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SOUTHERN DRAUGHT
ARCHITECTURAL SOLUTIONS

Southern Draught Ltd

PROJECT SPECIFICATION

Aubrey Road House

749 Aubrey Road
ALBERT TOWN
Wānaka

Issued for Consent

2504

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PROJECT OVERVIEW

Scope

Construct new two story timber framed home on concrete slab.

Address

Site Address	749 Aubrey Road
Suburb	ALBERT TOWN
Region	Wānaka
Lot #	1
DP #	355535

Site Conditions

Wind Zone	VH - Very High Wind Speed
Earthquake Zone	Zone 3
Exposure Zone	Zone B - Low
Snow Loading Zone	Zone N5

Related Parties

Structural Engineer

BSK Consulting Engineers, Philip Mcdonald, philip@bsk.co.nz

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TABLE OF CONTENTS

Concrete....4
Thermakraft Underlay, DPM, DPC & Tapes....4
MAXRaft® Fully Insulated Foundations....11
Brickwork....24
Brickwork....24
Waterproofing....26
ARDEX Liquid-Applied Waterproofing Membranes....26
Carpentry....33
COLORSTEEL® - Profiled Metal Wall Cladding....34
Timber Framing....39
GIB® Plasterboard Linings....39
GIB® Wet Area Systems....50
GIB® GIBFix® Framing System....56
DYNEXbuild DynaFlash Universal Back Flashings....60
IBS RigidRAP®....63
Pro Clima Intelligent Airtightness System....72
Cladding & PreCladding....79
COLORSTEEL® - Profiled Metal Wall Cladding....79
Hermpac Weatherboard Cladding Systems....84
DYNEXbuild DynaFlash Universal Back Flashings....88
Insulation....93
Pink Batts Insulation....93
Roofing....100
Nuralite Nuratherm Insulated Membrane Roofing....100
Metalcraft Rainwater & Fascia Systems....106
COLORSTEEL® - Roofing Specification....109
Painting & Decorating....112
Resene Painting General....112
HVAC....118
Escea Outdoor Wood Fires....118
Appendix....123
CODEMARK CMNZ30036 Vertical Shiplap....123
Escea install....123
12kN pile fixing....123
NURATHERM INSULATION DESIGN....123
XBOND WET AREA FINISH....123
NZMRM SPOUTING CALCULATIONS....123
SAN SELMO....123
CodeMark Certificate of Conformity - Nuraply 3PM Torch-on Membrane for Roofs and Decks....123

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1 CONCRETE

1.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

1.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

2295:2006(NZS)	Pliable, permeable building underlays
2904:1995(AS/NZS)	Damp-proof courses and flashings
3101.1&2:2006(NZS)	Concrete Structures Standard
3104:2003(NZS)	Specification for concrete production
3109:1997(NZS)	Concrete construction
3112.1:1986(NZS)	Methods of test for concrete - Tests relating to fresh concrete
3112.2:1986(NZS)	Methods of test for concrete - Tests relating to the determination of strength of concrete
3114:1987(NZS)	Specification for concrete surface finishes
3121:2015(NZS)	Water and aggregate for concrete
3122:2009(NZS)	Specification for Portland and blended cements (General and special purpose)
3604:2011(NZS)	Timber-framed buildings
4200.1:2017(AS|NZS)	Pliable building membranes and underlays - Part 1: Materials
4200.2:1994(AS/NZS)	Pliable building membranes and underlays - Installation requirements
4389:2015(AS/NZS)	Roof safety mesh
4431:1989(NZS)	Code of practice for earth fill for residential development
NZBC B1/VM1	Structure
NZBC B2/AS1	Durability
SNZ HB 3604:2011	Timber-framed buildings - Selected extracts from NZS 3604:2011

1.3 Thermakraft Underlay, DPM, DPC & Tapes

1.3.1 Scope

Supply and install Thermakraft Underlays and Membranes, as specified herein, to the locations identified on the drawings, complete with all accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with Thermakraft Ltd technical information and installation requirements

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(check www.thermakraft.co.nz, or call 0800 806 595 for the latest editions), other relevant product manufacturers' recommendations, and as shown on the design drawings.

No substitutions are permitted for the specified products from Thermakraft Ltd.

1.3.2 Requirements

1.3.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

1.3.2.2 Warranty

Kingspan Thermakraft Product Warranty Statement:
- 15 Years Warranty - for all Thermakraft warranted products installed, according to the warranty conditions.
- Provide the Thermakraft Ltd Product Warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of permanent installation.

1.3.2.3 Substitutions

Thermakraft Ltd products shall be as specified herein and as indicated on the approved drawings. The substitution of Thermakraft branded products for alternative brands is not permitted under any circumstances.

The substitution of a specified Thermakraft product for an alternative Thermakraft branded product by the Contractor shall only be permitted with the Contract Administrator's written authorisation, and shall be at no additional cost to the Principal. Should any resultant extra work and/or redesign work be required to accommodate alternative Thermakraft branded products to satisfy design, performance and compliance requirements, then the cost of these shall be borne by the Contractor.

1.3.3 Damp-Proof Membrane

Thermathene Black (250µm). A 250 micron thick (0.25mm), tear resistant, recycled polyethylene film sheet concrete underlay. Coloured black.

Installed over nominal 10mm (max. 25mm) thick compacted sand blinding layer, over a properly prepared base course, as a moisture vapour barrier under concrete slabs on-ground (prior to concreting), in accordance with the manufacturer's requirements and as shown on the drawings (Install Guide).

Thermathene Black must be laid in a continuous manner with all laps minimum 150mm, and penetrations to be taped with Thermakraft White General Purpose Tape. Tape-seal around penetrations. Inspect immediately before pouring concrete and repair any holes or other damage.

Installed Location:

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1.3.4 Damp-Proof Course

Supercourse 500 DPC. A 0.75mm thick, high-impact, single-layer Polyethylene film, embossed on both sides. Available in 50mm 75mm, 90mm, 100mm, 150mm, 200mm, 250mm, 300mm, and 500mm roll widths. Supercourse 500 DPC is suitable for use as a separation barrier between most incompatible and dissimilar materials.

Used as a general damp proof course (DPC) for separating timber and wood-based products and metal from concrete, masonry, brick, and stone surfaces, and as a moisture barrier (Install Guide).

Also used as a concealed flashing behind brick veneer cladding in accordance with NZS 4229 and NZBC E2/AS1.

Installed in accordance with the manufacturer's requirements, BRANZ Appraisal No.329, and as shown on the drawings.

1.3.5 Roof Underlay

Covertek 407. A self-supporting, fire-retardant, absorbent, breathable, synthetic non-woven polyolefin underlay.

Can only be used in lined applications. Section E2 of the NZBC defines a lining as "the rigid sheet covering for a wall, ceiling or other interior surface." Must not be used in unlined buildings such as unlined garages, sheds, soffits or canopies.

Covertek 407 is CodeMark assured with the NZ Building Code: CodeMark Certificate of Conformity No:CM30028-RevI, issued by Global-Mark Pty Ltd.

Installed as a roof underlay over timber or steel roof framing in accordance with the manufacturer's requirements and BRANZ Appraisal No.651.

Covertek 407 roof underlay can be used directly under direct-fixed roof claddings, or directly under roof cavity battens or tile battens in accordance with Thermakraft requirements.

Covertek 407 roof underlay must installed in a manner that prevents ponding of water. Refer to Covertek 407 Installation guide for underlay support requirements. Support requirements are dependent upon pitch, purlin spacing and installation direction of underlay.

Do not leave Covertek 407 exposed on roofs for more than a total of 7 days before covering.

Installed Location:

1.3.6 Window Flashing Tape

1.3.6.1 Thermaflash High Adhesion Synthetic Window Flashing Tape

Thermaflash High Adhesion Synthetic Window Flashing Tape. Thermaflash Synthetic Window Flashing tape is part of the Thermakraft ONE WRAP System - a total building wrap solution. The advanced adhesive technology provides a high strength bond to most building surfaces and wall underlays. It is suitable for window and door installation as well as other

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wall penetrations. Thermaflash can be installed in a wide range of temperatures and can withstand UV exposure for up to 180 days.

Thermaflash Window Flashing Tape is suitable for use on timber or steel framed buildings, in conjunction with a compatible flexible underlay, around framed joinery openings as a secondary weather barrier.

Thermaflash Window Flashing Tape can be used as a flexible flashing system around window and door joinery openings on timber and steel framed buildings within the following scope:
• Installed into and around joinery openings over the wall underlay and exposed frame to cover both the face and edge of the opening as a secondary weather resistant barrier.
• To assist the overall weathertightness performance of window and door joinery installations.
• To be used in conjunction with air seals and joinery flashing systems. Installer must check for air seal product compatibility with Thermaflash.
• Situated in NZS3604 Wind Zones up to, and including, 'Extra High'.
• Suitable for residential builds (E2/AS1 timber framed and E2/AS4 steel framed) and medium rise buildings (E2/VM2)

General
Physical Properties:
- Thickness: 400 µm.
- Installation temperature range: minimum -10°C.
- Maximum UV exposure: 180 days.
- Tape width: Available in 75x23mm, 150x23mm, and 200x23mm wide rolls.

The width of Thermaflash Window Flashing Tape used shall be selected to suit the depth of framed openings and Thermakraft installation requirements.

Installed in accordance with the requirements of the Thermaflash Window Flashing Tape Installation Guide and BRANZ Appraisal No.1122 (2020), to the locations and details shown on the drawings.

Compatible with all Thermakraft building underlays. Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in well ventilated area. Recommended minimum 7 days.
Corner Moulds are optional however butterfly strips must be used in the absence of a corner mould (see installation guide).

Do not leave Thermaflash Window Flashing Tape exposed to weather and UV light for more than 180 days after installation.

Flashing Tape Size:
Installed Location:

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1.3.7 Joining Tapes

1.3.7.1 Thermakraft Premium Joining Tapes

Thermakraft Premium Joining Tapes are high-end construction tapes to join James Hardie RAB sheets. They can also be used to join a wide range of flexible underlays and rigid sheathing products. The thick layer of acrylic adhesive, bonds to common construction substrates and supports a wide range of operating temperatures.

Thermakraft Premium Joining Tape is part of the RAB™ Board system by James Hardie™. It can be used to join the laps of wall and roof underlays, damp proof membranes, vapour control products such as foil underlays and rigid sheathing products (e.g., plywood rigid underlay, OSB board, fibre cement and insulation panels). Installer or designer must check the compatibility of Thermakraft Premium Joining Tape with the substrate manufacturer.

• With flexible underlays that meet the performance requirements outlined in standard NZS 2295.2006.
• Is suitable to use with air barrier underlays in unlined wall spaces.
• Is suitable to be used in conjunction with thermal breaks on steel framed buildings.
• Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent to flash off in a well-ventilated area. Recommended minimum 7 days.

General
Physical Properties:
- Thickness: 400 µm.
- Installation temperature range: minimum -10°C.
- Maximum UV exposure: 180 days.
- Tape width: Available in 75x23mm wide rolls.

Limitations :
- Thermakraft Premium Joining Tape is NOT a window flashing tape and must NOT be used as a window flashing tape.
- Must NOT be used in areas where the tape is permanently exposed to the weather or UV.

Installed in accordance with the requirements of the Thermakraft Premium Joining Tape Installation Guide, to the locations and details shown on the drawings.

1.3.8 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to install Thermakraft Underlays, DPMs, and DPCs as required.

1.3.9 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

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All installation work shall be carried out by experienced and competent tradespersons, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements.

All cutting, joining, and fixing techniques shall be exactly as recommended by the manufacturer, and carried out with the use of suitable tools and equipment appropriate for the application. All work shall be such as to leave a neat, efficient, and weathertight installation.

1.3.10 Delivery & Handling

Store underlay rolls on end, undercover, on a flat, clean and dry surface. Keep stored materials dry, out of direct sunlight, and protected from damage and contamination at all times.

Handle materials in accordance with the manufacturer's requirements and in a manner that prevents damage to or deterioration of the product.

Do not used damaged or defective materials, or products that are beyond their designated shelf life.

Installers shall be familiar with and comply with the manufacturer's safe handling requirements and precautions for use, and shall use appropriate safety gear when handling materials.

Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including General risk and workplace management - part 1.

1.3.11 Preparation

1.3.11.1 General

Prior to installation, carry out all necessary inspections and preparatory work required, and ensure that all preliminary works by other trades has been completed to specification and as shown on the approved drawings.

Do not commence installation until all necessary preliminary works by others is complete and to the required standard. The commencement of work shall be deemed to indicate full acceptance by the installer that all preliminary works by other trades is complete.

Supporting timber framing shall comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design, and have a maximum moisture content of 20% at the time of cladding installation. Allow LOSP treated timber to sufficiently flash-off before installing Thermakraft building underlays and foils.

Supporting light structural steel framing shall comply with the requirements of AS/NZS 4600 or the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria. Comply with the light structural steel framing fabricator's specifications and requirements for fixing cladding and roofing components.

Supporting heavy steel structures shall comply with NZS 3404.

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1.3.11.2 Under-Slab Basecourse

Under-Slab Basecourse - prior to laying under-slab DPM, check all aspects of preparatory works, including but not limited to:
- Check that the under-slab basecourse has been correctly laid and compacted as specified.
- Check that the surface has been properly prepared and compacted to the required standard, and is smooth and flat.
- Ensure any sand blinding is free of aggregate, sharp protrusions.
- Ensure the final surface is free of hollows and ponded water prior to laying the DPM.

1.3.11.3 Roof Structure

Roof Structure - prior to roof underlay installation check all aspects of preparatory works, including but not limited to:
- Check that the supporting purlins or battens are set-out to the required set-out and spacings, are straight and true to line and plane, and are securely fixed.
- Check that all barge and fascia boards have been installed to the correct line and plane with all edge blocking complete and secure.
- Check that valley gutter and hidden gutter framing is to the required dimensions with solid backing supports securely fixed, true to line and plane.
- Check that internal gutter membrane linings are complete, and dressed back and adhered to a solid substrate along the roof edge as shown on the approved drawings.
- Check that all trimming for roof penetrations, all roof/wall junction blocking, and all necessary work by other trades is complete.
- Check that solid sarking required for fully-supported roofing is complete and securely fixed in accordance with the approved drawings.
- Check that any required anti-ponding boards for tiled roofs have been correctly installed to a minimum 5° (1:12) fall to the eaves gutter.

1.3.12 Installation - Roof Underlay

1.3.12.1 Covertek 407 - synthetic roof underlay

Covertek 407 synthetic roof underlay shall be installed without support on roofs with slopes 10° or greater (unless specified otherwise), run horizontally across the roof slope and over the purlins, starting from the gutter/lowest point up to the ridge/highest point, extending maximum 20mm into gutters, with minimum 150mm side and end laps, lapped such that any water will be shed to the outside of the underlay, and sufficiently tensioned without sagging.

Fix at maximum 300mm centres to purlins, with 8-12mm stainless steel staples or 20mm large-head galvanised clouts or galvanised proprietary grippers.

For tiled roofs, lay Covertek 407 underlay over the anti-ponding board and rafters/trusses, and fix at maximum 300mm centres to the rafters/trusses before the tile battens are installed.

Can only be used in lined applications

Finish Covertek 407 underlay along roof edges and junctions, valley gutters, and at the ridge as shown on the drawings. Carefully cut underlay at roof openings at 45º angle away from each corner and lap-tape closed to framed up-stands, ducts and other services penetrating the underlay in accordance with Thermakraft requirements and as detailed. Leave underlay minimum 50mm distance clear of the outer liner of flue stacks.

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1.3.13 Completion

Check that all underlays have been installed correctly and are properly supported, and that all underlay edges, joins and ends are correctly finished prior to closing off with claddings - all in accordance with Thermakraft installation requirements.

Check installed membranes and underlays for defective work and damage - replace and/or repair as necessary to the required standard.

Leave all of this work complete, and free of defects, and to the required standard in accordance with the manufacturer's warranty requirements.

Issue to the Owner a copy of the Thermakraft maintenance requirements and the Thermakraft product warranties for the installed products.

1.4 MAXRaft® Fully Insulated Foundations

1.4.1 Scope

Supply and install MAXRaft® Fully Insulated Foundations, as specified herein, to the location, layout and details as shown on the design drawings, complete with all necessary components and accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with MAXRaft® technical literature, including the MAXRaft® Technical Details and MAXRaft® Installation Manual and detail drawings (check www.maxraft.co.nz, or email info@maxraft.co.nz, or call 0800 629 7238 for the latest editions) within the conditions and limitations of the MAXRaft® Fully Insulated Foundations CodeMark Certificate of Conformity, BRANZ Appraisal 1054, and other relevant product manufacturers' recommendations.

The MAXRaft® Fully Insulated Foundations system is CodeMark assured to comply with the NZ Building Code subject to specific conditions and limitations - refer to CodeMark Certificate of Conformity No: CMA-CMA40124-101-R02, issued by CertMark International Pty Ltd.

No substitutions are permitted for MAXRaft® Fully Insulated Foundations.

For the purpose of this specification, MAXRaft® Fully Insulated Foundations is referred to as 'MAXRaft® Floor'. All associated MAXRaft® technical literature, including the MAXRaft® Technical Details and MAXRaft® Installation Manual and detail drawings and the Code Mark Certificate, are collectively referred to as the 'Technical Literature'.

All MAXRaft® Floors are fully engineered by independent engineers on a site-specific basis to ensure the design of the MAXRaft® system is appropriate for the ground conditions and building type.

This specification should be read in conjunction with other relevant specification sections as they are interrelated, in particular, Siteworks and relevant services - i.e. Drainlaying, Plumbing, Electrical, etc.

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1.4.2 Requirements

1.4.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

1.4.2.2 Substitutions

The MAXRaft® Floor shall be as specified herein and on the design drawings. The substitution of the MAXRaft® Floor for an alternative brand or system is not permitted under any circumstances.

The substitution of a specified MAXRaft® Floor system/material for an alternative MAXRaft® Floor system/material by the Contractor shall only be permitted with the Contract Administrator's written authorisation and shall be at no additional cost to the Principal. Should any resultant extra work and/or redesign work be required to accommodate an alternative MAXRaft® Floor system/material to satisfy design, performance and compliance requirements, then the cost of these shall be borne by the Contractor.

1.4.2.3 Geotechnical Report

A geotechnical investigation of the site has been carried out - refer to the Geotechnical Report appended.

1.4.2.4 Producer Statement PS1

Furnish a fully completed Producer Statement PS1 (Design) as confirmation that the MAXRaft® Floor as designed and documented complies with the relevant clauses of the New Zealand Building Code. The Producer Statement PS1 shall be submitted with the Building Consent documentation. The PS1 Producer Statement shall not serve as a product warranty or guarantee of compliance.

1.4.2.5 Producer Statement PS4

Furnish a fully completed Producer Statement PS4 (Construction Review) as confirmation that the MAXRaft® Floor as constructed complies with the relevant requirements of the Building Consent and Building Consent Amendments, with respect to the relevant clauses of the New Zealand Building Code. The Producer Statement PS4 shall be submitted by the Contractor with the application for Code Compliance Certificate of the contract works.

1.4.2.6 Inspections & Reporting

BCA inspections of the works shall take place at each of the stages as scheduled in the Building Consent. Confirm a written programme to facilitate these inspections, including notification when each stage of the work is ready for inspection.

Carry out all necessary pre-installation and installation inspections for each area and stage of the works.
Complete all necessary Pre-Installation Checklists, and all necessary Installation Checklists.
Complete all necessary Sign-Off Certificates before handing over completed work.
Complete and sign the MAXRaft® Polystyrene Installation Quality Assurance Form.

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Notify the BCA and the Contract Administrator for all required inspections of the MAXRaft® Floor construction, including the excavations. All inspections and test results shall be properly recorded and documented by the Contractor and made available on request.

The Contractor shall provide all necessary quality control checklists to the Contract Administrator prior to pouring and with sufficient time for their pre-pour inspection.

The Contract Administrator and BCA shall be notified and given reasonable opportunity to inspect the section of work prior to pouring. The Contractor shall give at least one working day's notice of intention to place concrete in any area.

The Contract Administrator's and/or BCA's instructions shall be carried out before concrete placing commences. Instructions issued by the Design Engineer must be authorised by the Contract Administrator. Unless approval is given by the Contract Administrator, Design Engineer (or their agent) and/or BCA, no concrete shall be placed in that section of work. Any concrete placed without authorisation may require removal from the works at the Contractor's expense.

1.4.2.7 Engineer's Site Monitoring

The Design Engineer (CPEng) or their authorised agent shall have reasonable access to the site where the work is being carried out for the purposes of inspection, recording, or testing. Any resulting notification or instruction arising from their site monitoring must be authorised by the Contract Administrator.

1.4.2.8 Quality Assurance

Maintain and comply with industry-recognised quality control and assurance procedures to ensure that all stages of the works are carried out to the highest standard. Ensure that the construction of the MAXRaft® Floor complies in all respects with the design drawings and specifications.

A signed quality assurance form must be provided from MAXRaft® confirming that the polystyrene has been installed in accordance with the Producer Statement - PS1.

If requested, prepare and submit to the Contract Administrator details of the quality assurance procedures for concrete work for approval.

The quality assurance procedures shall encompass all aspects of the MAXRaft® Floor construction including, but not limited to:
- Concrete quality; and
- Formwork quality; and
- Construction tolerances; and
- Reinforcing steel placement; and
- Cast-in items; and
- Concrete finishes.

The Contractor shall advise the Contract Administrator in writing the name of a suitably experienced and qualified representative to be responsible for the quality control of concrete work.

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The Contractor's nominated representative shall be required to complete and sign a written quality control checklist for each on-site concrete pour. A copy of each completed checklist shall be provided to the Contract Administrator before pouring commences and with sufficient time for the pre-pour inspection. The format and detail of the checklist shall be agreed to by the Contract Administrator and the Contractor prior to the commencement of any concrete work.

The Contractor shall supply evidence of concrete production quality standards to the Contract Administrator in advance of construction in accordance with the requirements of NZS 3109.

1.4.2.9 Tolerances

Except where specified otherwise herein or on the drawings, dimensional tolerances of the MAXRaft® Floor shall be within 5mm of the position shown on plan and conforming to NZS 3109, Table 5.2 - 'Tolerance for *in situ* construction' for all other aspects, and to NZS 3114 for off-the-form and unformed surface tolerances.

To ensure that elements such as external claddings, window and door joinery etc will properly fit the building, the Contractor shall maintain accurate control of the overall set-out and construction of the MAXRaft® Floor.

1.4.2.10 No-Slab Heating Systems

No embedded underfloor heating in slab. MAX85 is not designed to work in conjunction with embedded Underfloor Heating.

1.4.2.11 Applied Coatings & Finishes

The MAXRaft® polystyrene insulation system exterior requires protection from physical damage, UV rays and water absorption. MAXRaft® polystyrene insulation should be protected by the use of a coating that protects the insulation and is suitable for use in the subgrade.

Refer to the Technical Literature for guidance, and to the project design drawings and specification for coatings and finishes to be applied to MAXRaft® polystyrene insulation exterior surfaces.

1.4.3 Ground Classification

1.4.3.1 Good Ground

The ground conditions have been established as good ground, as defined by NZS 3604, by a geotechnical investigation compliant with local Territorial Authority requirements and NZS 3604. Refer to the Geotechnical Report.

1.4.4 MAXRaft® & MAXSlab® Floor System

1.4.4.1 MAXSlab® 300.

MAXSlab® 300.
A reinforced concrete slab-on-ground floor and foundation system contained entirely within a thermal envelope of specifically-designed MAXRaft® insulation, consisting of perimeter footings and internal slab thickenings in conjunction with MAXRaft® insulation. Suitable for single-storey residential buildings and two-storey residential buildings depending on cladding

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and the bearing capacity of the ground.
The ground immediately beneath the floor must have a minimum >300kPa UBC TC1 bearing capacity.

System Details:
- Total Thickness: 300mm, including polystyrene envelope.
- Concrete Topping Thickness: 100mm, unless specified otherwise on the design drawings.
- Perimeter Footings: 500mm wide x 300mm high (100mm to underside of concrete topping) including polystyrene envelope.
- Slab Thickenings: 300mm high (100mm to underside of concrete topping) including polystyrene envelope.
- Components: MAXRaft® Insulation, concrete, steel reinforcement, damp proof membrane - refer to Materials clauses.

Installed Location:

1.4.5 Materials - MAXRaft® Insulation

MAXSlab® 300 Polystyrene Insulation Components - including, but not limited to 500mm wide x 50mm thick Perimeter Profiles, 200mm S Grade insulation, 50mm VH EPS Thickening insulation - selected according to MAXRaft® project-specific design requirements and installed to the layout shown on the project-specific MAXRaft® Panel Plan.

Load-bearing insulation material, including perimeter footings, shall be from 300kPa extruded polystyrene (XPS) or 165kPa Class-VH expanded polystyrene (EPS). All other insulation material shall be from Class-S expanded polystyrene (EPS) with a density between 16-30kg/m³.

1.4.6 Materials - Concrete

1.4.6.1 Concrete Mix

Concrete shall be 20MPa, 140mm slump mix, in either a 13mm or 19mm nominal aggregate size, Normal Concrete (N) produced in accordance with NZS 3104 from a New Zealand Ready Mixed Concrete Association audited plant, with sufficient cement quantity to ensure satisfactory finish and durability.

1.4.7 Materials - Steel Reinforcement

1.4.7.1 Steel Reinforcement

Steel Mesh:
- SE62 Ductile Mesh (or minimum 2.29kg/m²) Grade 500E welded steel mesh, complying with AS/NZS 4671 and subject to the requirements of NZBC B1/VM1 Paragraph 14.0.
- Machine-welded wire mesh; 500 MPa minimum yield strength; 6.1mm wire diameter; 200 x 200mm wire centres.
- Installed as slab topping reinforcement in accordance with the Technical Literature and the design drawings.

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Steel Bar:
- Grade 500E to AS/NZS 4671.
- Except where otherwise specified on the design drawings, reinforcing bars shall be HD12.
- Grade 500E reinforcing bar shall be manufactured by Pacific Steel micro-alloy process. *Alternative manufacturers of Grade 500E reinforcing will only be approved if written evidence is provided, including test certificates, verifying the product*.
- Installed as main reinforcement and sundry bars; all in accordance with the Technical Literature and the design drawings.

General Requirements:
- Mill certificates must be provided to the Contract Administrator for all reinforcing steel used.
- All bundles of reinforcing steel supplied to the job shall be clearly marked with numbers relating to the Bending Schedule and related design drawing.
- Ensure that all reinforcing is adequately supported off the ground while stored on-site.
- Reinforcing bars shall be cut, bent, placed and fixed by suitably trained and experienced personnel to the requirements of NZS 3109.
- Ensure that all preparatory works and formwork have been completed to the specified requirements prior to placing reinforcing.
- Steel reinforcement shall be installed to the locations and spacings shown on the design drawings, and supported with the use of proprietary bar chairs and spacers to ensure correct placement and cover is achieved.
- All reinforcing bar laps shall be minimum 50 x the bar diameter.
- Where Ductile 500E mesh is lapped, the lap length between outer cross bars shall be to the manufacturer's requirements.
- Minimum concrete cover to reinforcement shall be as specified on the design drawings or otherwise as specified in NZS 3109 - the design drawings shall take precedence over those specified in NZS 3109.
- The ends of wire ties shall be turned away from the concrete face to maintain cover.
- Do not tie wire ties to formwork.

1.4.8 Materials - Damp Proof Membrane

1.4.8.1 Polyethylene Sheet - 250µm thick

Damp Proof Membrane (DPM) - 250µm. A 250 micron thick, tear-resistant, polyethylene (polythene) film sheet damp-proof membrane. Installed over a maximum 25mm thick layer of compacted sand blinding, in accordance with the Technical Literature and the design drawings.

The DPM shall be laid over the entire building platform directly on top of a sand blinding layer, and extend 100mm beyond the foundation perimeter to a straight line. All DPM joints shall be lapped minimum 150mm and tape-sealed with minimum 50mm wide pressure sensitive PVC tape. Tape-seal around penetrating pipes and sleeves.

Take all reasonable measures to protect the DPM from damage during construction, and repair any perforations or other damage.

Do not leave the DPM exposed for more than the maximum period recommended by the manufacturer.

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1.4.9 Concrete Finishes

1.4.9.1 General

Unless specified otherwise herein or on the design drawings, concrete finishes shall comply with the provisions of NZS 3114 applicable to the surface finish class specified.

Surface finishes not specified in this specification or on the design drawings shall be in accordance with Table 1 or Table 2 of NZS 3114, as appropriate for location and use.

Arrange the pouring to allow adequate time for floating and finishing to the specified finish class.

Floating and any subsequent finishing shall be at the correct time to obtain the quality of compaction and finish required. No finishing work shall be carried out on a surface where there is free surface water. The application of dry cement or sand to absorb free surface water is not permitted.

All trowelling ridges shall be removed while soft, or by subsequent light grinding where appropriate. Slabs not fulfilling the standard of finish required shall be ground smooth or otherwise treated to the satisfaction of the Contract Administrator.

1.4.10 Formwork

1.4.10.1 Formwork

Formwork shall conform to NZS 3109 Section 5, and comply with the provisions of NZS 3114 according to the specified off-the-form-finish classification.

Formwork shall have sufficient strength to retain and support the wet concrete being placed to the required profiles and tolerances.

The formwork surface finish shall be of suitable quality necessary to produce the specified concrete finish. Any formwork with a deteriorated or damaged surface that does not meet the requirements of the surface finish shall not be used.

Fair-faced formwork shall be constructed so as to provide straight and true angles, and so as to produce cast surfaces within a maximum tolerance of 5mm of the given dimensions, and without visible offsets, bulges, or misalignment of the concrete. Form neat arrised edges, except where chamfers are indicated on the drawings or required to match existing detail.

Plywood formwork shall be constructed from Formply plywood sheets or C-grade faced standard plywood sheets (according to concrete finish), placed in a regular pattern and tightly butted together to avoid grout loss. Plywood formwork shall not be permitted to stain visually-exposed concrete.

The formwork face shall be adequately clean and treated with a general purpose concrete form release agent in accordance with the manufacturer's requirements. Diesel and oil-based products are not permitted. Care shall be taken to ensure that the release agent is kept out of contact with the reinforcement and is compatible with any subsequent coating system applied to the concrete.

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Erected formwork shall be set and checked for dimensional accuracy and alignment before, during and after concreting, and any damaged formwork replaced. All debris shall be removed from formed voids immediately before concrete is placed.

Do not remove formwork for at least 12 hours after concrete placement. Formwork shall be removed without shock or vibration and in such a manner as to prevent damage. Do not permit bars or other tools to lever against the MAXRaft® Insulation or set concrete when removing formwork. Any damage to the concrete occurring during removal shall be repaired to the required standard by an approved method at the Contractor's expense.

1.4.11 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the design drawings.

Coordinate with other trades, as required, the installation of all cast-in items and piped and cabled services, including drains, conduits, in-slab heating system, etc, within the MAXRaft® Floor.

1.4.12 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

MAXRaft® Floor construction work, including sand-blinding, DPM laying, formwork erection, reinforcing placement, and concrete placing and finishing techniques, shall be carried out by experienced and competent workers, familiar with the specified products and construction techniques, under the direct supervision of a Licensed Building Practitioner, in accordance with the Technical Literature and NZS 3109 and NZS 3114, and to fully comply with all warranty requirements.

All work shall be such as to leave a neat, efficient, robust and structurally sound installation, to the required standard.

1.4.13 Delivery & Handling

Take delivery of materials undamaged. Reject any item found to be defective or damaged and contact the manufacturer/supplier for replacement.

Store MAXRaft® Insulation components and reinforcing steel clear of the ground and in a manner that prevents damage and distortion in accordance with the manufacturer's requirements. Protect these materials from damage, distortion and contamination until use.

Do not use damaged or defective materials, or products that are beyond their designated shelf life.

Should a problem be encountered with any MAXRaft® Floor product during use or delivery, immediately contact MAXRaft® on 0800 629 7238. Do not continue to use the product that is not performing to specification or expectation. Keep the product in question and where possible, the document batch numbers and/or manufacturing details.

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Handle materials and products in accordance with the manufacturer's recommendations and in a manner that prevents damage.

Installers shall be familiar with and comply with the manufacturer's Material Safety Data Sheet precautions for use, and use appropriate safety gear when handling materials.

Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry.

1.4.14 Preparation

1.4.14.1 Site Clearing, Stripping, Excavation & Earthfill

Site Clearing, Stripping, Excavation & Earthfill - refer to separate specification section - Siteworks.

1.4.14.2 Piped & Cabled Services

Except where shown otherwise on the design drawings, piped and cabled services shall be run in-ground beneath the MAXRaft® Floor and returned vertically, at right angles through the floor at the required exit/entry points shown on the design drawings.

All service pipes in direct contact with concrete shall be lagged with a minimum 6mm thick, compressible, impermeable material.

In-ground services installations, including trenching, bedding, backfilling, ducting and sleeving, gradients, etc., shall be as specified for the applicable service (Drainlaying, Plumbing, Electrical), and must comply with the requirements of the New Zealand Building Code and the conditions of the Building Consent.

Plumbing and drainage fixtures installed in or on the MAXRaft® Floor shall be to the locations dimensioned on the design drawings, and shall not deviate from these without written prior approval from the Contract Administrator.

IMPORTANT:
- Service pipes are not permitted to be run lengthways within any MAXRaft® Floor footing or rib under any circumstance, nor shall they penetrate vertically through a footing without specific detailing.
- A service pipe is only permitted to pass perpendicular through a footing or rib according to the requirements of the specific design drawings.

1.4.14.3 Granular Basecourse to NZS 3604

Granular base to the underside of the MAXRaft® Floor shall consist of granular fill material conforming to NZS 3604 Section 7.5.3, and shall be systematically placed and compacted in horizontal layers no thicker than 150mm over the area beneath the slab and extending minimum 1.0m beyond the slab perimeter. Each layer shall be placed and compacted as a separate operation to subsequent layers.

The total thickness of the granular base shall be in relation to the finished slab level indicated on the design drawings, and no less than 75mm and no more than 600mm.

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Compact each layer until the material is tightly bound together and does not visibly deform under the weight of a pressed adult heel. Compaction shall only be carried out with approved, special-purpose compaction equipment appropriate for the application. Compaction equipment shall follow systematic patterns of travel and make sufficient passes to ensure that the required compaction has been uniformly obtained everywhere for each layer. Care should be taken not to overwork the subgrade or to cause weaving.

1.4.14.4 Sand Blinding

Blind the finished subgrade with a 5-25mm thick layer of clean, compacted sand or approved blinding material, covering the entire area and extending 500mm beyond the perimeter footing. Ensure the sand blinding is compacted and levelled to within +/- 3mm of the required level, without deviation. Do not leave sand blinding exposed to the elements any longer than necessary, and install the DPM immediately or as soon as practicable.

1.4.15 Installation

Damp Proof Membrane
Lay the DPM over the entire platform and extending at least 100mm beyond the perimeter footing, with joints overlapped minimum 150mm and tape-sealed, and any services penetrations tape-sealed. Tape repair any damaged DPM as soon as it occurs - check the DPM for damage during all stages and repair as necessary.

Formwork
Erect perimeter formwork to straight and true to lines, and to the slab dimensions, levels and details shown on the design drawings. Form all edge rebates, set-downs, block-outs and sloping falls as dimensioned and detailed. Do not strike formwork for at least 12 hours after concrete placement.

MAXRaft® Insulation - MAXSlab® 300

Install individual, pre-cut and numbered MAXSlab® 300 polystyrene insulation components (perimeter edge beam panels, slab thickening panels, standard panels) over the DPM according to the MAXRaft® Panel Plan layout and the Technical Literature, with all components tightly butted together without gaps or voids, and the perimeter edge beam firmly supported by formwork. Install MAXRaft Spacers at edge beam as per panel plan (remove prior to concrete pour)
Carry out any necessary site-cutting, including holes for service pipes, with a saw or suitable hot wire as required.

A signed quality assurance form must be provided from MAXRaft® confirming the polystyrene has been installed in accordance with the Producer Statement - PS1."

Steel Reinforcement - MAXSlab® 300

Do not install reinforcing steel and mesh until all polystyrene perimeter and interior panels have been installed, and all required piped services works within the slab are complete.

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Steel reinforcement types, sizes and placement must be as specified and in accordance with the layout and details shown on the specific design drawings. Reinforcing bars and mesh shall be accurately positioned and firmly secured to the specified placement and cover.

Install reinforcing bars to perimeter edge beam and slab thickenings as detailed using bar chairs to achieve the specified cover. Install reinforcing mesh using mesh chairs OR pod sticks to achieve the specified concrete cover.
Install shrinkage control bars across re-entrant corners only where specified on the specific design drawings.

1.4.16 Concreting

1.4.16.1 Handling, Placement & Compaction

The handling, placement, and compacting of MAXRaft® Floor concrete shall conform to NZS 3109 and the requirements of the Technical Manual.

Concrete shall be transported, handled, placed and compacted so as to:
- Prevent segregation or loss of materials;
- Produce a monolithic mass between planned joints or the extremities of the floor slab, or both;
- Completely fill the formwork to the intended level, expel entrapped air, and closely surround all reinforcement and embedments; and
- Provide the specified finish to the formed surfaces of the floor slab;
- Ensure there is no contamination of the concrete;
- Ensure that the transporting, handling, placing and compaction of the concrete is complete before setting reactions have passed the point which prevents the concrete from attaining its potential fully cured properties.

Take all necessary precautions and measures during unfavourable conditions, as required by NZS 3109 Section 7.2, to ensure the quality and finish of the concrete is not compromised or reduced in any manner.

