 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

1.5 NO SUBSTITUTIONS

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

1.6 TEST MASONRY

Test masonry in accordance with NZS 4210 for the following and at frequencies required by the engineer. Keep test records and make available to the contract administrator on request.

- 28 day compressive strength of mortar
- 7 day masonry-to-mortar bond strength

1.7 KEEP RECORDS

Keep the following records and make available to the contract administrator on request:

- Proportions of mortar used, including admixtures
- Supplier of mortar sand

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1.8 INFORMATION FOR INSTALLATION

Contractor to obtain manufacturer / supplier instructions and requirements for the installation of the natural stone product. Keep and maintain on site the relevant latest version of such documents and make available to workers carrying out that part of the work.

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

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

Quality control and assurance

2 PRODUCTS

Materials - cavity

2.1 CAVITY BATTENS

Refer to SELECTIONS.

2.2 BACKING BOARD

Moisture resistant rigid backing board material and associated components such as board fixings, joint sealant and joint tape. Refer to SELECTIONS.

2.3 BACKING BOARD SEALER

Liquid applied waterproofing sealer compatible with the specified backing board, formulated to prevent moisture absorption into backing board. Refer to SELECTIONS.

Materials - veneer

2.4 NATURAL STONE

Quarried stone worked to size, shape and face finish to form veneer cladding and decorative stone work, such as string courses, quoins, sill and cap stones. Salt attack resistance tested to AS/NZS 4456 to comply with NZS 4210. Refer to SELECTIONS.

2.5 MORTAR

To NZS 4210, bedding and jointing mortar composed of Portland cement, sand, admixture or hydrated lime and clean, fresh water free from excess alkali, salt, silt and organic materials. Mortar for pointing and for use with sill and cap stones to include waterproofing agents. Coloured mortar to be coloured by use of mineral oxide pigments or coloured cement. Refer to SELECTIONS.

2.6 WALL TIES

Wall ties and associated fixings of the specified type. Durability classification, marking and structural performance to AS/NZS 2699.1. Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 STORAGE & HANDLING OF AGGREGATES

Store and handle aggregates to prevent segregation and contamination by foreign materials and intermixing of aggregate sizes.

3.3 STORAGE & HANDLING OF CEMENT & MORTAR

Store and handle cement and mortar to protect it against deterioration and contamination. Store accessible for inspection.

3.4 STORAGE & HANDLING OF NATURAL STONE

Store natural stone to protect from weather so that stone is in an air-dry state at installation. In hot dry weather dampen stone as per the manufacturer / supplier instructions. Check stone is of required thickness, size, shape and finish, and without defects. Carry out such additional work to bring stone to the required condition.

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3.5 ROUTINE MATTERS

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

3.6 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work, including (but not limited to):

- Vertical and horizontal alignment of the concrete base
- Installation of damp proofing material to walls and concrete base
- Installation of flashings required to be installed prior to veneer cladding installation (i.e. joinery flashings)
- Installation of windows and doors

Installation/application - generally

3.7 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements. Tolerances to NZS 4210, Maximum tolerances.

3.8 COLD & HOT WEATHER CONSTRUCTION

In air temperatures below 5°C and above 25°C or in drying winds, install natural stone veneer cladding to the precaution requirements of NZS 4210 for cold and hot weather construction.

3.9 BLENDING OF NATURAL STONE

Blend natural stone to achieve a consistent colour and size spread throughout the work.

3.10 CLEANING OUT

To NZS 4210, Cleaning Out. Clean out drained cavities and remove mortar from ties, mortar protruding into cells and cavities at joints, mortar droppings and other loose material.

3.11 FACE WORK

Keep natural stone face work clean during erection and until completion of the contract works. Remove occurring stains as per the natural stone manufacturer / supplier instructions and requirements for cleaning.

3.12 PROTECTION OF UNFINISHED WORK

Protect freshly laid stone work and the top course of uncompleted walls during interruption through rain and at completion of each day's work.

3.13 PROTECTION OF CAVITY

Install temporary protection where required to protect the cavity from wet mortar entering. Only remove when mortar has cured.

Installation - cavity

3.14 INSTALLATION CAVITY BATTENS

Install cavity battens vertically, true to line and face, at required spacing. Rigidly fix in place.

3.15 INSTALLATION BACKING BOARDS

Install backing boards to cavity battens, and where specified seal and tape joints, to the manufacturer's requirements and instructions.

3.16 APPLICATION BACKING BOARD SEALER

Mask surfaces to prevent contamination, apply backing board sealer to backing board with tools and to technique and curing times instructed by the sealer manufacturer.

Installation - veneer

3.17 PREPARATION MORTAR

Mix materials for mortar to composition and proportion required by, and to the instructions of, the manufacturer and NZS 4210. Measure materials in calibrated devices, thoroughly mix to an even consistency in a mechanical batch mixer or with a hand-mixer for quantities of mortar not exceeding 0.03m³.

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3.18 LAYING OF VENEER STONES

Ensure stone is clean, sound and free of defects. Start at corners / wall ends and work horizontally towards the centre, lay stone to the required bond, true to line, plumb and level in 10mm thick (±3 mm tolerance) soft plastic mortar bed, up to 20mm thickness is acceptable for bottom course where required to accommodate variations in the foundation. Lay stone from sedimentary geological formation with its natural bed horizontal. Tool mortar joints to the specified type.

3.19 INSTALLATION WALL TIES

Install wall ties as the work proceeds to the specified embedment, spacing and fixing and to the instructions of the manufacturer. Install at a 5° downward angle away from the exterior wall and contained within the veneer's mortar bed over its full contact length. When fixing through membranes pre-fill fixing holes with silicone sealant.

3.20 INSTALLATION WEEP HOLES

Install 75mm high x maximum 10mm wide weep holes at maximum 800mm centres to mortar joints at the bottom of the natural stone veneer cladding and at any other location shown on construction drawings and stated in the specific design documentation. Where 75mm height cannot be achieved reduce weep hole spacing to provide at least 1000mm² opening area per lineal meter.