Immersion vibrators shall be used for the compaction of the concrete and shall be moved to new positions as frequently as necessary to ensure uniform vibration of the whole mass and fully compacted concrete. On no account shall immersion vibrators be allowed to come into contact with the face of formwork. Vibrators should not be used to transport concrete along footings.

1.4.16.2 Curing & Protection

Concrete shall be cured in accordance with NZS 3109 Section 7.8. The use of concrete curing compounds shall be only as agreed with the Contract Administrator before it is used or applied. Ensure that any agreed concrete curing compound is compatible with subsequent floor coverings or surface treatments, including any sealers, paints, waterproofing membranes, etc.

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The finished concrete slab shall be protected from damage during subsequent stages of the building contract. Repairs and remedial work to the slab shall be carried out to the satisfaction of the Contract Administrator.

No loads are to be placed on the concrete slab or MAXRaft® insulation before the concrete has cured sufficiently over 4 days. When the perimeter formwork has been struck and removed, check all exposed perimeter polystyrene insulation surfaces for concrete slurry leaks and spills and clean down immediately.

1.4.16.3 Remedial Work

Defects and imperfections in the concrete floor shall be remedied to the satisfaction of the Contract Administrator. No structural repair of concrete shall be undertaken without specific instruction from the Contract Administrator.

The removal of surface markings from visually exposed concrete shall be carefully carried out with the use of wire brushing, pumice stone, carborundum stone, or washing and scrubbing such as will remove the marks without scratching, discolouring or otherwise affecting the surrounding or underlying concrete.

Patching or filling of visually exposed fair-faced concrete and making good broken edges and corners shall be done with coloured sands and cement where necessary to match the colour of the surrounding concrete when dry. Epoxy compounds may be used when necessary but only with prior approval from the Contract Administrator.

1.4.17 Saw Cutting

1.4.17.1 Saw-Cut Shrinkage Control Joints

Saw-cut shrinkage control joints shall be cut into the MAXRaft® Floor within 24 hours after pouring and when the slab is sufficiently hard, and according to the control joint layout, dimensions and details shown on the design drawings.

Unless specified otherwise on the design drawings, saw cuts shall be 25mm deep for an 85mm thick concrete topping. For thicker toppings, deeper saw cuts will be required of approximately ⅓ of the topping thickness - to the cut depth specified on the design drawings.

Early-entry soft cutting is recommended. Saw cutting shall be carried out without excessive chipping, spalling or tearing of the concrete. Saw cuts shall be straight and true and within +/- 5mm of correct alignment.

1.4.18 Completion

Check the MAXRaft® Floor has been correctly formed to the required setout, dimensions, levels, alignment and detailing as shown on the specific design drawings, and that any deviation from these is within the specified tolerances.

Check that all required cast-in items and provisions for services are correctly located and positioned as shown on the design drawings.

Check that concrete surfaces have been properly finished to the required finish level.

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Check for any damage and defective work. Carry out any necessary repairs and/or remedial work as specified and/or instructed by the Contract Administrator to the required standard.

Leave all of this work complete and structurally sound, and to the required standard.

Leave the slab surface and surrounding work areas clean and free of rubbish. Remove all associated rubbish and excess material from site.

Provide all necessary Producer Statements.

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2 BRICKWORK

2.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

2.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

2699.1:2000(AS/NZS)	Built-in components for masonry construction - Wall ties
3103:1991(NZS)	Specification for sands for mortars and plasters
3604:2011(NZS)	Timber-framed buildings
4210:2001(NZS)	Masonry construction: Materials and workmanship
4236:2002(SNZHB)	Masonry veneer wall cladding

2.3 Brickwork

2.3.1 Scope

Supply and lay the selected bricks to form the brick elements as shown on the drawings. All aspects of this work shall be in accordance with the related compliance documents and as shown on the drawings.

2.3.2 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All work shall only be carried out by Licensed Building Practitioners - Bricklaying and Blocklaying, and conform to the requirements of NZS 4210.

Submit evidence on request of experience, relevant qualifications, LBP Licence - Bricklaying & Blocklaying, New Zealand Masonry Trades Association (NZMTA) Member Registration.

Co-operate with the concretor and carpenter in the setting out of the works.
Co-operate with other trades to ensure that all preliminary and preparatory works, including all framing, membranes, wraps, rigid air barriers, and flashings, all relevant clearances, and any other related works, are completed to specification and as shown on the drawings.
Co-ordinate with trades the locations of pipes, outlets, cables, meter boards and other fittings installed by others.

All brick veneer walls shall be true to line, level and plumb, and within the tolerances tabled in NZS 4210 and SNZ HB4236. All brickwork laid to stretcher bond pattern, with joints width 10mm +/- 3mm.

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2.3.3 Installation

Install all brickwork related damp proof courses in accordance with the requirements of NZBC E2/AS1 and to the details shown on the drawings.

Mortar shall have a minimum compressive strength of 12.5 MPa, and be manufactured from cement, sand, lime, and admixtures, and be accurately measured and mixed in accordance with NZS 4210. Mineral oxide pigment dosages shall be to NZS 4210.

Form all necessary openings, reveals, sills, weepholes, separation and control joints, and cavities to the locations and details shown on the drawings, and in accordance with the requirements of NZBC E2/AS1 and NZS 4210. Install necessary vermin stops. Weatherproof all separation joints to the details shown on the drawings.

Wall tie type, durability, spacing, fixing and installation shall be as defined in NZBC E2/AS1 Tables 18A, 18B, 18C, and NZS 4210.

Install steel angle lintels to openings as required by NZBC E2/AS1 Table 18E and as noted on the drawings.

Install all necessary flashings to openings, and other locations as required, to the details shown on the drawings and in accordance with NZBC E2/AS1 requirements.

During the progress of work every care must be taken to prevent moisture penetration of the bricks. No bricklaying shall proceed during wet weather. Upon completion of each days work, exposed tops of brick veneers shall be protected from inclement weather.
Comply with NZS 4210 Cold Weather Construction and Hot Weather Construction requirements.

On completion or the works leave brickwork clean and free of marks and staining. All brickwork cleaning shall be done to the brick manufacturer's recommendations.
Thoroughly clean all other surfaces affected by the brickworks.

2.3.4 Mortar Pointing

Mortar joints shall be raked out, pointed and tooled to a depth not exceeding 6mm after the initial stiffening has occurred.

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3 WATERPROOFING

3.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

3.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

3740:2010(AS)	Waterproofing of domestic wet areas
4858:2004(AS/NZS)	Wet area membranes
NZBC E3/AS1	Internal Moisture

3.3 ARDEX Liquid-Applied Waterproofing Membranes

3.3.1 Scope

Supply and install the specified ARDEX Liquid-Applied Waterproofing Membranes to the locations indicated on the drawings, complete with all system components and accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with the manufacturer's requirements and technical literature (check www.ardex.co.nz, or call 0800 227 339 for the latest editions), other relevant product manufacturers' recommendations, and BRANZ Appraisal No.472 and No. 473, and as shown on the drawings.

No substitutions are permitted for any specified ARDEX Liquid-Applied Waterproofing Membranes, or ARDEX products, or ARDEX system components or accessories.

This specification should be read in conjunction with other relevant specification sections as they may be interrelated.

3.3.2 Requirements

3.3.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

3.3.2.2 Warranty

ARDEX NZ Ltd warrant this work under normal use and environmental conditions, against failure of materials and application, according to the warranty conditions.
- 15 Years' Warranty Materials and Workmanship - for all ARDEX Liquid-Applied Waterproofing Membranes.

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- Provide the aarranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of practical completion.

3.3.2.3 Substitutions

ARDEX Liquid-Applied Waterproofing Membranes shall be as specified herein and as indicated on the approved drawings. The substitution of ARDEX branded products for alternative brands is not permitted under any circumstances.

The substitution of a specified ARDEX waterproofing product for an alternative ARDEX branded product by the Applicator shall only be permitted with the Contract Administrator's authorisation, and shall be at no additional cost to the Principal. Should any resultant extra work and/or redesign work be required to accommodate alternative ARDEX branded products to satisfy design, performance and compliance requirements, then the cost of these shall be borne by the Applicator.

3.3.2.4 Quality Assurance

Maintain and comply with industry-recognised quality control and assurance procedures to ensure that all stages of ARDEX Liquid-Applied Waterproofing Membranes work are carried out to the highest standard.

3.3.2.5 Inspections & Reporting

BCA inspections shall take place at each of the stages as scheduled in the Building Consent. Confirm a written programme to facilitate these inspections, including notification when each stage of the work is ready for inspection.

Carry out all necessary pre-installation/application and installation/application inspections for each area of waterproofing work in accordance with the requirements of industry best practice recommendations and guidelines.

Complete all necessary Pre-Installation Checklists prior to installation/application, and all relevant Installation Checklists.

Complete all necessary Installation Sign-Off Certificates before undertaking subsequent work or before handing over completed work.

3.3.2.6 Defective Materials & Work

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. Rejected ARDEX Liquid-Applied Waterproofing Membranes materials and work shall be repaired and/or replaced to the satisfaction of the Contract Administrator, without delay and at no additional cost to the Principal.

Should a problem be encountered with any ARDEX waterproofing product during use or delivery, immediately contact the ARDEX Technical Hotline on 0800 227 339. Do not continue to use the product that is not performing to specification or expectation. Keep the product in question and where possible, the document batch numbers and/or manufacturing dates.

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3.3.2.7 Flood Testing

Make all necessary provisions for, and carry out all necessary flood testing of ARDEX waterproofing membranes in accordance with the requirements of the ARDEX Warranty. Carry out any additional works required as a result of the flood testing.

3.3.3 Performance

3.3.3.1 Durability

The durability requirements of ARDEX Liquid-Applied Waterproofing Membranes shall meet the requirements of NZBC B2/AS1: Table 1, according to Building Element, Component, Situation/Function, and Duration.

3.3.3.2 Interior Wet-Area Waterproofing Membranes

Interior Wet-Area Waterproofing Membranes. The performance of interior wet-area waterproofing membranes shall comply with the requirements of NZBC E3/AS1, in accordance with the 'Code of Practice for Internal Wet Area Membranes' prepared by the Waterproofing Association (NZ) Inc.

3.3.4 Interior Undertile Membrane

3.3.4.1 ARDEX WPM 002

Interior Undertile Waterproofing Membrane - ARDEX WPM 002. A 2-part, fast drying, cementitious-based, fibre-reinforced waterproofing membrane designed for use under tiles. Suitable for use on interior and exterior walls and floors, in wet areas, and on decks, balconies, and other areas that will be tiled or otherwise protected from regular foot traffic. ARDEX WPM 002 waterproofing membrane is suitable for continuously immersed tiling applications - refer to ARDEX Terchnical Bulletin - TB088 for swimming pool applications.

Features:
- BRANZ Appraised - refer to BRANZ Appraisal No.472.
- Conforms to the requirements of AS/NZS 4858 - meets class 3 classification (high extensibility).
- Designed for tiling applications - fully compatible with ARDEX tiling adhesive systems.
- Fibre reinforced - excellent strength, eliminates the need for a reinforcing mat.
- Low VOC.

Where to Use:
- On concrete structures; on new and existing concrete.
- On cement/sand screeds and renders.
- On fibre cement sheet - wet-area grade only; and compressed fibre cement sheet.
- On plasterboard wall lining - wet-area grade only.
- On plywood - wet-area grade only - interior use only.
- On particleboard - wet-area grade only - interior use only.

Limitations:
- Do NOT use ARDEX WPM 002 on substrates subject to negative hydrostatic pressure or rising damp, unless treated with ARDEX WPM 300.
- Do NOT allow ARDEX WPM 002 waterproofing membrane to be left exposed and subject to regular foot traffic.

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- All floor areas must have adequate built-in drainage falls prior to the application of ARDEX WPM 002 waterproofing membrane.

Primer & Sealer:
- Seal damp substrates and set concrete less than 28 days' old using ARDEX WPM 300 in accordance with ARDEX requirements.
- Seal set renders and screeds less than 7 days' old using ARDEX WPM 300 in accordance with ARDEX requirements.
- Prime all substrates receiving ARDEX WPM 002 waterproofing membrane using ARDEX WPM 265 in accordance with ARDEX requirements.

Application:
- Seal corner junctions and junctions where movement will occur with a neutral cure silicone sealant in accordance with ARDEX requirements.
- Treat movement control joints, waste outlets and penetrations in accordance with ARDEX requirements.
- Apply a minimum of two coats of ARDEX WPM 002 to achieve the required total dry film thickness - Floors, 1.2mm; Walls, 0.8mm - in accordance with ARDEX requirements.
- Reinforce ARDEX WPM 002 membrane between coats as necessary using ARDEX Deckweb fabric in accordance with ARDEX requirements.

Application Data (at +23° and 50% RH):
- Mixing Ratio: Part A + B = 1:1 by weight.
- Application Temperature Range: from +10°C to +35°C (surface temperature).
- Recoat Time: 1-2 hours.
- Ready to Tile: 16-24 hours after application, depending on humidity, surface temperature and porosity of substrate.
- Fully Cured: 3 days after application.
- Flood Test Time: at least 48 hours after application, and before tiling commences.
- Colour: Grey/green.

Apply ARDEX WPM 002 undertile waterproofing membrane to properly prepared substrates in strict accordance with the manufacturer's requirements.

Installed Location:

3.3.5 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to install ARDEX Liquid-Applied Waterproofing Membrane systems and products as required.

3.3.6 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

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All preparation and installation work shall be carried out by ARDEX Approved Applicators, familiar with the specified products and installation techniques, to fully comply with all ARDEX NZ Ltd warranty requirements and in accordance with the manufacturer's installation requirements, relevant ARDEX BRANZ Appraisals, and as noted and detailed on the drawings.

All work shall be such as to leave a neat, efficient, robust and waterproof installation.

Use only ARDEX-approved primers compatible with the specified membranes and substrates, and according to the membrane's application/use.

Do not install membranes in wet weather conditions, or when temperatures and humidity are outside the manufacturer's permissible range.

Make all necessary provisions to protect adjacent finished work and surfaces from damage and contamination during installation.

As necessary, protect installed membranes from damage and contamination during subsequent construction activities until permanently covered/enclosed.

3.3.7 Delivery & Handling

Store ARDEX waterproofing products inside, in a weatherproof environment, clear of the floor, on a flat, even and level surface. Keep stored products dry, out of direct sunlight and protected from damage, moisture and contamination.

Do not use damaged, defective or contaminated products, or products that are beyond their designated shelf life.

Should a problem be encountered with any ARDEX product, immediately contact the ARDEX Technical Hotline on 0800 227 339. Do not continue to use the product that is not performing to specification or expectation. Keep samples of the product in question and where possible, document batch numbers and/or manufacturing dates.

Handle ARDEX waterproofing products in accordance with the manufacturer's requirements as set out in the relevant Technical Data Sheet(s), and in a manner that prevents contamination or deterioration of the material and does not reduce its performance.

Installers shall be familiar with and comply with the manufacturer's Safety Data Sheet precautions for use, and use appropriate safety gear when handling materials.

Conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry.

3.3.8 Preparation

3.3.8.1 General

Substrates shall be structurally sound and dimensionally stable, even and smooth, clean, dry, and free from dirt, dust, grease, oil, wax, paint residue, loose plaster and laitance, curing

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compounds and other materials and contaminants likely to cause damage to the waterproofing membrane or affect its bonding and performance.

Carry out all necessary inspections and preparatory work to all substrates in accordance with the manufacturer's product Technical Data Sheet prior to application of ARDEX surface primers and waterproofing membranes.

Check that the substrate is free of voids and depressions, and is in correct alignment - true to line, level and/or plumb and to the falls indicated on the drawings.

Check that all embedded items are correctly installed, and that all substrate edges are completed as detailed.

Confirm the location of all movement control joints prior to commencement of the works, and ensure that they are appropriately treated. Do not cover or bridge control joints without the use of the manufacturer's recommended bond breaker tapes, flexible waterproofing bands, corners, sleeves, sealants etc, appropriate for the application and the ARDEX waterproofing membrane.

Allow floor levelling compounds and mortar screeds to properly cure in accordance with the manufacturer's recommendations before commencing waterproofing.

The commencement of work on each section of waterproofing shall be deemed to indicate full acceptance by the ARDEX Approved Applicator that all preparatory works by other trades are appropriate to achieve the required finished results.

Carry out all necessary substrate priming in accordance with ARDEX requirements.

3.3.8.2 Concrete Slabs

Reinforced Concrete Slabs - check all aspects of preparatory works, including but not limited to:
- Concrete slab surface finishes must be compliant with NZS 3114 'U3 Surface Finish'.
- New concrete must have aged for a minimum of 28 days prior to application of ARDEX waterproofing membranes.
- Old or soiled concrete must be thoroughly cleaned and washed and allowed to dry prior to application of waterproof membranes.
- Check the surface for damage and defects - have any surface damage and defects appropriately remedied.
- Check junctions with adjacent substrates and elements, ensuring that all necessary works have been completed as detailed.
- Ensure the substrate is dry and free of all loose material, sharp protrusions, hollows, etc., prior to priming and membrane application.
- Carry out all necessary substrate priming in accordance with ARDEX requirements.

3.3.8.3 Cement Screeds & Render

Cement Screeds & Render - check all aspects of preparatory works, including but not limited to:
- New screeds/render should be finished a wooden float and left to cure for at least 24 hours

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for every 25mm of thickness.
- Old or soiled screeds/render must be thoroughly cleaned and washed and allowed to dry.
- Check the surface for damage and defects - have any surface damage and defects appropriately remedied.
- Check junctions with adjacent substrates and elements, ensuring that all necessary works have been completed as detailed.
- Ensure the substrate is dry and free of all loose material, sharp protrusions, hollows, etc., prior to priming and membrane application.
- Carry out all necessary substrate priming in accordance with ARDEX requirements.

3.3.8.4 Plasterboard Wet-Area Lining

Water-Resistant Plasterboard Wet-Area Lining - check all aspects of preparatory works, including but not limited to:
- Check that the plasterboard sheets have been correctly installed in accordance with the manufacturer's requirements, and that all sheet edges are fully supported.
- Check that all sheet joints and fastening heads have been finished to the required standard.
- Check the surface for damage and defects - have any surface damage and defects appropriately remedied.
- Check junctions with all other substrates and elements, ensuring that all necessary works have been completed as detailed.
- Check that all apertures, openings, edges and expansion and movement control joints are completed as detailed.
- Carry out all necessary substrate priming in accordance with ARDEX requirements.

3.3.9 Completion

Check that ARDEX liquid-applied waterproofing membranes have been applied and installed correctly, with all edges, penetrations, outlets, movement control joints and other detailing correctly finished.

Check waterproofing membranes for defects, surface damage and punctures - carry out any repairs in strict accordance with the manufacturer's instructions before permanently covering. Replace damaged membranes when beyond repair.

As necessary, flood test waterproofing membranes in accordance the manufacturer's requirements and time frames - carry out any additional works necessary as a result of the testing.

Ensure waterproofing membranes are adequately protected from damage and contamination until permanently covered or enclosed.

Leave this work complete, watertight and leak-free, and to the required standard in accordance with ARDEX NZ Ltd requirements.

Clean up thoroughly, and leave adjacent surfaces and finished work clean and free of damage and contamination. Remove all associated rubbish from site.

Issue to the Owner a copy of the manufacturer's maintenance requirements (if applicable), and a copy of the ARDEX NZ Ltd Warranty.

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Queenstown Lakes District Council

4 CARPENTRY

4.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

4.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

1170.2:2011(AS/NZS)	Structural design actions - Wind actions
2295:2006(NZS)	Pliable, permeable building underlays
2588:2018(AS|NZS)	Gypsum plasterboard
2589:2017(AS/NZS)	Gypsum linings - Application and finishing
2728:2013(AS|NZS)	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
3601:1973(NZS)	Metric dimensions for timber
3602:2003(NZS)	Timber and wood-based products for use in building
3603:1993(NZS)	Timber Structures Standard
3604:2011(NZS)	Timber-framed buildings
3622:2004(NZS)	Verification of timber properties
3631:1988(NZS)	New Zealand timber grading rules
3640:2003(NZS)	Chemical preservation of round and sawn timber
4200.1:2017(AS|NZS)	Pliable building membranes and underlays - Part 1: Materials
4200.2:1994(AS/NZS)	Pliable building membranes and underlays - Installation requirements
9972:2015(AS/NZS ISO)	Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurization method
AS/NZS 1080.1:2012	Timber - Methods of test - Method 1: Moisture content
AS/NZS 1170.2:2021	Structural design actions, Part 2: Wind actions
AS/NZS 1604.2:2012	Specification for preservative treatment - Part 2: Reconstituted wood-based products
NASH Standard	Residential and Low-rise Steel Framing - Part 1: Design Criteria
NZBC B1/VM1	Structure
NZBC B2/AS1	Durability
NZBC C/AS2-AS6	Protection from Fire
NZBC E2/VM1	External Moisture
NZBC F2	Hazardous Building Materials
NZBC G6	Airborne and Impact Sound

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NZBC H1	Energy Efficiency
NZMRM Code of Practice	NZ Metal Roof and Wall Cladding Code of Practice - Version 3.0

4.3 General

This section includes the receiving, stacking and storage of all Carpenter's materials and the fabrication, erection and fixing of all framing, sheathings and finishing timbers, including all work incidental to neatly finishing in other trades and all temporary work and temporary bracing.

The Carpenter shall attend upon all trades, and shall supply and fix all obviously necessary but not specifically mentioned fixings and materials.

4.4 COLORSTEEL® - Profiled Metal Wall Cladding

4.4.1 Scope

Inland - Moderate (ISO C2)
Supply the selected COLORSTEEL® wall cladding and install on the areas identified on the elevations. All aspects of the work shall be in complete accordance with the COLORSTEEL® Installers Guide found at www.colorsteel.co.nz and any other relevant Product Manufacturers Recommendations.

4.4.2 Material

Profiled metal wall cladding shall be manufactured from COLORSTEEL® Maxam™. Pre-painted hot dipped aluminium/zinc/magnesium alloy coated steel coil, with a minimum coating weight of 150g/m², conforming with AS/NZS 2728 Class 6. COLORSTEEL®

Colour: TBC by Client

4.4.3 Profile

Trapezoidal 0.40mm G550
Trapezoidal 0.40 BMT x G550.
Location: Refer drawings

4.4.4 Cavity Batten and Closures

Castellated Cavity Battens for vertically orientated wall cladding over framing should be installed horizontal over the wall underlay and directly over nogs or girts at maximum spacing to suit the cladding profile and as shown on the drawings. Fix to timber framing with 40 x 2.5mm hot-dipped galvanised flat head nails or fix to lightweight steel framing with 6g x 30mm self-drilling (AS 3566 Corrosion Class 3) countersunk screws. Do not use battens treated with copper azole or AQC treatment. Where shown and as specified on the drawings, install a separation layer over the face of timber cavity battens to ensure isolation of materials between the cladding and the cavity batten. Closures to be UPVC installed as per design details and manufacturers requirements.

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4.4.5 Ancillary Components & Accessories

Cladding screw fastener type and durability shall comply with AS 3566 Class 4 or Class 5, as appropriate, and be no less than the durability of the material being fixed. Fastener type and placement (frequency) shall be appropriate for the environmental conditions and the specified cladding profile and material and the supporting structure material; all in accordance with the NZMRM Code of Practice and E2 External Moisture.

Metal Flashings. Profiled metal cladding flashings shall be fabricated from material with the same coating as the cladding material, to maintain durability and compatibility requirements. Flashings shall be 0.55BMT G300 steel or H34 Aluminium coated to the same standards as the profiled cladding sheets, and notched/scribed when installed across the cladding profile or provided with a soft edge – in accordance with COLORSTEEL® and NZMRM Code of Practice requirements.

Flashings, flashing fastenings and fastening frequency shall be in accordance with the NZMRM Code of Practice.

Do not construct flashing joints and flashing junctions in a manner that relies entirely on sealant to maintain weathertightness.

Rivet Fastenings. Rivets shall be sealed aluminium minimum 4mm diameter.

Use only neutral-curing silicone or MS polymer sealant, compatible with the specified metal cladding and flashing materials and finishes, that is suitable for the required application and use in accordance with the sealant manufacturer's instructions and to NZMRM Code of Practice requirements. All sealed joints must be mechanically fastened, and excess sealant neatly removed to prevent unnecessary dirt build-up. Sealant shall only be used to seal between two metal surfaces, do not fill holes or gaps with sealant.

Proprietary Collar Flashings. EDPM or silicone-polymer proprietary flexible collar flashings for weatherproofing cladding-penetrating pipes/flues/ducts. Sized to suit the applicable pipe/flue/duct and installed in strict accordance with the manufacturer's requirements and the NZMRM Code of Practice.

Profiled Foam Closure Strip. Non-bituminous, compressible, closed-cell foam strips profiled to fit the specified cladding profile. Installed to the details shown on the drawings and in accordance with COLORSTEEL® and NZMRM Code of Practice recommendations.

4.4.6 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings. Co-ordinate with other trades to ensure that the Profiled Metal Wall Cladding allows for joinery installation, the location of pipes, outlets, meter boards and other fixtures and fittings installed by others, and to install the Profiled Metal Wall Cladding as required. Co-operate with installers of other wall cladding materials to agree on details and responsibility for achieving a weather tight connection between materials.

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4.4.7 Qualifications & Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.
All installation work shall be carried out by experienced and competent tradespersons, familiar with the specified products and installation techniques and suitably qualified to install Profiled Metal Wall Cladding, to fully comply with all warranty requirements in accordance with the manufacturer's requirements.

Installers of COLORSTEEL Maxam® shall be supervised by an accredited COLORSTEEL Maxam® installer.

All cutting, fixing and installation techniques, fastenings and sealants shall be exactly as recommended by and in accordance with the NZMRM Code of Practice, and carried out with the use of suitable tools and equipment appropriate for the application.

Always maintain isolation of dissimilar materials in accordance with the NZMRM Code of Practice Section 4.10. Isolate dissimilar materials (metal and non-metal) in close proximity as necessary by fitting separator strips. Place isolators between metals and treated timber or cement-based materials. Do not allow unpainted lead-sheet or copper materials to come in contact with, or allow water run-off from these onto COLORSTEEL®, Zincalume® or galvanised materials.
All work shall be such as to leave a neat, efficient, robust and weathertight installation.

4.4.8 Delivery & Handling

Store COLORSTEEL® profiled metal wall cladding, flashings and accessories clear of level ground, on bearers at evenly spaced centres as recommended by the NZMRM Code of Practice. Keep stored materials and accessories dry and protected from damage and contamination at all times.

Do not use damaged or defective materials or products, or products that are beyond their designated shelf life.

Handle materials in accordance with the manufacturer's requirements and in a manner that prevents damage to or deterioration of the material, including surface marking.

4.4.9 Preparation

Check that the specified building underlay (to NZS 2295) has been installed in accordance with NZBC requirements and the manufacturer’s recommendations, and with all finishing tapes, flashings etc. at windows, doors, corners and penetrations all correctly incorporated to provide a continuous seal.

Check that appropriate additional restraint is correctly installed over the underlay to keep bulk insulation from pushing the underlay into the cavity space.

Ensure that all underlays directly behind Profiled Metal Wall Cladding are of absorbent type as required in E2/AS1 Table 23. Check that all preparatory materials are lapped such that any water will run down to the exterior.
Check that ground levels and drains are constructed so that there will be no ponding water

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against the building, and that the ground will always remain clear of the cladding by at least 100mm in accordance with E2/AS1.

4.4.10 Installation

Installers shall be familiar with and comply with the manufacturer's safe handling requirements and precautions for use and shall use appropriate safety gear when handling materials. Installers shall conform with all relevant WorkSafe NZ Guidelines Working at Heights.

Ensure cavity battens and closures are installed in accordance with specifications and suitable separation is provided between treated battens and Profiled Metal Wall Cladding.

Install Profiled Metal Wall Cladding in accordance with the design drawings. Confirm the layout and location of all control joints; the layout of the cavity battens; and any specific cladding detailing requirements prior to installation.

Prevent contact with, or run-off from, incompatible materials in accordance with the recommendations in the NZMRM Code of Practice.
Protect the coated surface from damage at all times; replace the whole sheet where a significant depth of the coating has been damaged (including flashings).

Accurately set-out the planned cladding layout prior to fixing to ensure true and accurate cladding lines and incorporate correct relationships with other design features shown on the drawings; maintain this accurate set-out throughout installation.

Keep cladding lines consistent and true along walls and around corners; with side-laps of vertically orientated sheets directed away from the prevailing wind and/or line of sight; to straight, true and accurately aligned lines in both directions - vertical and horizontal. Check for and eliminate any creep and/or spread of sheets during installation.

Cut metal cladding and flashings by shear only - do not use abrasive cutting tools. Do not use black lead pencils for marking pre-finished metal cladding and flashings.

Screw fastenings for pre-painted metal must be pre-painted prior to installation for an accurate colour match.

All cladding jointing techniques and sealants shall be in accordance with the NZMRM Code of Practice and shall be compatible with the cladding material and finish. Joints shall be sealed with an approved neutral-cure sealant or approved closed-cell lap tape.

Install fasteners in a straight line with a consistent fastening pattern on each sheet to achieve a flat surface and resist design wind loads. Fasteners into timber are to have a minimum of 30mm embedment into structural framing. For pierce fastened profiles, fasteners are to be positioned in the pan adjacent to a rib unless otherwise specified.

Install fasteners in a straight line with a consistent fastening pattern on each sheet to achieve a flat surface and resist design wind loads. Fasteners into steel are to have a minimum

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penetration of three threads through the steel member. For pierce fastened profiles, fasteners are to be positioned in the pan adjacent to a rib unless otherwise specified.

Fasteners are to be set using a snug fitting socket and a setting tool that does not unduly damage the finish coating of the screw. Depth of setting is to be sufficient to achieve slight compression of the sealing washer without distorting the profile or the sealing washer itself. Aluminium rivets are to be sealed type pre-painted to match cladding, minimum 4mm diameter. Clip-fastened sheets shall be fixed with concealed proprietary fastening clips appropriate for the cladding profile and material, substrate/structure and the environment in accordance with the NZMRM Code of Practice recommendations.

Install flashings to internal and external corner junctions, window/door and other openings, eave and soffit junctions, parapets and at junctions with other cladding systems and building elements as detailed on the drawings and in accordance with the Zealand Metal Roofing Code of Practice. All flashings shall be neatly formed and finished, securely fastened to the structure, weatherproof, and lapped such that any water will run down to the exterior. For highly visible flashings, plan each flashing joint and/or junction with specific regard to aesthetic requirements. Penetration flashings shall be as per the design details and shall not rely solely on silicone sealant to achieve weathertightness of the flashing.

Form vertical movement control joints to the locations, layout and details shown on the drawings. Movement control joints shall be aligned with control joints in the structural framing. Confirm the location of movement control joints prior to installation.

Handle sheets carefully to avoid scratching and denting. Do not walk on wall cladding sheets prior to installation. Remove strippable film, if applied, immediately after installation of wall cladding to avoid resin staining. All accessories are to be colour matched prior to installation, do not use colour match paint for repairing any blemishes. Ensure sealant is trapped between joint surfaces and not exposed to the visual surface.

4.4.11 Compatibility

Ensure material is isolated from incompatible materials. It must not be in contact with, or receive run off from, less noble metals such as copper, brass and lead. It should not be in wet contact with stainless steel. Sustained wet contact with timber, either treated or untreated, must be avoided. For more information, see the COLORSTEEL® Installers Guide (available at www.colorsteel.co.nz).

4.4.12 Completion

Check that the Profiled Metal Wall Cladding and associated components and flashings have been installed and finished correctly. Check for defective work, damage and surface marking - replace and/or repair as necessary. Ensure that the work of other trades does not reduce the clearances of the cladding to ground, deck or roof that are required by the NZ Building Code. Leave all work complete and weathertight and to the required standard in accordance with the New Zealand Metal Roofing Code of Practice.
Leave the completed works and surrounding surfaces clean and free of debris and rubbish. Remove all rubbish and excess material from the site.

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Provide the cladding material manufacturer's/supplier's 'Product Warranty' for the installed metal cladding product. Warrant this work under normal conditions and use against failure of coating and for weatherproofing by material penetration. Commence the warranty from the date of practical completion of the contract works.
Maintenance should be carried out in accordance with the COLORSTEEL® 'Environmental Categories, Warranty & Product, Maintenance Recommendations Brochure'.

4.5 Timber Framing

4.6 GIB® Plasterboard Linings

4.6.1 Scope

Supply and install GIB® Plasterboard Linings specified herein, as sheet lining materials to the walls, ceilings and other elements identified on the drawings, complete with all accessories required for proper installation, finishing and performance. All aspects of this work shall be in complete accordance with the current GIB® Site Guide and relevant GIB® Systems literature (check www.gib.co.nz, or call 0800 100 442 for the latest editions), and other relevant product manufacturers' recommendations.

No substitutions are permitted for GIB® Plasterboard Linings, GIB® Systems or GIB® System components and accessories.

This specification must be read in conjunction with relevant GIB® Systems specifications - GIB® EzyBrace® Systems, GIB® Fire Rated Systems, GIB® Noise Control Systems, GIB® Aqualine® Wet Area Systems, GIB® X-Block® Systems, GIB® Quietline®, GIB® Intertenancy Barrier System, and GIB® Rondo® Metal Batten Systems - and other specifications sections, as they are interrelated

4.6.2 Requirements

4.6.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

4.6.2.2 Warranty

GIB® Product & System Warranty:

GIB Systems Durability.
The following systems have, unless stated otherwise in GIB® technical literature, a serviceability life in excess of that stated and satisfy the requirements of NZBC Clause B2 Durability:
15 Years:
- GIB Aqualine® Wet Area Systems.

50 Years:
- GIB® Fire Rated Systems

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- GIB EzyBrace® Systems
- GIB X-Block® Systems
- GIB Noise Control® Systems.

Provide the GIB® Product & System Warranty on the manufacturer's standard warranty form. Commence the warranty from the date of practical completion of the contract works.

Include with the warranty: a copy of the completed GIB® Installation Sign-Off sheet, and the GIB® Plasterboard Lining Systems Care and Maintenance bulletin.

4.6.2.3 Quality Assurance

Ensure that the installation and finishing of GIB® Plasterboard Linings and associated GIB® Systems comply in all respects with the approved design drawings and specifications, and Building Consent.

Maintain and comply with industry-recognised quality control and assurance procedures to ensure that all stages of work are carried out to the highest standard.

4.6.2.4 Inspection & Acceptance of GIB® Plasterboard Linings

Carry out all necessary pre-installation, installation and finishing inspections of GIB® Plasterboard Linings for each area of work in accordance with the requirements of the GIB® Site Guide and associated industry Code of Practice (AWCI) recommendations.

Complete the GIB® Site Guide Pre-Installation Checklist prior to installing GIB® plasterboard linings, and relevant GIB® Performance Systems Installation Checklists.

Complete the GIB® Interior Plasterer/Stopper Installation Sign-Off Certificate upon completion and before handover for subsequent decoration.

4.6.2.5 Defective Materials & Work

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. Rejected GIB® Plasterboard Linings and GIB® Systems materials and work shall be repaired and/or replaced to the satisfaction of the Architect/Designer, without delay and at no additional cost to the Principal.

4.6.3 Performance

4.6.3.1 Limitations of GIB® Plasterboard

GIB® plasterboard products must NOT be:
- used in external situations, or
- exposed to water or be installed in situations where extended exposure to humidity above 90% RH can reasonably be expected, or
- exposed to temperatures in excess of 52°C for prolonged periods.

4.6.3.2 Bracing Performance - Timber Framing

Bracing Performance - GIB EzyBrace® Systems - Timber Framing. To the timber framed elements noted as 'Bracing' on the drawings, additionally comply with all relevant aspects of the GIB EzyBrace® Systems (2016) publication and GIB Ezybrace® Bracing Software according to the specified bracing unit rating, BRANZ Appraisal No.928, and other relevant

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product manufacturers' recommendations. Refer to separate specification GIB EzyBrace® Systems.

4.6.3.3 Wet Areas

Wet Area Plasterboard Linings - GIB Aqualine® Wet Area Systems. To the areas noted as 'Wet Area' on the drawings, additionally comply with all relevant aspects of the GIB Aqualine® Wet Area Systems publication, BRANZ Appraisal No.427 (2021), and other relevant product manufacturers' recommendations. Refer to separate specification GIB Aqualine® Wet Area Systems.

4.6.4 GIB® Plasterboard Linings

4.6.4.1 GIB® Standard Plasterboard, 10mm

GIB® Standard Plasterboard, 10mm. A 10mm thick standard plasterboard interior lining. Suitable for use in residential and commercial applications on walls. Manufactured to exceed the requirements of AS/NZS 2588. Refer to the GIB® Site Guide.

Installed Location:

4.6.4.2 GIB® Standard Plasterboard, 13mm

GIB® Standard Plasterboard, 13mm. A 13mm thick standard plasterboard interior lining. Suitable for use in residential and commercial applications on walls and ceilings. Manufactured to exceed the requirements of AS/NZS 2588. Refer to the GIB® Site Guide.

Installed Location:

4.6.4.3 GIB Braceline® & GIB Noiseline®, 10mm

GIB Braceline® & GIB Noiseline®, 10mm. A 10mm thick dual purpose plasterboard interior lining, with a high-density core for extra bracing and noise control performance. Suitable for use in residential and commercial applications on walls and ceilings where increased bracing and noise control performance is required. Manufactured to exceed the requirements of AS/NZS 2588. Refer to the GIB® Site Guide.

Installed Location:

4.6.4.4 GIB Aqualine®, 10mm

GIB Aqualine®, 10mm. A 10mm thick moisture resistant plasterboard interior lining, with a water resistant polymer impregnated core to help prevent moisture penetration. Suitable for use in residential and commercial applications on walls and ceilings in spaces at risk from water or moisture damage. Manufactured to exceed the requirements of AS/NZS 2588. Refer to the GIB® Site Guide.