3.21 INSTALLATION VENTILATION

Provide ventilation to the top of the veneer to the requirements of NZS 4210 and in accordance with construction drawings and specific design documents.

Completion & Commissioning

3.22 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials - cavity

4.1 CAVITY BATTENS

Location:	See plans
Type:	20x40mm H3.1

4.2 BACKING BOARD

Location:	See plans
Brand:	Eterpan
Type:	MB
Size:	9mm

Materials - veneer

4.3 NATURAL STONE

Location:	See plans
Type:	Natural
Thickness:	40mm

4.4 MORTAR

Brand:	Mapei

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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 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

1.2 DOCUMENTS

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

BPS	Building Product Specifications
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 3566	Self-drilling screws for the building and construction industries
ISO 5660.1	Reaction to fire tests - heat release, smoke production and mass loss rate. Part 1 Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction to fire tests - heat release, smoke production and mass loss rate. Part 2 Smoke production rate (dynamic measurement)
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice
CodeMark™ CMNZ70050 ver2	Colorsteel® Dridex®

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

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

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	For workmanship

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

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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 GENERALLY
Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 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.

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

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

Performance - Fire

1.9 INTERIOR SURFACE FIRE PROPERTIES - GROUP NUMBER
Zincalume®, COLORSTEEL® Maxam™, COLORSTEEL Altimate® and COLORSTEEL® Maxam™ Dridex® have been tested to ISO 5660.1 & ISO 5660.2 and have been assigned the following Group Numbers in accordance with BPS, 8.5.1 Group Numbers:

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

2 PRODUCTS

Materials

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

Fixings

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

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

2.4 RIVETS
Sealed aluminium, minimum diameter 4.0mm.

Components

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

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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:	Ironsand
Profile:	5-RIB

Accessories

4.2 FLASHINGS - GENERALLY

Profile:	5-RIB
BMT/material:	0.55BMT
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 provisions for timber-framed buildings up to 10 m in height
NZBC F4/AS1	Safety from falling
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
NZBC H1/VM1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/VM2	Energy efficiency for buildings greater than 300m²
AS/NZS 1170.2:2011	Structural design actions - Wind actions
NZS 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

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BRANZ BU 636	Protecting Glass From Damage

Window & Glass Association NZ (WGANZ) documents:

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

US Federal Specification:

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

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 THERMAL PERFORMANCE - WINDOWS & GLAZED DOORS, HOUSING ONLY

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

1.12 THERMAL PERFORMANCE - WINDOWS & DOORS

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

- Thermal transmittance of window & doors in accordance with ISO 10077-1.
- Thermal transmittance of framing in accordance with ISO 10077-2.

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- Thermal transmittance of glazing using BS EN 673.

Refer to SELECTIONS for construction R-values.

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

Components - for cavity systems

2.9 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.



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Components

2.11 GLAZING GASKETS

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

2.12 HARDWARE AND FURNITURE

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

2.13 SAFETY STAYS

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

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, paragraph 9.1.9.9.

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.

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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.

3.9 INSTALLATION FIXING

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

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

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

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 8.5.6.1D: Junctions with walls for membrane.

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.

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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, 9.1.5 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.

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.

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4 SELECTIONS

Performance

4.1 THERMAL PERFORMANCE - VERTICAL WINDOWS & DOORS

Window /Door Number:	Construction R-value:
All windows and doors	Minimum R3.9 as per H1 report

Performance - Wind (design by contractor)

4.2 WIND - NON SPECIFIC DESIGN

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

Window and door system

4.3 ALUMINIUM WINDOWS

Manufacturer: To be confirmed by owner/builder
Type / location: See window & door schedule

4.4 ALUMINIUM DOORS

Manufacturer: To be confirmed by owner/builder
Type / location: See window & d

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

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

Manufacturer/supplier contact details

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

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER
Provide a material manufacturer/supplier warranty:

50 years	For Pink® Batts® insulation products

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

Refer to the general section 1237 WARRANTIES for additional requirements.

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

1 year	For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

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

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

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

Provide insulation clearances to NZS 4246 and for recessed luminaires AS/NZS 3000, 4.5.2.3. Where allowed by these standards provide insulation clearances to product manufacturer's stated clearances. Secure insulation in place so clearances are maintained and use guards/barriers , if required, where insulation is not secured.

3.7 LAY WIRE NETTING - UNDER JOISTS / PURLINS

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

3.8 LAY WIRE NETTING - OVER PURLINS

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

3.9 LAY PLASTIC STRAPPING TAPE

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

3.10 PREPARATION INSULATION

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

3.11 CUTTING INSULATION TO SIZE

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

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.



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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:	Walls
Brand/Type:	Pink® Batts®
R-value:	2.8
Nominal stabilised thickness:	90mm

4.2 PINK® BATTS® CEILING INSULATION

Location:	Ceilings
Brand/Type:	Pink® Batts®
R-value:	7.0
Nominal stabilised thickness:	300mm



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5113G GIB® PLASTERBOARD LININGS

1 GENERAL

This section relates to the supply and installation of Winstone Wallboards Ltd GIB® plasterboard linings to walls and ceilings.