Installed Location:

4.6.4.5 GIB Aqualine®, 13mm

GIB Aqualine®, 13mm. A 13mm thick moisture resistant plasterboard interior lining, with a water resistant polymer impregnated core to help prevent moisture penetration. Suitable for use in residential and commercial applications on walls and ceilings in spaces at risk from

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Queenstown Lakes District Council

water or moisture damage. Manufactured to exceed the requirements of AS/NZS 2588. Refer to the GIB® Site Guide.

Installed Location:

4.6.5 Components & Accessories

4.6.5.1 GIBFix® Framing System

GIBFix® Framing System - incorporating GIBFix® Angle and GIB® Grabber® Dual Thread Drywall Screws. Refer to the GIB® Site Guide, and to separate specification GIBFix® Framing System.

4.6.5.2 Plasterboard Fasteners

GIB® Plasterboard Fasteners. Fasteners for fixing GIB® Plasterboard Linings shall be selected and used according to best fixing practices and the GIB® Site Guide and relevant GIB® Systems literature. Fastener heads shall be set slightly below the plasterboard sheet surface without breaking the paper facing.

Screw Fixing to Timber Framing:
- GIB® Grabber® High Thread Drywall Screws: A coarse high-thread screw for fixing into timber with superior holding power and ease of penetration.
- GIB® Grabber® Self Tapping Drywall Screws: A fine self-tapping thread, needle point screw, suitable for fixing to timber and light gauge steel framing.
- GIB® Grabber® Dual Thread Drywall Screws: A dual coarse/fine threaded, needle point screw, as a component of the GIBFix® Framing System and for fixing to timber framing.

Nail Fixing to Timber Framing:
- GIB Nail: Passivated coated, annular grooved, bugle head drywall nails with chequer-keyed head.

Screw Fixing to Light Steel Framing:
- GIB® Grabber® Self Tapping Drywall Screws: A fine self-tapping thread needle point screw, suitable for fixing to light gauge (0.45-0.95mm) steel framing.
- GIB® Grabber® Dual Thread Drywall Screws: A dual coarse/fine threaded, needle point screw, suitable for fixing to light gauge (0.45-0.95mm) steel framing.

4.6.5.3 Adhesives

GIB® Adhesives. In addition to GIB® plasterboard fasteners, fix GIB® Plasterboard Linings using GIB® adhesives in accordance with the requirements of the GIB® Site Guide and GIB® System literature.

GIB® Adhesives:
- GIBFix® One: An acrylic based plasterboard adhesive with ultra low VOC, suitable for use on timber and metal substrates, including all treated timber. Minimum application temperature - 10°C.
- GIBFix® All-Bond: A solvent based plasterboard adhesive, suitable for use on timber and metal substrates, including all treated timber. Do not use on polystyrene surfaces.

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4.6.5.4 Paper Faced Metal Trims

GIB® Goldline® Paper Faced Metal Trims. Paper-faced metal corner beads and edge trim made with a patented, high quality paper laminated to galvanised steel forms. Paper faced metal trims shall be embedded in jointing compound - do not mechanically fasten paper faced trims. Installed in accordance with the requirements of the GIB® Site Guide and GIB® Systems literature.

GIB® Goldline® Profiles:
- External 90° Corner Trim (G1-W): profile available in 2.4/2.7/3.0m lengths.
- External 135° Corner Trim (G1-O): profile available in 2.4m lengths.
- Internal 90° Corner Trim (G2): profile available in 2.4/2.7/3.0m lengths.
- Internal 135° Corner Trim (G2-O): profile available in 2.4m lengths.
- Bullnose External 90° Corner Trim (G1-B): profile available in 2.4/2.7/3.0m lengths.
- Reveals (GR): profiles available for 10mm thick and 13mm thick plasterboard.
- L-Trims (G4): profiles available for 10mm thick and 13mm thick plasterboard.

4.6.5.5 Proprietary Control Joints

GIB® Plasterboard Control Joints. Form movement control joints in plasterboard lined walls and ceilings to the locations and details shown on the approved drawings. Where not indicated on the drawings, movement joints shall be positioned in accordance with the requirements and recommendations given in the GIB® Site Guide and relevant GIB® Systems literature.

When not specified on the drawings, select the most suitable GIB® Plasterboard Control Joint according to location, application, durability, and finish detail required.

GIB® Plasterboard Control Joints:
- Metal Control Joint: GIB® Rondo® P35 Control Joint, with perforated metal flanges. 18mm wide. Available in 3.0m lengths.
- Plastic Smooth Control Joint: GIB® Plastic Smooth Control Joint, with flush face. 10mm wide. Available in 3.0m lengths.
- Plastic W-Profile Control Joint: GIB® Plastic W-Profile Control Joint, with tear-away beads. 14mm wide. Available in 3.0m lengths.

4.6.5.6 Joint & Finishing Compounds

GIB® Compounds. Use the most suitable GIB® Compounds to joint and finish GIB® Plasterboard Linings according to the plasterboard type, location, application, durability, and quality of finish required. GIB® Compounds shall be applied and finished in accordance with the manufacturer's requirements to the specified finish level, and used in conjunction with GIB® Paper Joint Tape and GIB® Plasterboard Trims.

GIB® Compounds:
- GIB TradeSet®: Setting type compound. Suitable for Tape Coat, 2nd Coat. Easy to scrape. 20/45/90/150 minute working/set times.
- GIB MaxSet®: Setting type compound. Suitable for Tape Coat, 2nd Coat. Scrape while 'green'. 90 minute working/set time.
- GIB Lite Blue®: Setting type compound. Suitable for 2nd Coat. Easy sanding. 90 minute working/set time.

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Queenstown Lakes District Council

- GIB Trade Finish® Heavy Weight: Air drying ready-mix type compound. Suitable for Finishing Coat. Moderate sanding.
- GIB Trade Finish® Multi: Air drying ready-mix type compound. Suitable for Tape Coat, 2nd Coat; Finishing Coat. Easy sanding.
- GIB Trade Finish® Lite: Air drying ready-mix type compound. Suitable for Finishing Coat. Very easy sanding.
- GIB Promix® Lite: Air drying ready-mix type compound. Suitable for Finishing Coat. Very easy sanding.
- GIB® U-Mix: Air drying powder-mix type compound. Suitable for Finishing Coat. Easy Sanding.
- GIB Plus 4®: Air drying ready-mix type compound. Suitable for Tape Coat, 2nd Coat, Finishing Coat. Very easy sanding.
- GIB Promix® All Purpose: Air drying ready-mix type compound. Suitable for Tape Coat, 2nd Coat, Finishing Coat. Moderate sanding.
- GIB-Cove® Bond: Setting type compound. Suitable for bonding GIB-Cove® cornice, back-blocking plasterboard linings, and direct-bonding plasterboard to concrete and masonry walls. Hard to scrape. 45/90 minute working/set times.
- GIB X-Block® Jointing Compound: Used in conjunction with GIB X-Block® plasterboard wall and ceiling linings in accordance with the GIB X-Block® Radiation Shielding publication.

4.6.5.7 Joint Tape

GIB® Paper Joint Tape. A 50mm wide, spark perforated paper joint tape used to strengthen joints between plasterboard sheets. Centre-creased for internal and external corner applications. Recommended for jointing GIB® plasterboard wall and ceiling linings in accordance with the GIB® Site Guide and GIB Systems literature.

4.6.5.8 Wet Area Sealant

Wet Area Sealant. A mould resistant, flexible, neutral curing silicone sealant with strong adhesion, suitable for wet area applications and where there is high humidity, including bathrooms, toilets, showers, wash-down areas, kitchens, laundries.

Applied in accordance with the sealant manufacturer's instructions, as required by the GIB® Site Guide and GIB® System literature. Sealant joints shall be in accordance with the sealant manufacturer's joint design width-to-depth ratio.

Manufacturer & Brand:

4.6.6 Level of Finish

4.6.6.1 Level of Finish

To the areas noted as a specific Level of Finish (3-5) on the drawings, additionally comply with all relevant aspects of the GIB® Site Guide and AS/NZS 2589, complete with all system accessories, and other relevant product manufacturers' recommendations.

NOTE: Unless stated otherwise, Level 4 is the default Level of Finish.

4.6.6.2 Acceptance of Levels of Finish

Carry out all necessary inspections and assessments of completed plasterboard jointing and finishing prior to hand-over for subsequent decoration.

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Do not apply surface sealers and decorative treatments until written agreement between the Contractor and Painter/Decorator is given confirming the specified Finish Levels have been achieved and the plasterboard linings are ready for subsequent sealing and decoration.

4.6.7 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.
Co-operate with the Decorator to ensure that the specified Finish Levels for plasterboard jointing and finishing is achieved before decorating commences.

Coordinate with other trades to install GIB® Plasterboard Linings as required, and to ensure that:
- appropriate tolerances and clearances allow for adjacent internal linings, fixtures, fittings, services, etc; and
- the linings correctly allow for proper door and window installation; and
- penetrations for building services are correctly handled to maintain sheet integrity and system performance.

4.6.8 Workmanship

Where required by the NZ Building Act 2004, it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

Installation and finishing work of GIB® Plasterboard Linings shall be carried out by qualified and experienced tradespersons, familiar with the specified materials and installation and finishing techniques, in accordance with the GIB® Site Guide and the relevant GIB® product technical literature, and to fully comply with all warranty requirements. Submit evidence of experience on request, e.g. National Certificate of Interior Systems, or Certified Business Member of AWCINZ.

GIB® Plasterboard Linings shall be jointed and finished to the specified Finish Levels in accordance with AS/NZS 2589 and GIB® Site Guide. Make all necessary arrangements for the quality assessment of plasterboard jointing and finishing Finish Levels prior to commencing decorating.

All cutting, fixing, jointing, finishing and sealing techniques shall be exactly as recommended by the manufacturer. All work shall be such as to leave a neat, efficient and robust installation, to the required standard and free from damage and defects.

Protect surrounding surfaces and areas from jointing compound splashes and sanding dust.

4.6.9 Delivery & Handling

Store GIB® Plasterboard Linings indoors, in neat, flat stacks off the floor, in dry conditions and without any sagging or distortion, in accordance with the GIB® Site Guide. Keep plasterboard linings, compounds and accessories dry, out of direct sunlight, and protected from damage, moisture and contamination at all times.

Do not use damaged or defective materials and products, or products that are beyond the designated shelf life.

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Should a problem be encountered with any GIB® product during installation or delivery, immediately contact the GIB® Helpline on 0800 100 442. Do not continue to use the product that is not performing to specification or expectation. Keep samples of the product in question and where possible, document batch numbers and/or manufacturing dates.

Handle all products and materials in accordance with the manufacturer's requirements and relevant Product Data Sheets and GIB® Site Guide, and in a manner that prevents damage. Carry plasterboard sheets on edge, and avoid damage to sheet edges, ends, and surfaces.

Installers shall be familiar with and comply with the requirements of the GIB® Site Guide precautions for use, and use appropriate safety gear when handling materials.

Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice.

4.6.10 Preparation

4.6.10.1 General

All framing and substrates shall be complete and ready for GIB® Plasterboard Lining installation.

Timber framing shall comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design, and have a maximum moisture content 18% at the time of plasterboard lining installation.

Light structural steel framing shall comply with the requirements of AS/NZS 4600 or the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria. All light structural steel framing members shall satisfy the requirements of AS/NZS 1170. Comply with the steel framing fabricator's specifications and requirements for plasterboard installation.

Steel stud partitioning shall comply with AS 1397 and as specified and shown on the drawings. Comply with the manufacturer's specifications and requirements for plasterboard installation.

Concrete substrates shall comply with the CCANZ CP 01:2011 or with NZS 3109. New concrete must have aged for a minimum of 28 days. Ensure that concrete surfaces are within the tolerances specified. For of direct bonded plasterboard linings, concrete substrates must below 75% relative humidity prior to installation.

Concrete masonry substrates shall comply with NZS 4229, or with NZS 4230 and AS/NZS 1170 for specific design. For of direct bonded plasterboard linings, concrete masonry substrates must below 75% relative humidity prior to installation.

Carry out all necessary moisture readings. Do not commence installation until the moisture readings are below the required level.

Carry out all necessary substrate inspections and preparatory work in accordance with the manufacturer's recommendations and the GIB® Site Guide prior to installation. Complete and sign the GIB® Site Guide Pre-Installation Checklist.

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Check that the building envelope has been finished at all penetrations including doors, windows, services, etc., and the building is weathertight.

Check junctions to all other building elements and ensure that all necessary works have been completed, including cavity insulation.

Check that all fixtures, fittings and built-in items are correctly installed, and that all framing and substrate edges are completed as detailed.

Confirm the location and details of movement control joints, as indicated on the drawings, prior to installation.

Ensure all pre-wiring and service piping is installed and complete.

Check that any required cavity insulation has been installed correctly and its bulk thickness does not exceed the framing thickness.

Remove all debris and rubbish from framing voids prior to installing linings.

The commencement of work on each section/area shall be deemed to indicate full acceptance by the installer that all preparatory works by other trades is complete.

4.6.10.2 Framing Check

Framing - check all aspects of preparatory works, including but not limited to:
- Check that the framing is straight and true to line, and is plumb/level and correctly aligned.
- Check that the framing is within the required deviation tolerances defined in AS/NZS 2589 according to the specified Finish Level.
- Check that vertical and horizontal framing members are at the spacings shown on the drawings, and that any required battens or furring channels are installed to the required layout.
- Check that the framing has no projections due to structural and bracing bracketry, etc. Ensure that framing brackets, plates, braces, hold-downs, etc., are correctly installed.

4.6.10.3 Work above Ceilings

Check that all building work, mechanical, plumbing, electrical, fire protection and other services installed above the ceiling are completed and independently supported by the building structure - not by the ceiling system.

4.6.11 Installation

4.6.11.1 General

Install GIB® Plasterboard Linings and accessories in accordance with the requirements of the GIB® Site Guide and product technical literature and associated fixing schedules, to the locations and details shown on the drawings. For GIB® Performance Systems, refer to the relevant GIB® system specification.

Prior to installation, confirm:
- The locations and construction details of all movement control joints;
- The locations and installation details of all building services items within framed structures;

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- The specified GIB® plasterboard installation and fixing requirements;
- The specified Finish Level(s) for the plasterboard linings.
- Subsequent surface treatments and finishes applied to GIB® plasterboard.

4.6.11.2 Wall Linings - Horizontally Fixed - Timber Frame

GIB® Plasterboard Wall Linings Horizontally-Fixed to Timber Framing. Install GIB® plasterboard sheets horizontally, at right angles to studs, with any end-joints staggered, and with the bottom edge of the lower sheet gapped 5–10mm off finished floor level.

All joints between sheets shall be touch fitted. Eliminate or minimise the butting of sheet end-joints by using full-length or long-length sheets. Give careful consideration to the placement of sheet joints. Where possible, place joints in situations where they are less likely to be affected by critical lighting.

It is recommended that sheet end joints in horizontally fixed plasterboard be unsupported, off-stud and back blocked - stud centres must not exceed 600mm. For plasterboard linings with Level 3 Finish and Level 4 Finish, sheet end joints can be located on-stud.

Sheet end joints at openings, such as window and door openings, shall not coincide with the vertical edges of the opening - sheets shall be fitted so that the vertical end joint falls minimum 200mm either side of the edge of the opening.

Plasterboard sheets shall be fixed to timber framing in conjunction with GIBFix® adhesive applied at maximum at 300mm centres to intermediate studs. Do not apply adhesive at sheet edges or within 200mm of fasteners. Firmly press the plasterboard where adhesive has been applied to ensure full contact.

Fix sheets to timber framing with GIB® Grabber® High Thread Screws or GIB® Nails in accordance with GIB® Site Guide fastener schedule. Place fasteners at 300mm centres to top and bottom plates and to perimeter studs, and to each stud where the horizontal joint crosses the stud, with screws no closer than 12mm from sheet edges. It is recommended that fasteners at wall corners are placed 50mm in from the corner in each direction (horizontal/vertical).

Install all necessary paper-faced and metal beads, casing beads, shadow and reveal beads and other edge trims to plasterboard corners and edges as necessary and as detailed on the drawings.

Form movement control joints to the locations and details shown on the approved drawings. Where not indicated on the drawings, movement joints shall be positioned at maximum 12m intervals in both directions (horizontally/vertically), and shall coincide with movement joints in the primary structure, and where there is a change in wall lining material.

Accommodate piped and cabled services and other building services fixtures and fittings that penetrate the wall lining.

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4.6.11.3 Wall Linings - Vertically Fixed - Timber Frame

GIB® Plasterboard Wall Linings Vertically-Fixed to Timber Framing. Install GIB® plasterboard sheets vertically, parallel with studs, with any end-joints staggered, and with the bottom edge of the lower sheet gapped 5–10mm off finished floor level.

All joints between sheets shall be touch fitted. Eliminate or minimise the butting of sheet end-joints by using full-length or long-length sheets. Give careful consideration to the placement of sheet joints. Where possible, place joints in situations where they are less likely to be affected by critical lighting.

Form sheet edge joints on studs. Short vertical edge joints (400mm or less) such as above windows and door can be made off stud and back blocked.

Sheet joints at openings, such as window and door openings, shall not coincide with the vertical edges of the opening - sheets shall be fitted so that the vertical end joint falls minimum 200mm inside the edge of the opening.

Plasterboard sheets shall be fixed to timber framing in conjunction with GIBFix® adhesive applied at maximum at 300mm centres to intermediate studs. Do not apply adhesive at sheet edges or within 200mm of fasteners. Firmly press the plasterboard where adhesive has been applied to ensure full contact.

Fix sheets to timber framing with GIB® Grabber® High Thread Screws or GIB® Nails in accordance with GIB® Site Guide fastener schedule. Place fasteners at 300mm centres around the perimeter of each sheet, no closer than 12mm from sheet edges. It is recommended that fasteners at wall corners are placed 50mm in from the corner in each direction (horizontal/vertical).

Install all necessary paper-faced and metal beads, casing beads, shadow and reveal beads and other edge trims to plasterboard corners and edges as necessary and as detailed on the drawings.

Form movement control joints to the locations and details shown on the approved drawings. Where not indicated on the drawings, movement joints shall be positioned at maximum 12m intervals in both directions (horizontally/vertically), and shall coincide with movement joints in the primary structure, and where there is a change in wall lining material.

Accommodate piped and cabled services and other building services fixtures and fittings that penetrate the wall lining.

4.6.11.4 Jointing & Finishing

Joint and finish GIB® Plasterboard Linings with GIB® joint and finishing compounds appropriate for the plasterboard type and durability, and the finish level required. Refer to Joint & Finishing Compounds clause.

Carry out jointing and finishing according to the specified Finish Level in accordance with the GIB® Site Guide and GIB® Compounds brochure. Reinforce sheet joints and internal corners with joint tape or paper-faced trim embedded into the Taping (first) Coat.

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Sheet joints, internal and external corners, and fastener heads shall be evenly finished with GIB® compounds. When dry, lightly sand to a smooth finish with 220 grit sandpaper or drywall sanding screen to remove tool marks, ridges and other imperfections prior to subsequent sealing and decorating.

4.6.12 Completion

Check that GIB® Plasterboard Linings have been installed in accordance with the GIB® Site Guide and GIB® Systems literature, and are finished to the specified finish levels.

Check for any damage and defective work - repair or replace as necessary to the required standard.

Ensure that inspection and assessment of the plasterboard Finish Level has been carried out, and that written agreement stating the completed jointing and finishing is acceptable for subsequent surface sealing and decoration has been provided.

Ensure that the GIB® Installation Sign-Off Certificate has been completed and signed by the Interior Plasterer/Stopper.

Leave all of this work complete and to the required standard in accordance with the manufacturer's warranty requirements, as shown on the drawings and the conditions of the Building Consent.

Clean up thoroughly and leave the finished work and surrounding surfaces clean and free of contamination from compound splashes and dust. Remove all associated rubbish and excess material from the site.

Issue to the Owner a copy of the GIB® Plasterboard Lining Systems Care and Maintenance bulletin, and a copy of the GIB® Product and System Warranty.

Preparation and painting (by others) of GIB® Plasterboard Linings shall be carried out in accordance with AS/NZS 2311 and with the paint manufacturer's recommendations. Refer to separate specification section Painting & Decorating.

Preparation, including application of under-tile waterproofing membranes, and tiling (by others) of GIB® Plasterboard Linings shall be carried out in accordance with AS 3589.1 and the BRANZ Good Practice Guide: Tiling. Refer to separate specification section Tiling.

4.7 GIB® Wet Area Systems

4.7.1 Scope

Supply and install the specified GIB Aqualine® Wet Area Systems to the locations identified on the drawings, incorporating GIB® plasterboards and all system components and accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with the GIB Aqualine® Wet Area Systems publication and the current GIB® Site Guide (check www.gib.co.nz, or call 0800 100 442 for the latest editions), BRANZ Appraisal No.427, other relevant product manufacturers' recommendations, and as shown on the drawings.

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No substitutions are permitted for GIB Aqualine® Wet Area Systems, GIB® Plasterboard Linings, or GIB® System components and accessories.

This specification section must be read in conjunction with the GIB® Plasterboard Linings specification and relevant GIB® Systems specifications, and other specification sections, as they are interrelated.

For the purpose of this specification, the GIB Aqualine® Wet Area Systems publication is referred to as the GIB® Wet Area Systems Manual..

4.7.2 Requirements

4.7.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

4.7.2.2 Warranty

GIB® Product & System Warranty:
- 10 Years Warranty - for all GIB® Products and Systems installed, according to warranty conditions.
- Provide the GIB® Product & System Warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of practical completion of the contract works.

Include with the warranty: a copy of the completed GIB® Installation Sign-Off sheet, and the GIB® Plasterboard Lining Systems Care and Maintenance bulletin.

4.7.2.3 Quality Assurance

Ensure that the installation and finishing of GIB Aqualine® Wet Area Systems comply in all respects with the approved design drawings and specifications, and Building Consent.

Maintain and comply with industry-recognised quality control and assurance procedures to ensure that all stages of work are carried out to the highest standard.

4.7.2.4 Inspection & Acceptance of GIB® Wet Area Systems

Carry out all necessary pre-installation, installation and finishing inspections necessary for GIB Aqualine® Wet Area Systems for each area of work in accordance with the requirements of the GIB® Wet Area Systems Manual, GIB® Site Guide, and BRANZ Appraisal No.427.

Complete the GIB® Wet Area Systems Manual and GIB® Site Guide Pre-Installation Checklists prior to installing GIB® plasterboard linings.

Complete the GIB® Interior Plasterer/Stopper Installation Sign-Off Certificate upon completion and before handover for subsequent decoration.

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4.7.2.5 Defective Materials & Work

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. Rejected GIB Aqualine® Wet Area System materials and/or work shall be repaired and/or replaced to the satisfaction of the Architect/Designer, without delay and at no additional cost to the Principal.

4.7.3 Performance

4.7.3.1 Limitations of GIB® Plasterboard

GIB® plasterboard products must NOT be:
- used in external situations, or
- exposed to water or be installed in situations where extended exposure to humidity above 90% RH can reasonably be expected, or
- exposed to temperatures in excess of 52°C for prolonged periods.

In addition to the limitations above, GIB Aqualine® plasterboard must NOT be:
- used for bracing purposes in shower cubicles or above baths; or
- applied directly to solid plaster (gypsum or cement), wood based sheet linings or similar materials, masonry or concrete; or
- installed over a vapour barrier or a wall acting as a vapour barrier.

4.7.3.2 Bracing Performance - Timber Framing

Bracing Performance - GIB EzyBrace® Systems - Timber Framing. To the timber framed elements noted as 'Bracing' on the drawings, additionally comply with all relevant aspects of the GIB EzyBrace® Systems (2016) publication and GIB Ezybrace® Bracing Software according to the specified bracing unit rating, BRANZ Appraisal No.928 (2016), and other relevant product manufacturers' recommendations. Refer to separate specification GIB EzyBrace® Systems.

4.7.4 GIB Aqualine® Non-Tiled Wall Systems

4.7.4.1 Non-Tiled Walls - Timber Frame

GIB Aqualine® Wet Area Systems - Non-Tiled Walls - Timber Framing. A timber frame, wet area lining system for non-tiled walls incorporating one layer of 10mm or 13mm GIB Aqualine® on the wet area side. Refer to the GIB® Aqualine® Systems literature.

4.7.5 GIB Aqualine® Ceiling Systems

4.7.5.1 Metal Ceiling Battens

GIB Aqualine® Wet Area Systems - Ceilings - Metal Ceiling Battens. A wet area drywall ceiling lining system over metal ceiling battens incorporating one layer of 10mm or 13mm GIB Aqualine®. Refer to the GIB® Wet Area Systems literature.

4.7.6 Components & Accessories

4.7.6.1 Components & Accessories

GIB Aqualine® Wet Area Systems components and accessories, including, but not limited to:
- GIB® Plasterboard Linings;
- GIB® Plasterboard Fasteners;

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- GIB® Adhesives - GIBFix® One and/or GIBFix® All-Bond;
- GIB® Rondo® NZ18 Perimeter Angle: shower corner reinforcing, 32 x 32 x 0.55mm thick galvanised steel angle.
- GIB® Metal Trims & Paper Faced Trims;
- GIB® Plasterboard Control Joints;
- GIB® Joint and Finishing Compounds;
- Wet Area Sealant.

Refer to the GIB® Wet Area Systems literature and the GIB® Site Guide for further information.

4.7.7 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.
Co-operate with the Decorator to ensure that the specified Finish Levels for plasterboard jointing and finishing is achieved before decorating commences.

Coordinate with other trades to install GIB Aqualine® Wet Area Systems to the required set-out and standard, and to ensure:
- appropriate tolerances and clearances allow for adjacent internal linings, fixtures, fittings, services, etc; and
- GIB® plasterboard linings correctly allow for proper door and window installation; and
- penetrations for building services are correctly handled to maintain sheet integrity and system performance.

4.7.8 Workmanship

Where required by the NZ Building Act 2004, it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

Installation of GIB Aqualine® Wet Area Systems shall be carried out by experienced and competent tradespersons, who are familiar with the specified materials and installation techniques, in accordance with the manufacturer's installation requirements, and to fully comply with all warranty requirements. Submit evidence of experience on request, e.g. National Certificate of Interior Systems, or Certified Business Member of AWCINZ.

Carry out all necessary installation inspections in accordance with the GIB® Wet Area Systems Manual and the GIB® Site Guide, and to fully comply with the manufacturer's warranty requirements as the works progress.

All cutting, jointing, fixing and sealing techniques shall be exactly as recommended by the manufacturer. All work shall be such as to leave a neat, efficient and robust installation, to the required standard, free from damage and defects.

Make all necessary provisions to protect adjacent work and surfaces from damage during installation.

On Completion:
- Check that GIB Aqualine® Systems have been correctly installed and finished in

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accordance with the requirements of the GIB® Wet Area Systems Manual and GIB® Site Guide, to the correct set-out, dimensions and details shown on the drawings.
- Check for any damage and defective work - repair or replace as necessary to the required standard.
- Ensure that inspection and assessment of the plasterboard Finish Level have been carried out, and that written agreement stating the completed jointing and finishing is acceptable for subsequent surface sealing and decoration has been provided.
- Ensure that the GIB® Installation Sign-Off Certificate has been completed and signed by the Interior Plasterer/Stopper.
- Leave all of this work complete and to the required standard in accordance with the manufacturer's warranty requirements, as shown on the drawings and the conditions of the Building Consent.
- Clean up thoroughly and leave the finished work and surrounding surfaces clean and free of contamination from compound splashes and sanding dust. Remove all associated rubbish and excess material from the site.
- Issue to the Owner a copy of the GIB® Plasterboard Lining Systems Care and Maintenance bulletin, and a copy of the GIB® Product and System Warranty.

4.7.9 Delivery & Handling

Store all GIB Aqualine® Wet Area Systems plasterboard linings and system components indoors, off the floor, on a flat, level surface in accordance with the manufacturer's requirements. Keep stored plasterboard linings and system accessories dry, out of direct sunlight, and protected from damage, moisture and contamination at all times.

Do not use damaged or defective materials and products, or products that are beyond the designated shelf life. Cracked or damaged GIB Aqualine® sheets must never be used.

Should a problem be encountered with any GIB® product during installation or delivery, immediately contact the GIB® Helpline on 0800 100 442. Do not continue to use the product that is not performing to specification or expectation. Keep samples of the product in question and where possible, document batch numbers and/or manufacturing dates.

Handle all materials in accordance with the manufacturer's requirements and relevant Product Data Sheets, and in a manner that prevents damage.

Installers shall be familiar with and comply with the manufacturer's Material Safety Data Sheet precautions for use, and use appropriate safety gear when handling materials. Carry plasterboard sheets on edge, and avoid damage to sheet edges, ends, and surfaces.

Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including General risk and workplace management - part 1.

4.7.10 Preparation

4.7.10.1 General

All framing shall be complete and ready for GIB Aqualine® Wet Area Systems and associated GIB® plasterboard linings installation.

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Timber framing shall comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design, and have a maximum moisture content 18% at the time of plasterboard lining installation.

Light structural steel framing shall comply with the the requirements of AS/NZS 4600 or the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria. All light structural steel framing members shall satisfy the requirements of AS/NZS 1170. Comply with the steel framing fabricator's specifications and requirements for plasterboard installation.

Steel stud partitioning shall comply with AS 1397 and as specified and shown on the drawings. Comply with the manufacturer's specifications and requirements for plasterboard installation.

Concrete substrates shall comply with the CCANZ CP 01:2011 or with NZS 3109. New concrete must have aged for a minimum of 28 days. Ensure that concrete surfaces are within the tolerances specified.

Concrete masonry structures shall comply with NZS 4229, or with NZS 4230 and AS/NZS 1170 for specific design.

Carry out all necessary moisture readings. Do not commence installation until the moisture readings are below the required level.

Carry out all necessary substrate inspections and preparatory work in accordance with the manufacturer's recommendations and the GIB® Site Guide prior to installation. Complete and sign the GIB® Site Guide Pre-Installation Checklist.

Check that the building envelope has been finished at all penetrations including doors, windows, services, etc., and the building is weathertight.

Check junctions to all other building elements and ensure that all necessary works have been completed, including cavity insulation.

Check that all fixtures, fittings and built-in items are correctly installed, and that all framing and substrate edges are completed as detailed.

Confirm the location and details of movement control joints, as indicated on the drawings, prior to installation.

Ensure all pre-wiring and service piping is installed and complete.

Check that any required cavity insulation has been installed correctly and its bulk thickness does not exceed the framing thickness.

Remove all debris and rubbish from framing voids prior to installing linings.

The commencement of work on each section/area shall be deemed to indicate full acceptance by the installer that all preparatory works by other trades is complete.

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4.7.10.2 Framing Check

Framing - check all aspects of preparatory works, including but not limited to:
- Check that the framing is straight and true to line, and is plumb/level and correctly aligned.
- Check that the framing is within the required deviation tolerances defined in AS/NZS 2589 according the specified Finish Level.
- Check that vertical and horizontal framing members are at the spacings shown on the drawings, and that any required battens or furring channels are installed to the required layout.
- Check that the framing has no projections due to structural and bracing bracketry, etc. Ensure that framing brackets, plates, braces, hold-downs, etc., are correctly installed.

4.8 GIB® GIBFix® Framing System

4.8.1 Scope

Supply and install the GIBFix® Framing System according to the framing layout and details shown on the drawings, incorporating GIB® plasterboards and all system components and accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with the GIBFix® Framing System (2016) publication and the current GIB® Site Guide (check www.gib.co.nz, or call 0800 100 442 for the latest editions), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for the GIBFix® Framing System, GIB® Plasterboard Linings, or GIB® System components and accessories.

This specification section must be read in conjunction with the GIB® Plasterboard Linings specification and relevant GIB® Systems specifications, and other specification sections, as they are interrelated.

For the purpose of this specification, the GIBFix® Framing System (2016) publication is referred to as the 'GIBFix® Framing System Manual'..

4.8.2 Performance

4.8.2.1 Limitations

The use of the GIBFix® Framing System is limited to timber framed buildings designed and constructed in accordance with NZS 3604 that comply with the New Zealand Building Code. The GIBFix® Framing System does not affect compliance with NZS 3604 (2011) or NZBC Clause B1 - Structure. For further information and technical advice about the GIBFix® Framing System contact the GIB® Helpline on 0800 100 442.

GIB® Plasterboard products must NOT be:
- used in external situations, or
- exposed to water or be installed in situations where extended exposure to humidity above 90% RH can reasonably be expected, or
- exposed to temperatures in excess of 52°C for prolonged periods.

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4.8.2.2 Bracing Performance - Timber Framing

Bracing Performance - GIB EzyBrace® Systems - Timber Framing. To the timber framed elements noted as 'Bracing' on the drawings, additionally comply with all relevant aspects of the GIB EzyBrace® Systems (2016) publication and GIB Ezybrace® Bracing Software according to the specified bracing unit rating, BRANZ Appraisal No.928 (2016), and other relevant product manufacturers' recommendations. Refer to separate specification GIB EzyBrace® Systems.

4.8.2.3 Wet Areas

Wet Area Plasterboard Linings - GIB Aqualine® Wet Area Systems. To the areas noted as 'Wet Area' on the drawings, additionally comply with all relevant aspects of the GIB Aqualine® Wet Area Systems (2007) publication, BRANZ Appraisal No.427 (2007), and other relevant product manufacturers' recommendations. Refer to separate specification GIB Aqualine® Wet Area Systems.

4.8.3 System Components

4.8.3.1 System Components

GIBFix® Framing System components, including, but not limited to:
- GIBFix® Angle;
- GIB® Plasterboard Linings;
- GIBFix® Framing System Plasterboard Fasteners: GIB® Grabber® Dual Thread Screw.

Refer to the GIBFix® Framing System literature and the GIB® Site Guide for further information.

4.8.4 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.
Co-operate with the Decorator to ensure that the specified Finish Levels for plasterboard jointing and finishing is achieved before decorating commences.

Coordinate with trades to install GIBFix® Framing System to the required set-out and standard, and to ensure:
- timber framing stud set-out at internal corners and wall junctions is in accordance with the requirements of the GIBFix® Framing System; and
- the corner framing and fixing requirements of external wall claddings is correct; and
- appropriate tolerances and clearances allow for adjacent internal linings, fixtures, fittings, services, etc; and
- GIB® plasterboard linings correctly allow for proper door and window installation; and
- penetrations for building services are correctly handled to maintain sheet integrity and system performance.

4.8.5 Workmanship

Where required by the NZ Building Act 2004, it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

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Installation of the GIBFix® Framing System and GIB® plasterboard shall be carried out by experience and competent tradespersons, who are familiar with the specified materials and installation techniques, in accordance with the manufacturer's installation requirements, and to fully comply with all warranty requirements. Submit evidence of experience on request, e.g. National Certificate of Interior Systems, or Certified Business Member of AWCINZ.

Carry out all necessary installation inspections in accordance with the GIB® Site Guide, and to fully comply with the manufacturer's warranty requirements as the works progress.

All cutting, jointing, fixing and sealing techniques shall be exactly as recommended by the manufacturer. All work shall be such as to leave a neat, efficient and robust installation, to the required standard, free from damage and defects.

Make all necessary provisions to protect adjacent work and surfaces from damage during installation.

4.8.6 Delivery & Handling

4.8.6.1 Delivery & Handling

Store all GIB® plasterboard linings and system components indoors, off the floor, on a flat, level surface in accordance with the manufacturer's requirements. Keep stored plasterboard linings and system accessories dry, out of direct sunlight, and protected from damage, moisture and contamination at all times.

Do not use damaged or defective materials and products, or products that are beyond the designated shelf life. Cracked or damaged GIB® plasterboard sheets must never be used.

Should a problem be encountered with any GIB® product during installation or delivery, immediately contact the GIB® Helpline on 0800 100 442. Do not continue to use the product that is not performing to specification or expectation. Keep samples of the product in question and where possible, document batch numbers and/or manufacturing dates.

Handle all materials in accordance with the manufacturer's requirements and relevant Product Data Sheets, and in a manner that prevents damage.

Installers shall be familiar with and comply with the manufacturer's Material Safety Data Sheet precautions for use, and use appropriate safety gear when handling materials. Carry plasterboard sheets on edge, and avoid damage to sheet edges, ends, and surfaces.

Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including General risk and workplace management - part 1.

4.8.7 Preparation

4.8.7.1 General

All framing shall be complete and ready for GIBFix® Angle and associated GIB® plasterboard linings installation.

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Queenstown Lakes District Council

Timber framing shall comply with NZS 3604, and have a maximum moisture content 18% at the time of plasterboard lining installation. The stud set-out at internal corner and wall junctions shall be formed such that a GIBFix® Angle is used in place of a corner stud. A minimum of two equally spaced nog/dwang lines is required at corner and wall junctions on walls between 2.4m and 3.0m in height.

Carry out all necessary moisture readings. Do not commence installation until the moisture readings are below the required level.

Carry out all necessary substrate inspections and preparatory work in accordance with the manufacturer's recommendations and the GIB® Site Guide prior to installation. Complete and sign the GIB® Site Guide Pre-Installation Checklist.

Check that the building envelope has been finished at all penetrations including doors, windows, services, etc., and the building is weathertight.

Check junctions to all other building elements and ensure that all necessary works have been completed, including cavity insulation.

Check that all fixtures, fittings and built-in items are correctly installed, and that all framing and substrate edges are completed as detailed.

Confirm the location and details of movement control joints, as indicated on the drawings, prior to installation.

Ensure all pre-wiring and service piping is installed and complete.

Check that any required cavity insulation has been installed correctly and its bulk thickness does not exceed the framing thickness.