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
FRR	Fire resistance rating
IIC	Impact insulation class
Rw	Weighted sound reduction index
STC	Sound transmission class

Documents

1.2 DOCUMENTS

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

BPS	Building Product Specifications
AS/NZS 2588	Gypsum plasterboard
AS 1530.4	Methods for fire tests on building materials, components and structures - Fire-resistance tests for elements of construction
ISO 5660.1	Reaction-to-fire tests – heat release, smoke production and mass lose rate – Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Smoke production rate (dynamic measurement)
BRANZ Technical Paper P21	A wall bracing test and evaluation procedure (2010)

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

GIB® Noise Control Systems Specification and Installation Manual (September 2017)
GIB® Fire Rated Systems Specification and Installation Manual (September 2024)
GIB® Wet Area Systems Specification and Installation Manual (February 2021)
GIB Weatherline® Rigid Air Barrier Systems Design and Construction Manual (March 2021)
GIB Curveline® Specification and Installation Manual for Curved Walls and Ceilings (November 2025)
GIB Ezybrace® Systems Specification and Installation Manual (August 2016)
GIB Ezybrace® Bracing Design Software
GIB Ezybrace® for Light Steel Frame Systems (March 2017)
GIB® Tough Systems Design and Installation Guide (May 2025)
GIBFix® Framing System (August 2016)
GIB® Rondo® Metal Batten Systems Specification and Installation Manual (September 2024)
GIB® Site Guide
GIB® Product BPIS
GIB® Plasterboard Lining Systems Care and Maintenance
GIB® Product and System Warranty
BRANZ Appraisal 289 (2024) GIB® Fire Rated Systems
BRANZ Appraisal 394 (2025) GIB® Noise Control Systems
BRANZ Appraisal 427 (2021) GIB® Wet Area Systems
BRANZ Appraisal 928 (2021) GIB EzyBrace® Systems
BRANZ Appraisal 1048 (2025) GIB Weatherline® Rigid Air Barrier Systems

Manufacturer/supplier contact details

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

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Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years For GIB® products and systems

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years For workmanship

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 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 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents:
GIB® Plasterboard Lining Systems Care and Maintenance

Provide this information prior to practical completion.

Compliance information

1.9 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.

1.10 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

1.11 BRACING

GIB EzyBrace® Systems have been tested and analysed using the BRANZ Technical Paper P21 test method to BPS, 3.5.3 Wall bracing elements.

2 PRODUCTS

Materials

2.1 GIB® STANDARD PLASTERBOARD

Paper-bound gypsum plaster core sheet lining, manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.2 GIB AQUALINE® PLASTERBOARD

Paper-bound, modified water-resistant gypsum plaster core sheet lining, manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.3 GIB TOUGHLINE® AQUA PLASTERBOARD

Paper-bound, high-density gypsum plaster core sheet lining with modified water-resistant formulation and embedded fibreglass mesh, manufactured to AS/NZS 2588. Refer to SELECTIONS.

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2.4 GIB WEATHERLINE® PLASTERBOARD
Exterior-grade glass-fibre fleece-wrapped modified gypsum core sheet lining with water and mould resistant properties, manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.5 GIB BRACELINE®/GIB NOISELINE® PLASTERBOARD
Paper-bound, high-density gypsum plaster core sheet lining manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.6 STRUCTURAL PLYWOOD
Minimum 7mm thick, square edge structural plywood, Type A phenolic bonded timber veneers to AS/NZS 2269.0. Refer to SELECTIONS.

Components

2.7 GIB® GRABBER® SCREWS
Proprietary drywall screws. Refer to SELECTIONS.

2.8 GIBFIX® ADHESIVE
Proprietary wallboard adhesive. Available in water-based and solvent-based formulations. Refer to SELECTIONS.

2.9 GIB® TRIMS AND EDGES
Proprietary corner trims and edge beads available as paper-faced galvanized steel, perforated galvanized steel, and composite moulds. Refer to SELECTIONS.

2.10 GIB® JOINTING COMPOUND
Proprietary jointing compounds. Available in a range of plaster-based and polymer-based compounds. Refer to SELECTIONS.

2.11 GIB® JOINT TAPE
Proprietary joint tape. Available in paper and fibreglass. Refer to SELECTIONS.

2.12 GIB HANDIBRAC® HOLD DOWN BRACKET
Galvanized steel bracket supplied with 5 Tek screws and 2 BOWMAC blue head screw bolts.

Accessories

2.13 GIB GAP FILLER
Proprietary flexible water-based acrylic gap filler.

3 EXECUTION

Conditions

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

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

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

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

Timber framing: 18% maximum moisture content

Installation/application

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

3.5 INSTALLATION GENERALLY
Install plasterboard linings in accordance with the relevant GIB® system installation instructions and the GIB® Site Guide.

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3.6 INSTALL RONDO FLEXIBLE TRACK

Coordinate flexible track installation with framing construction. Fit track to the top and bottom of curved walls and fix studs through the pre-punched holes.

GIB® Plasterboard

3.7 INSTALL PLASTERBOARD LININGS - WALLS

Horizontally fixed sheets: Install sheets with vertical sheet end joints fully supported. Fix to framing at 300mm centres around the wall perimeter. Fix to intermediate framing at 300mm centres with fasteners or daubs of adhesive. Fix a single fastener each side of horizontal sheet edge joints where crossing a stud.

Vertically fixed sheets: Install full-height sheets with the sheet perimeter fully supported. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres with fasteners or daubs of adhesive.

Place fasteners 12mm from paper-bound edges, 18mm from cut edges, and 50mm in each direction from corners. Touch fit adjacent sheets. Leave a 5mm-10mm gap at floor level.

3.8 INSTALL PLASTERBOARD LININGS - CEILINGS

Install sheets perpendicular to ceiling framing. Form all sheet joints off frame with back-blocking, staggering sheet end joints a minimum of 600mm. Apply daubs of adhesive to the battens at 200mm centres between fastener locations. Fix around the ceiling perimeter at 600mm centres. Fix sheets to each batten along sheet edges and sheet centres. Place fasteners 12mm from tapered sheet edges, 18mm from cut edges. Touch fit adjacent sheets.

GIB® Wet Area Systems

3.9 INSTALL PLASTERBOARD LININGS - NON-TILED TIMBER FRAMED WET AREA WALLS

Horizontally fixed sheets: Install sheets with vertical sheet end joints fully supported. Fix to framing at 300mm centres around the wall perimeter. Fix to intermediate framing at 300mm centres daubs of adhesive. Fix a single fastener each side of horizontal sheet edge joints where crossing a stud.

Vertically fixed sheets: Install full-height sheets with the sheet perimeter fully supported. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres daubs of adhesive.

Place fasteners 12mm from sheet edges, 18mm from sheet ends, and 50mm in each direction from corners. Touch fit adjacent sheets. Leave a 5mm-10mm gap at floor level.

3.10 INSTALL PLASTERBOARD LININGS - WET AREA CEILINGS

Install sheets perpendicular to ceiling framing. Form sheet joints off frame with back-blocking, staggering sheet end joints a minimum of 600mm. Apply daubs of adhesive to the battens at 200mm centres between fastener locations. Fix around the ceiling perimeter at 600mm centres. Fix sheets to each batten along sheet edges and sheet centres. Place fasteners 12mm from sheet edges. Touch fit adjacent sheets.

GIB EzyBrace® Systems

3.11 INSTALL HOLD DOWN BRACKETS

Fix GIB® HandiBrac® hold-down brackets at each end of bracing element with supplied fasteners.

3.12 INSTALL PLASTERBOARD LININGS - BRACED WALLS

Horizontally fixed sheets: Install sheets with vertical sheet end joints fully supported. Fix the perimeter of the bracing element to the framing to the GIB EzyBrace® fastener pattern. Fix to intermediate framing at 300mm centres with daubs of adhesive. Fix a single fastener each side of horizontal sheet edge joints where crossing a stud.

Vertically fixed sheets: Install full-height sheets with the sheet perimeter fully supported. Fix the perimeter of the bracing element to the framing to the GIB EzyBrace® fastener pattern. Fix vertical sheet edge joints to framing at 300mm centres. Fix to intermediate framing at 300mm centres with daubs of adhesive.

Place fasteners 12mm from paper-bound edges and 18mm from cut edges. Touch fit adjacent sheets.

3.13 INSTALL STRUCTURAL PLYWOOD - BRACED WALLS

Install full-height plywood sheets vertically with sheet perimeter fully supported. Fix to framing at 150mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres.



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3.14 INSTALL PLASTERBOARD LININGS - CEILING DIAPHRAGM

Install sheets perpendicular to ceiling framing. Form sheet joints off frame with back-blocking, staggering sheet end joints a minimum of 600mm. Fix the diaphragm perimeter to the framing to the GIB EzyBrace® fastener pattern. Apply daubs of adhesive to the battens at 200mm centres between fastener locations. Fix around the ceiling perimeter at 600mm centres. Fix sheets to each batten along sheet edges and sheet centres. Place fasteners 12mm from sheet edges and 18mm from sheet ends. Touch fit adjacent sheets.

GIB® Jointing and Finishing Systems

3.15 FIX GIB® SLIM ANGLE METAL TRIM

Screw fix metal trims over plasterboard at 300mm centres.

3.16 JOINTING AND STOPPING

Apply first coat of bedding compound 150mm wide to joints, 75mm along corner faces, and 75mm each side of control joints. Embed joint tape, and paper-faced trims or control joints where required, in the compound. Cover with a thin layer of bedding compound over tape and allow to dry. Apply a second coat of bedding compound, extending a minimum of 25mm beyond the first coat. Feather the edges and allow to dry. Apply finishing compound, extending a minimum of 25mm beyond the second coat. Feather the edges and allow to dry. Lightly sand with fine sandpaper. Stop all fastener heads. Finish smooth and free of tool marks and ridges.

Completion & Commissioning

3.17 COMPLETION MATTERS

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

4 SELECTIONS

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

GIB® Plasterboard

4.1 GIB® PLASTERBOARD - TIMBER FRAMED WALLS

Location: See plans
Lining: 10mm GIB Standard plasterboard

4.2 GIB® PLASTERBOARD - CEILINGS

Location: See plans
Lining: 13mm GIB Standard plasterboard

GIB® Wet Area Systems

4.3 GIB® WET AREA SYSTEMS - NON-TILED TIMBER FRAMED WALLS

Location: See plans
Lining: GIB Aqualine 10mm

4.4 GIB® WET AREA SYSTEMS - CEILINGS

Location: See plans
Lining: Gib Aqualine 13mm

GIB EzyBrace® Systems

4.5 GIB EZYBRACE® SYSTEM - TIMBER FRAMED WALLS

Location: See Bracing Plan

4.6 GIB EZYBRACE® SYSTEM - CEILING DIAPHRAGM

Location: See plans

4.7 GIB® RONDO® CEILING BATTEN SYSTEM - DIRECT FIX Bbattens

Type: GIB® Rondo® Ceiling battens
Batten type: GR310-DF

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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.

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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5431KF KOPINE PARTICLEBOARD FLOORS

1 GENERAL

This section relates to the supply and fixing of Kopine® high density particleboard as flooring. It includes:

- Kopine® Ultralock 12
- Kopine® Tongue & Groove 12
- Kopine® is a registered trademark of the New Zealand Panels Group Limited

Documents

1.1 DOCUMENTS

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

BPS	Building Product Specifications
AS/NZS 1860.1	Particleboard flooring - Specifications
NZS 3604	Timber-framed buildings
CodeMark™ CMNZ70064 ver2	Kopine Flooring Systems Ultralock™ 12 and Tongue & Groove 12

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

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

Kopine® - Product Warranty
Product Warranty
Kopine® Particleboard Safety Data Sheet
Technical Data Sheet
Installation Guide & Technical Specification (June 2025)
Eco® Choice Aotearoa Certificate

Manufacturer/supplier contact details

Company:	Kopine® - a business unit of New Zealand Panels Group
Web:	www.kopine.co.nz
Email:	sales@kopine.co.nz
Telephone:	0800 866 678

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

50 years	Kopine® Ultralock and Tongue & Groove flooring

- 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.