Remove all debris and rubbish from framing voids prior to installing linings.

The commencement of work on each section/area shall be deemed to indicate full acceptance by the installer that all preparatory works by other trades is complete.

4.8.7.2 Framing Check

Framing - check all aspects of preparatory works, including but not limited to:
- Check that the framing is straight and true to line, and is plumb/level and correctly aligned.
- Check that the framing is within the required deviation tolerances defined in AS/NZS 2589 according the specified Finish Level.
- Check that vertical and horizontal framing members are at the spacings shown on the drawings.
- Check nog/dwang lines are equally spaced at corner and wall junctions where GIBFix® Angle is to be installed.
- Check corner framing requirements for external claddings.
- Check that the framing has no projections due to structural and bracing bracketry, etc. Ensure that framing brackets, plates, braces, hold-downs, etc., are correctly installed.

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4.9 DYNEXbuild DynaFlash Universal Back Flashings

4.9.1 Scope

Supply and install DynaFlash Flashings to the locations identified on the drawings, as concealed corner and transition flashings, complete with all accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with the manufacturer's technical literature (check dynexbuild.nz, or call 0800 439 639 for the latest editions), BRANZ Appraisal No.913, other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for DynaFlash Flashings.

The installation of DynaFlash Flashings must be considered as part of the overlaying cladding system and not in isolation.

For the purpose of this specification, DynaFlash Universal Back Flashings are referred to as DynaFlash Flashings.

4.9.2 Requirements

4.9.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

4.9.2.2 Prevention of Fire Occurring

Separation or protection must be provided to the DynaFlash Flashings from heat sources such as flues and chimneys. Refer to the design drawings and NZBC C/AS1 - C/AS6 and NZBC C/VM1 for methods for the separation and protection of combustible materials from heat sources.

4.9.2.3 Defective Materials & Work

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. All rejected DynaFlash Flashing materials and work shall be repaired and/or replaced to the satisfaction of the Contract Administrator, without delay and at no additional expense to the Principal.

4.9.2.4 DynaFlash Flashings as a Substitute

Where a proprietary cladding manufacturer specifies a specific flashing as part of their system, permission must be obtained from the cladding manufacturer before the flashing system is substituted with Dynaflash Flashings.

4.9.3 Components & Accessories

4.9.3.1 DynaFlash Flashings

DynaFlash Flashings. A range of proprietary concealed corner and transition flashing designed to meet the flashing requirements of NZBC Acceptable Solution E2/AS. DynaFlash

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Queenstown Lakes District Council

Flashings are manufactured from 1mm thick extruded white polypropylene with integral black EPDM rubber seals along each edge.

DynaFlash Flashings are BRANZ Appraised for use as concealed flashings on timber and steel framed buildings clad with direct fixed, or cavity-based wall cladding systems complying with NZBC E2/AS1 or with proprietary direct fixed or cavity-based cladding systems covered by a valid BRANZ Appraisal, on buildings situated in NZS 3604 Wind Zones up to, and including 'Extra High'.

Applications:
- DynaFlash Flashings can be left unfolded for flat backing-flashing applications; or
- they can be folded along the centreline in either direction to suit internal and external corner back-flashing applications;
- the 200mm wide flashing can be bent and used for stepped transition back-flashing applications

Available Sizes:
- 100mm: 50 x 50mm when folded,
- 150mm: 75 x 75mm when folded,
- 200mm: 100 x 100mm when folded.
- All sizes supplied in 25m long coils.

Do not leave DynaFlash Flashings exposed to weather or UV light for a total of more than 90 days before covering with wall cladding.

4.9.3.2 Fixings

DynaFlash Flashing Fixings:
- For Timber Substrates: Fix with 30-40mm x 2.5mm, hot-dip galvanised, flat-head nails; or staples.
- For Steel Substrates: Fix with self-drilling, 6-gauge, Class 4 galvanised screws; or staples (when fixed to timber cavity battens).

Fixings shall be spaced approximately 400mm centres, and where possible be fixed through the section of flashing between the EPDM seal and outside edge. If a fixing is removed from the flashing, the remaining hole must be repaired or the flashing replaced.

4.9.4 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to install DynaFlash Flashings as required.

4.9.5 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

Installation of DynaFlash Flashings shall be carried out by qualified and experienced tradespersons, familiar with the specified materials and installation techniques, in accordance

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Queenstown Lakes District Council

with the manufacturer's technical literature and BRANZ Appraisal No.913, and to comply with the requirements of the New Zealand Building Code.

All work shall be such as to leave a neat, efficient and robust installation, to the required standard and free from damage and defects.

4.9.6 Delivery & Handling

Store DynaFlash Flashings in clean, dry conditions, and protected from damage and contamination. Do not place hot objects near or allow contact with DynaFlash Flashings at any time.

Should a problem be encountered with any DynaFlash Flashing product during installation, immediately contact Dynex on 0800 439 639. Do not continue to use the product that is not performing to specification or expectation. Keep samples of the product in question and where possible, document manufacturing details.

Installers shall be familiar with, and comply with, the manufacturer's safe handling requirements and precautions for use, and shall use appropriate safety gear when handling materials.

Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including General risk and workplace management - part 1.

4.9.7 Preparation

4.9.7.1 General

Prior to installation, carry out all necessary inspections and preparatory work required, and ensure that all preliminary works by other trades has been completed to specification and as shown on the approved drawings.

Do not commence installation until all necessary preliminary works by others is complete and to the required standard. The commencement of work shall be deemed to indicate full acceptance by the installer that all preliminary works by other trades is complete.

Supporting timber structures must comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design, and have a maximum moisture content in accordance with the requirements NZS 3602 at the time of installation - unless specified otherwise by the cladding manufacturer.

Supporting lightweight steel framed structures must be to a specific design, and shall meet the requirements of AS/NZS 4600 or the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria.

4.9.8 Installation

4.9.8.1 Installation - when used with Timber Cavity Battens

Install DynaFlash Flashings over the cavity battens in accordance with the manufacturer's requirements, to the locations and details shown on the drawings.

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Queenstown Lakes District Council

Fix the back flashings in place, using the fastener type specified for fixing to timber cavity battens, at approximately 400mm centres, with fasteners placed through the flashing section between the EPDM seal and outside edge.

Install flashing runs in a continuous length. Where joins are unavoidable, form joins with minimum 100mm overlap, and lapped such that any water will be shed to the outside.

Do not leave DynaFlash Flashing exposed to weather or UV light for more than 90 day before covering with wall cladding - replace with new back flashings if 90 days' exposure is exceeded.

4.9.9 Completion

Check that all DynaFlash Flashings have been installed correctly, and that all edges, joins and ends are correctly finished prior to closing off with wall cladding.

Check all DynaFlash Flashings for damage and defective work - replace and/or repair as necessary to the required standard.

Leave all of this work complete, and free of defects, and to the required standard for the installation of subsequent cladding.

4.10 IBS RigidRAP®

4.10.1 Scope

Supply and install IBS RigidRAP®, as specified herein, to the locations indicated on the design drawings, complete with all system components and accessories required for proper installation and performance. This system can be used as a rigid air barier system or a structural bracing system, or both. All aspects of this work shall be in complete accordance with IBS RigidRAP® Design and Installation Guide (check https://www.ibs.co.nz/product/ibs-rigidrap/, or email info@ibs.co.nz, or call 0800 500 338 for the latest editions), and other relevant product manufacturers' recommendations. IBS RigidRAP® is CodeMark assured with the NZ Building Code: refer to CodeMark Product Certificate No: CM70035 Issued by Bureau Veritas Australia Pty Ltd.No substitutions are permitted for IBS RigidRAP®
For the purpose of this specification, all IBS RigidRAP® technical literature, including the Design & Installation Guide and CodeMark Certificate, is collectively referred to as the 'Technical Literature'.
This specification section must be read in conjunction with other specification sections and the contract documents, as they are interrelated. For more information, please refer to:
IBS RigidRAP® FAQ's: https://www.ibs.co.nz/wp-content/uploads/2019/08/IBS-RigidRAP-1-Page-FAQ.pdf
IBS RigidRAP® Booklet: https://www.ibs.co.nz/wp-content/uploads/2019/07/RigidRAP-Booklet.pdf
IBS RigidRAP® Design and Installation guide to: https://www.ibs.co.nz/wp-content/uploads/2019/07/RigidRAP-Design-Installation-Guide.pdf
IBS RigidRAP® CodeMark certificate to: https://www.ibs.co.nz/wp-content/uploads/2019/07/RigidRAP-Codemark-Certificate-CM70035.pdf
IBS RigidRAP® approved CAD details to:https://www.ibs.co.nz/download-centre-cad-files/

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Queenstown Lakes District Council

4.10.2 Requirements

4.10.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

4.10.2.2 Warranty

IBS RigidRAP® Product Warranty - according to warranty terms and conditions:
- 50 Years Warranty for IBS RigidRAP® supplied by IBS.
- Provide the warranty on the supplier's standard warranty form.
- Commence the warranty from the date of practical completion of the contract works.

4.10.2.3 Substitutions

IBS RigidRAP® shall be as specified herein and on the design drawings. The substitution of IBS RigidRAP® for an alternative rigid air barrier material or wall bracing system is not permitted under any circumstances.
For all IBS RigidRAP® Wall Bracing Systems, no product substitution is allowed.
The substitution of a specified IBS RigidRAP® wall bracing system for an alternative IBS RigidRAP® wall bracing system by the Contractor shall only be permitted with the Contract Administrator's written authorisation and shall be at no additional cost to the Principal. Should any resultant extra work and/or redesign work be required to accommodate an alternative IBS RigidRAP® wall bracing system to satisfy design, performance and compliance requirements, then the cost of these shall be borne by the Contractor.

4.10.2.4 Inspections & Reporting

BCA inspections of the works shall take place at each of the stages scheduled in the Building Consent. Confirm a written programme to facilitate these inspections, including notification when each stage of the work is ready for inspection.
Carry out all necessary pre-installation and installation inspections for each area of the works.
Complete all necessary Pre-Installation Checklists, and all necessary Installation Checklists.
Complete all necessary Sign-Off Certificates before handing over completed work.

4.10.2.5 Quality Assurance

Maintain and comply with industry-recognised quality control and assurance procedures to ensure that all stages of the works are carried out to the highest standard.

4.10.2.6 Defective Materials & Work

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. Rejected IBS RigidRAP® work shall be repaired and/or replaced to the satisfaction of the Contract Administrator, without delay and at no additional cost to the Principal.

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Queenstown Lakes District Council

4.10.3 Wall Bracing System

4.10.3.1 SYSTEM 1: IBS RigidRAP® 300 x 2400 mm wall using Gib Handibrac®

SYSTEM 1: IBS RigidRAP® 300 x 2400 mm wall using Gib Handibrac®
- Fixing: 30 x 2.5 Galv clouts @ 150mm centres, 12mm from the edge.
- Fixing: Gib Handibrac® to concrete as per manufacturer's instructions
- Minimum Wall Length: 300mm.
- Lining Requirements: 8mm IBS IBS RigidRAP® fixed to one side.
- BU/m - Wind: Concrete Floor = 49 BU/m. Timber Floor = 49 BU/m.
- BU/m - Earthquake: Concrete Floor = 58 BU/M. Timber Floor = 58 BU/m.

Installed to the locations indicated on the design drawings in accordance with the IBS RigidRAP® Design & Installation guide.
Wall length to not be longer than twice the stated length.
Installed Location:

4.10.3.2 SYSTEM 2: IBS RigidRAP® 400 x 2400 mm wall using Gib Handibrac®

SYSTEM 2: IBS RigidRAP® 400 x 2400 mm wall using Gib Handibrac®
- Fixing: 30 x 2.5 Galv clouts @ 150mm centres, 12mmm from edge.
- Fixing: Gib Handibrac® to concrete as per manufacturer's instructions
- Minimum Wall Length: 400mm.
- Lining Requirements: 8mm IBS IBS RigidRAP® fixed to one side.
- BU/m - Wind: Concrete Floor = 70 BU/m. Timber Floor = 70 BU/m.
- BU/m - Earthquake: Concrete Floor = 79 BU/M. Timber Floor = 79 BU/m.

Installed to the locations indicated on the design drawings in accordance with the IBS RigidRAP® Design & Installation guide.
Wall length to not be longer than twice the stated length.
Installed Location:

4.10.3.3 SYSTEM 3: IBS RigidRAP® 600 mm x 2400 mm wall GIB HandiBrac®

SYSTEM 3: IBS RigidRAP® 600 mm x 2400 mm wall GIB HandiBrac®
- Fixing 30 x 2.5 Galv clouts @ 150mm centres, 12mmm from edge.
- Fixing: Gib Handibrac® to concrete as per manufacturer's instructions
- Minimum Wall Length: 600mm.
- Lining Requirements: 8mm IBS IBS RigidRAP® fixed to one side.
- BU/m - Wind: Concrete Floor = 76 BU/m. Timber Floor = 76 BU/m.
- BU/m - Earthquake: Concrete Floor = 81 BU/M. Timber Floor = 81 BU/m.

Installed to the locations indicated on the design drawings in accordance with the IBS RigidRAP® Design & Installation guide.
Wall length to not be longer than twice the stated length.
Installed Location:

BC261419 APPROVED
Queenstown Lakes District Council

4.10.3.4 SYSTEM 4: IBS RigidRAP® 1200 mm x 2400 mm wall GIB HandiBrac®

SYSTEM 4: IBS RigidRAP® 1200 mm x 2400 mm wall GIB HandiBrac®
- Fixing 30 x 2.5 Galv clouts @ 150mm centres, 12mmm from edge. Intermediate fixing at 600mm along stud @ 300mm centres.
- Fixing: Gib Handibrac® to concrete as per manufacturer's instructions
- Minimum Wall Length: 1200mm.
- Lining Requirements: 8mm IBS IBS RigidRAP® fixed to one side.
- BU/m - Wind: Concrete Floor = 131 BU/m. Timber Floor = 131 BU/m.
- BU/m - Earthquake: Concrete Floor = 107 BU/M. Timber Floor = 107 BU/m.

Installed to the locations indicated on the design drawings in accordance with the IBS RigidRAP® Design & Installation guide.
Wall length to not be longer than twice the stated length.
Installed Location:

4.10.3.5 SYSTEM 6: IBS RigidRAP® 1200 mm x 2400 mm without GIB HandiBrac®

SYSTEM 6: IBS RigidRAP® 1200 mm x 2400 mm wall **without** GIB HandiBrac®
- Fixing 30 x 2.5 Galv clouts @ 150mm centres, 12mmm from edge. Intermediate fixing at 600mm along stud @ 300mm centres.
- Fixing: No hold down brackets
- Minimum Wall Length: 1200mm.
- Lining Requirements: 8mm IBS IBS RigidRAP® fixed to one side.
- BU/m - Wind: Concrete Floor = 93 BU/m. Timber Floor = 93 BU/m.
- BU/m - Earthquake: Concrete Floor = 78 BU/M. Timber Floor = 78 BU/m.

Installed to the locations indicated on the design drawings in accordance with the IBS RigidRAP® Design & Installation guide.
Wall length to not be longer than twice the stated length.
Installed Location:

4.10.4 Components & Accessories

4.10.4.1 IBS RigidRAP® 8mm OS3 Panel

IBS RigidRAP® (rigid air barrier panel). A 8mm thick, 3-layered, moisture resistant, oriented strand board structural bracing panel (sheet), manufactured in accordance with EN 13986:2004, and designed specifically for the New Zealand building and construction industry. IBS RigidRAP® is Codemarked that it complies with the NZBC.

IBS RigidRAP® is suitable for use:
- As an internal or external wall bracing element when used in conjunction with a specific fixing system - refer to Wall Bracing Systems clause.
- In exterior wall construction as an alternative to light or heavyweight wall wrap or where a rigid air barrier is required.
- As an internal wall substrate where high impact use is expected.

Standard Panel Sizes: 1196mm wide x 2440/2745/3050mm long.
Installed, in accordance with the IBS RigidRAP® Design and Installation Guide, to the locations and details shown on the design drawings.

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Application:
Installed Location:

4.10.4.2 Mechanical Connections and Ties - Wall Bracing Systems

Mechanical Connections and Ties - for IBS RigidRAP® Wall Bracing Systems. Refer to the selected bracing systems in the Wall Bracing Systems clause and the IBS RigidRAP® Design and Installation Guide section 3.3.9, pg 12 for specific requirements.

4.10.4.3 Flexible Flashing Tape

Flexible Flashing Tapes - for exterior applications. Only use flexible sealing tapes approved for use with IBS RigidRAP® , in accordance with the tape manufacturer's instructions and the Technical Literature. Flexible flashing tapes shall be used to seal IBS RigidRAP® panel joints (vertical and horizontal), around framed window and door openings in exterior walls, and to seal pipes, ducts, etc penetrating exterior walls so as to form a weathertight rigid air barrier.

Approved Flexible Flashing Tapes:
- Hydro™ Flashing Tape (Masons)
- Super-Stick® Building Tape (Marshall Innovations)
- Tescon Extora (Pro Clima)
- FlameFlash™ Flashing Tape (Techno Insulation)
- Watertight® Flashing Tape (Techno Insulation)
- 3M All Weather FLashing Tape 8067

4.10.4.4 Gib HandiBrac

GIB HandiBrac® is to be fixed to the 90 x 45mm studs with 4 No. supplied Tek Screws, and to the floor substrate with:
Fixing to timber framed floors: BOWMAC® screw bolt to achieve a characteristic uplift strength of 12kN.
Fixing to concrete slabs: BOWMAC® screw bolt to achieve a characteristic uplift strength of 15kN
Install as per manufacturers instructions. For more information on the system, refer to: https://www.gib.co.nz/assets/Uploads/LiteratureFile/PRODUCTS/GIB-HandiBrac-Brochure.pdf

4.10.5 Panel Fixing

4.10.5.1 Galvanised Nails - Rigid Air Barrier

IBS RigidRAP® Rigid Air Barrier. Fix panels to timber framing with 30 x 2.5mm hot-dip galvanised clouts. Set nail heads flush with the panel surface. Do NOT drive fixings below the surface.

Fixing Pattern:
- Panel Edges: fix at maximum 150mm centres on all sides (vertical and horizontal edges), including around window and door openings.
- Panel Body: fix at maximum 300mm centres to intermediate studs and along nog/dwang lines.

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4.10.5.2 Galvanised Nails - Wall Bracing

IBS RigidRAP® (rigid air barrier panel) - Wall Bracing. Fix panels to timber framing with 30 x 2.5mm hot-dip galvanised clouts @ 150mm crs. around the perimeter, to the fixing pattern specified for the bracing system according to the IBS RigidRAP® Design & Installation Guide. Set nail heads flush with the panel surface. Do NOT drive fixings below the surface.

4.10.5.3 Bottom plate fixing

Bottom plate fixing for standard IBS installation shall be installed as per NZ3604:2011 figure 8.12 or as per IBS RigidRap® installation guidance 3.3.13.3

4.10.5.4 Gib Handibrac fixing

For installations where the IBS RigidRAP®system is to be used for bracing, the selected system shall have the studs fixed with Gib Handibrac using the supplied fixings, to the details and locations as shown in the contract documentation ,manufacturers instructions and as per IBS RigidRAP®installation guidance 3.3.13.3. Gib Handibrac is suitable for all exposure zones.

4.10.5.5 Mechanical hold down and uplift connections

Refer, for more information, to IBS RigidRAP®installation guidance 3.3.14, and to the appropriate proprietary system's installation instructions. Ensure that the mechanical connectors are suitable for the uplift and hold down forces required, the application, the structural engineers requirements, exposure zone requirements. If in doubt, contact IBS RigidRAP®.

4.10.6 Sealing tape

4.10.6.1 General

For joint sealing tape selection, refer for more information to IBS RigidRap® installation guidance 3.4, and to the appropriate proprietary system's installation instructions. The following sealaing tapes are suitable and compatible for use with the IBS RigidRap® system. If unsure, please contact RigidRap®. All joints and penetrations must be sealed including:

- Vertical and horizontal joints
- External and internal joints
- Penetrations
- Window and door joinery

Where sealing a joint, ensure the IBS RigidRAP® joins are centred under the tape joint. Use a 25 mm hard PVC roller to ensure full adhesion.

4.10.7 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the design drawings and in accordance with the Technical Literature.

Coordinate with trades as necessary to install IBS RigidRAP® as required.

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Queenstown Lakes District Council

4.10.8 Workmanship

4.10.8.1 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner (LBP). On completion of the installation, the installing LBP shall complete and sign a Restricted Building Work (RBW) memorandum and shall issue a copy to the Building Consent Authority and, where applicable, to the Main Contractor.

Installation and finishing work shall be carried out by suitably qualified and experienced tradespersons, familiar with the specified materials and their installation techniques and cavity construction, in accordance with the Technical Literature, and to fully comply with all warranty requirements.

All cutting, drilling and notching, jointing and sealing techniques shall be exactly as recommended by the manufacturer and shall be carried out using suitable tools and equipment.

All work shall be such as to leave a neat, efficient, robust and weathertight installation, to the required standard, free from damage and defects.

4.10.9 Delivery & Handling

Upon delivery to site inspect IBS RigidRAP® materials and reject those items found to be damaged, defective or substandard, and contact the supplier immediately. Any strapping and shrink-wrap must be removed from packed IBS RigidRAP® without delay. Allow IBS RigidRAP® to condition and acclimatise for at least 48 hours prior to commencing installation.

Store IBS RigidRAP® panels undercover in a well-ventilated area, stacked flat, off the ground and supported on level bearers spaced at maximum 800mm centres in accordance with the Technical Literature. Keep stored materials dry and protected from damage and contamination, and free from bending and distortion.

Do not use damaged or defective materials, or products that are beyond the designated shelf life.

Should a problem be encountered with any IBS RigidRAP® product, immediately contact IBS on 0800 367 759. Do not continue to use the product that is not performing to specification or expectation. Keep the product in question, and where possible, document numbers and/or manufacturing details.

IBS RigidRAP® must not be exposed to weather (atmospheric conditions) for more than 3 months after installation - remove and replace with new IBS RigidRAP® if 3 months' exposure is exceeded.

Handle materials in accordance with the manufacturer's recommendations, and in a manner that prevents damage and does not reduce its performance.IBS RigidRAP® panels should always be carried manually on edge.

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Installers shall be familiar with, and comply with, the manufacturer's safe handling requirements and precautions for use, and shall use appropriate safety gear when handling materials.

Installers shall conform to all relevant WorkSafe NZ Guidelines and Codes of Practice - including the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry.

4.10.10 Preparation

4.10.10.1 Preparation

Prior to installation, carry out all necessary inspections and preparatory work required, and ensure that all preliminary work by other trades has been completed to specification and as shown on the design drawings.

Do not commence installation until all necessary preliminary work by others is complete and to the required standard. The commencement of work shall be deemed to indicate full acceptance by the installer that all preliminary work by other trades is complete.

Timber framed elements shall comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific-design, and have a maximum moisture content of 18% at the time of IBS RigidRAP® installation.

Lightweight steel framed elements shall comply with the requirements of AS/NZS 4600 or the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria. Comply with the light structural steel framing fabricator's specifications and requirements for fixing rigid wall underlay. Note: the installation of IBS RigidRAP® on lightweight steel framing is limited to the use as a rigid air barrier only (when fitted with a thermal break), NOT for structural bracing purposes.

4.10.10.2 Framing Check

Framing Check - prior to installation check all aspects of preparatory works, including but not limited to:
- Check that wall framing has been completed to the layout shown on the design drawings and complies with the relevant design and construction standards.
- Check the framing has studs spaced at maximum 600mm centres, has the required number of rows of horizontal nogs/dwangs at the correct spacings, is plumb and in true alignment,
- Check the framing is securely fixed, true to line and plane, is plumb and level where required, and is correctly trimmed at edges, openings and penetrations as required.
- Check there are no projections due to structural bracing and bracketry etc.
- Exterior walls: check the required clearances from ground, deck, balcony or lower roof to the bottom edge of the rigid air barrier and cladding system are in accordance with NZBC E2/AS1.

4.10.11 Installation

Install IBS RigidRAP® as a rigid air barrier in accordance with the Technical Literature.

General:
- Panels must always be installed vertically when used as a bracing element.
- Always install panels with the printed side showing 'This Side Out' to the exterior of the

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building.
- Panels joints must be formed on solid framing with panel edges fully supported and gapped minimum 4mm apart (vertical and horizontal).
- Panel fixing - refer to Panel Fixing clause. Do NOT drive fixings below the panel surface.
- All vertical and horizontal panel joints, other than at mid-floor inter-storey junctions, must be sealed with an approved flexible flashing tape
- Allow a minimum of 4 mm between panel joints to accommodate dimension movement.
Horizontal Joints:
- Panel joints on walls greater than 3050mm high (except inter-storey joints) shall be formed on solid blocking, of the same gauge as the studs, with a 4mm gap between upper and lower panels. Panels higher than IBS RigidRAP® 2440 mm must be fixed top plate to bottom plate. When walls are higher than 2440 mm, IBS RigidRAP® 2745 or 3050 mm sheets can be used.
- Inter-storey joints shall be made at each mid-floor level and incorporate a proprietary rigid 'Z' flashing and a 15mm gap between upper and lower panels. The panels must NOT be fixed to the mid-floor structure (joists, blocking, etc). IBS RigidRAP® must not be exposed to weather (atmospheric conditions) for more than 3 months after installation. Install cladding systems as soon as possible to enclose and protect installed IBS RigidRAP®.
- If the bracing systems requires GIB HandiBrac® hold down brackets, they shall be fixed to each end-to-end studs and to bottom plate with concrete hold downs as per manufacturer's specifications. Refer to the IBS RigidRap® installation guide 3.3.13.3 for more information.

4.10.12 Limitations

When specifying IBS RigidRAP® as a bracing element, the designer must take into account site specific conditions and the building with respect to, but not limited to, the following:
• Environmental (exposure) zone
• Wind zone
• Wall bracing table for wind and EQ demand
• Structural design loads
• Structural framing requirements
• Preparation of substrate
• External envelope

• Other materials likely to affect the performance of IBS RigidRAP®Refer to the IBS RigidRAP® Design & Installation Guide for more information on limitations.
- Allow a minimum of 4 mm between panel joints to accommodate dimension movement.
- Maximum spacings of wall studs must not exceed 600 mm centres.
- Curved walls, minimum radius 2.5 m are allowable, the IBS RigidRAP® panels must be fixed horizontally onto framing studs with spacing and stud centres dependent on the radius.
- A proprietary 'Z' flashing must be installed at mid floor level where IBS RigidRAP® is installed on multi levels. Serviceability of the joints may be affected if - at the time the timber framing is installed - its moisture content is greater than 18%.
- For wall heights greater than 3050 mm horizontal wall joints are permitted, provided the panel joint is over solid blocking of the same gauge as the studs.
- Panels higher than IBS RigidRAP® 2440 mm must be fixed top plate to bottom plate. When walls are higher than 2440mm, IBS RigidRAP® 2745 or 3050 mm sheets can be used.
- All joints, other than mid floor level, (vertical and horizontal) must be sealed with an IBS approved self-adhesive "flashing tape" as specified in section 3.4. IBS recommend 150 mm

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Queenstown Lakes District Council

flashing tape or a proprietary Z flashing for horizontal joins.
- A hole 100 x 100 mm maximum within an envelope of 100 mm from top and vertical edges and 200 mm from the bottom of the IBS RigidRAP® panel will not affect the bracing capacity. Multiple holes of this size are permitted provided the centre lines of the holes are not closer than 600 mm.
- Steel fixings and fastenings must be in accordance with table 4.1, NZS 3604: 2011.
- IBS RigidRAP® must be allowed to acclimatise for at least 48 hours prior to installation.
- Do not install IBS RigidRAP® if the building paper has delaminated from the OSB sheet.

4.10.13 Completion

Check IBS RigidRAP® rigid air barrier and bracing systems have been installed correctly according to the Technical Literature and as indicated on the design drawings.

Check that all IBS RigidRAP® panel joints, window and door openings and panel penetrations are correctly sealed with flexible flashing tape according to the Technical Literature.

Check for damage and defects - replace or repair as necessary to the required standard.

Ensure that the work of other trades does not negatively impact on or reduce the minimum clearances required by the NZ Building Code, between the cladding and ground, roof and/or deck junctures.

Leave all of this work complete and to the required standard in accordance with the Technical Literature and warranty requirements.

Leave the completed works and surrounding surfaces clean and free of debris and rubbish. Remove all rubbish and excess material from the site.

Complete and sign the Restricted Building Work (RBW) memorandum. Issue a copy of the RBW document to the Building Consent Authority and, where applicable, to the Main Contractor.

Issue to the Owner a copy of the IBS RigidRAP® Care & Maintenance requirements, and a copy of the IBS RigidRAP® Product Warranty.

4.11 Pro Clima Intelligent Airtightness System

4.11.1 Scope

Supply and install Pro Clima Intelligent Airtightness System (IAS), as specified herein, to the locations and details shown on the design drawings, complete with all necessary components and accessories required for proper installation and performance. The system shall be designed and installed to meet the airtightness requirements of Passive House certification, achieving an airtightness level of ≤ 0.6 ACH at 50 Pa. All aspects of this work shall comply with the New Zealand Building Code (NZBC), related Pro Clima technical literature, and applicable standards, including but not limited to AS/NZS 4200.1:2017 for building membranes and AS/NZS 4200.2:2017 for installation requirements.

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Queenstown Lakes District Council

This specification shall reference all relevant Pro Clima technical documents, including installation guides, product data sheets, and BRANZ Appraisal No. 1149 (2021). These documents collectively define the 'Technical Literature' for the Pro Clima Intelligent Airtightness System (IAS). Refer to Pro Clima (NZ) Ltd at www.proclima.co.nz, email support@proclima.co.nz, or call 0800 PRO CLIMA (806 595) for the latest editions.

No substitutions are permitted for the Pro Clima Intelligent Airtightness System (IAS).

The Pro Clima Intelligent Airtightness System (IAS) is designed for use in residential, commercial, and industrial buildings, including those requiring Passive House certification, to reduce air infiltration, enhance thermal performance, and manage moisture within the building envelope. The system includes airtight membranes, tapes, sealants, and grommets, specifically designed to create a continuous air barrier while allowing dynamic vapour control to protect the building structure. For applications outside the scope of this specification, consult Pro Clima (NZ) Ltd for technical support.

Airtightness testing shall be conducted during and after installation, as specified in the design documents, to verify compliance with Passive House performance requirements.

Refer to the contract documents for specific locations and applications of the system components.

The following is a list and a general description of the extent of the Pro Clima Intelligent Airtightness System (IAS), which are more specifically defined in the contract documents, required for the completion of the contract works:

- Installation of airtightness membranes as shown in the contract drawings.
- Sealing of all overlaps, junctions, penetrations, and other connections using specified tapes, adhesives, and grommets.
- Verification of airtightness through blower door testing as per AS/NZS 9972.
- Any other components or accessories necessary to achieve the system’s design performance.

4.11.2 Requirements

4.11.2.1 Substitutions

Pro Clima NZ Ltd products shall be as specified herein and as indicated on the approved drawings. The substitution of Pro Clima branded products for alternative brands is not permitted under any circumstances.

The substitution of a specified Pro Clima product for an alternative Pro Clima branded product by the Contractor shall only be permitted with the Contract Administrator's written authorisation, and shall be at no additional cost to the Principal. Should any resultant extra work and/or redesign work be required to accommodate alternative Pro Clima branded

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Queenstown Lakes District Council

products to satisfy design, performance and compliance requirements, then the cost of these shall be borne by the Contractor.

4.11.2.2 Warranty

Pro Clima Ltd Product Warranty:
- 10 Years Warranty - for all Pro Clima warranted products installed, according to the warranty conditions.
- Provide the Pro Clima Ltd Product Warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of permanent installation.

4.11.2.3 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

4.11.3 Internal Airtightness & Vapor Control Layer

INTELLO PLUS is a reinforced intelligent air and vapour control membrane designed to provide superior airtightness and moisture regulation in walls, ceilings, and roof structures, meeting the stringent requirements of Passive House certification. Using Hydrosafe® technology, it dynamically adjusts its vapour resistance (Sd value) to environmental conditions, offering high diffusion resistance in winter to restrict vapour ingress and enabling back-diffusion during warmer conditions to support drying.

The additional polypropylene reinforcement enhances its mechanical strength and durability, making it suitable for applications requiring robust performance and long-term reliability. INTELLO PLUS supports achieving airtightness levels of ≤ 0.6 ACH at 50 Pa, critical for Passive House certification, while maximising the thermal efficiency of insulation systems by preventing air leakage and controlling moisture movement.

INTELLO PLUS complies with NZBC clauses B2 (Durability), E3 (Internal Moisture), and H1 (Energy Efficiency) and meets air barrier standards under AS/NZS 4200.1:2017. The membrane is installed in accordance with NZBC H1/AS1 and BRANZ Appraisal No. 1149, suitable for use in NZS 3604 Wind Zones up to and including 'Extra High'. Installation must follow the manufacturer’s requirements and incorporate compatible sealing products to maintain system performance.

- Polyethylene copolymer membrane reinforced with polypropylene mesh.
- Humidity-variable Sd value from 0.25 m to 25 m for dynamic moisture regulation.
- 110 g/m² surface weight for enhanced durability and handling efficiency.
- Operates in temperatures from -40°C to +80°C.
- Certified as Class 2 to Class 3 vapour barrier under AS/NZS 4200.1:2017.
- High tear and tensile strength ensures mechanical robustness and reliability.

Installed Location:

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4.11.4 Joining Tapes & Accessories

4.11.4.1 TESCON® VANA Multi-purpose Adhesive Tape

Supply and install Pro Clima TESCON® VANA multi-purpose adhesive tape to ensure airtight sealing of overlaps, joints, and penetrations in the building envelope, as specified and shown on the drawings.

TESCON® VANA is a versatile adhesive tape designed for interior applications, providing durable, airtight, and weathertight seals. Available in 30m lengths x 60mm width, it is suitable for sealing overlaps of membranes, joints between panels, and around penetrations such as pipes and cables. The tape features a special polypropylene (PP) fleece backing and a water-resistant SOLID adhesive, ensuring strong adhesion even on slightly damp surfaces

All aspects of this work shall be in accordance with Pro Clima TESCON® VANA technical literature, other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for Pro Clima TESCON® VANA.

4.11.5 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to install Pro Clima as required.

4.11.6 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All installation work shall be carried out by experienced and competent tradespersons, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements.

All cutting, joining, and fixing techniques shall be exactly as recommended by the manufacturer, and carried out with the use of suitable tools and equipment appropriate for the application. All work shall be such as to leave a neat, efficient, and weathertight installation.

4.11.7 Delivery & Handling

Store underlay rolls on end, undercover, on a flat, clean and dry surface. Keep stored materials dry, out of direct sunlight, and protected from damage and contamination at all times.

Handle materials in accordance with the manufacturer's requirements and in a manner that prevents damage to or deterioration of the product.

Do not used damaged or defective materials, or products that are beyond their designated shelf life.

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Queenstown Lakes District Council

Installers shall be familiar with and comply with the manufacturer's safe handling requirements and precautions for use, and shall use appropriate safety gear when handling materials.

Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including the Best practice guidelines for working on roofs and the General risk and workplace management - part 1.

4.11.8 Preparation

4.11.8.1 General

Prior to installation, carry out all necessary inspections and preparatory work required, and ensure that all preliminary works by other trades have been completed to specification and as shown on the approved drawings.

Do not commence installation until all necessary preliminary works by others are complete and to the required standard. The commencement of work shall be deemed to indicate full acceptance by the installer that all preliminary works by other trades are complete.

Supporting timber framing shall comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design, and have a maximum moisture content of 20% at the time of cladding installation. Allow LOSP-treated timber to sufficiently flash off before installing Pro Clima-approved internal airtightness, vapor control layers, and relevant tapes and accessories.

Supporting light structural steel framing shall comply with the requirements of AS/NZS 4600 or the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria. Comply with the light structural steel framing fabricator's specifications and requirements for fixing cladding and roofing components.

Supporting heavy steel structures shall comply with NZS 3404 and any approved SED provided by a licensed or chartered Structural Engineer.

4.11.8.2 Wall Framing

Wall Framing - before internal airtightness & vapor control layer installation, check all aspects of preparatory works, including but not limited to:

- Check that wall framing has been completed as shown on the drawings, and complies with the relevant design and construction standards.
- Check that framing is securely fixed, true to line and plane, is plumb and level where required, and is trimmed at edges, openings, and penetrations as required.
- Check that there are no projections due to structural bracing and bracketry, etc.
- Check that the required substrate preparation, upstands, sealings, and clearances of materials are in accordance with NZBC E3/AS1.
- Coordinate and check any requirements for internal service penetrations and fixtures with compatibility with the Pro Clima Internal Airtightness System

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4.11.9 Installation

4.11.9.1 Installation of Pro Clima Airtightness System in Passive House Construction

Preparation

Ensure all surfaces are clean, dry, and free of dust, grease, or contaminants that may impair adhesion. Substrates must be stable and not frozen during application. Verify that the building structure is aligned and suitable for achieving Passive House airtightness standards (≤ 0.6 ACH @ 50 Pa). Store Pro Clima materials in a dry, protected environment until installation. Pre-plan all airtightness detailing to address transitions, penetrations, and complex junctions effectively.

Installation of Airtight Membranes

Install Pro Clima INTELLO or INTELLO PLUS membranes with the printed side facing the installer. For walls, ceilings, and roofs, apply the membrane horizontally or vertically, ensuring overlaps of at least 100 mm. Use printed guide markings for alignment. Attach the membrane with corrosion-resistant fasteners, spaced no more than 150 mm apart along framing members. The membrane must be taut and free of wrinkles to minimise air leakage.

In areas of higher wind exposure or where additional durability is required, consider reinforcing overlaps and junctions with TESCON VANA tape or ORCON adhesive. Ensure the membrane is applied continuously across all framing components.

Sealing Membrane Overlaps

Seal all horizontal and vertical overlaps with Pro Clima TESCON VANA tape. Center the tape over the overlap and press firmly into place, using a Pro Clima PRESSFIX tool to ensure full adhesion and eliminate air bubbles. Where overlaps occur near edges, ensure the tape extends at least 50 mm beyond the membrane’s edge for complete coverage.

Sealing Penetrations

Seal all penetrations, including pipes, cables, and ducts, with Pro Clima ROFLEX® & KAFLEX® grommets, as per INTELLO® and INTELLO PLUS® requirements. Select a grommet size that matches the diameter of the penetration. Slide the grommet over the penetration and adhere it to the membrane with TESCON VANA tape. For irregular penetrations or grouped cables, use AEROSANA VISCONN or VISCONN FIBRE to achieve a seamless airtight seal. Reinforce gaps wider than 20 mm with AEROSANA FLEECE before applying the sealant.

Sealing Junctions and Connections

For wall-to-ceiling, wall-to-floor, and wall-to-wall junctions, use TESCON® VANA tape or ORCON® CLASSIC adhesive. Ensure that transitions between framing and substrates, such as masonry or concrete, are sealed with ORCON® CLASSIC adhesive. Smooth the adhesive bead with a spatula to create an even seal, ensuring full contact between the materials.

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In window and door openings, apply Pro Clima CONTEGA EXO to seal transitions between the airtight membrane and frames. Follow manufacturer guidelines to ensure the tapes are installed with adequate tension and coverage.

Complex Junctions and Difficult Areas

For curved or angled surfaces, use TESCON® PROFIL tape for airtightness. For inaccessible or irregular areas, spray AEROSANA® VISCONN to form a continuous airtight layer. Allow the sealant to dry and inspect the surface to confirm coverage and adhesion. Use AEROSANA® VISCONN FIBRE for larger gaps or areas requiring reinforcement.

Quality Assurance

Conduct a preliminary blower door test after the initial airtightness system is installed but before interior linings are applied. This ensures that any air leakage points can be identified and addressed early. Inspect all seams, penetrations, and junctions for gaps, wrinkles, or insufficient adhesion. Reseal or repair as necessary to achieve continuous airtightness.

Perform a final blower door test at project completion to confirm compliance with Passive House standards. Achieving ≤ 0.6 air changes per hour (ACH) at 50 Pa is critical for certification.

Maintenance and Protection

During construction, protect the airtightness system from damage caused by tradespeople or material handling. Clearly mark the airtight layer on construction plans and communicate its importance to all contractors. In case of accidental damage, repair the membrane immediately using TESCON VANA tape or AEROSANA sealants, following the manufacturer’s instructions.

4.11.10 Completion

Check that all underlays have been installed correctly and are properly supported, and that all underlay edges, joins and ends are correctly finished prior to closing off with claddings - all in accordance with Pro Clima installation requirements.

Check installed membranes and underlays for defective work and damage - replace and/or repair as necessary to the required standard.

Leave all of this work complete, and free of defects, and to the required standard in accordance with the manufacturer's warranty requirements.

Issue to the Owner a copy of the Pro Clima maintenance requirements and the Pro Clima product warranties for the installed products.

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5 CLADDING & PRECLADDING

5.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

5.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

1170.2:2011(AS/NZS)	Structural design actions - Wind actions
2295:2006(NZS)	Pliable, permeable building underlays
2728:2013(AS|NZS)	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
3602:2003(NZS)	Timber and wood-based products for use in building
3603:1993(NZS)	Timber Structures Standard
3604:2011(NZS)	Timber-framed buildings
3617:1979(NZS)	Specification for profiles of weatherboards, fascia boards, and flooring
4200.1:2017(AS|NZS)	Pliable building membranes and underlays - Part 1: Materials
NZBC B2/AS1	Durability
NZMRM Code of Practice	NZ Metal Roof and Wall Cladding Code of Practice - Version 3.0

5.3 COLORSTEEL® - Profiled Metal Wall Cladding

5.3.1 Scope

Inland - Moderate (ISO C2)
Supply the selected COLORSTEEL® wall cladding and install on the areas identified on the elevations. All aspects of the work shall be in complete accordance with the COLORSTEEL® Installers Guide found at www.colorsteel.co.nz and any other relevant Product Manufacturers Recommendations.

5.3.2 Material

Profiled metal wall cladding shall be manufactured from COLORSTEEL® Maxam™. Pre-painted hot dipped aluminium/zinc/magnesium alloy coated steel coil, with a minimum coating weight of 150g/m², conforming with AS/NZS 2728 Class 6. COLORSTEEL®

Colour: TBC by Client

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5.3.3 Profile

Trapezoidal 0.40mm G550
Trapezoidal 0.40 BMT x G550.
Location: Roof and wall clkadding where specified

5.3.4 Cavity Batten and Closures

Castellated Cavity Battens for vertically orientated wall cladding over framing should be installed horizontal over the wall underlay and directly over nogs or girts at maximum spacing to suit the cladding profile and as shown on the drawings. Fix to timber framing with 40 x 2.5mm hot-dipped galvanised flat head nails or fix to lightweight steel framing with 6g x 30mm self-drilling (AS 3566 Corrosion Class 3) countersunk screws. Do not use battens treated with copper azole or AQC treatment. Where shown and as specified on the drawings, install a separation layer over the face of timber cavity battens to ensure isolation of materials between the cladding and the cavity batten. Closures to be UPVC installed as per design details and manufacturers requirements.

5.3.5 Ancillary Components & Accessories

Cladding screw fastener type and durability shall comply with AS 3566 Class 4 or Class 5, as appropriate, and be no less than the durability of the material being fixed. Fastener type and placement (frequency) shall be appropriate for the environmental conditions and the specified cladding profile and material and the supporting structure material; all in accordance with the NZMRM Code of Practice and E2 External Moisture.

Metal Flashings. Profiled metal cladding flashings shall be fabricated from material with the same coating as the cladding material, to maintain durability and compatibility requirements. Flashings shall be 0.55BMT G300 steel or H34 Aluminium coated to the same standards as the profiled cladding sheets, and notched/scribed when installed across the cladding profile or provided with a soft edge – in accordance with COLORSTEEL® and NZMRM Code of Practice requirements.

Flashings, flashing fastenings and fastening frequency shall be in accordance with the NZMRM Code of Practice.

Do not construct flashing joints and flashing junctions in a manner that relies entirely on sealant to maintain weathertightness.

Rivet Fastenings. Rivets shall be sealed aluminium minimum 4mm diameter.

Use only neutral-curing silicone or MS polymer sealant, compatible with the specified metal cladding and flashing materials and finishes, that is suitable for the required application and use in accordance with the sealant manufacturer's instructions and to NZMRM Code of Practice requirements. All sealed joints must be mechanically fastened, and excess sealant neatly removed to prevent unnecessary dirt build-up. Sealant shall only be used to seal between two metal surfaces, do not fill holes or gaps with sealant.

Proprietary Collar Flashings. EDPM or silicone-polymer proprietary flexible collar flashings for weatherproofing cladding-penetrating pipes/flues/ducts. Sized to suit the applicable

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pipe/flue/duct and installed in strict accordance with the manufacturer's requirements and the NZMRM Code of Practice.

Profiled Foam Closure Strip. Non-bituminous, compressible, closed-cell foam strips profiled to fit the specified cladding profile. Installed to the details shown on the drawings and in accordance with COLORSTEEL® and NZMRM Code of Practice recommendations.

5.3.6 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings. Co-ordinate with other trades to ensure that the Profiled Metal Wall Cladding allows for joinery installation, the location of pipes, outlets, meter boards and other fixtures and fittings installed by others, and to install the Profiled Metal Wall Cladding as required. Co-operate with installers of other wall cladding materials to agree on details and responsibility for achieving a weather tight connection between materials.

5.3.7 Qualifications & Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.
All installation work shall be carried out by experienced and competent tradespersons, familiar with the specified products and installation techniques and suitably qualified to install Profiled Metal Wall Cladding, to fully comply with all warranty requirements in accordance with the manufacturer's requirements.

Installers of COLORSTEEL Maxam® shall be supervised by an accredited COLORSTEEL Maxam® installer.

All cutting, fixing and installation techniques, fastenings and sealants shall be exactly as recommended by and in accordance with the NZMRM Code of Practice, and carried out with the use of suitable tools and equipment appropriate for the application.

Always maintain isolation of dissimilar materials in accordance with the NZMRM Code of Practice Section 4.10. Isolate dissimilar materials (metal and non-metal) in close proximity as necessary by fitting separator strips. Place isolators between metals and treated timber or cement-based materials. Do not allow unpainted lead-sheet or copper materials to come in contact with, or allow water run-off from these onto COLORSTEEL®, Zincalume® or galvanised materials.
All work shall be such as to leave a neat, efficient, robust and weathertight installation.

5.3.8 Delivery & Handling

Store COLORSTEEL® profiled metal wall cladding, flashings and accessories clear of level ground, on bearers at evenly spaced centres as recommended by the NZMRM Code of Practice. Keep stored materials and accessories dry and protected from damage and contamination at all times.

Do not use damaged or defective materials or products, or products that are beyond their designated shelf life.

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Handle materials in accordance with the manufacturer's requirements and in a manner that prevents damage to or deterioration of the material, including surface marking.

5.3.9 Preparation

Check that the specified building underlay (to NZS 2295) has been installed in accordance with NZBC requirements and the manufacturer’s recommendations, and with all finishing tapes, flashings etc. at windows, doors, corners and penetrations all correctly incorporated to provide a continuous seal.

Check that appropriate additional restraint is correctly installed over the underlay to keep bulk insulation from pushing the underlay into the cavity space.

Ensure that all underlays directly behind Profiled Metal Wall Cladding are of absorbent type as required in E2/AS1 Table 23. Check that all preparatory materials are lapped such that any water will run down to the exterior.
Check that ground levels and drains are constructed so that there will be no ponding water against the building, and that the ground will always remain clear of the cladding by at least 100mm in accordance with E2/AS1.

5.3.10 Installation

Installers shall be familiar with and comply with the manufacturer's safe handling requirements and precautions for use and shall use appropriate safety gear when handling materials. Installers shall conform with all relevant WorkSafe NZ Guidelines Working at Heights.

Ensure cavity battens and closures are installed in accordance with specifications and suitable separation is provided between treated battens and Profiled Metal Wall Cladding.

Install Profiled Metal Wall Cladding in accordance with the design drawings. Confirm the layout and location of all control joints; the layout of the cavity battens; and any specific cladding detailing requirements prior to installation.

Prevent contact with, or run-off from, incompatible materials in accordance with the recommendations in the NZMRM Code of Practice.
Protect the coated surface from damage at all times; replace the whole sheet where a significant depth of the coating has been damaged (including flashings).

Accurately set-out the planned cladding layout prior to fixing to ensure true and accurate cladding lines and incorporate correct relationships with other design features shown on the drawings; maintain this accurate set-out throughout installation.

Keep cladding lines consistent and true along walls and around corners; with side-laps of vertically orientated sheets directed away from the prevailing wind and/or line of sight; to straight, true and accurately aligned lines in both directions - vertical and horizontal. Check for and eliminate any creep and/or spread of sheets during installation.

Cut metal cladding and flashings by shear only - do not use abrasive cutting tools. Do not use black lead pencils for marking pre-finished metal cladding and flashings.

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Screw fastenings for pre-painted metal must be pre-painted prior to installation for an accurate colour match.

All cladding jointing techniques and sealants shall be in accordance with the NZMRM Code of Practice and shall be compatible with the cladding material and finish. Joints shall be sealed with an approved neutral-cure sealant or approved closed-cell lap tape.

Install fasteners in a straight line with a consistent fastening pattern on each sheet to achieve a flat surface and resist design wind loads. Fasteners into timber are to have a minimum of 30mm embedment into structural framing. For pierce fastened profiles, fasteners are to be positioned in the pan adjacent to a rib unless otherwise specified.

Install fasteners in a straight line with a consistent fastening pattern on each sheet to achieve a flat surface and resist design wind loads. Fasteners into steel are to have a minimum penetration of three threads through the steel member. For pierce fastened profiles, fasteners are to be positioned in the pan adjacent to a rib unless otherwise specified.

Fasteners are to be set using a snug fitting socket and a setting tool that does not unduly damage the finish coating of the screw. Depth of setting is to be sufficient to achieve slight compression of the sealing washer without distorting the profile or the sealing washer itself. Aluminium rivets are to be sealed type pre-painted to match cladding, minimum 4mm diameter. Clip-fastened sheets shall be fixed with concealed proprietary fastening clips appropriate for the cladding profile and material, substrate/structure and the environment in accordance with the NZMRM Code of Practice recommendations.

Install flashings to internal and external corner junctions, window/door and other openings, eave and soffit junctions, parapets and at junctions with other cladding systems and building elements as detailed on the drawings and in accordance with the Zealand Metal Roofing Code of Practice. All flashings shall be neatly formed and finished, securely fastened to the structure, weatherproof, and lapped such that any water will run down to the exterior. For highly visible flashings, plan each flashing joint and/or junction with specific regard to aesthetic requirements. Penetration flashings shall be as per the design details and shall not rely solely on silicone sealant to achieve weathertightness of the flashing.

Form vertical movement control joints to the locations, layout and details shown on the drawings. Movement control joints shall be aligned with control joints in the structural framing. Confirm the location of movement control joints prior to installation.

Handle sheets carefully to avoid scratching and denting. Do not walk on wall cladding sheets prior to installation. Remove strippable film, if applied, immediately after installation of wall cladding to avoid resin staining. All accessories are to be colour matched prior to installation, do not use colour match paint for repairing any blemishes. Ensure sealant is trapped between joint surfaces and not exposed to the visual surface.

5.3.11 Compatibility

Ensure material is isolated from incompatible materials. It must not be in contact with, or receive run off from, less noble metals such as copper, brass and lead. It should not be in wet contact with stainless steel. Sustained wet contact with timber, either treated or untreated,

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must be avoided. For more information, see the COLORSTEEL® Installers Guide (available at www.colorsteel.co.nz).

5.3.12 Completion

Check that the Profiled Metal Wall Cladding and associated components and flashings have been installed and finished correctly. Check for defective work, damage and surface marking - replace and/or repair as necessary. Ensure that the work of other trades does not reduce the clearances of the cladding to ground, deck or roof that are required by the NZ Building Code. Leave all work complete and weathertight and to the required standard in accordance with the New Zealand Metal Roofing Code of Practice.
Leave the completed works and surrounding surfaces clean and free of debris and rubbish. Remove all rubbish and excess material from the site.

Provide the cladding material manufacturer's/supplier's 'Product Warranty' for the installed metal cladding product. Warrant this work under normal conditions and use against failure of coating and for weatherproofing by material penetration. Commence the warranty from the date of practical completion of the contract works.
Maintenance should be carried out in accordance with the COLORSTEEL® 'Environmental Categories, Warranty & Product, Maintenance Recommendations Brochure'.

5.4 Hermpac Weatherboard Cladding Systems

5.4.1 Scope

Scope
Supply and install the Hermpac Pacific Limited Weatherboard System, as specified herein, to the walls identified on the drawings, complete with all accessories and trim. For the purpose of this specification, Hermpac Pacific Limited shall be referred to as Hermpac. All aspects of this work shall be complete in accordance with the Hermpac product specifications and technical literature (check www.hermpac.co.nz, email: technical@hermpac.co.nz, or call 09 421 9840 for the latest editions), and as shown on the drawings.

No substitutions or deletions are permitted for the Hermpac product.

5.4.2 Vertical Weatherboard

Vertical Shiplap Weatherboard
Supply and install the Hermpac Vertical Shiplap Weatherboard Cavity System, as specified herein, to the walls identified on the drawings, complete with all accessories and trim. All aspects of this work shall be completed in accordance with the Hermpac product specifications and technical literature (check www.hermpac.co.nz, email: technical@hermpac.co.nz, or call 0800 329 423 for the latest editions), NZBC E2/AS1, other relevant product manufacturers' recommendations, and as shown on the drawings.
The Hermpac Vertical Shiplap Weatherboard Cavity System is CodeMark assured.
No substitutions or deletions are permitted for the Hermpac Vertical Shiplap Weatherboard Cavity System.

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5.4.3 Timber Species & Profile

Western Red Cedar
Weatherboard Profile *~as identified on the accompanying drawings*
Grade PC1 ~as identified on the accompanying drawings
Grain/Cut -Mixed-Grain *~as identified on the accompanying drawings*
Face Finish *~as identified on the accompanying drawings*
Coating *~as identified on the accompanying drawings*

5.4.4 Accessories

Hermpac Eave Mouldings - Shiplap Weatherboard
Hermpac Vertical Shiplap Weatherboard Eave Moulding - Selected to suit the details shown on the drawings. Nail fixings matched with the selected weatherboard fixing. Unless specified otherwise on the drawings, timber species, grade and surface finish to match weatherboards.

5.4.5 Cavity Batten & Base Closer

Vertibat 45mm Cavity Battens - Vertical Boards, 45mm Cavity
Vertibat 45mm thick Timber Cavity Battens - to form a nominal 45mm deep drained cavity for Hermpac vertical weatherboards. Vertibat V5 - 45 x 45mm thick, and Vertibat V6 - 70mm x 45mm thick, bevelled and castellated timber cavity battens; incorporating 20mm wide x 5mm deep, alternating rebates at 100mm centres either side of the batten. Manufactured from H3.2 Micropro treated Radiata pine.
Fix Vertibat 45mm thick cavity battens at each stud crossing with 12g x 75mm Grade 316 stainless steel self-drilling screws - one screw per stud.
Installed horizontally, at minimum 400mm to maximum 480mm vertical centres, to the layout and details shown on the drawings and in accordance with the Hermpac VertiLine Installation Specification

5.4.6 Co-operation

Co-operation
Co-operate with other trades to ensure that all preliminary and preparatory works, including membranes, flexible underlays, rigid air barriers, and trims and any other related works are completed in accordance with the Hermpac Cavity System Installation Specification and Construction Drawings
Coordinate with trades the locations of pipes, outlets, cables, meter boards and other fittings installed by others, and to install Hermpac Weatherboard Cladding System as required.

5.4.7 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner. Installation work shall be carried out by suitably qualified and experienced tradespersons, familiar with the specified products and the required construction and installation techniques, in accordance with the requirements of the Hermpac technical literature and associated BRANZ Appraisal, NZBC E2/AS1, and as noted and detailed on the approved construction drawings.
Upon completion of the installation, the installing LBP shall complete and sign a Restricted Building Work (RBW) memorandum and the associated Hermpac Weatherboard Cladding System, Product Installation Check List. Issue a copy of the RBW document to the Building Consent Authority and to the Main Contractor.

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All work shall be such as to leave a neat, efficient, robust and weathertight installation, to the required standard, free from damage and defects, including surface marking.
Make all necessary provisions to protect adjacent finished work and surfaces from damage during installation.
Refer www.hermpac.co.nz, email: technical@hermpac.co.nz, or call 0800 329 423 for any technical assistance required, and ensure that current Hermpac technical literature is referenced and followed when installing Hermpac weatherboards.

5.4.8 Delivery & Handling

Delivery & Handling
Store weatherboards and accessories undercover, flat and true, clear of the ground by at least 150mm and supported on dry and clean timber bearers at maximum 900mm centres in accordance with Hermpac recommendations. Keep stored weatherboards and accessories dry and protected from damage and contamination, and free from bending or excessive compression.
Do not use damaged or defective weatherboards or accessories.

Dock any oversized knots, unacceptable or unrequired grade characteristic, or damaged areas of weatherboard. Do not install weatherboards during periods of wet weather. Double seal all cut ends and fresh cut timber with selected exterior coating. Some grades of timber will require more docking than others. Please check NZ Grading Rules to ensure that all timber installed meets the NZBC requirements.
Handle weatherboards in accordance with the manufacturer's recommendations and in a manner that prevents damage and surface marking.
Installers shall be familiar with, and comply with, the manufacturer's safe handling requirements and precautions for use, and shall use appropriate safety gear when handling materials.
Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including the Best practice guidelines for working at height in NZ, and the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry.

5.4.9 Preparation and Installation

General Requirements
Install the specified Hermpac Weatherboard Cladding System, complete with accessories, in accordance with the Hermpac installation requirements and technical literature and as shown on the approved construction drawings.
Confirm the layout and location of all control joints; the layout of cavity battens; and any specific cladding detailing requirements prior to installation.
Ensure that all associated preliminary and preparatory works are completed to the required standard and specification, and as shown on the drawings.
Ensure that the current and up-to-date Hermpac installation and technical literature is readily available on site for reference during installation.
Weatherboard soaker and/or flashing material compatibility shall be in accordance with NZBC E2/AS1 2.2, and as shown on the drawings.
Ensure all cut ends and fresh timber is double coated and sealed in accordance with Hermpac requirements before fixing.
Refer to Fixing for fixing type and placement etc.

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All internal and external weatherboard corner junctions, inter-storey junctions, and weatherboard trim and accessories, shall be constructed and installed to the details shown on the drawings.
Always keep Hermpac weatherboard cladding lines consistent and true along walls and around corners.
All flashings around windows, doors and other openings, at corner junctions, inter-storey junctions, soffit junctions, and pipe penetrations, shall be carefully constructed, fixed and finished to the details shown on the drawings.
Hermpac Vertical Shiplap Weatherboard Cavity-Fixed over a Rigid Wall Underlay on Timber framing
Preparation
- Check all aspects of preparatory works, including, but not limited to:
- Check that the timber wall framing complies with NZS 3604, has studs at maximum 600mm centres and Nogs/Dwangs as per design specification and NZBC (or at 400mm min. - 480mm max. centres) for vertical cladding, is plumb and in true alignment, includes all blocking required for cavity battens and fixing at openings, joints, corners, soffits, etc., and has a maximum moisture content of 18% at the time of cladding installation.
- Check that the rigid wall underlay, as specified, has been installed in accordance with NZBC requirements and the manufacturer's recommendations, with all finishing tapes, flashings etc. at windows, doors, corners and penetrations all correctly incorporated to provide a continuous seal.
- Check that all preparatory materials are lapped such that any water will run down to the exterior.
Installation
Hermpac Vertical Shiplap Weatherboards installed over a cavity drain (20mm/40mm/45mm) over a rigid wall underlay:
Over the rigid wall underlay, install and fix the specified cavity battens to the timber framing to the layout and details shown on the drawings.
Back flash all internal and external corners with Hermpac aluminium corner flashings.
Carefully set-out cladding vertically to straight plumb lines with side laps directed away from prevailing weather.
As specified and shown on the drawings, fix shiplap weatherboards to the timber framing through 20mm thick Vertibat cavity battens, or fix to Vertibat 40mm or 45mm thick cavity battens, and maintain the base overhang minimum 50mm, or as detailed, below the bottom plate or floor structure.
Install full length weatherboards where possible. Where joints are unavoidable, scarf the weatherboards at 30º over a cavity batten line, and fix weatherboard ends, with the top board fixed through the top overlapping board above the joint - not through the joint.
Overlap, joint and fix cavity-installed Hermpac Shiplap Weatherboards in accordance with Hermpac installation requirements and as detailed on the drawings. NB: Ensure weatherboard end-grains are double coated.

5.4.10 Fixing

Fix Hermpac Shiplap Weatherboards
Fix Hermpac Shiplap Weatherboards with Grade 316 Stainless Steel finish as identified on the accompanying drawings, Hermpac Starcap Screws in accordance with Hermpac fixing requirements and as shown on the drawings.

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When fixing with Starcap screws (used most often for an oil/stain finish), the shank length must allow minimum 21mm penetration of the wall frame.
All screw fixings shall be pre-drilled a maximum of 1mm diameter smaller than the screw gauge.
Ensure the weatherboards are set-out with an overlap of 32mm.
Single fix weatherboards at every fixing point, with screws driven in a slight upward slope, located 35-40mm from the bottom edge of the weatherboard, and no closer than 32mm from the end of the board.
Screws shall be set flush onto the board surface - not into or below the surface.
Finish - *as identified on the accompanying drawings*

5.4.11 Completion

Check that the specified Hermpac Weatherboard System has been correctly installed and fixed to the layout and details shown on the drawings; that all joints, associated trim and accessories finished correctly; and that all openings and penetrations have been properly flashed and sealed.
Check for damaged materials and defective work - carry out repairs as necessary to the required standard.
Ensure that the work of other trades does not negatively impact on or reduce the minimum clearances required by the NZ Building Code, between the cladding and ground, roof and/or deck junctures.
Leave all of this work complete and weathertight and to the required standard in accordance with Hermpac requirements and NZBC E2/AS1.
Leave the completed works and surrounding surfaces clean and free of debris and rubbish.
Remove all rubbish and excess material from the site.
Complete and sign the Restricted Building Work (RBW) memorandum, and the Hermpac Weatherboard Cladding System Product Installation Check List. Issue a copy of the RBW document to the Building Consent Authority and to the Main Contractor.

5.5 DYNEXbuild DynaFlash Universal Back Flashings

5.5.1 Scope

Supply and install DynaFlash Flashings to the locations identified on the drawings, as concealed corner and transition flashings, complete with all accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with the manufacturer's technical literature (check dynexbuild.nz, or call 0800 439 639 for the latest editions), BRANZ Appraisal No.913, other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for DynaFlash Flashings.

The installation of DynaFlash Flashings must be considered as part of the overlaying cladding system and not in isolation.

For the purpose of this specification, DynaFlash Universal Back Flashings are referred to as DynaFlash Flashings.

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5.5.2 Requirements

5.5.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

5.5.2.2 Prevention of Fire Occurring

Separation or protection must be provided to the DynaFlash Flashings from heat sources such as flues and chimneys. Refer to the design drawings and NZBC C/AS1 - C/AS6 and NZBC C/VM1 for methods for the separation and protection of combustible materials from heat sources.

5.5.2.3 Defective Materials & Work

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. All rejected DynaFlash Flashing materials and work shall be repaired and/or replaced to the satisfaction of the Contract Administrator, without delay and at no additional expense to the Principal.

5.5.2.4 DynaFlash Flashings as a Substitute

Where a proprietary cladding manufacturer specifies a specific flashing as part of their system, permission must be obtained from the cladding manufacturer before the flashing system is substituted with Dynaflash Flashings.

5.5.3 Components & Accessories

5.5.3.1 DynaFlash Flashings

DynaFlash Flashings. A range of proprietary concealed corner and transition flashing designed to meet the flashing requirements of NZBC Acceptable Solution E2/AS. DynaFlash Flashings are manufactured from 1mm thick extruded white polypropylene with integral black EPDM rubber seals along each edge.

DynaFlash Flashings are BRANZ Appraised for use as concealed flashings on timber and steel framed buildings clad with direct fixed, or cavity-based wall cladding systems complying with NZBC E2/AS1 or with proprietary direct fixed or cavity-based cladding systems covered by a valid BRANZ Appraisal, on buildings situated in NZS 3604 Wind Zones up to, and including 'Extra High'.

Applications:
- DynaFlash Flashings can be left unfolded for flat backing-flashing applications; or
- they can be folded along the centreline in either direction to suit internal and external corner back-flashing applications;
- the 200mm wide flashing can be bent and used for stepped transition back-flashing applications

Available Sizes:
- 100mm: 50 x 50mm when folded,
- 150mm: 75 x 75mm when folded,

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- 200mm: 100 x 100mm when folded.
- All sizes supplied in 25m long coils.

Do not leave DynaFlash Flashings exposed to weather or UV light for a total of more than 90 days before covering with wall cladding.

5.5.3.2 Fixings

DynaFlash Flashing Fixings:
- For Timber Substrates: Fix with 30-40mm x 2.5mm, hot-dip galvanised, flat-head nails; or staples.
- For Steel Substrates: Fix with self-drilling, 6-gauge, Class 4 galvanised screws; or staples (when fixed to timber cavity battens).

Fixings shall be spaced approximately 400mm centres, and where possible be fixed through the section of flashing between the EPDM seal and outside edge. If a fixing is removed from the flashing, the remaining hole must be repaired or the flashing replaced.

5.5.4 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to install DynaFlash Flashings as required.

5.5.5 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

Installation of DynaFlash Flashings shall be carried out by qualified and experienced tradespersons, familiar with the specified materials and installation techniques, in accordance with the manufacturer's technical literature and BRANZ Appraisal No.913, and to comply with the requirements of the New Zealand Building Code.

All work shall be such as to leave a neat, efficient and robust installation, to the required standard and free from damage and defects.

5.5.6 Delivery & Handling

Store DynaFlash Flashings in clean, dry conditions, and protected from damage and contamination. Do not place hot objects near or allow contact with DynaFlash Flashings at any time.

Should a problem be encountered with any DynaFlash Flashing product during installation, immediately contact Dynex on 0800 439 639. Do not continue to use the product that is not performing to specification or expectation. Keep samples of the product in question and where possible, document manufacturing details.

Installers shall be familiar with, and comply with, the manufacturer's safe handling requirements and precautions for use, and shall use appropriate safety gear when handling materials.

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Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including General risk and workplace management - part 1.

5.5.7 Preparation

5.5.7.1 General

Prior to installation, carry out all necessary inspections and preparatory work required, and ensure that all preliminary works by other trades has been completed to specification and as shown on the approved drawings.

Do not commence installation until all necessary preliminary works by others is complete and to the required standard. The commencement of work shall be deemed to indicate full acceptance by the installer that all preliminary works by other trades is complete.

Supporting timber structures must comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design, and have a maximum moisture content in accordance with the requirements NZS 3602 at the time of installation - unless specified otherwise by the cladding manufacturer.

Supporting lightweight steel framed structures must be to a specific design, and shall meet the requirements of AS/NZS 4600 or the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria.

5.5.8 Installation

5.5.8.1 Installation - when used with Timber Cavity Battens

Install DynaFlash Flashings over the cavity battens in accordance with the manufacturer's requirements, to the locations and details shown on the drawings.

Fix the back flashings in place, using the fastener type specified for fixing to timber cavity battens, at approximately 400mm centres, with fasteners placed through the flashing section between the EPDM seal and outside edge.

Install flashing runs in a continuous length. Where joins are unavoidable, form joins with minimum 100mm overlap, and lapped such that any water will be shed to the outside.

Do not leave DynaFlash Flashing exposed to weather or UV light for more than 90 day before covering with wall cladding - replace with new back flashings if 90 days' exposure is exceeded.

5.5.9 Completion

Check that all DynaFlash Flashings have been installed correctly, and that all edges, joins and ends are correctly finished prior to closing off with wall cladding.

Check all DynaFlash Flashings for damage and defective work - replace and/or repair as necessary to the required standard.

Leave all of this work complete, and free of defects, and to the required standard for the installation of subsequent cladding.

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6 INSULATION

6.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

6.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

4218:2009(NZS)	Thermal insulation - Housing and small buildings
4220:1982(NZS)	Code of practice for energy conservation in non-residential buildings
4243.1:2007(NZS)	Energy efficiency - Large buildings - Building thermal envelope
4246:2016(NZS)	Energy efficiency - Installing bulk thermal insulation in residential buildings
4859.1:2018(AS|NZS)	Thermal insulation materials for buildings - Part 1: General criteria and technical provisions

6.3 Pink Batts Insulation

6.3.1 Scope

Supply and install Pink® Batts® Insulation, as specified herein, to the locations identified on the drawings, complete with all accessories required for proper installation and performance. No substitutions are permitted for Pink® Batts® Insulation. All aspects of this work shall be in complete accordance with Pink® Batts® technical information and installation requirements and as shown on the drawings:
https://www.pinkbatts.co.nz/resources/downloads/product-data-sheets

6.3.2 Requirements

6.3.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

6.3.2.2 Warranty - applies to BRANZ Appraised Pink® Batts® Ceiling & Wall products

Pink® Batts® Lifetime Product Warranty:
- 50 Years Warranty for BRANZ Appraised Pink® Batts® ceiling and wall products installed according to the warranty conditions.
- Provide the Pink® Batts® Lifetime Product Warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of permanent installation.

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6.3.2.3 Substitutions

Pink® Batts® Insulation shall be as specified herein and as indicated on the approved drawings. The substitution of Pink® Batts® branded products for alternative brands is not permitted under any circumstances.

The substitution of a specified Pink® Batts® product for an alternative Pink® Batts® branded product by the Installer (PinkFit® or other) shall only be permitted with the Contract Administrator's written authorisation, and shall be at no additional cost to the Principal. Should any resultant extra work and/or redesign work be required to accommodate alternative Pink® Batts® branded products to satisfy design, performance and compliance requirements, then the cost of these shall be borne by the Installer.

6.3.3 Underfloor Thermal Insulation

6.3.3.1 Pink® Batts® SnugFloor® R2.6 Wide

Pink® Batts® SnugFloor® R2.6 Wide- product code 7131601. A non-combustible, resin bonded fibrous glasswool insulation manufactured from over 80% New Zealand sourced recycled glass and cured urea extended phenolic resin. Suitable for use in timber framed floors. R-value R-2.6. 110mm thick x 580mm wide x 1220mm long segments.

BRANZ Appraised for use as a thermal insulating material for timber framed floors in new and existing domestic buildings according to the conditions and limitations of BRANZ Appraisal No.632.

Pink® Batts® SnugFloor® R2.6 Wide is licenced with Environmental Choice New Zealand: Thermal Building Insulant Licence No.2504017.

Installed as underfloor thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

6.3.3.2 Pink® Batts® SnugFloor® R3.2 Wide

Pink® Batts® SnugFloor® R3.2 Wide- product code 7135832. A non-combustible, resin bonded fibrous glasswool insulation manufactured from over 80% New Zealand sourced recycled glass and cured urea extended phenolic resin. Suitable for use in timber-framed floors. R-value R-3.2 - 140mm thick x 580mm wide x 1220mm long segments.

BRANZ Appraised for use as a thermal insulating material for timber framed floors in new and existing domestic buildings according to the conditions and limitations of BRANZ Appraisal No.632.

Pink® Batts® SnugFloor® R3.2 - Wide is licenced with Environmental Choice New Zealand: Thermal Building Insulant Licence No.2504017.

Installed as underfloor thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

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6.3.4 Wall Thermal Insulation

6.3.4.1 Pink® Batts® R1.0 Masonry Wall

Pink® Batts® R1.0 Masonry Wall - product code 7160110. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-1.0. 40mm thick x 580mm wide x 1220mm long segments.

Pink® Batts® Masonry Wall insulation is specifically designed to be installed between vertical strapping members fixed to solid concrete/masonry walls. It is recommended that an absorbent building paper or a waterproof membrane is placed between the insulation and the concrete.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238. Refer to product data - https://www.pinkbatts.co.nz/assets/Products/April-2022-changes-/Wall-Product-Sheet_April22_1075-RevF.pdf

Installed as thermal insulation to strapped concrete/masonry wall to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

6.3.4.2 Pink® Batts® Ultra® R4.3 140mm Wall

Pink® Batts® Ultra® R4.3 140mm Wall - product code 7127143. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-4.3 - 140mm thick x 560mm wide x 1140mm long segments.

BRANZ Appraised https://www.branz.co.nz/appraisal-codemark-certificates/238-2018-pink-batts-insulation/ for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238. Refer to product data - https://www.pinkbatts.co.nz/assets/Products/April-2022-changes-/Wall-Product-Sheet_April22_1075-RevF.pdf

Pink® Batts® Ultra® R4.3 140mm Wall is licenced with Environmental Choice New Zealand: Thermal Building Insulants Licence No.2504017.
Installed as wall cavity thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

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6.3.5 Ceiling Thermal Insulation

6.3.5.1 Pink® Batts® Classic R1.8 Ceiling

Pink® Batts® Classic R1.8 Ceiling - product code 7110118. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-1.8. 95mm thick x 432mm wide x 1220mm long segments.

Pink® Batts® ceiling insulation is a lightweight flexible glasswool insulation products designed to:
- thermally insulate ceilings in new homes, be retrofitted into existing homes without insulation, or over existing insulation for better performance;
- fit easily into standard ceiling constructions, or be easily cut to fit non-standard constructions;
- meet the requirements of the New Zealand Building Code for different designs and environments.

Pink® Batts® Classic R1.8 Ceiling is BRANZ Appraised - refer to BRANZ Appraisal No.238. Refer to Product data sheet - https://www.pinkbatts.co.nz/assets/Uploads/Downloads/Roof-and-RTA-Data-Sheet-February-2023.pdf

Installed as ceiling thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

6.3.6 Building Insulation Blanket (BIB)

6.3.6.1 Pink® Batts® BIB R3.6 Blanket

Pink® Batts® BIB R3.6 Blanket - product code 720081. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-3.6. 140mm thick x 1.2m wide x 8m long rolls.

Pink® Batts® Building Insulation Blanket (BIB) is specifically designed for commercial roof and commercial wall applications. When used in residential applications, installation must be completed in line with NZS 4246.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238. Refer to product data - https://www.pinkbatts.co.nz/assets/BIB/PB_BIB-ProductSheet_MARCH22_1080-RevD.pdf

Installed as thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

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6.3.7 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with trades to install Pink® Batts® Insulation as required.

6.3.8 Workmanship

All installation work shall be carried out by registered PinkFit® installers; the preferred Pink® Batts® installers, or by experienced and competent installers, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements. For more information on best practice Pink® Batts® installation refer to:
https://www.pinkbatts.co.nz/resources/downloads/product-data-sheets

6.3.9 Delivery & Handling

Store the Pink® Batts® Insulation materials undercover, in a weatherproof environment, off the floor, on a flat, even surface in accordance with the manufacturer's requirements. Keep materials dry and protected from damage, moisture and contamination at all times.