Compliance information

1.4 COMPLIANCE - CODEMARK CERTIFICATE

Kopine Ultralock™ 12 and Tongue & Groove 12 flooring meet the requirements of the NZBC when used within the conditions and limitations of their CodeMark Certificate of Conformity CMNZ70064

1.5 INFORMATION REQUIRED FOR CODE COMPLIANCE

Where the floor forms part of a structural bracing system, install in accordance with NZS 3604, 7.3 Structural Floor Diaphragms and provide the following compliance documentation:

- Installer's approval certificate from the manufacturer / importer / distributor
- Manufacturer / importer / distributor product warranty
- Installer / applicator workmanship warranty
- Producer Statement - (PS3) Construction from the applicator / installer
- Producer Statement - (PS4) Construction Review from a suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

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2 PRODUCTS

2.1 KOPINE® TONGUE & GROOVE 12 HIGH DENSITY PARTICLEBOARD FLOORING

Kopine® Tongue & Groove 12 High Density Particleboard Flooring is manufactured from sustainably grown NZ plantation pine to AS/NZS 1860.1, black plastic beaded tongues fit into grooved edges of adjacent panels forming a continuous flooring membrane. In most cases nogs/dwangs are not required. 20mm thick panels are 2400mm x 1200mm or 3600mm x 1200mm. Flooring meets the requirements of the Eco® Choice Aotearoa specification EC-32-17 'Furniture, Fittings & Flooring'.

2.2 NAILS

Hand-driven nails:

- 60 x 2.8mm hot-dipped galvanized jolt head nails or 60 x 3.15mm hot-dipped galvanized csk annular grooved flooring nails.

Power-driven nails:

- 65 x 2.87mm hot-dipped galvanized annular grooved flooring nails.

Jolt head nails must be used where particle board is to be exposed (clear finished).

2.3 ADHESIVE

Soudal Gorilla Grip 1 Hour - single-component polyurethane-based construction adhesive. Always supplied with Kopine® flooring and must be used to meet CodeMark requirements.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE AND HANDLING

Take delivery of packets of particle board, all from the same batch for clear finish floors and store flat stacked on site and protect from damage. Protect finished surfaces, edges and corners from damage. Move/handle particle board in accordance with Kopine® requirements. Reject and replace goods that are damaged or will not provide the required finish.

3.2 WORK GENERALLY

To be carried out to CodeMark CM70064 rev 1 and the relevant Kopine® Installation Guide & Technical Specification.

3.3 LAYING PATTERN

Ensure subfloor framing suits the required laying pattern.

3.4 SUBSTRATE

Do not commence work until the substrate is plumb and level, in true alignment and to Kopine® requirements.

3.5 SUPPORT EDGES AND JOINTS

Fully support square edges of sheet ends (where two sheets are butt-jointed to one another, or the first/last laid sheet), over a joist or nog.

3.6 EXPOSURE TO WEATHER

Kopine® flooring must not be exposed to weather for more than 12 weeks.

Application

3.7 ADHESIVE FASTENING

Apply Soudal Gorilla Grip 1 Hour adhesive (supplied by Kopine®) to all square edge butt joints and grooved edge butt joints, in accordance with the adhesive manufacturer's requirements. Secure Kopine® Ultralock 12 and Kopine® Tongue & Groove 12 flooring to joists using adhesive in conjunction with mechanical fixings.

3.8 NAIL FIXING

Nail edges at 150mm centres along short side of the sheets and around the perimeter of the entire floor, and at 200mm centres along intermediate joists, with all nails slightly skewed except for corner vertical nails. Fixings must be a minimum of 10mm from the Ultralock 12 panel edge. With tongue and groove flooring, nails must be 15mm from the edge to avoid tongue damage.

3.9 EXPANSION JOINTS - LARGER FLOORS

Lay particleboard flooring to allow for a 20mm expansion gap at maximum 10m centres for large floor areas to Kopine® requirements. Locate under internal walls where possible.

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Installation

3.10 LAYING FLOORING - TONGUE AND GROOVE 12 HIGH DENSITY

Install particleboard flooring to Kopine® requirements. Programme work for minimal exposure to weather.

- Lay sheets perpendicular to joist spans, in a staggered pattern from the centre of large areas, with continuous edge support at building perimeter. Sheets to span at least 3 joists. Lay sheet with the printed side down.
- Leave 10mm expansion clearance where partitions or walls interrupt and an 8mm minimum clearance between panel edges and fixed objects including columns and bottom plates. Fix sheets using construction adhesive in conjunction with mechanical fixing.
- Apply adhesive in a continuous 5mm bead to all floor joists and nogs, and a 5mm bead to the top of the tongue prior to insertion into the groove.
- Fix sheets with nails or screws to Kopine® requirements.
- Finish all fixings flush with surface at time of fixing. Tighten fixings; punch nails and tighten screws just prior to sanding. Close butt edges of sheets. Do not cramp sheets.

Do not allow water to pond on the floor surface. Clean surface of flooring daily to remove sawdust and shavings, when exposed to the weather.

3.11 FINISHING

Refer to Kopine® requirements regarding timing of nail punching and general sanding procedures. Lightly sand for floor coverings and 3-cut sand for clear finish. Hand sand into corners.

Completion

3.12 ROUTINE CLEANING

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

3.13 DEFECTIVE OR DAMAGED WORK

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

4 SELECTIONS

For further details on selections go to www.kopine.co.nz. Substitutions are not permitted to the following Kopine® materials and/or associated components, unless stated otherwise.

4.1 PARTICLEBOARD FLOORING - KOPINE® TONGUE & GROOVE 12

Manufacturer/supplier:	New Zealand Panels Group Ltd.
Brand/grade:	Kopine® Tongue & Groove 12
Thickness:	20mm
Edge detail:	Polypropylene tongue and groove

Components

4.2 ADHESIVE, MULTIPURPOSE

Brand/type:	Soudal Gorilla Grip 1 Hour, polyurethane construction adhesive (supplied with Kopine® flooring)

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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)

Warranties

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.

1.9 QUALITY CONTROL SYSTEM - LEAD FREE

If requested, by the contract administrator or consenting authority, provide test reports from IANZ or equivalent accredited testing facility confirming products that contain copper alloy and are used in contact with potable water for human consumption are lead free.

Performance

1.10 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.

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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.

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.