For best practice, refer to Pink Batts Product and Installation Guides.
Further assistance contact 0800 746 522

Store the Pink® Batts® Insulation materials undercover, in a weatherproof environment, off the floor, on a flat, even surface in accordance with the manufacturer's requirements. Keep materials dry and protected from damage, moisture and contamination at all times.

Conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including the Workplace and facilities requirements

6.3.10 Installation

6.3.10.1 General

Install Pink® Batts® Insulation in accordance with NZS 4246.
All installation work shall be carried out by experienced and competent installers, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements. For more information on best practice Pink® Batts® installation refer to:
https://www.pinkbatts.co.nz/resources/downloads/product-data-sheets

6.3.10.2 Pink® Batts® SnugFloor®

Install Pink® Batts® SnugFloor® Insulation in accordance with NZS 4246.

All installation work shall be carried out by experienced and competent installers, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements. For more information on best practice Pink® Batts® installation refer to:

https://www.pinkbatts.co.nz/resources/downloads/product-data-sheets

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6.3.10.3 Pink® Batts® Wall

Install Pink® Batts® Wall Insulation in accordance with NZS 4246.

All installation work shall be carried out by experienced and competent installers, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements. For more information on best practice Pink® Batts® installation refer to:

https://www.pinkbatts.co.nz/resources/downloads/product-data-sheets

6.3.10.4 Pink® Batts® Ceiling - Truss/Framed Roof

Install Pink® Batts® Ceiling Insulation in accordance with NZS 4246.

All installation work shall be carried out by experienced and competent installers, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements. For more information on best practice Pink® Batts® installation refer to:

https://www.pinkbatts.co.nz/resources/downloads/product-data-sheets

6.3.10.5 Pink® Batts® BIB - Wall

Install Pink® Batts® BIB Insulation in accordance with NZS 4246.

All installation work shall be carried out by experienced and competent installers, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements. For more information on best practice Pink® Batts® installation refer to:

https://www.pinkbatts.co.nz/resources/downloads/product-data-sheets

6.3.11 Completion

Check that all specified Pink® Batts® Insulation products have been installed correctly in accordance with the manufacturer's requirements.

Check for damage and defects - replace damaged and defective insulation as necessary to the required standard.

Ensure the installed insulation will be adequately protected for durability and performance in accordance with the manufacturer's warranty requirements.

Leave all of this work complete, and in the condition required for proper performance, including for the installation of subsequent linings, in accordance with the manufacturer's warranty requirements.

BC261419
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Leave adjacent surfaces and finished work clean and free of damage. Remove all associated rubbish and waste material from site.

Issue to the Owner a copy of the Pink® Batts® Lifetime Product Warranty for all Pink® Batts® Insulation products installed.

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7 ROOFING

7.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

7.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

1397:2011(AS)	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
2295:2006(NZS)	Pliable, permeable building underlays
3604:2011(NZS)	Timber-framed buildings
NZMRM Code of Practice	NZ Metal Roof and Wall Cladding Code of Practice - Version 3.0

7.3 Nuralite Nuratherm Insulated Membrane Roofing

7.3.1 Scope

Supply and install the selected Nuratherm Insulated Membrane Roofing System as a waterproof membrane roof cladding to the locations shown on the drawings, complete with all accessories. All aspects of this work shall be in strict accordance with Nuralite Waterproofing Ltd (Nuralite) technical guidelines, installation specifications and details, (check www.nuralite.co.nz, or call 0800 68725483 for the latest editions).

No substitutions are permitted for Nuratherm Insulated Membrane Roofing.

Comply with:

CODEMARK CM70032 – The Nuraply 3PM Roofing Membrane System

BRANZ Appraisal 547 - Nuraply Roof Membranes

BRANZ Appraisal 732 - Nuraply Nuratherm System

Nuraply 3PM Roofing Membrane Installation Manual

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7.3.2 Wind Zone

The specified Nuratherm Insulated Membrane Roofing System shall be installed in either a Very High or Extra High Wind Zone, and fixed accordingly to Nuralite installation requirements.

7.3.3 Rainwater Run-off

The rainwater run-off from the Nuratherm Insulated Membrane Roof can be collected, stored and used as potable water.

7.3.4 Substrate

Prior to installation, carry out all necessary inspections and preparatory work required, and ensure that all preliminary works by other trades has been completed to specification and as shown on the drawings.
Do not commence installation until all necessary preliminary works by others is complete and to the required standard. The commencement of work shall be deemed to indicate full acceptance by the installer that all preliminary works by other trades is complete.
Supporting timber structures shall comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design.

Plywood as a substrate:

Plywood materials shall comply with AS/NZS 2269, and be minimum 17mm thick for roofs or 21mm thick for decks, CD grade (C face up), H3.2 CCA treated, and installed and fixed exactly to the plywood manufacturer's requirements according to Nuralite recommendations. LOSP treated plywood must NOT be used.
Plywood must be fixed using a suitable glue adhesive and with countersunk screw heads, 10g Grade 316 stainless steel screws at maximum 150mm centres along edges and maximum 200mm centres in the body of the sheets.
Plywood Substrates - check all aspects of preparatory works, including but not limited to:
- Check that sheets have been laid with staggered joints (stretcher bond) to falls, with joints flush, edges arrised, upstands filleted, with no bumps or hollows, and are smooth, clean, dry and free of debris.
- Check that the plywood sheets are rigid, and fully supported on all edges, on deck framing members spaced both ways at maximum 600mm centres, unless detailed otherwise.
- Check that the plywood substrate is smooth, clean, dry and free of debris.
- Check that any built-in falls are at the required slope - minimum 1:60 for decks; and minimum 1:100 for gutters.

Plywood and the timber substructure to have a maximum moisture content of 20% when the membrane is installed. Fillets are not required with NURAPLY TPO installations. Install 20 x 20mm H3.2 treated timber edge fillets as required, and 5mm-radius-chamfer external edges at turn-downs.

7.3.5 Vapour Barrier

Nuraply ALU Vapour Barrier - as a component of Nuratherm Insulated Membrane Roofing. An aluminium faced, self-adhesive membrane, 0.6mm thick, installed over the substrate with joints lapped 80mm at sides and 100mm at ends and fully sealed. Extend the vapour barrier beyond the roof edges to ensure that the edges of the insulation panels are fully dressed and closed by the vapour barrier.

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Applied to properly prepared and primed substrates, in accordance with Nuralite requirements and as shown on the drawings.

7.3.6 Vapour Barrier Primer

Nuraflux Primer - as a component of Nuratherm Insulated Membrane Roofing. Applied as a surface primer for Nuraply ALU Vapour Barrier membrane in accordance with Nuralite requirements. Limit priming to no more than can be covered by the membrane in one working day, and allow the primer to properly dry before installing the vapour barrier membrane. Protect the primed surface from contamination until membrane installation.

Apply Nuraflux Primer to properly prepared substrates, by brush or roller, for optimum Nuraply ALU Vapour Barrier membrane adhesion in accordance with Nuralite requirements

7.3.7 Enertherm Insulation

Lay out ENERTHERM INSULATION. If using Tapered boards to create the fall, layout needs to be carefully considered before commencing so that there is positive drainage to all outlets. Ensure that sheets have been stretcher bond laid to falls, are rigid, with joints flush, up stands filleted, no lumps or hollows, smooth, clean, dry and free of debris. Secure the sheets to the substrate with Nuratherm fasteners at a rate based in the checklist below or consult with Nuralite representatives. For a double layered Enertherm system, use Nurabond Low Foaming PU adhesive. Weight boards after installation to ensure a strong bond. Seal any gaps in the insulation with HOLDFAST EXPANDING FOAM to produce a continuous insulation blanket with no gaps. Apply a layer of Aluminium Foil tape to any exposed ends of Enertherm sheet to provide a surface for the base sheet membrane to adhere to. On the lip of gutters, Gutter Lip Trim may be installed if the Enertherm edge requires additional protection from damage.

Mechanically fix Enertherm Insulation Panels to properly prepared plywood or metal tray substrate with IKO Fix Fasteners, 9 fasteners per panel, spaced in accordance with Nuralite requirements.

7.3.8 Base-layer Membrane

Lay the NURAPLY 3PV-SA out and remove backing film so the sheet adheres to the insulation board. Joints to be sealed with pressure or by lightly heating them. With minimum 80 mm wide down roll edges and minimum 100 mm wide across roll ends, to the NURALITE Waterproofing Limited requirements. Ensure unobstructed drainage flow at outlets. Install NURAPLY 3PB-SA to upstands and gutters so that the membrane is fully bonded to the Enertherm boards on the vertical surface.

Applied to properly prepared substrates, in accordance with Nuralite requirements, BRANZ Appraisal No.732 (2012), and as shown on the drawings.

7.3.9 Finish Membrane

Nuraply 3PM - as a component of the Nuraply 3PM Membrane Roofing System (*double layer system*) on Enertherm Insulation Panels. A 4mm thick reinforced fibre asphalt, flexible waterproof capping membrane with a pre-finished coloured mineral chip surface. Fabricated from modified bitumen (APP) reinforced with non-woven polyester. Lay the second NURAPLY 3PM layer by heat fusing over the cleaned repaired and NURAFLUX QD primed (if

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Queenstown Lakes District Council

necessary) surface of the first layer in the same sequence. Joints in the second layer must not correspond with joints in the first layer. Second layer joints to be welded lap-joints, minimum 80 mm wide down roll edges and minimum 100 mm wide across roll ends, to the NURAPLY 3PM supplier's requirements. Roll junctions must be staggered to avoid 4-layer lap-weld build-up of NURAPLY 3PM at corners. Ensure unobstructed drainage flow at outlets. WELD JOINTS

Heat fuse joints minimum width 80mm side and 100mm end laps using NURALITE Waterproofing Limited self-checking lap welding techniques.
PENETRATIONS
Form mould, weld and flash all upstands, downturns and penetrations to NURALITE Waterproofing Limited details including raised, anti-ponding water deflectors on the upside of penetrations.
MOVEMENT JOINTS
Form and weatherproof movement joints as designed to NURALITE Waterproofing Limited details.
JUNCTIONS
Check that adjoining walls and parapets are prepared ready for the installation of NURAPLY roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof.
Required work includes the following:
- 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).
Recommended practice on parapets is to apply NURAPLY roofing up across the top and down the outside face at least 70mm.

Available in Charcoal, Slate, White, Red or Green colour.

The Nuraply 3PM Roofing Membrane System is CodeMark assured with the NZ Building

Code: CodeMark Certificate of Conformity No:CM70032, issued by Bureau Veritas Australia Pty Ltd.

Installed as a capping membrane over a Nuraply 3PV-SA base-layer in accordance with Nuralite requirements, BRANZ Appraisal No.732 (2019), and as shown on the drawings.

Where specified, a thin coating of Nuraglaze shall be applied as a surface dressing to enhance the system's appearance and to bind any over-chipping of the mineral chip finish.

Colour: charcoal

Installed Location: Refer drawings. Deck roof.

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7.3.10 Installation

7.3.10.1 Nuraply 3PM Membrane Roofing System on Enertherm Insulation Panels

Install Nuraply 3PM Membrane Roofing System on Enertherm Insulation Panels as the Nuratherm Insulated Membrane Roofing System - complete with Nuraply 3PM Membranes, Enertherm Insulation Panels, Nuraply ALU Vapour Barrier underlay (if specified), all surface priming, membrane application, jointing, flashing and sealing, etc., and all Nuralite supplied fillets and metal edge trims, and gutter outlets, - in strict accordance with Nuralite installation requirements and details, and as shown on the drawings.

Install the Enertherm insulation panels in a stretcher bond pattern to the substrate (over Nuraply ALU Vapour Barrier vapour if specified) with all edges fully supported by the substrate. Seal gaps with Holdfast Expanding Foam gap filler.

If installed, return the Nuraply ALU Vapour Barrier and dress 20mm passed the edge of the Enertherm insulation panels and at penetrations.

As necessary, install 20 x 20mm H3.2 treated timber fillets to roof/wall junctions.

Unroll the Nuraply membranes on to the substrate and allow it to relax for at least 30 minutes prior to installation.

Commence membrane installation from low points and sumps, and proceed through gutters to the main roof, installing the membrane up the roof slope from the lowest edge.

Apply the Nuralite 3PV-SA self-adhesive base sheet to the Enertherm insulation panels. Joints pressure sealed, minimum 80mm side-lap and 100mm end-lap, and neatly finished straight and parallel. Use neatly cut strips of membrane for gutters and upstands etc., and install Nuralite supplied metal edge trims, flanged drains, outlets etc., as required and/or specified to complete the installation.

Heat fuse the Nuraply 3PM cap sheets to the base sheets in the same sequence with joints off-set 500mm from the base sheet joints. Joints to be fully welded, minimum 80mm side-laps and 100mm end-laps, and neatly finished straight and parallel. Avoid four layer lap weld build-up of Nuraply at corner junctions.

Ensure unobstructed drainage flow at rainwater outlets.

Finish any control joints located on the drawings to Nuralite requirements.

Consult Nuralite regarding any detail where a standard Nuraply detail does not exist.

Protect installed membrane as required, avoid puncturing or damaging the membrane during installation; repair or replace as necessary.

Thoroughly blow or sweep clean the installed Nuraply 3PM membrane to remove over-chipping, allow to dry and apply any selected coating.

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7.3.11 Delivery & Handling

Take delivery of materials undamaged. Reject any item found to be defective or damaged and contact the supplier for replacement.

Store materials and accessories undercover, off the ground, on a flat surface, and out of direct sunlight, with membrane roll stacked on ends. Keep stored materials and accessories dry and protected from damage, contamination and freezing conditions at all times.

Do not use damaged or defective materials and products, or products that are beyond the designated shelf life.

Handle the specified materials and products in accordance with the manufacturer's recommendations and in a manner that prevents damage and surface marking.

Installers shall be familiar with and comply with the manufacturer's Material Safety Data Sheet precautions for use, and use appropriate safety gear when handling materials.

Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including the Best practice guidelines for working on roofs and the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry.

7.3.12 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings. Co-ordinate with other trades to install Nuratherm Insulated Membrane Roofing as required.

7.3.13 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All installation work shall be carried out by experienced Nuralite Authorised Applicators, familiar with the specified products and installation techniques, to fully comply with all Nuralite warranty requirements, in accordance with the manufacturer's installation requirements and as noted and detailed on the drawings.

All membrane cutting, laying and jointing techniques shall be exactly as recommended by the manufacturer. All work shall be such as to leave a neat, efficient, robust and watertight installation.

Use only Nuralite-approved primers and adhesives compatible with the specified membranes and substrates, and the membrane's application/use.

Protect adjacent finished work and surfaces from damage and contamination during installation. Leave completed surfaces clean, sound, and free of defects and damage.

7.3.14 Temporary Protection

Keep the working area cordoned off during installation, and protect completed work from construction foot traffic and damage until hand-over, or as directed. Where necessary,

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provide temporary access boards as protection during subsequent operations, and remove these when no longer required.

7.3.15 Completion

Check that the membrane roofing has been installed correctly, and that all system accessories are correctly installed and finished.

Check for damage, and repair or replace as necessary. Carry out any repairs and remedial work in accordance with Nuralite instructions to the required standard.

Leave the completed membrane roofing system leak free and watertight, and to the required standard in accordance with Nuralite requirements.

Completely clean the works area, and leave adjacent surfaces and finished work clean and free of damage. Remove all associated rubbish from site.

Complete and sign the project-specific Nuralite Checklist for Project Signoff, and the Nuralite Checklist for Roof Readiness, and the project-specific Nuralite Maintenance Programme.

Issue to the Owner a copy of the Nuralite Maintenance Programme, and a copy of the Nuralite Product Warranty and the Applicator's Installation Warranty for the completed works.

7.4 Metalcraft Rainwater & Fascia Systems

7.4.1 Scope

Supply and install Metalcraft Rainwater & Fascia Systems, as specified herein, to the locations and details shown on the design drawings, complete with all necessary components and accessories required for proper installation and performance. All aspects of this work shall comply with the NZ Building Code, related Metalcraft technical literature and publications (check http://www.metalcraftgroup.co.nz or call (0800) 766 369 for the latest editions), and other relevant product manufacturers' recommendations.

No substitutions are permitted for Metalcraft Rainwater & Fascia Systems.

For the purpose of this specification, Metalcraft Rainwater & Fascia Systems is referred to as 'Rainwater & Fascia Systems', and all 'Metalcraft' associated technical literature and publications, including the 'Metalcraft Product Technical Statement', installation instructions and drawings, are collectively referred to as the 'technical literature'.

Extent of work:

The following is a list and/or general description of the extent of the Metalcraft Rainwater & Fascia Systems works, which are more specifically defined in the contract documents, required for the completion of the contract works:

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7.4.2 Requirements:

7.4.2.1 Safety:

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

7.4.2.2 Warranty:

Please refer to Metalcraft specifications for applicable warranty terms and conditions.

7.4.2.3 Inspection and reporting:

Inspections shall take place at each of the stages as scheduled in the building consent. Confirm a written programme to facilitate these inspections, including notification when each stage of the work is ready for inspection.

Carry out all necessary pre-installation and installation inspections for each area of the works.

Complete all necessary pre-installation checklists prior to installation, and all necessary installation checklists.

Complete all necessary final checklists and installation sign-off certificates before handing over completed work.

7.4.2.4 Quality Assurance:

Maintain and comply with industry-recognised quality control and assurance procedures to ensure that all stages of the work are carried out to the highest standard.

7.4.2.5 Defective Material & Workmanship:

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. Rejected Metalcraft Rainwater & Fascia System materials and work shall be repaired and/or replaced to the satisfaction of the Contract Administrator without delay and at no additional cost to the Principal.

7.4.3 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades, as required, the assembly and installation of the Rainwater & Fascia system to the required layout, details and tolerances.

7.4.4 Product

COLORSTEEL® Maxam™ - Pre-painted hot dipped aluminium/zinc/magnesium alloy coated steel coil, with a minimum coating weight of 150g/m², conforming with AS/NZS 2728 Class 6. COLORSTEEL®

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Colour: tidal drift matt

7.4.5 Spouting Profile

A proprietary half round guttering system manufactured from Zinc/alum coated steel substrate conforming with AS 1397:2013.

System:

- 161 x 86 x 109 high
- Cross-sectional area - 8627 mm/2
- Cross section capacity – 6554 mm/2

Accessories:

- External brackets
- Stop ends

Installed in accordance with ‘technical literature’ requirements.

7.4.6 Downpipe Profile

Metalcraft COLORSTEEL MAXAM downpipe system including round down pipes, bends and clips to the the requirements of the plans.

- 80mm round - internal dimension 79mm. Total cross sectional area = 4902mm/2
- 100mm round - internal dimension 101mm. Total cross sectional area = 8012mm/2
- 150mm round - internal dimension 158mm. Total cross sectional area = 19607mm/2

Installed in accordance with ‘technical literature’ requirements.

7.4.7 Preparation

Check all aspects of preparatory works, including but not limited to:-

Check that the timber framing complies with NZS 3604, is in true alignment and includes all blocking required for joints, corners and soffits etc., and has a maximum moisture content of 24% at the time of Metalcraft Rainwater & Fascia Systems installation.

Check that all preparatory materials are lapped such that any water will run down to the exterior.

7.4.8 Installation

7.4.8.1 Workmanship

All installation work shall be carried out by experienced and competent tradesmen who are familiar with the techniques and materials specified. All handling and fixing techniques, and all jointing and sealing materials and techniques, shall be exactly as required by Metalcraft.

Handle spouting and fascia without scratching, distorting or damaging.

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Protect the coated surface from damage at all times; replace the whole section where a significant depth of the coating has been damaged. Completely clean off all drill and power saw swarf as the work proceeds.

Screw fixings shall be in accordance with Metalcraft requirements and as noted on the drawings, and of a compatible material and finish with the fascia, spouting, and spouting brackets. Exposed screws should be factory prepainted for an accurate colour match. Support brackets fixed in accordance with Metalcraft 'Technical literature' requirements.

7.4.8.2 Spouting

Screw fix spouting brackets, true to line, at maximum 900mm centres and to falls as shown on the drawings. Form spouting joints and downpipe droppers in strict accordance with Metalcraft 'technical literataure' requirements. Locate downpipe droppers to the set-out shown on the drawings.

7.4.8.3 Downpipes

Downpipes and spreaders setout and installed complete with bends as shown on the drawings. All joints lapped and sealed to Metalcraft 'technical literature' requirements. Screw fix down pipes plumb to walls with matching support brackets. Direct downpipes into stormwater system as noted on the drawings.

7.4.9 Completion

7.4.9.1 Completion:

Clean up thoroughly and remove debris and unused material from the site.

Issue to the Main Contractor a copy of the Metalcraft Rainwater Systems maintenance requirements together with the Metalcraft Rainwater Systems Warranty for the completed works.

7.5 COLORSTEEL® - Roofing Specification

7.5.1 Scope

Inland - Moderate (ISO C2)
Supply the selected COLORSTEEL® roofing and install on the areas identified on the Roof Plan. All aspects of the work shall be in complete accordance with NZ Steel 'Installers Guide' (check colorsteel.co.nz for the latest edition) and any other relevant Product Manufacturers Recommendations.

7.5.2 Products™

COLORSTEEL MAXAM
Colour:

7.5.3 Profile

Trapezoidal 0.40 BMT x G550.
Location:

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7.5.4 Qualifications

All installation work shall be carried out by experienced and competent tradesmen who are familiar with the techniques and materials specified.\

7.5.5 Co-operation

Co-operate with other trades to ensure that roof framing has appropriate spacings, alignments and fixings, and coordinate to ensure that all timber members required for ridges, hips, valleys, barges, penetrations, junctions with vertical faces, etc. are correctly in place. Coordinate with other trades to ensure the correct process sequencing and intersection details with other materials and building elements are achieved.

7.5.6 Installation

Set-out the roofing sheets square to building axis and maintain this accurate set out throughout the works.

Install the underlay, keeping it taut and evenly lapped, with a minimum lap of 150mm.

All handling and fixing techniques, and all jointing and sealing materials and techniques, shall be exactly as recommended by New Zealand Steel.

Upon delivery, store on even bearers, and keep dry until installed. Handle roofing without scratching, distortion or other damage. Ensure that each section of roof is waterproofed as soon as possible after preparatory work is complete; allow to carry out the works in several operations if necessary to comply with this condition.

Install fasteners in straight lines, setting them to the correct depth to avoid either a loose seal or distorted sealing washer. Cut sheets by shear only, do not use grinders or friction blades. Do not use graphite pencils for marking. At the end of each day, sweep any loose debris/swarf from the roof surface. The top ends of all sheets are to be turned up to form a stop-end. The bottom of all sheets that have pitches below 8degrees must be drip formed into the gutter.

7.5.7 Compatibility

Ensure material is isolated from incompatible materials. It must not be in contact with, or receive run off from, less noble metals such as copper, brass and lead. It should not be in wet contact with stainless steel. Sustained wet contact with timber, either treated or untreated, must be avoided. For more information, see the COLORSTEEL® Installers Guide (available at www.colorsteel.co.nz).

7.5.8 Flashings

Ridges, hips and barge flashings etc. should all be matching COLORSTEEL®, and as detailed. Cuts must be tidily executed. Soft edge flashing must be colour matched before installation and dressed down into the roofing profile. The terminations of all flashings, particular ridges and barges, must be capped to form a tidy and weatherproof stop-end. Penetrations must be executed as per consented drawings and finished in a weatherproof and tidy manner.

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7.5.9 Protection

Always protect the coated surface from damage; replace the whole sheet where a significant depth of the coating has been damaged. Completely clean off all drill and power saw swarf and pop-rivet shanks as the work proceeds (at least daily, and keep them and other rubbish out of the spouting). Remove trade debris from the roof and from the site progressively, and on completion leave the roof and rainwater system completely clean.

At the completion of the roof instillation, document the condition of the roof and confirm with the main contractor.

7.5.10 Maintenance

After completion of the roof, the roof must be maintained in accordance with the COLORSTEEL® Maintenance Recommendations Brochure.

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8 PAINTING & DECORATING

8.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

8.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

2310:2002(AS/NZS)	Glossary of paint and painting terms
2311:2017(AS/NZS)	Guide to the painting of buildings
2312.1:2014(AS/NZS)	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings - Part 1: Paint coatings
3750.0:2008(AS/NZS)	Paints for steel structures - Introduction and list of Standards

8.3 Resene Painting General

8.3.1 Scope

Supply and apply the selected Resene coating systems to the surfaces identified on the drawings and as noted in the Resene Interior/Exterior/Protective Finishes schedules within this specification. All aspects of this work shall be in accordance with the Resene One-Line Specifications, Product Data Manual, and Putting Your Safety First (check 0800 RESENE for the latest editions), and other relevant product manufacturer’s recommendations.

8.3.2 Warranties & Requirements

The Manufacturer/Supplier is to warrant this work under normal conditions of use against failure referring to the Resene Promise of Quality in the Resene One-Line specifications and product data manual.

Substitutions are NOT permitted to any specified Resene coating system, or associated components and products. Do not combine paints from different manufacturers in a paint system.

If in the applicator's own expertise and judgement an amendment to this specification is required, or where a substrate preparation, or required painting system is not covered in this specification, this shall be brought to the attention of the contract administrator and any amendment agreed before work proceeds any further.

8.3.3 Qualifications

Painters to be experienced competent workers, familiar with the materials and the techniques specified and with the Resene coating systems and be members of the Master Painters New Zealand Association Inc.

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Queenstown Lakes District Council

The applicator is to have the necessary skill, experience and equipment to undertake the work. The applicator remains responsible for ensuring proper completion of the work.

8.3.4 Health & Safety

Refer to and comply with the requirements of the Health and Safety in Employment Act 1992 including the obligation to:

Eliminate hazards and if hazards cannot be eliminated or isolated, then minimise the hazards in this work by using the proper equipment and techniques as required by the MPNZA Painters hazard handbook and Resene Putting your safety first handbook.

Supply protective clothing and equipment.

Inform the contractor as well as the employees and others on site of those hazards and put in place procedures for dealing with emergencies.

Obtain from Resene (phone 0800 RESENE, or www.resene.co.nz) the safety data sheet for each product used and comply with the required safety procedures. Keep sheets on site.

8.3.5 Materials

8.3.5.1 Materials Generally

Do not combine paints from different manufacturer's in a paint system.

Use only Resene products (which are guaranteed for consistency and performance under ISO 9001 and APAS) prepared, mixed and applied as directed in the Resene One-Line Specifications and Product Data Manual. This specification has been written using where practical and available both low/no VOC and Environmental Choice approved products.

8.3.5.2 Exposed Dark Colours

Darker colours in areas of high sun exposure place significant stress on the coating and substrate. Resene 'CoolColour' technology reduces heat absorption of a wide range of colours. Contact your local Resene Representative or visit www.resene.co.nz for more information or visit www.resene.co.nz/coolcolour. View a list of Resene colours that can be made using Resene CoolColour technology at www.resene.co.nz/colourlibrary.

8.3.5.3 Thinners & Additives

Use only if and when expressly directed by Resene for their particular product in a particular application. Always wear gloves when handling any solvents including turpentine as harmful chemicals may be absorbed into the body through the skin.

8.3.6 Conditions

To conform to required trade practice, which shall be deemed to include those methods, practices and techniques contained in the Master Painters New Zealand Association Inc. Specification manual.

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Where surfaces have been treated with preservatives or fire retardants, check with the treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance. If they are not compatible, obtain instructions before proceeding.

The descriptions of areas in schedules and elsewhere are of necessity simplified. Coat ancillary exposed surfaces to match similar or adjacent materials or areas, except where a fair-faced natural finish is required or items are completely prefinished. In cases of doubt obtain written instructions before proceeding.

Do not paint hinges or hardware that cannot be removed. Before commencing work carefully remove hardware, fixtures and fittings, set aside where they cannot be damaged or misplaced and replace on completion.

Supply, lay and fix dropsheets, coverings and masking necessary to protect adjoining, fixtures, fittings and spaces from paint drops, spots, spray and damage.

8.3.7 Preparation

Refer to the Resene One-Line specifications and product data manual for surface preparation sheets (or obtain them by phoning 0800 RESENE, or at www.resene.co.nz) listed in the materials systems schedule clauses. Carry out the preparatory work required by them for each of the substrates.

Handle cautiously lead-based paint and asbestos, if present, as outlined in the preamble of the Resene One-Line specifications and product data manual and the Putting your safety first brochure.

Remove and/or repair sharp edges, cracks and holes if present, as outlined in the preamble of the Resene One-Line specifications and product data manual.

Elastomeric sealants, if used, should not be painted. The paint film will not match the flexibility of the sealant and may severely limit its effectiveness.

If any substrate or surface, that even with the preparation work called for in this section, cannot be brought up to a standard that will allow painting or clear finishing of the required standard then do not proceed until remedial work is carried out.

Make good cracks, holes, indented and damaged surfaces. Use suitable gap fillers to match the surface being prepared. Any special priming requirements of the fillers must be satisfied. Allow to dry or set before sanding back level with the surface. Prime or seal timber before using putty.

Exterior and wet areas: Use only Portland cement base or water-insoluble organic base gap fillers.

Carry out this work under cover in a suitable environment with suitable lighting. Store items, both before and after coating, in a clean, dry area protected from the weather and mechanical damage, properly stacked and spaced to allow air circulation and to prevent sticking.

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Pre-treat any cut surfaces of preservative treated timber before priming. Ensure L.O.S.P. treated joinery has dried sufficiently to lose solvent odour. Pre-treat bare timber with Resene TimberLock (see Data Sheet D48) to improve the durability of subsequent coats. Liberally coat end grain, allow to soak in and then recoat.

Where off-site coatings are specified they must be applied to surfaces including those concealed when incorporated into the building.

Apply primer to suit the coating system to surfaces which will be concealed when incorporated into the building.

Prime or seal and paint bottom edges of external doors before hanging.

Stained, varnished, or painted joinery to have the first two coats, or the primer and one undercoat, applied to rebates and beads before glazing.

According to the putty manufacturer's instructions allow putty to set, then prime with Resene Wood Primer (see Data Sheet D40). Fully protect the putty by completing the Resene coating system as soon as it is sufficiently firm.

8.3.8 Application

Comply with the Resene One-Line specifications and product data manual data sheets and the additional requirements of this work section.

Ensure large wall areas that require more than one container of paint per coat, have enough paint boxed (mixed) together to complete the final coat. This will not apply if a single factory batch of paint, rather than shop tinted paint, is applied.

Although generally supplied ready-mixed, thoroughly mix paints. Lift any settled pigment and ensure the paint is homogenous.

Defer painting of exterior surfaces until weather conditions are favourable - warm dry days without frost or heavy dews. Avoid painting in direct sunlight any surfaces that absorb heat excessively. As far as possible apply paint in the temperature range 15°C to 25°C. If temperatures fall outside the range of 10°C and 35°C do not paint unless paints with the necessary temperature tolerance have been specified. Do not apply solvent borne paint if moisture is present on the surface.

Painting work to generally follow the following sequences:
- Complete surface preparation before commencing painting.
- Apply primers, sealers, stains, undercoats, paints and clear coatings in the sequences laid down by Resene.
- Allow the full drying time between coats laid down by Resene.
- Do not expose primers, undercoats and intermediate coats beyond Resene's recommendations before applying the next coat.
- Finish broad areas before painting trim.
- Ensure batch numbers of tins are matched for whole areas.
- Internally, paint ceilings before walls and walls before joinery, trim and other items.

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Select brush, roller, or pad and apply coatings to the requirements of Resene to obtain a smooth, even coating of the specified thickness, uniform gloss and colour.

Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. Complete by removing dust immediately before applying the next coat.

Correct defective work immediately and recoat as required, following precisely the Resene system being applied.

Each coat of paint and the completed paint system to have the following qualities and properties:

- Uniform finish, colour, texture, sheen and hiding power and the proper number of coats applied.
- No blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, brush marks, ladder marks and blistering.
- Proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application.

8.3.9 Completion

Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at the completion of the building works. Clean glass inside and out to a shining finish. Use the Resene Washwise on site 'paint equipment clean-up water' reclamation system to minimise the environmental impact of cleaning paint application tools.

Leave the whole of this work uniform in gloss and colour, of correct thickness, free from painting defects, clean and unmarked and to the standard required by following procedures.

Remove dropsheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.

Replace hardware without damage to it or the adjoining surface and leave hardware properly fitted and in working order.

Note: The use and disposal of paint and thinners represents a significant environmental hazard. Ensure all paint and thinners are disposed of in the following manner:
- When requested hand over part used paint containers to client for maintenance touch ups.
- Recycle leftover paint at a Resene ColorShop as part of the Resene "Paintwise programme". Contact your local Resene ColorShop for details or view information online at www.resene.co.nz/paintwise.htm.
- Donate left over paint to local community groups.
- Solvent based paints, paint thinners, turpentine, mineral spirits and solvents require special disposal procedures. Do not pour down sewer or storm water drains, sinks or into the ground. If they cannot be recycled they must be disposed of in a refuse dump licensed to take toxic waste.

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8.3.10 Maintenance

Good maintenance of coating systems involves a routine of regular cleaning as well as regular inspections. Regular inspections of the coating systems are recommended to identify breakdown, accidental damage to or undesirable deterioration of the paint.

Refer the Resene Caring for your paint finish brochure and the Resene website, www.resene.co.nz/comn/services/maintenance.htm.

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9 HVAC

9.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

9.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

2918:2018(AS|NZS) Domestic solid fuel burning appliances - Installation

9.3 Escea Outdoor Wood Fires

9.3.1 Scope

Supply and install Escea Outdoor Wood Fires, as specified herein and indicated on the design drawings, complete with all necessary components and accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with the manufacturer's technical literature (check www.escea.com, or email info@escea.co.nz, or call 0800 173 000 for the latest editions), and the requirements of the Building Consent.

No substitutions are permitted for Escea Outdoor Wood Fires.

9.3.2 Requirements

9.3.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

9.3.2.2 Warranty - Product

Escea Warranty - according to warranty terms and conditions.
- 5 Year Fire Box Warranty.
- 2 Year Total Warranty.
- Provide the warranty on the Escea standard warranty form.
- Commence the warranty from the date of purchase.

9.3.2.3 Warranty - Installation

Installer Installation Warranty - according to warranty terms and conditions.
- 2 Years Workmanship Warranty for Escea Outdoor Wood Fires installed.
- Provide the Installation Warranty on the Installer standard warranty form.
- Commence the warranty from the date of practical completion of the contract works.

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9.3.2.4 Quality Assurance

Maintain and comply with industry-recognised quality control and assurance procedures to ensure that all stages of the works are carried out to the highest standard.

9.3.2.5 Inspections & Reporting

BCA inspections of the works shall take place at each of the stages as scheduled in the Building Consent. Confirm a written programme to facilitate these inspections, including notification when each stage of the work is ready for inspection.

Carry out all necessary pre-installation and installation inspections for the works.

Complete all necessary Pre-Installation Checklists, and all necessary Installation Checklists.

Complete all necessary Sign-Off Certificates before handing over completed work.

9.3.3 Outdoor Wood Fires

9.3.3.1 EK1250

Escea EK1250 Outdoor Wood Fire. This appliance is designed for outdoor use only. Features include cooking grills, grill plate, ember generator, and four adjustable-height cooking bays.

Appliance Details:
- Appliance Weight: 380kg.
- Appliance Size (approx): 1296mm wide x 1543mm high x 655mm deep.
- Viewable Fire Area: 1247mm wide x 666mm high.

Clearances:
- Minimum clearance to combustible surfaces shall be in accordance with the manufacturer's requirements and Local Authority restrictions.
- A 50mm clearance must be maintained from the concrete enclosure to combustible materials.
- Any combustibles in front of the fire need to be no less than 2000mm from the opening of the fire and 650mm to each side.
- It is recommended to install the fire with the opening 790mm above the floor.
- Do not install a TV above this fire under any circumstances.

Installed in accordance with the manufacturer's requirements and installation manual to the location and details shown on the design drawings.

Installed Location:

9.3.4 Ancillary Components

9.3.4.1 Flue System (EK1250)

Escea EK1250 Flue System - complete with all necessary components and accessories required for proper installation and performance. The flue system requires the use of a 350mm flue, 450mm flue liner, 550mm flue liner above the flashing, a 350mm to 650mm cone, and a flue terminal. It is recommended to use a minimum of 2.4m of flue.

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Installed in accordance with AS/NZS 2981 and the manufacturer's requirements to the details shown on the design drawings.

9.3.5 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to install Escea Outdoor Wood Fires as required. Confer with the site supervisor to check on-site the required installation location and arrangement, dimensions, clearances and other installation requirements. Resolve any discrepancies and conflicts before proceeding.

9.3.6 Workmanship

Where required by the NZ Building Act 2004, it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

Installation work shall be carried out by suitably qualified and experienced tradespersons, familiar with the specified products and their installation techniques, in accordance with Escea installation requirements, and to fully comply with all warranty requirements.

All work shall be such as to leave a neat, efficient, and robust installation, to the required standard.

Make all necessary provisions to protect adjacent finished work and surfaces from damage during installation.

9.3.7 Delivery & Handling

Inspect Escea appliances, components and accessories for damage upon delivery; reject any damaged or defective appliances, and immediately contact the supplier for replacement.

Store Escea appliances in the delivery packaging, in a secure, weatherproof, dry and well-ventilated space in accordance with the manufacturer's recommendations. At all times, keep stored appliances dry and protected from damage, moisture and contamination.

Do not install damaged or defective appliances, or products that are beyond their use by date.

Should a problem be encountered with any Escea appliance or product during delivery or installation, immediately contact Escea on 0800 173 000. Do not continue to use the item that is not performing to specification or expectation. Keep the item in question and where possible, the packaging, document numbers and manufacturer details.

Handle Escea appliances and products in accordance with the manufacturer's requirements and user guidelines.