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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	Structural provisions for buildings
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 - NZBC G13/AS2

To NZBC G13/AS2: 3.3 Gully traps, complete with grating.

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 - NZBC G13/AS2

Bedding and backfilling material to NZBC G13/AS2, 2.0 Materials**,** for methods shown in NZBC G13/AS2, figure 7, Bedding and backfilling.

Surface water

2.9 TRENCH BACKFILLING MATERIAL, SURFACE WATER - NZBC E1/AS1

Bedding and backfilling material to NZBC E1/AS1, 3.9 Bedding and backfilling, figure 13.



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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 - NZBC G13/AS2

Carry out foul water drainage work to NZBC G13/AS2 and NZBC G1/AS1 and complete all tests to NZBC G13/AS1, 7.1 Test Methods.
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 - E1/AS1

Carry out stormwater drainage work to NZBC E1/AS1, and complete all tests to NZBC E1/VM1, 8.0 Drain Leakage Tests.
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 - NZBC G13/AS2

Set in a minimum 75mm thick concrete with top surround 25mm above paving and 75mm above other surfaces, to NZBC G13/AS2, 3.3 Gully traps.

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 - NZBC G13/AS2

Construct as detailed on a poured concrete footing to NZBC G13/AS2, 5.7 Access points. 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

3.14 CONCRETE ENCASEMENT

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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 - NZBC E1/AS1

Granular bedding and selected fill shall be placed in layers no greater than 100 mm loose thickness and compacted. Base bedding (beneath the pipe) shall be placed and compacted before pipes are laid. Up to 300mm above the pipe, compaction shall be by tamping by hand tool over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing or distorting the drain. Run marker tape along line of the pipe on top of the bedding.

More than 300 mm above the pipe, compaction shall be by at least four passes of a mechanical tamping foot compactor (whacker type) with a minimum weight of 75 kg. For plastic based pipes, ensure care taken to avoid impact loading of the pipe.

3.17 FOUL WATER TRENCH BACKFILLING - NZBC G13/AS2

Carry out foul water trench backfilling to/NZBC G13/AS2, 5.3 to 5.5 and fig 7.

PVC-U pipe to AS/NZS 2032 and polyethylene pipes to AS/NZS 2033.

3.18 SURFACE WATER TRENCH BACKFILLING - NZBC E1/AS1

Carry out surface water trench backfilling to NZBC E1, 3.9.6 and fig. 13.

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

4.2 STRIP DRAIN

Location: See plans

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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
COC	Certificate of Compliance
ELV	extra low voltage
IP	international (ingress) protection classification
MCB	Miniature Circuit Breakers
NUO	Network Utility Operator
PCB	printed circuit board
PIR	passive infrared
RCCB	Residual Current-operated Circuit Breaker
RCD	Residual Current Device
SIA	security integration architecture
TCF	Telecommunications Carriers' Forum

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F6/AS1	Visibility in escape routes
NZBC F8/AS1	Signs
NZBC G4/AS1	Ventilation of buildings
NZBC G9/AS1	Electricity
AS/NZS 1125	Conductors in insulated electric cables and flexible cord
AS/NZS 2201.1	Intruder alarm systems - Client premises - Design, installation, commissioning and maintenance
AS 2293.1:2005	Emergency escape lighting and exit signs for buildings - System design, installation and operation
AS 2293.3:2005	Emergency escape lighting and exit signs for buildings - Emergency escape luminaires and exit signs
AS/NZS 2648.1	Underground marking tape - Non-detectable tape
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3008.1.2	Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions
AS/NZS 3100	Approval and test specification - general requirements for electrical equipment
AS/NZS 3111	Approval and test specification - Miniature overcurrent circuit-breakers
AS/NZS 3112:2017	Approval and test specification - Plugs and socket-outlets
NZS 3604	Timber framed buildings

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NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
AS/NZS 5000.2	Electric cables - Polymeric insulated - For working voltages up to and including 450/750 V
AS/NZS 60898	Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance.
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)
IEC 61008.1	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - Part 1: General rules
IEC 61009.1	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules
IEC 61643	Low-voltage surge protective devices
IEC 62423	Type F and type B residual current operated circuit-breakers with and without integral overcurrent protection for household and similar uses
IEC 62606	General requirements for arc fault detection devices

Electricity (Safety) Regulations 2010
NZ Telecommunications Forum (TCF) Premises Wiring Guidelines
Private Security Personnel Investigations Act 2010

1.3 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.

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Requirements

1.5 COMPLY

Comply with the Electricity (Safety) Regulations (2010), AS/NZS 3000, AS/NZS 3008.1.2 and TCF Premises Wiring Guideline 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 WORKERS – LICENSED UNDER STATUTE

Electrical workers holding a current Practising Licence (with an appropriate Registration class) to carry out prescribed electrical work. An Electrical Worker who holds a Trainee Limited Certificate or a Limited Certificate to be supervised by a licensed electrical worker with an appropriate Registration class.

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.7 PDL SELECTIONS - FITTINGS AND HARDWARE

Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.

1.8 NO SUBSTITUTIONS

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

Requirements- Compliance

1.9 ELECTRICAL CERTIFICATE OF COMPLIANCE

At the completion of electrical work provide 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 Electricity (Safety) Regulations 2010, Regulation 70 High-risk prescribed electrical work to be inspected.

1.10 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010, Reg 74A, to the Contract Administrator and when required the BCA. To be provided no later than 20 working days after connection and prior to Practical Completion.

1.11 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Other information required by the BCA in the Building Consent Approval documents.

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2 PRODUCTS

2.1 MAINS SUPPLY

Tough plastic sheathed neutral screened cable to AS/NZS 5000.2 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

2.2 CABLES

Tough plastic sheathed copper conductors to AS/NZS 5000.2, stranded above 1.0mm², and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the connected load, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.0mm² on 10 amp MCBs
Lighting circuits:	Commercial: 1.5mm² on 16 amp MCBs
Power circuits:	2.5mm² on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction 2.5mm² on 16 amp MCBs for domestic insulated construction, or filled cavity 2.5mm² on 20 amp MCBs for unenclosed or unfilled cavity construction 2.5mm² on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Range circuits:	Single phase: 6mm² high temperature cable on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions that may be above 35°C (roof spaces above insulation etc).

2.3 METER BOX

Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.

2.4 DISTRIBUTION BOARD

Flush or surface mount boards manufactured to AS/NZS 61439.3, and installed in accordance with AS/NZS 3000, 2.10 Switchboards. Complete with neutral and earth busbars, and insulated comb phase bar. Distribution boards to have 20% spare capacity for future additions and alterations.

2.5 CIRCUIT PROTECTION

General requirements including main switch 63A or 100A to AS/NZS 3000, 2.3.3 Main Switches and additional isolating switches to AS/NZS 3000, 2.3.4 Additional isolating switches.

Residual current protection maximum sensitivity of 30mA, to AS/NZS 3000, 2.6 Additional Protection by Residual Current Devices, as modified by Electricity (Safety) Regulations 2010. RCD and RCCBs' to meet Type A to IEC 61009.1 / IEC 61008.1 or Type F or Type B RCD to IEC 62423

Miniature Circuit Breakers (MCB) to AS/NZS 60898 series or AS/NZS 3111. Breaking capacity to be determined for each installation. Generally, 4.5kA is used for residential applications.

2.6 SURGE PROTECTION

Provide surge protection device(s) to AS/NZS 3000, Appendix F Surge Protection Devices. Protection for the homes appliances with medium surge protection devices fitted to the switchboard. For variable electronic equipment fit fine surge protection to switched socket outlets.

2.7 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.

2.8 SWITCH UNITS - PDL ICONIC SERIES / ICONIC STYL / ICONIC ESSENCE

Single pole switches to be 10 Amp minimum rated, double pole or intermediate to be 10 Amp minimum rated. All switches to be 230 Volt AC flush-plate units. Refer to drawings/schedules for number of switches per unit, dimmer units, LED (indicator or toggle) units, locator units and 2 way units.

2.9 HOT WATER SYSTEM SWITCH

To AS/NZS 3000, 4.8.2 Water heaters, one way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

2.10 SWITCHED SOCKET UNITS

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To AS/NZS 3000, 4.4 Socket-Outlets, 10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters to AS/NZS 3112, clause 3.12 as modified by Electricity (Safety) Regulations, single or multi gang as detailed.
For mounting height and orientation, refer to SELECTIONS.

2.11 DEGREES OF PROTECTION

For electrical equipment installed in classified zones (baths, showers, and other fixed water containers), provide a degree of protection to AS/NZS 3000, clause 6.2.4.1.

Zone 0	IPX7
Zone 1 and 2	IPX4
Zone 3	no specific degree of protection

Refer to AS/NZS 3000, Table 6.1 for requirement for selection and installation of electrical equipment.

For other damp situations such pools, water features, saunas, refrigeration rooms and in areas used for sanitization or general hose down operations, refer to AS/NZS 3000, section 6 for required degree of protection.

2.12 LIGHT FITTINGS - GENERAL

To AS/NZS 3000, 4.5 Lighting Equipment and Accessories and if required, complete with lamps and, if required, transformer and control gear for dimming. Refer to SELECTIONS.

2.13 SUSPENDED FITTING CHORD

Suspended fittings to have sheathed round flexible cord to AS/NZS 3008.1.2. Refer to SELECTIONS.

2.14 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.

2.15 RECESSED LIGHT FITTINGS - RESIDENTIAL

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

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

Refer to SELECTIONS.

2.16 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

Refer to SELECTIONS.

2.17 EXTRACT FANS

Ceiling or Wall mounted extract/exhaust fans for ventilation to NZBC G4/AS1, and compliant with Electrical (Safety) Regulations 2010, Schedule 4, 1 Household & similar appliances. Refer to SELECTIONS

2.18 HEATED TOWEL RAILS

Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with Electrical (Safety) Regulations, Schedule 4, 1 Household & similar appliances. Refer to SELECTIONS.

Signage

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

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Install electrical wiring and systems in accordance with Electricity (Safety) Regulations 2010, AS/NZS 3000 and other cited standards.

3.6 MAIN SUPPLY

Lay underground mains to the network utility operator and AS/NZS 3000, 3.11 Underground Wiring Systems requirements. Excavate trench, ensure minimum depth of cover to AS/NZS 3000 Table 3.6 Under-Ground Wiring Systems - Minimum Depth of Cover, install cable and marker tape, complying with AS/NZS 2648.1, and backfill.

3.7 METER BOX

Fit to meter box manufacturer and network utility operator requirements where detailed. Recess into external wall in sheltered area and flashed to weatherproof to NZBC E2/AS1, Figure 9.1.8.3B: General meterbox and similar penetrations. Arrange for meter installation inspection and connection.

3.8 DISTRIBUTION BOARD

Fit to AS/NZS 3000, 2.10 Switchboards and board manufacturer requirements where detailed. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

3.9 LABELLING

To AS/NZS 3000, 2.10.5 Equipment identification, include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit.

3.10 CIRCUIT PROTECTION

Install MCBs at distribution board to AS/NZS 3000 to protect each final sub circuit.

3.11 MAIN EARTH

Install main earthing conductor to AS/NZS 3000, 5.5.1 Main Earthing conductor. 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.

3.12 SURGE PROTECTION

Install surge protection devices to manufacturer requirements and in accordance with AS/NZS 3000, Appendix F, F1.2.2 Installation. When fitting medium protection at the switchboard, protect the device by a dedicated MCB.

3.13 RCD - RESIDENTIAL INSTALLATIONS

Install 30mA RCD protection at the switchboard for all final sub circuits to control outlets (except for fixed or stationary cooking equipment), lighting & directly connected handheld electrical equipment, to AS/NZS 3000, 2.6.3.3.1 Residential installations - New Zealand only.