Installers shall be familiar with and comply with the manufacturer's safety guidelines precautions for use, and use appropriate safety gear during handling.

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Installers shall conform to all relevant WorkSafe NZ Guidelines and Codes of Practice - including the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry.

9.3.8 Installation

9.3.8.1 EK1250

Carry out the whole of this work to comply with AS/NZS 2918 and to the required installation sequence.

Install Escea EK1250 outdoor wood fire in a heat-resistant, non-combustible enclosure, complete with flue and other components required, in accordance with the manufacturer's written instructions, to the location and details shown on the drawings.

The appliance enclosure must be ventilated with at least one air vent located no higher than 300mm from the base of the appliance, with a total combined open surface area of at least 28000mm².

The appliance must be fully supported on its base and securely fastened to the support platform via the fixing points at the base of the appliance. The support platform must be entirely heat-resistant, level and strong enough to support the weight of the appliance and flue system.

Maintain the specified minimum clearances between the fire assembly with any combustible materials and surfaces.

Install the flue system in accordance with AS/NZS 2918 and to the details shown on the drawings. Ensure all flue system components are correctly connected and secured - do not use tape at flue connections. If any flue pipe is damaged and its integrity compromised, the flue pipe must be replaced - do not repair damaged flue pipe with tape.

9.3.8.2 Commissioning

Carry out a final inspection and any required testing and commissioning procedures in accordance with AS/NZS 2918.

9.3.9 Completion

Check that the Escea outdoor wood fire installation has been installed correctly in accordance with the manufacturer's requirements and the design drawings and the Building Consent.

Check for damage, faults and defective work - repair/replace as necessary to the required standard.

Leave this work complete and in full working order, to the required standard.

Leave the surrounding surfaces clean and free of rubbish and debris. Remove all rubbish and excess material from the site.

Issue to the Owner a copy of the manufacturer's operation and maintenance requirements, and a copy of the manufacturer's product warranty.

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1. CODEMARK CMNZ30036 Vertical Shiplap
2. Escea install
3. 12kN pile fixing
4. NURATHERM INSULATION DESIGN
5. XBOND WET AREA FINISH
6. NZMRM SPOUTING CALCULATIONS
7. SAN SELMO
8. CodeMark Certificate of Conformity - Nuraply 3PM Torch-on Membrane for Roofs and Decks

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Product Certificate

Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System

Certificate no: CMNZ30036
Version: N
Original issue date: 31 March 2014
Version date: 26 July 2023
Renewal date: 12 July 2028

1. Certificate Holder Details

Hermpac

Herman Pacific Limited.
110 Foundry Road, Silverdale 0932
technical@hermpac.co.nz
Tel: 09 426 5475
https://www.hermpac.co.nz

2. Product Certification Body

Global-Mark Pty Ltd
Trading as Global-Mark
57 Willis Street, Wellington, 6011
customer.service@global-mark.co.nz
+64 9 889 0622
www.global-mark.co.nz

Complaints: The complaints process for this certificate can be found here:
www.global-mark.co.nz/complaints

Global-Mark Managing Director.



Herve Michoux

3. Description of Building Method or Product

The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System consists of vertically fixed shiplap weatherboards, ventilated cavity battens, flashings and accessories.

4. Intended use of Building Method or Product

The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is an external vertically fixed wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.

5. New Zealand Building Code Provisions

The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System if designed, used, installed and maintained in accordance with the conditions of this Certificate will comply with or contribute to compliance with the following performance provisions of the NZ Building Code:

Clause B1 STRUCTURE:	Performance B1.3.1, B1.3.2 and B1.3.4, for the relevant physical conditions of B1.3.3 (a), (h), (j) & (q)
Clause B2 DURABILITY:	Performance B2.3.1(b) 15 years and B2.3.2(a)
Clause E2 EXTERNAL MOISTURE:	Performance E2.3.2, E2.3.5, E2.3.6 and E2.3.7
Clause F2 HAZARDOUS BUILDING MATERIALS:	Performance F2.3.1

6. Conditions and Limitations of Use

1. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is certified for buildings:
    a. not greater than 10 metre height, and
    b. situated:
        i. in all exposure zones (excluding microclimates) as defined in NZS3604:2011, Paragraph 4.2.4 NZS3604:2011, and
        ii. more than 1m from a relevant boundary, and
    c. constructed with timber framing within the scope of NZBC Acceptable Solution E2/AS1, Third Edition including amendment 10 (5/11/2020) Paragraph 1.1, and with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Third Edition including amendment 10 (5/11/2020) Table 2, situated in Wind Zones (as defined in NZS 3604:2011) as follows:

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The purpose of construction site audits is to confirm the practicability of installing the product; and to confirm the appropriateness and accuracy of installation instructions. In issuing this certificate, Global-Mark has relied on the independent expert and/or laboratory advise or reports. In placing the CodeMark mark on the product/system, the certificate holder makes a declaration of compliance with the certification standard(s) and confirms that the product is identical to the product certified herein.

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CodeMark

Product Certificate

Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System

global-mark

Certificate no: CMNZ30036
Version: N
Original issue date: 31 March 2014
Version date: 26 July 2023
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i. up to and including Extra High; for oil or stain finished Western Red Cedar, Yellow Cedar or Kanda, or with paint finished AshinDura, and

ii. up to and including Medium (provided dwangs or structural Vertibat cavity battens are at maximum 480mm centres), and if fixed with jolt head nails, up to and including Very High (provided dwangs or structural Vertibat cavity battens are at maximum 400mm centres) for paint finished Western Red Cedar, or

d. constructed with timber framing subject to specific engineering design up to a maximum design differential ultimate limit state (ULS) wind pressure of 2.5 kPa and within the scope limitations of NZBC Acceptable Solution E2/AS1, Third Edition including amendment 10 (5/11/2020) Paragraph 1.1 with regards to building height and floor plan area, and with a risk score of 0-20 calculated in accordance with NZBC Acceptable Solution E2/AS1, Third Edition including amendment 10 (5/11/2020) Table 2, for oil or stain finished Western Red Cedar, Yellow Cedar or Kanda.

2. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System shall be designed, used, installed and maintained in accordance with:
   a. the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System Installation Specifications, May 2023 V3 including:
      i. the Hermpac standard construction drawings applicable (refer sections 9 & 11 of this certificate), and
      ii. the fixing & finish requirements applicable to the oil/stain or paint system used.
3. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System shall be only installed vertically on vertical, flat surfaces.
4. Only aluminium window and door joinery meeting the requirements of NZS 4211:2008 (including Amendment1) for the relevant Wind Zone or wind pressure and installed with vertical jambs and horizontal heads and sills shall be used with The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System.
5. The designer shall provide a signed Declaration for submission with the building consent application that the use of this product in the proposed building work falls within the scope of this certificate and that all design conditions of this certificate have been met.
6. The installer shall supply a signed Product Installation Checklist Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System (January 2023 V2) for consideration for issuing a Code Compliance Certificate (CCC).

7. Health and Safety Information

Standard industry safety practices and manufacturer safety requirements as detailed in the technical literature including the applicable SDS must be observed at all times. Please refer to the product technical literature, safe handling instructions and relevant MSDS.

8. Basis for Certification

The certification decision is based on independent technical review(s) of test report(s), engineering opinion(s) and other documented evidence(s), factory audit(s) and site review(s)

Code Clause	Compliance pathway	Evidence

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Queenstown Lakes District Council

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B1 STRUCTURE	Alternate solution based on NZS3604:2011 and comparison with E2/AS1	1, 2, 3, 4, 5, 6, 7, 8 & 9
B2 DURABILITY	Alternate solution based on expert judgement	1, 6, 7, 8, 10, 13, 14 & 15
E2 EXTERNAL MOISTURE	Verification method E2/VM1 test	1, 2, 3, 4, 5, 6, 7, 8, 11 & 12
F2 HAZARDOUS BUILDING MATERIALS	Alternate solution based on expert judgement	1, 6, 7, 8, 16 & 17

9. Supporting Documentation for Certification

Rev	Author	Description	Date and/or Revision
1.	Herman Pacific	Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System Installation Specifications	Version 3, May 2023
2.	Herman Pacific	VertiLine Vertical Shiplap Weatherboard 18-20mm Cavity System – Construction Drawings -	Version 2, 1 January 2022;
3.	Herman Pacific	VertiLine Vertical Shiplap Weatherboard 40-45mm Cavity System – Construction Drawings	Version 2, 1 January 2022
4.	Herman Pacific	VertiLine Vertical Shiplap Weatherboard Cavity System Random Width and Depth– Construction Drawings	Version 2, 1 January 2022
5.	Herman Pacific	Product Installation Checklist – Hermpac Accoya VertiLine Vertical Shiplap Weatherboard Cavity System_Checklist	Version 2, January 2023
6.	BRANZ	Hermpac Vertiline Vertical Shiplap Weatherboard Cavity System – BRANZ Appraisal No. 650 (2020)	27 May 2020
7.*	BRANZ	BRANZ Appraisals Means of Compliance – Basis of Appraisal - Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System – BRANZ Appraisal No. 650 (2020)	22 May 2020
8.	BRANZ	HERMPAC Cedar Horizontal Cavity Battens – BRANZ Appraisal 1189 (2021)	19 August 2021

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CodeMark

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9.	BRANZ	Structures Test Report - HERMPAC Weatherboard Connections	5 March 2021
10.	SCION	Durability and Potential End-uses of some Timber Species Imported into New Zealand	October 2017
11.	BRANZ	Weathertightness test to E2/VM1 of Herman Pacific Vertical Shiplap Weatherboard	10 May 2013
12.	BRANZ	E2 Weathertightness Opinion for the Reissue of the Appraisal of the VertiLine Vertical Shiplap Weatherboard Cavity System	22 May 2020
13.	Herman Pacific	Yellow Cedar – Technical Data Sheet	2021
14.	Herman Pacific	Kanda – Technical Data Sheet	2021
15.	CIRAD	Tropix & Tropical Wood Species – Kanda Technical Data Sheet	26 March 2012
16.	Herman Pacific	Hermpac Weatherboard Cladding Cavity Systems – SDS Index	20-May-2020
17.	Henkel Adhesives	Safety Data Sheet – Loctite HB S039 Purbond	November 2015

* These documents were provided commercial in confidence and are not publicly available

10. Supporting Information About Description (Optional)

- The system consists of vertically fixed shiplap weatherboards, proprietary cavity battens, flashings and accessories.
- The Hermpac VertiLine Vertical Shiplap Weatherboards are manufactured from Western Red Cedar. Selected Weatherboards are also manufactured from Yellow Cedar, Kanda and AshinDura. Western Red Cedar, Yellow Cedar and Kanda weatherboards are supplied either raw, with one coat of machine applied premium penetrating exterior grade oil stain to Hermpac specifications or, with a machine applied primer coat and one machine applied undercoat of exterior grade paint to Hermpac specifications. AshinDura weatherboards are treated to H3.1 and are only available with a machine applied primer coat and one machine applied coat of exterior grade paint to Hermpac specifications.
- The system incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall frame with a minimal 18 mm drained cavity.
- Hermpac Standard Profiles (HP50 - HP60) and Hermpac Custom Profiles defined in accordance with NZS3617 and BRANZ Bulletin 411 are covered by this certificate.
- The system construction details defined in:

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- VertiLine Vertical Shiplap Weatherboard 18-20mm Cavity System – Construction Drawings - Version 2 dated 01 January 2022; and
- VertiLine Vertical Shiplap Weatherboard 40-45mm Cavity System – Construction Drawings - Version 2 dated 01 January 2022; and
- VertiLine Vertical Shiplap Weatherboard Cavity System Random Width and Depth– Construction Drawings - Version 2 dated 01 January 2022.

11. Supporting Information About Intended Use (Optional)

Nil

12. Supporting Information About Conditions and Limitations of Use (Optional)

Nil

All CodeMark certificates that are current much be registered with MBIE. MBIE maintains a register of valid product certificates. Please find the register here.

If the certificate is not listed on this register or it appears as (SUSPENDED), it is not a valid CodeMark certificate and does not have to be accepted by a building consent authority as establishing compliance with the New Zealand Building Code.

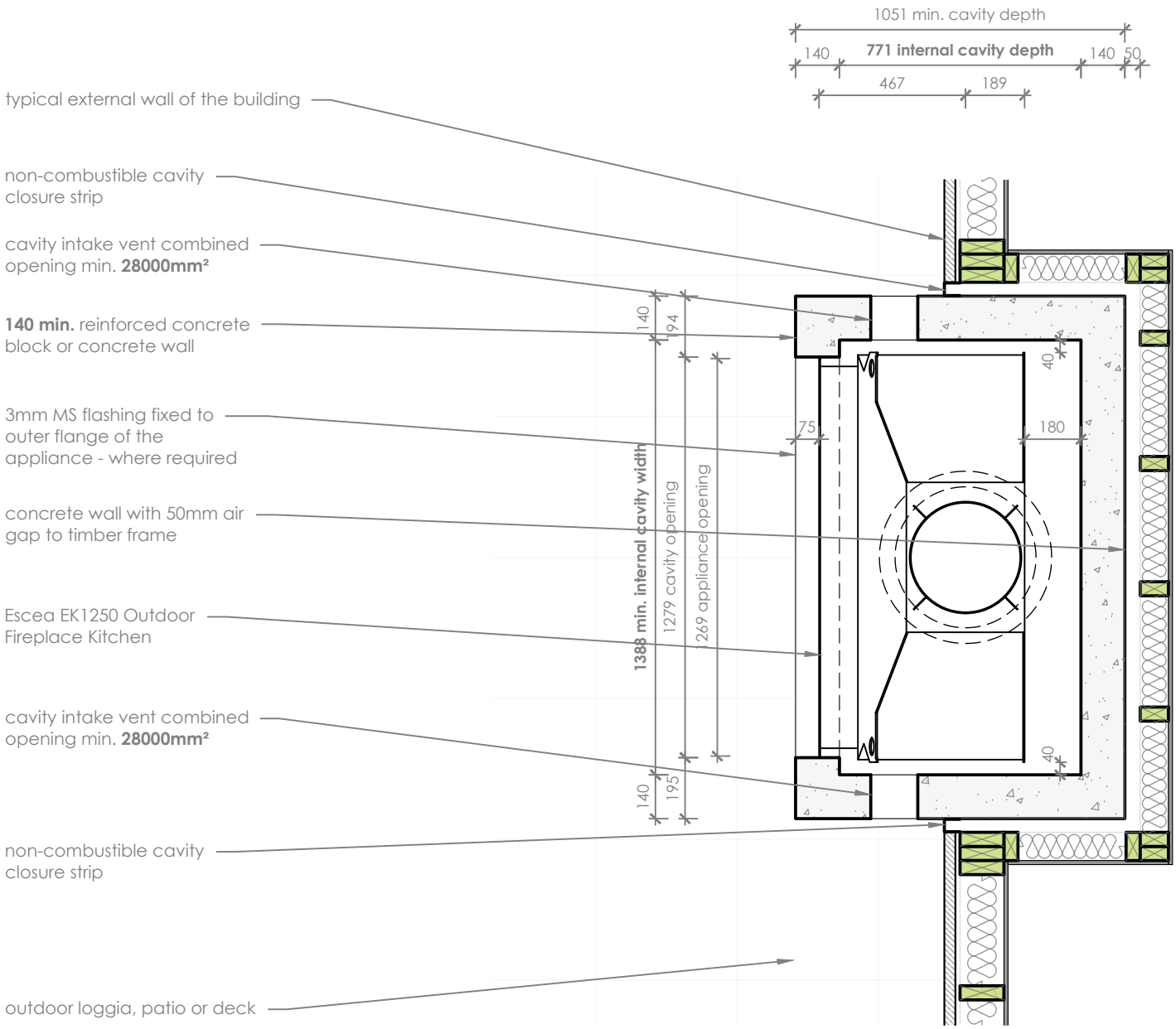
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EK1250 Outdoor Fireplace - Concrete Cavity Detail

FIRE BY escea.



Plan

scale 1:20

Notes:

- All dimensions are in mm. DO NOT SCALE OFF THESE DRAWINGS.
- This detail is to assist in the installation of a **EK1250 Outdoor Fireplace Kitchen** into the exterior of a building, within a concrete cavity.
- Parts of this fire and the cavity into which it is installed, may get hot during operation. Where required, ensure materials used are heat resistant and non-combustible. Escea takes no responsibility for material selection.
- Maintain **50mm clearance** from the concrete cavity to any combustible material.
- For flue detailing above the roof line, refer to the requisite Concrete Flue Technical Detail, which can be found at ***www.escea.com***
- This technical sheet must be read in conjunction with the EK Series Installation Manual, the latest version can be found on our website at ***www.escea.com***

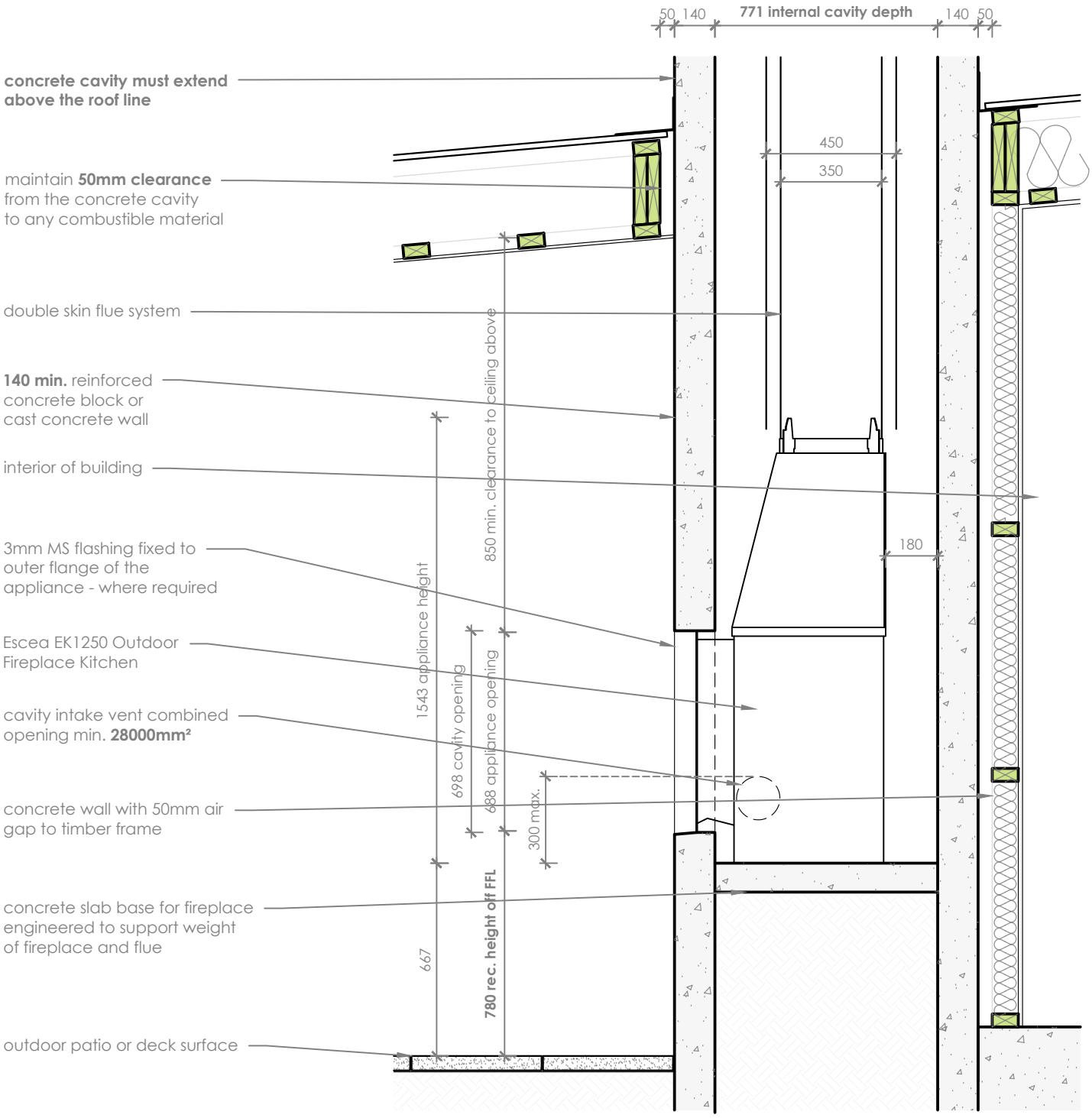
GENERAL CONSTRUCTION AND FINISHES SHOWN INDICATIVE ONLY

Contact the ESCEA Architectural Advisory Team for assistance with the specification of this fire - aa@escea.com

BC261419 APPROVED
Queenstown Lakes District Council

EK1250 Outdoor Fireplace - Concrete Cavity Detail

FIRE BY escea.



Section - Side

scale 1:20

Notes:

- All dimensions are in mm. DO NOT SCALE OFF THESE DRAWINGS.
- This detail is to assist in the installation of a **EK1250 Outdoor Fireplace Kitchen** into the exterior of a building, within a concrete cavity.
- Parts of this fire and the cavity into which it is installed, may get hot during operation. Where required, ensure materials used are heat resistant and non-combustible. Escea takes no responsibility for material selection.
- Maintain **50mm clearance** from the concrete cavity to any combustible material.
- For flue detailing above the roof line, refer to the requisite Concrete Flue Technical Detail, which can be found at ***www.escea.com***
- This technical sheet must be read in conjunction with the EK Series Installation Manual, the latest version can be found on our website at ***www.escea.com***

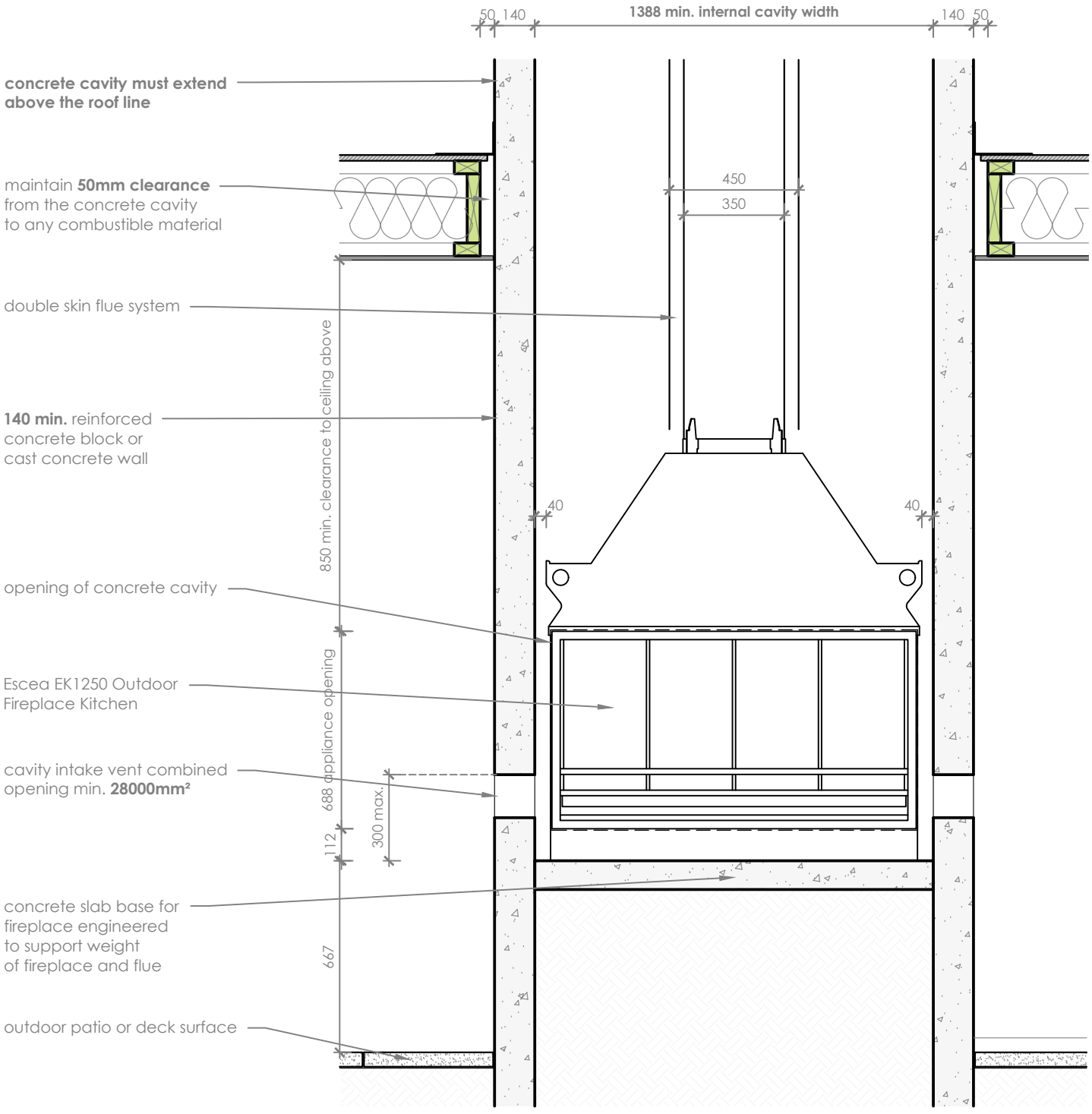
GENERAL CONSTRUCTION AND FINISHES SHOWN INDICATIVE ONLY

Contact the ESCEA Architectural Advisory Team for assistance with the specification of this fire - aa@escea.com

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EK1250 Outdoor Fireplace - Concrete Cavity Detail

FIRE BY escea.



Section - Front

scale 1:20

Notes:

- All dimensions are in mm. DO NOT SCALE OFF THESE DRAWINGS.
- This detail is to assist in the installation of a **EK1250 Outdoor Fireplace Kitchen** into the exterior of a building, within a concrete cavity.
- Parts of this fire and the cavity into which it is installed, may get hot during operation. Where required, ensure materials used are heat resistant and non-combustible. Escea takes no responsibility for material selection.
- Restrain the fire from movement by fixing to the supporting base through the provided holes in the base of the fireplace.
- For flue detailing above the roof line, refer to the requisite Concrete Flue Technical Detail, which can be found at ***www.escea.com***
- This technical sheet must be read in conjunction with the EK Series Installation Manual, the latest version can be found on our website at ***www.escea.com***

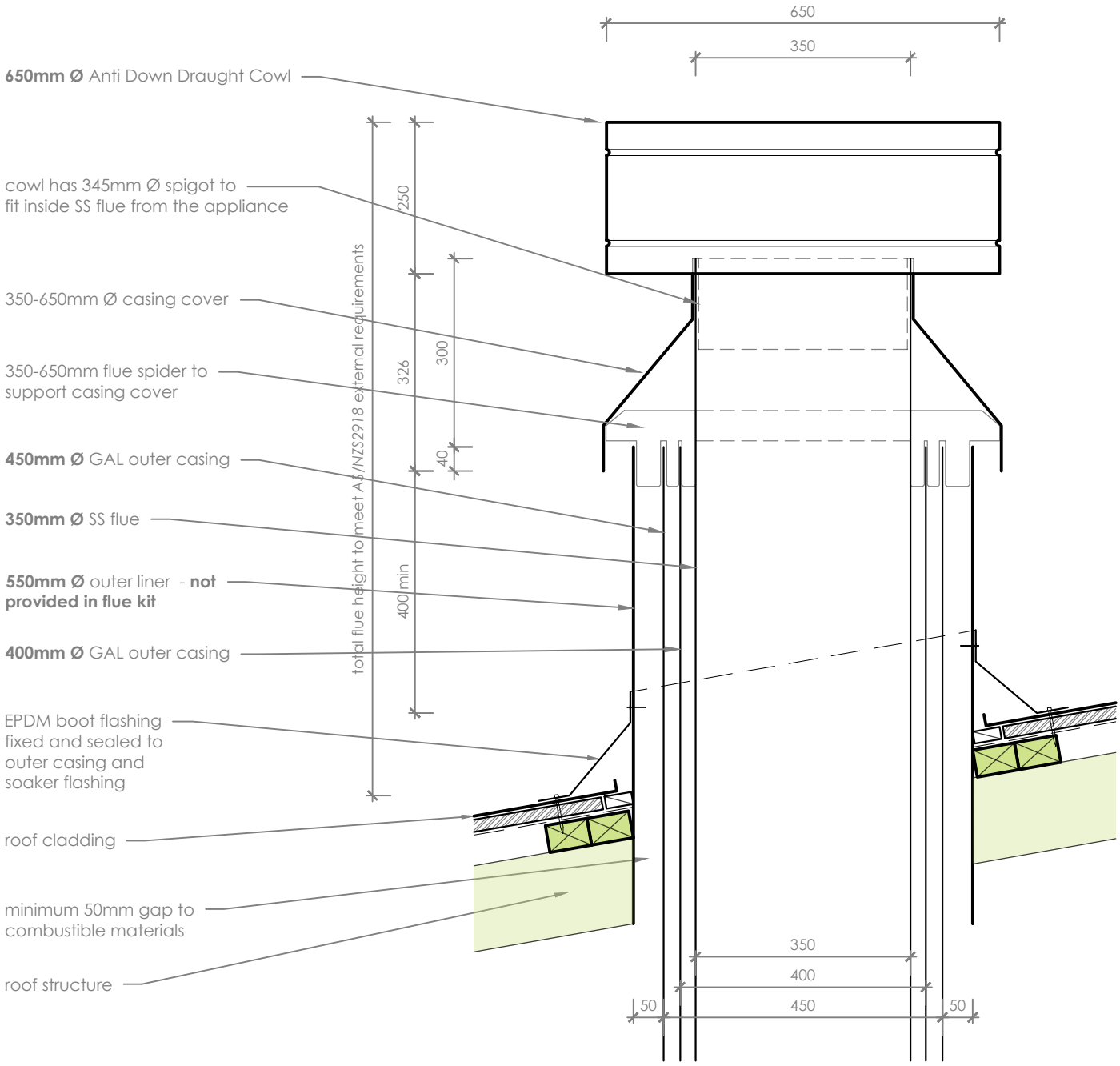
GENERAL CONSTRUCTION AND FINISHES SHOWN INDICATIVE ONLY

Contact the ESCEA Architectural Advisory Team for assistance with the specification of this fire - aa@escea.com

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EK Series Timber Cavity Flue - Roof Penetration Detail

FIRE BY escea.



Roof Penetration Detail 1:10

Notes:

- All dimensions are in mm. DO NOT SCALE OFF THESE DRAWINGS.
- This detail sheet is to assist in the installation of an **EK Series Outdoor Fireplace Flue System** into a timber framed cavity using AAC Panels.
- Protect the appliance from damage during installation.
- Some parts of this fire and the cavity into which it is installed, may get hot during operation. Ensure any materials used are heat resistant and non-combustible to resist deformation or degradation. Escea takes no responsibility for material selection.
- Follow the manufacturer's instructions for specifying and installing wall claddings, finishes and AAC Panels.
- The Specifier and/or Installer are responsible for compliance with all relevant Building Codes.
- This technical sheet must be read in conjunction with the EK Series Installation Manual, the latest version can be found on our website at ***www.escea.com***

GENERAL CONSTRUCTION AND FINISHES SHOWN INDICATIVE ONLY

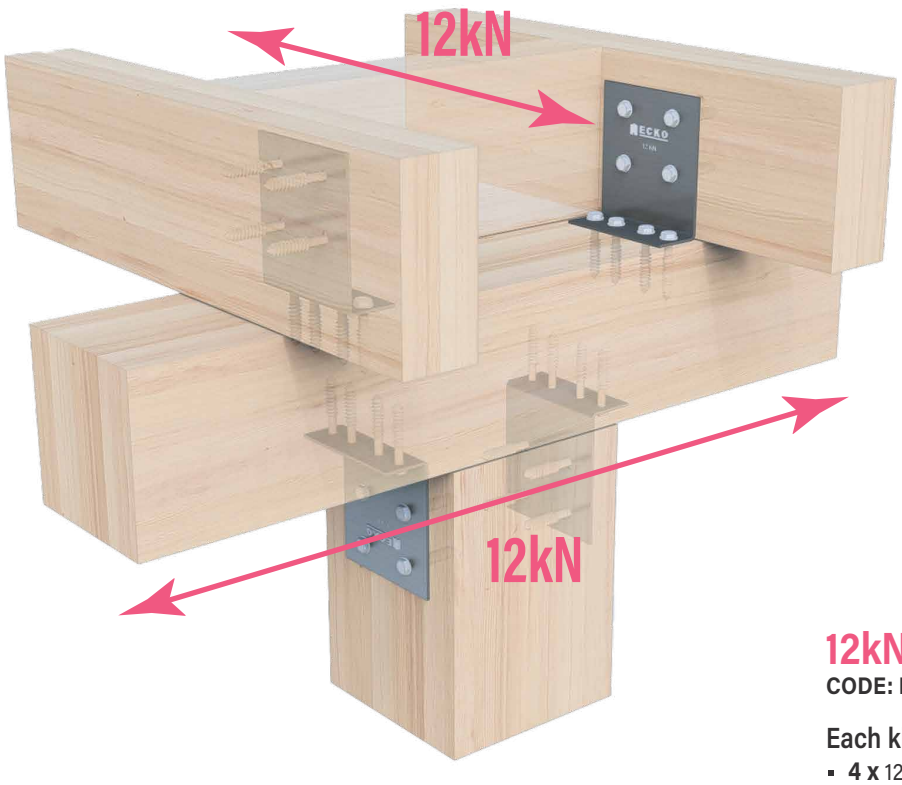
Contact the ESCEA Architectural Advisory Team for assistance with the specification of this fire - aa@escea.com

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ECKO Fastening Systems

12kN Pile Fixing Kit - Sea Spray Zone

ECKO 12kN Pile Fixing Kit is designed and tested to adhere to NZS3604:2011 requirements for braced and anchor pile fixing connections (pile-to-bearer and bearer-to-joist).



304 STAINLESS



12kN Pile Fixing Kit

CODE: BSSPILE12KN

Each kit includes

- **4 x** 12kN 304 Stainless Steel Pile Fixing Brackets.
- **32 x** 14g x 45mm 304 Stainless Steel Hex Head Screws.