3.14 RCD - DAMP SITUATIONS

Install 30-mA RCD protection as required to AS/NZS 3000, section 6 for damp situations, including in the following higher risk areas:

- Wet areas: bathrooms, laundries, kitchens
- Near pools and water features
- Where intended for use with cleaning equipment

3.15 SET-OUT - OUTLETS & EQUIPMENT

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.

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3.16 CABLING

Install wiring systems to AS/NZS 3000, Section 3 Selection and Installation of Wiring Systems. All cabling run concealed fix in position by suitable clips, saddles or clamps. Where possible, run cabling horizontally / vertically in straight line.

Locate holes in timber framing for the passage of cables at the centre line of member ensuring structural strength in maintained to NZS 3604 requirements. In steel studs/ structural steel, ensure aperture is brushed and shaped to minimize abrasion of cable. Cables may be supported by suspended ceiling systems unless not permitted by suspended ceiling manufacturer. Install cable in conduits where required to pass through concrete or underground.

3.17 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.

3.18 OUTDOOR/EXTERIOR SERVICES

Provide circuits and connections for exterior installations, including ELV 12/24 Volt path lighting and electronic irrigation systems, in accordance with AS/NZS 3000 and the fixture/fitting manufacturer's recommendations.

Where underground, ensure appropriate protection, such as thickness of sheathing, conduit, depth of cabling, and proximity to other services to AS/NZS 3000, 3.11 Underground Wiring Systems.

Use the appropriate rated fittings for power control and power supply. Weather protected switches and sockets to IP56 minimum. Install to manufacturer specifications using recommended fittings and sealants to maintain the products integrity.

Earth leakage protection to be provided for in areas where there is increased risk to human safety in the form of either RCDs at the distribution board, or socket outlet.

3.19 PROTECTION OF CABLING NEAR BUILDING SURFACES

Protect concealed wiring to AS/NZS 3000, 3.9.4 Protection against mechanical damage, where wiring is fixed in position by fastening, or held in position by thermal insulation or passes through an opening in a structural member and they are located within 50mm from the surface of a wall, roof, ceiling or floor.

3.20 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.

3.21 SWITCH AND SOCKET UNITS

Fit all switch units and socket units to the manufacturer requirements with heights and mounting directions as indicated in SELECTIONS.

3.22 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 as confirmed by the Contract Administrator, when not specifically shown on the drawings. Install to the luminaire manufacturer's requirements (including clearances) and to AS/NZS 3000, 4.5 Lighting Equipment & Accessories, in correct orientation for light output, complete with lamps.

Fix through linings to structure or framing, provide additional nogs, trim and packing if required. Ensure transformers/drivers and luminaires are adequately ventilated and clear of any building elements, to AS/NZS 3000.

3.24 INSULATION CLEARANCES

Refer to relevant INSULATION section.

3.25 INSULATION CLEARANCES – RETROFIT RECESSED LUMINAIRES

For retrofitting or replacement recessed luminaire applications, check insulation clearances to NZS 4246, AS/NZS 3000, 4.5.2.3 and, where allowed by these standards, to the light manufacturers stated insulation clearances.



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3.26 ELECTRIC HOT WATER SYSTEM

For storage heaters, install to manufacturer's requirements and to AS/NZS 3000, 4.8.2 Water 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.

3.27 DATA WIRING

Install data wiring to outlet positions shown on the drawings. Install in conduit for outlets on masonry surface.

3.28 TV AERIAL AND CABLING

Fix aerial, run cabling concealed below the roof and fit outlets where shown on the electrical drawings. Ensure the system is suitable for high quality reception of all VHF and UHF channels - Sky TV installation practices minimum. Cable penetrations through the cladding to be weatherproofed to comply with NZBC E2/AS1.

3.29 ELECTRICAL HEATING CABLES

Install to the heating cable manufacturer requirements and to AS/NZS 3000, 4.10 Electrical heating cables for floors and ceilings and trace heating applications.

Install a 30mA RCD to heating cables and refer to AS/NZS 3000, 4.10.5 for earthing requirements, for conductive cable covering or a metallic grid.

3.30 COOKING APPLIANCES

Install cooking appliances to manufacturer's requirements and to AS/NZS 3000, 4.7 Cooking appliances. Provide a switching device to all cooking appliances that have an open cooking surface such as a hob in a visible and accessible position within 2m of appliance, but not in prohibited location, refer to Figure 4.17.

3.31 ELECTRICAL FIXTURES

Install all electrical fixtures and wire to AS/NZS 3000 and manufacturers requirements. Refer to SELECTIONS.

Completion & Commissioning

3.32 COMPLETION MATTERS

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

- Leave installation operating correctly, with equipment clean and all lamps operational.

3.33 COMPLETION - TESTS & CERTIFICATION

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

Testing:	To Electricity (Safety) Regulations 2010 and AS/NZS 3000, 8.3 testing
Certificate of Compliance:	To Electricity (Safety) Regulations 2010 and ensure Verification Records supplied to AS/NZS 3000, clause 8.4

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

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4.2 PDL DISTRIBUTION BOARD

Location:	refer to drawings
Brand / type:	PDL Superboard
MCB:	Resi9
RCCB:	Resi9
RCBO:	Resi9
Surge protectors:	Resi9
Modular contactors:	Schneider Electric
Main switch:	Resi9
Timers:	Schneider Electric
AFDD:	Resi9

Interior outlets - PDL

4.3 PDL INTERIOR OUTLETS - ICONIC SERIES

Location:	refer to drawings
Switch / socket outlets	PDL Iconic Series
Switch - Height to centre of unit:	1000mm above FFL
Orientation:	Horizontal

Miscellaneous switches & sockets

Light fittings

4.4 EXTERNAL LIGHT FITTINGS

Location: Refer to drawings

4.5 INTERNAL LIGHT FITTINGS

Location: Refer to drawings

Electrical equipment / fittings

4.6 MISCELLANEOUS ELECTRICAL ITEMS

Item:	**Brand/type:**
Smoke Alarms	Clipsal Fire Tek Range



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