KEY FEATURES

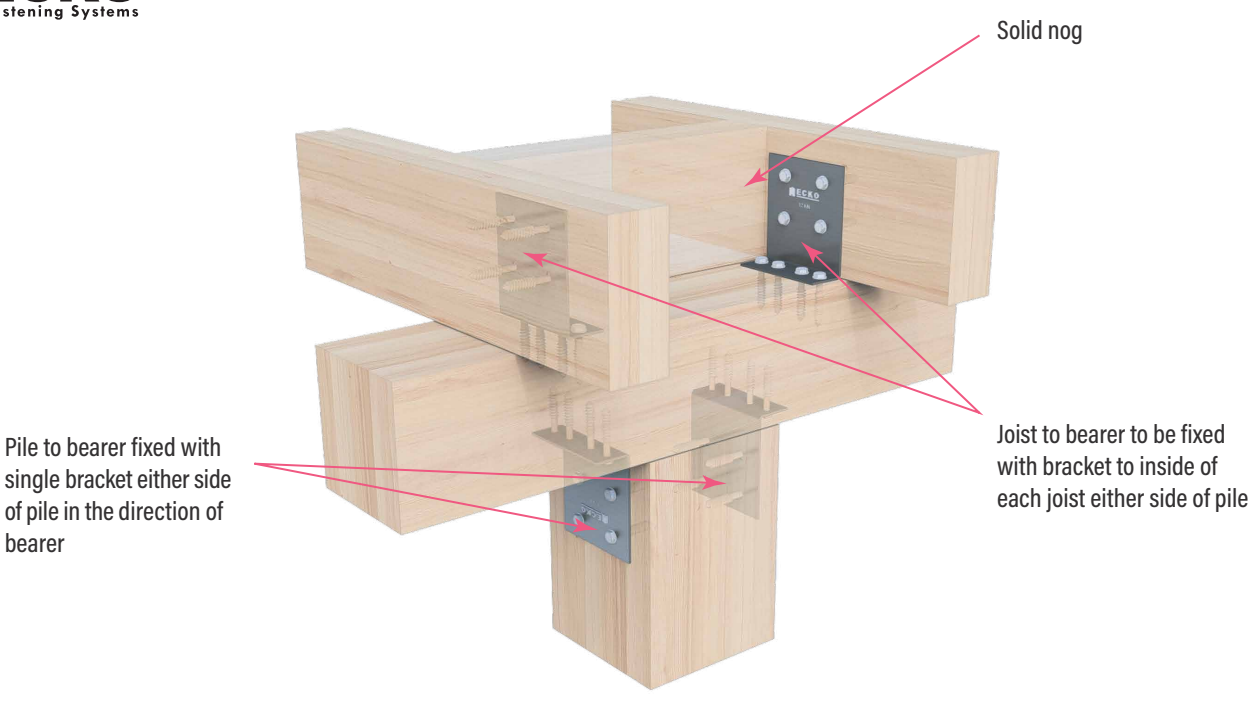
- All screw fixed, ensuring easy and fast installation
- No need to shave pile to fit bearer
- All components are made from 304 Stainless Steel, suitable for high corrosion environments

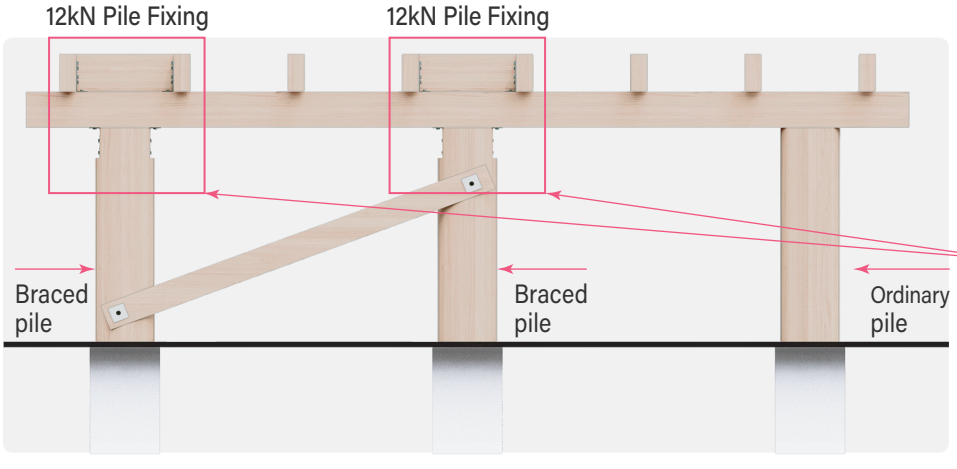
NOTE

- All construction must be in line with NZS3604:2011 and fixings set out in this document
- Solid blocking is required directly over braced or anchor pile
- Lateral support to floor joists must be within 300mm of bearer or bracing lines (NZS3604)
- Round piles must be checked out to ensure bracket sits flush with pile
- Joists must be a minimum of 140mm
- Where possible bearer to be centrally located on pile
- Minimum pile size: 125 x 125mm square, 140mm round
- All bracket holes to be filled

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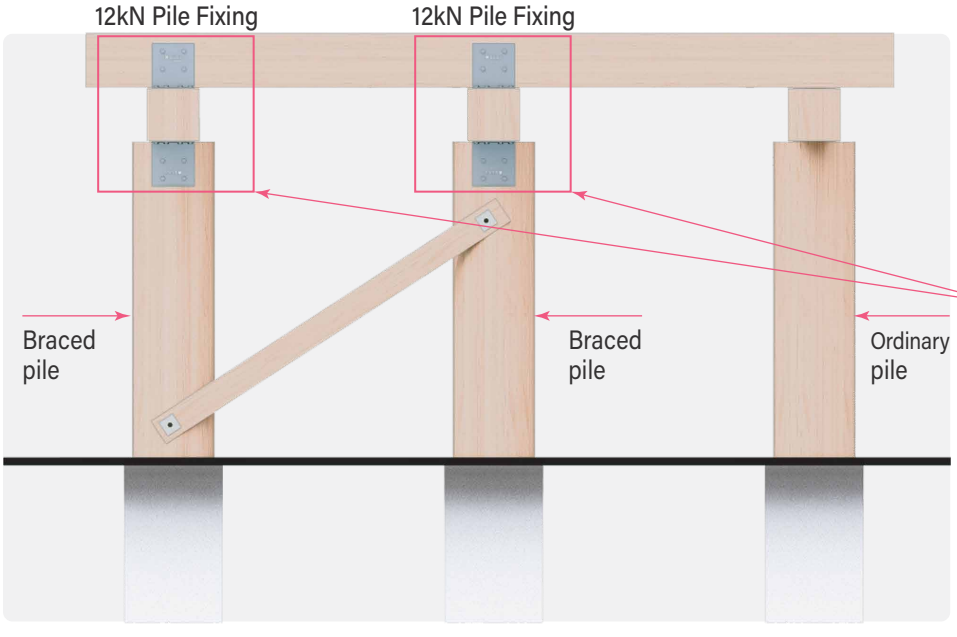
ECKO Fastening Systems







Braced & Anchor Pile
as per NZS3604:2011





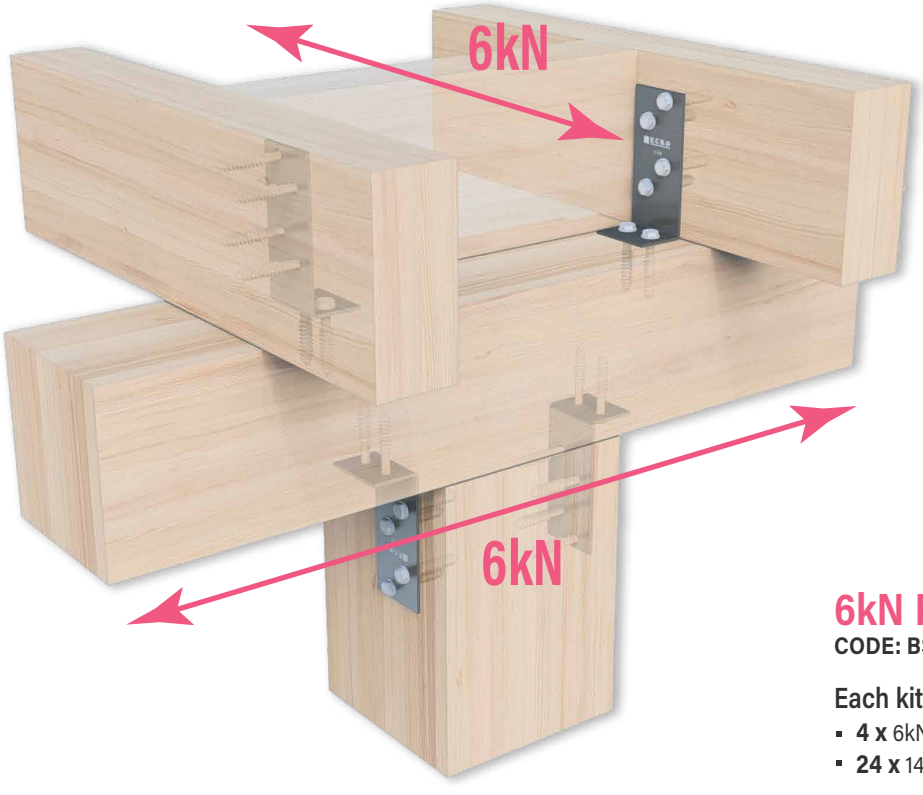
Braced & Anchor Pile
as per NZS3604:2011

BC261419 APPROVED
Queenstown Lakes District Council

ECKO Fastening Systems

6kN Pile Fixing Kit - Sea Spray Zone

ECKO 6kN Pile Fixing Kit is designed and tested to adhere to NZS3604:2011 requirements for cantilever pile fixing connections (pile-to-bearer and bearer-to-joist).



304 STAINLESS



6kN Pile Fixing Kit

CODE: BSSPILE6KN

Each kit includes

- **4 x** 6kN 304 Stainless Steel Pile Fixing Brackets.
- **24 x** 14g x 45mm 304 Stainless Steel Hex Head Screws.

KEY FEATURES

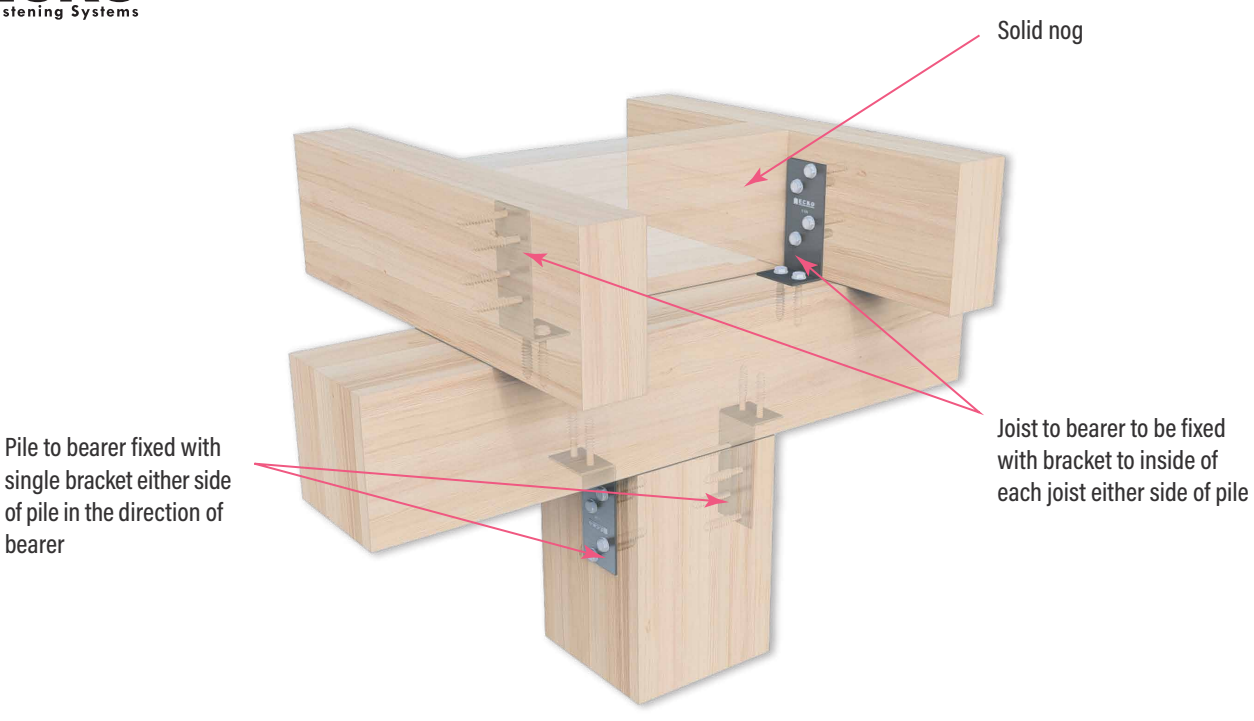
- All screw fixed, ensuring easy and fast installation
- No need to shave pile to fit bearer
- All components are made from 304 Stainless Steel, suitable for high corrosion environments

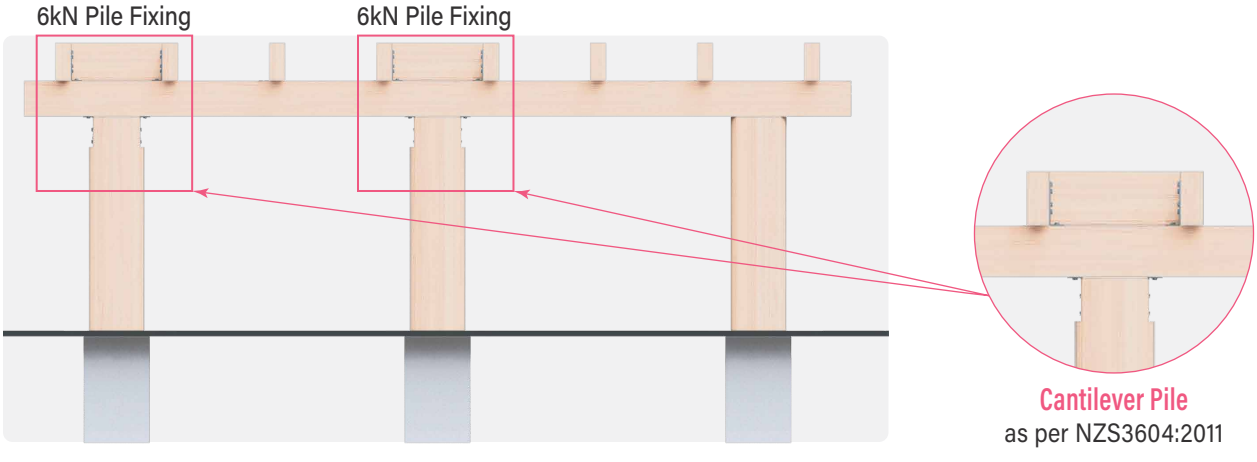
NOTE

- All construction must be in line with NZS3604:2011 and fixings set out in this document
- Solid blocking is required directly over cantilever pile
- Lateral support to floor joists must be within 300mm of bearer or bracing lines (NZS3604)
- Round piles must be checked out to ensure bracket sits flush with pile
- Joists must be a minimum of 140mm
- Where possible bearer to be centrally located on pile
- Minimum pile size: 125 x 125mm square, 140mm round
- All bracket holes to be filled

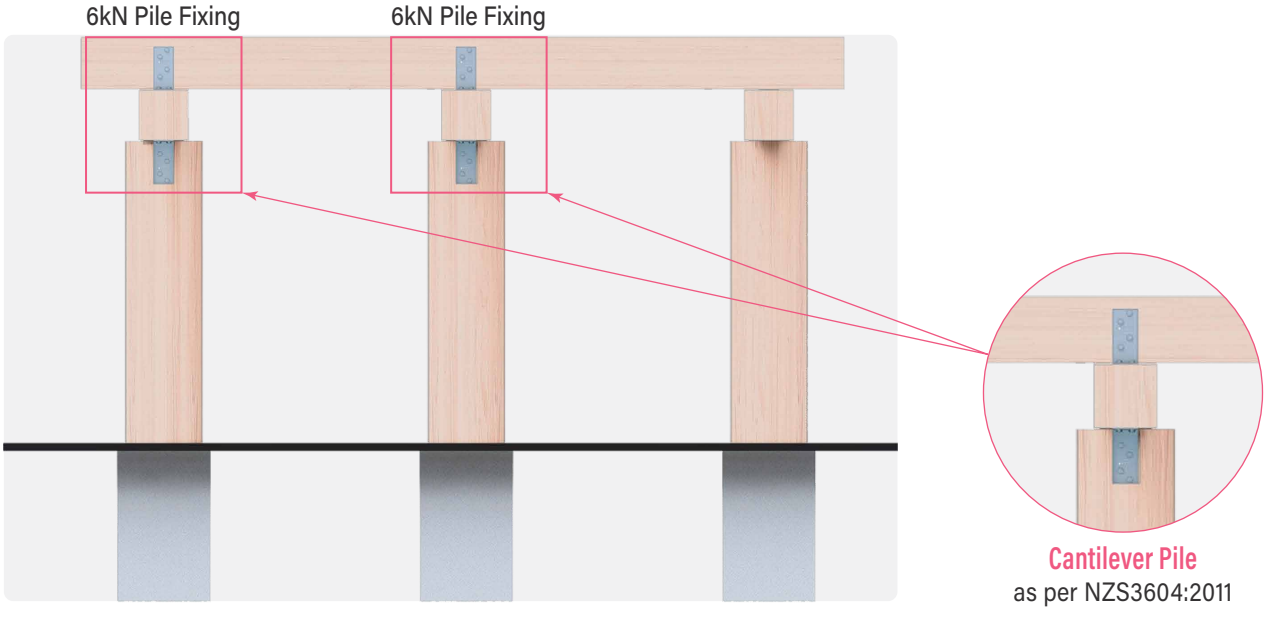
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Queenstown Lakes District Council

ECKO Fastening Systems





Cantilever Pile
as per NZS3604:2011



Cantilever Pile
as per NZS3604:2011

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Queenstown Lakes District Council

NURALITE
FLAT ROOFS | BUILT RIGHT

Nuralite Group Ltd
60D Leon Leicester Avenue
Mount Wellington, Auckland 1060
09 579 2046 I 0800 687 254

Aubrey Road House

749 Aubrey Road, Wanaka

Layout: 1 | Architect: Southern Draught | Timber | 20 May 2026

BOARD QUANTITIES

Board	Qty
B	14
C	14
D	7

These fixings assume a fixing pattern for up to 4.00 kPa of wind uplift. Anything above this requires SED wind mapping, resulting in fixings being used in the basesheet. Check with the main contractor that this is not a requirement.

SCREWS — TOTAL BY SIZE

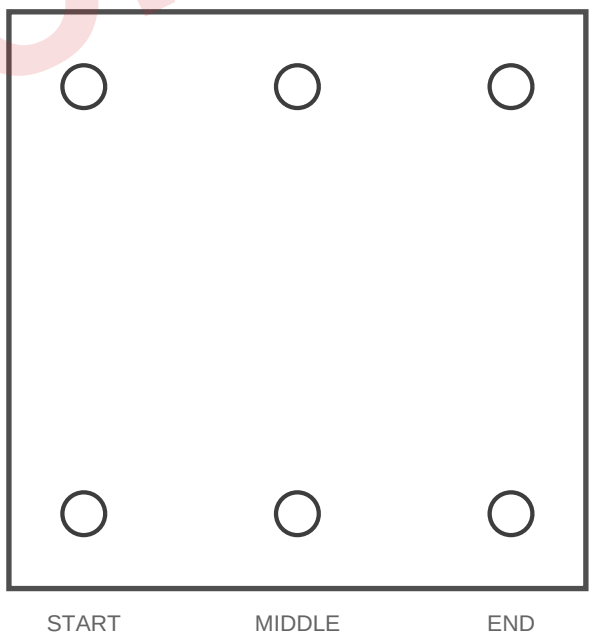
Size	Quantity
60mm	70
70mm	70
80mm	70
TOTAL	**210**

THERMAL FLANGES — TOTAL BY SIZE

Size	Quantity
30mm	28
60mm	112
90mm	70
TOTAL	**210**

FIXING PATTERN DIAGRAM

Start: 2 Middle: 2 End: 2 (Timber)



THERMAL PERFORMANCE OF ROOF

AVERAGE R-VALUE (m2.K/W)
3.82

AVERAGE THICKNESS
84mm

Thickness	Min	Avg	Max
Thickness (mm)	60	84	114

R-Value (m2.K/W)	Min	Avg	Max
R-Value (m2.K/W)	2.73	3.82	5.19

NOT A SCHEDULE OF QUANTITIES

This recommendation is based on scaled drawings and other critical information which has been provided to Nuralite. If the actual build varies from any of this information it will materially impact on the accuracy of this layout. While Nuralite endeavors to ensure accuracy of tapered recommendations, this is a complimentary service which is intended to be used as a guide for insulation layout. Nuralite does not take design responsibility for the project and nor does it take responsibility
for any cost variations or material changes that may be required to execute the final build.It is the responsibility of other parties, (for example, specifiers, builders and installers) to each confirm measurements, heights, minimum R-value, minimum falls, outlet locations etc before making any contractual commitments. It is critically important to ensure the project designer has approved any layout before proceeding.

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Queenstown Lakes District Council

This drawing is indicative only and not for construction. This detail depicts Nuralite products and components for correct use as per the installation manual. All other elements are typical only - refer to the designer. Always refer to original colour details when printing.

Flange size:	30	30	30	60	60	60	90	90	90	120	120	120	120	150	150	150	150
	A		B		C		D		A		B		C		D		
									+80		+80		+80		+80		
Board thickness:	40		60		80		100		120		140		160		180		200
Screw size:	60	70	80	60	70	80	60	70	80	60	70	80	100	70	80	100	100

Flange size:	150	150	*	150	150	225	225	225	225	225	225	285	285	285	285	285	285	285
	A			B		C		D		A		B		C		D		
	+80			+80		+80		+80		+80		+80		+80		+80		
	+80			+80		+80		+80		+80		+80		+80		+80		
Board thickness:	200			220		240		260		280		300		320		340		360
Screw size:	100	130		130	130	70	80	100	100	130	130	70	80	100	100	130	130	130

Flange size:	285	285	285	285	285	285	285	285	285	285	285	285	285	285	285	285	285
	A		B		C		D		A		B		C		D		
	+80		+80		+80		+80		+80		+80		+80		+80		
	+80		+80		+80		+80		+80		+80		+80		+80		
	+80		+80		+80		+80		+80		+80		+80		+80		
	+80		+80		+80		+80		+80		+80		+80		+80		
Board thickness:	360		380		400		420		440		460		480		500		520
Screw size:	130	160	160	160	180	180	200	200	230	230	230	250	250	250	275	275	300

*After this point, flanges and screws are indent only

NURALITE
FLAT ROOFS | BUILT RIGHT

50 ANNIVERSARY YEARS 1966 2016

All Nuralite products/systems to be installed by an authorized Nuralite applicator and in accordance with Nuralite published instruction. Product data sheets should be consulted at all times. This drawing is a guide and is not for construction. This detail drawing is to be used only as part of the Nuralite specification package. All drawings are subject to copyright. Unauthorized use is prohibited. © Nuralite Waterproofing Ltd

0800 - NURALITE (687254) www.nuralite.co.nz

PRODUCT/SYSTEM: **NURATHERM**

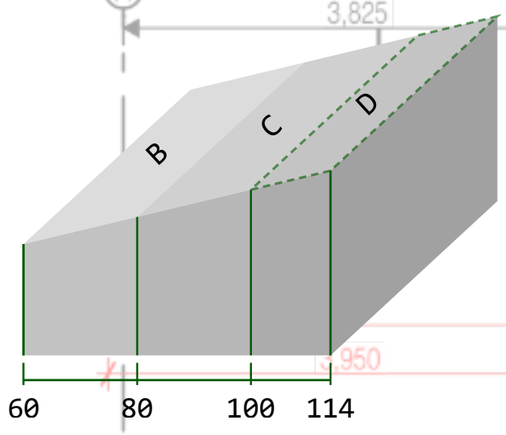
DETAIL: TAPERED FIXING PLAN

SCALE: **NTS** DATE: **AUG 2023** PREVIOUS DWG no: **-** REVISION: **3** DWG no: **▬**

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Queenstown Lakes District Council

TAPERED BOARDS: 1:60 BOARDS FOR ROOFING		
A BOARD	40mm - 60mm:	N/A
B BOARD	60mm - 80mm:	14
C BOARD	80mm - 100mm:	14
D BOARD	100mm - 120mm:	7
FILLER BOARDS		
	80mm:	N/A

SECTION OF ROOFING AND FILLER BOARDS USED



NOT FOR CONSTRUCTION

Page Size: A3
Page Scale: 1:50 @ A3

This recommendation is based on scaled drawings and other critical information which has been provided to Nuralite.
If the actual build varies from any of this information it will materially impact on the accuracy of this layout.

While Nuralite endeavors to ensure accuracy of tapered recommendations, this is a complimentary service which is intended to be used as a guide for insulation layout.
Nuralite does not take design responsibility for the project and nor does it take responsibility for any cost variations or material changes that may be required to execute the final build.

It is the responsibility of other parties, (for example, specifiers, builders and installers) to each confirm measurements, heights, minimum R-value, minimum falls, outlet locations etc before making any contractual commitments. It is critically important to ensure the project designer has approved any layout before proceeding.

NOT FOR CONSTRUCTION watermarks are typically removed once Nuralite receives written confirmation that the designer or main contractor accepts the layout

LAYOUT REVIEW
This is intended to be filled & signed by the designer.

- ☐ NO EXCEPTIONS TAKEN - PROCEED
- ☐ WORK MAY PROCEED SUBJECT TO COMMENTS NOTED
- ☐ AMEND (AS NOTED) & RESUBMIT
- ☐ REJECTED. SEE REMARKS.

Signed:

Date:

Produced for:
Southern Draught
Aubrey House
749 Aubrey Road Wanaka
Date Produced: May 20, 2026
[sheet: 2504] {rev://} [Layout#:1]

NURALITE
FLAT ROOFS | BUILT RIGHT

Nuralite Group Ltd
60D Leon Leicester Avenue
Mount Wellington, Auckland
09 579 2046 | 0800 687 254
www.nuralite.co.nz

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Queenstown Lakes District Council

X-Bond Specification

Description

X-bond micro-cement is a seamless overlay system consisting of two components, Stonetex, a blend of white Portland cement silica sand and X-bond liquid, a Co polymer liquid which creates a chemical bond to any solid surface, X-bond is a zero VOC Hybrid of Natural Stone and advance cross-linking technology.

Areas of Application - Commercial and Residential

Internal and external Walls

Internal and external Floors

Internal and external Joinery

Wet areas – Showers

Ceilings

Pools

Finishes

X-Bond Seamless Surface

X-Bond Polished Stone

X-Bond Natural Concrete

X-Bond Mineral Finish

Sealers

Satin Stone – Topical Polyurethane Hybrid

Natural Shield – Waterproof Penetrating sealer

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Suitable Floor Substrates

Concrete

Wood

Fibre Cement Sheet

Tiles

Screeds

Suitable Wall Substrates

Plaster Board

Fibre Cement Sheet

AAC Panels/Blocks

Concrete

Concrete Blocks/Bricks

EPS Foam

Suitable Substrates for Joinery

MDF

Marine Ply

Laminate

Fibre Cement Sheet

EPS Foam

AAC

Plastic

Metal

Substrate Preparation

All Substrates must be solid, thoroughly cleaned free from oil, wax, grease, curing compound, paint and sealers that may act as a barrier by mechanical or chemical means.

Concrete – Clean and Solid

Wood - Floor/Walls - Overlayed with Fibre Cement sheet, glued and nailed

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Fibre Cement – Anti-Fracture and Mesh Coat

Tiles – Clean, Dry, Solid, Extra Coat of X-bond required

Screed – Clean and Solid, Fully cured

Levelling Compound – Clean, Solid and Fully Cured

Plaster Board – 1st Coat Taping and External beads

AAC Panels & Blocks – Mesh Coat and External Beads

Concrete Blocks - Clean and Solid with Extra Base Coat

EPS Foams – Mesh and Beads

MDF – Anti-Fracture Membrane, Mesh and Beads

Ply – Anti-Fracture Membrane, Mesh and Beads

Laminate– Anti-Fracture Membrane, Mesh and Beads

Substrates and ambient temperatures must be a minimum of 10˚ RH for installation

All substrate based off being installed to individual manufacturers recommendations.

Recommended Taking Systems

Semco Liquid Membrane

Ardex WPM002

Adrex WPM 750 Weldtec

Installed as per manufacturers Recommendations

Dry Times – 2 hours at 22˚ RH

Full Cure – 28 Days

Application Thickness – 2.- 1.83mm

Coverage – 1.8kg per mm/per m2

Compressive Strength – 27MPA

Shower and wet areas – Ready for use After 7 days

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SATIN STONE

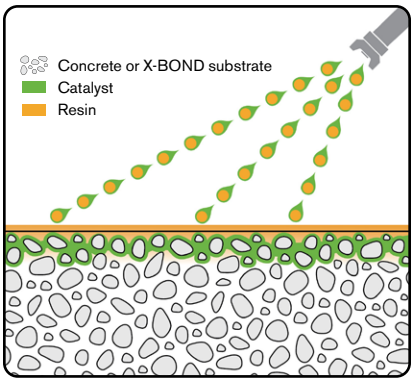
Industrial Satin Finish Sealer

SEMCO
modern seamless surface
SURFACE ENGINEERING COMPANY

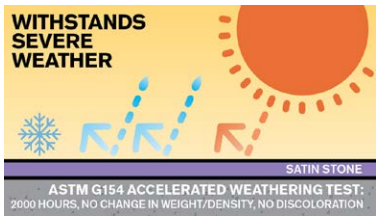
Technical Product Information

PRODUCT DESCRIPTION

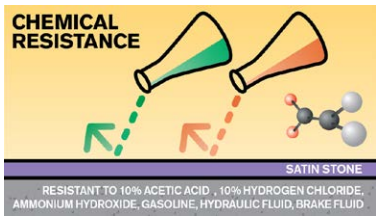
Satin Stone is the latest technology in SEMCO Cross Linking sealers. It interlocks with applied substrates solidifying and creating total surface protection with a density enhancement of up to 85%. Excellent for interior and exterior use while handling rigorous surface conditions including high traffic commercial and industrial environments.

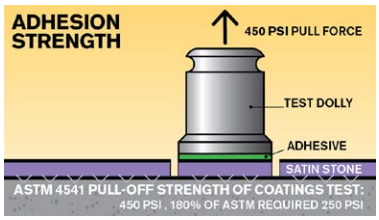


MIXING RATIO: 2 Parts A : 1 Part B









FEATURES / BENEFITS

- Withstands industrial and commercial vehicle traffic
- Rejuvenates color, leaves natural look
- For interior and exterior surfaces
- Resistant to chemicals: can be used in hospitals, laboratories, food preparation areas and automotive facilities

*Also available with a non-skid additive
*Available in color

SUBSTRATES

- X-Bond Seamless Stone
- Pre-Stain Color
- Color Green
- New and existing concrete
- Stamped concrete
- Natural stone
- Industrial and commercial floors

APPLICATION AND SPECIFICATIONS

Application	Airless sprayer tip size 21 at 1,000 PSI
Application environment	Apply at temperatures from 50°F to 90°F
Drying time	1 hour at 72°F
Cure time	48 hours
Color	Part A - milky white, Part B - light amber
Chemical type	Polyurethane hybrid
Clean up	SEMCO Stone Soap with water
Shelf life	1 year
Useful life after mixing Part A with Part B	35 minutes after mixing
Packaging (base and color activator)	Part A - 1 gal. pail, Part B - 0.5 gal. pail

COVERAGE (sq. ft. per gallon of mixture)

Polished concrete	200-250
X-Bond Seamless Stone	250-300
Artificial stone	200-250
Stamped concrete	300-350
Below grade	N/A

TEST RESULTS*

Used automobile oil	Excellent
Transmission fluid	Good
Water	Excellent
Cooking oil	Excellent
Wine	Excellent
Alkali resistance	Excellent
Hydrochloric acid (10%)	Good

FLOORS | WALLS | POOL DECKS | WATERPROOFING
REDEFINING THE ART OF SURFACE CREATIVITY FOR OVER 25 YEARS USING GREEN MATERIALS

BC261419
APPROVED
Queenstown Lakes District Council

SATIN STONE

Industrial Satin Finish Sealer

SEMCO
modern seamless surface
SURFACE ENGINEERING COMPANY

WARRANTY 5 year standard limited warranty, 10 year for non-traffic surfaces

PRECAUTIONS

Always test a small area first to determine ease of application and desired results. When performing a flood test remove all excess water if test is performed prior to 100% curing. Not for use on humans or animals. Be sure to read container label and Safety Data Sheet for additional handling requirements before using this product.

LIMITED WARRANTY NOTICE

SEMCO Modern Seamless Surface warrants that its products will meet their specifications. There are no other warranties, expressed or implied of merchantability or fitness of use. The only obligation of the seller-manufacturer shall be to replace material found to be defective. SEMCO Modern Seamless Surface will not be liable for labor or consequential damage of any kind. The information contained herein is, to the best of our knowledge and belief, true and accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations. All chemicals may present unknown health hazards and should be used with caution.









FLOORS | WALLS | POOL DECKS | WATERPROOFING
REDEFINING THE ART OF SURFACE CREATIVITY FOR OVER 25 YEARS USING GREEN MATERIALS

BC 26/2026 APPROVED
Queenstown Lakes District Council

NZ Metal Roof and Wall Cladding Code of Practice

5.4.7 Gutter Capacity Calculator

Calculation Date: 11/06/2026, 4:33:19 pm – https://www.metalroofing.org.nz/cop

Project Name

Aubrey Rd house

Site Address

749 Aubrey Road, Wānaka

Note that this site address is used only for convenience if printing calculations to attach to documentation.
*This address is **not** factored into calculations - you must determine intensity from Region/Location selection, Rainfall Intensity Maps or NIWA's HIRDS tool.*
The address is not recorded or shared with any other parties.

Rainfall Intensity

See 5.3.2.1A RCP Level Descriptions for more information.

Region	Location	Basis	Rainfall Intensity
Otago	Wanaka	RCP 4.5	44 mm/hr

Rainfall Intensity (10 Min Duration, 2% AEP Intensity) from NZBC E1/AS1 Table A – Adjusted for RCP 4.5

Options

Type of Building	Type of Gutter	Overflow along Gutter	Overflow at Downpipe
○ Commercial	◉ **External**	○ No	○ No
◉ **Residential**	○ ~~Internal~~	◉ **Yes**	○ ~~Yes~~
	○ ~~Secret~~		

Short-Term Intensity Multiplication Factor	1	
Minimum 1 for current selections		
Gutter Fall	1:500 = 2	mm per metre
90 Degree Bends	0	bends
Gutter Length served by outlet	12.2	m

Select Gutter Information Source

○ Rectangular Gutter ◉ **Manufacturer's Data**

Gutter Dimensions at outlet

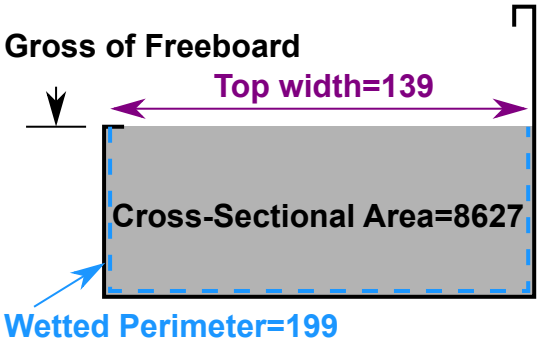


Illustration is for explanatory purposes only and is not to shape or scale.

Product Description: Metalcraft Half round

Describe the product: this does not control the calculation which relies on you entering accurate data

Manufacturer's Cross-sectional area (gross of freeboard)	8627	mm²
Wetted perimeter (gross of freeboard)	199	mm
Top Width when running full	139	mm

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Max Capacity Roof Area	241.76m²

Conditions and assumptions for flat gutters:

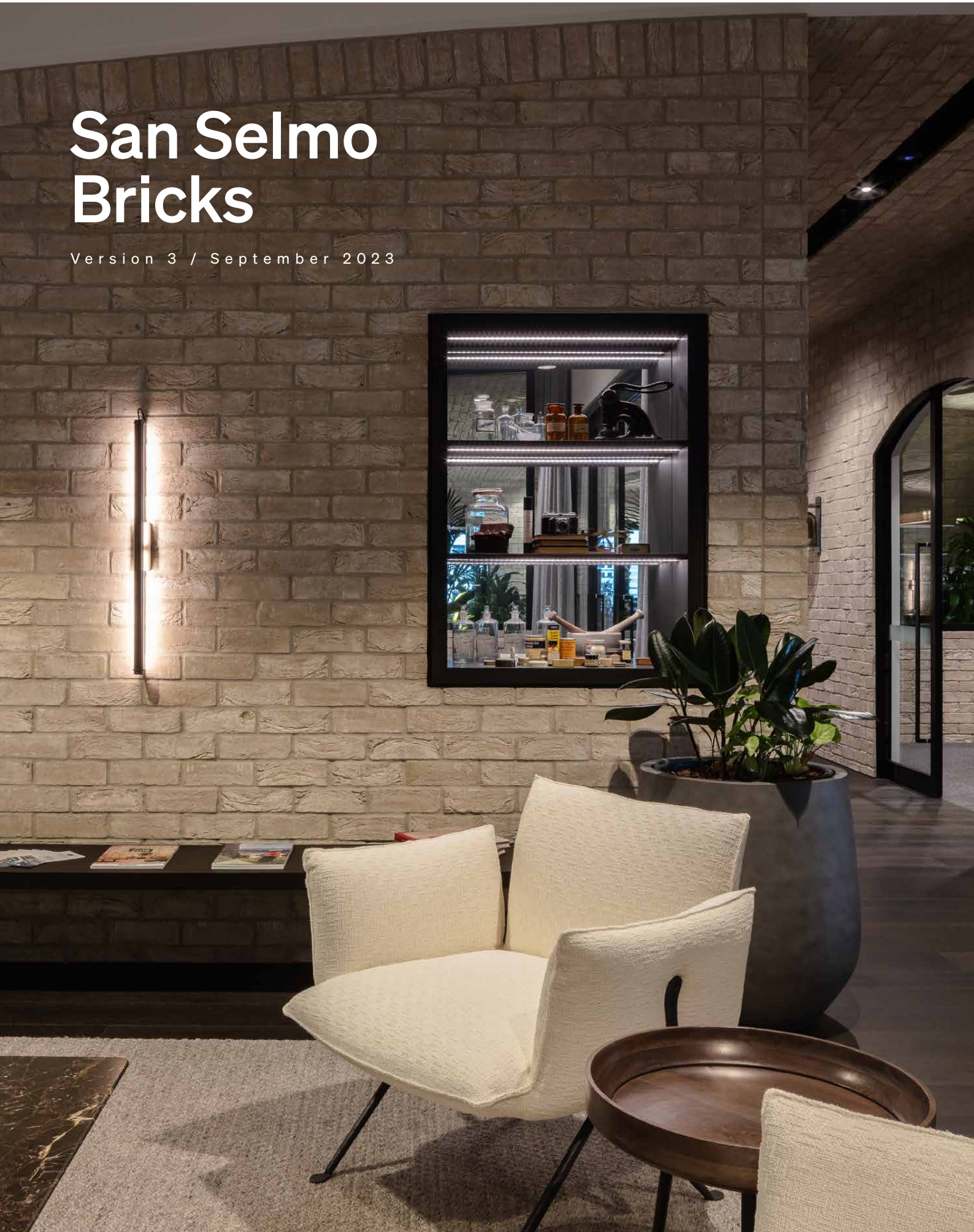
1. Mannings n assumed to be 0.014 to represent long term friction conditions.
2. Equations valid for gutters with min gradient 1:500.
3. Bends are accounted for by local loss coefficients (0.5 for each 90° bend).

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Construction and Cleaning Recommendations

San Selmo Bricks

Version 3 / September 2023



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Construction & Cleaning Recommendations

These recommendations are to provide a best practice guide to San Selmo bricks during the construction and cleaning processes, which, when followed will reduce common problems.

Brick construction

Good workmanship and correct storage of bricks during construction will ensure that a number of potential stains are avoided.

Storage

Ensure bricks are stored appropriately (either on pallets or on plastic sheeting), to prevent bricks absorbing ground salts and excessive water, which causes issues when laid.

Bricks should always be protected from rain with plastic or similar waterproof material.

Blending

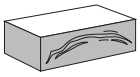
Bricks are to be blended from three packs, in a vertical manner.

There are four usable faces – two headers and two stretchers. To achieve the full blended look, a relatively even mix of all four sides is to be used.

Bricks can be laid with either the frog up or down. Frog up will make the bricks "smile", frog down will make the bricks "frown".



Frog UP – Smiling



Frog DOWN – Frowning

Bricklaying

Care should be taken to help keep the wall free of mortar dags and smears. During laying these should be cut off with a trowel. The cleaner the bricklayer leaves the wall the easier the cleaning task will be.

- **Mortar dags and smears on the work face must be removed by dry brushing within 1-2 days**
- **Do not sponge the joints of the brickwork, otherwise it may create permanent stains**

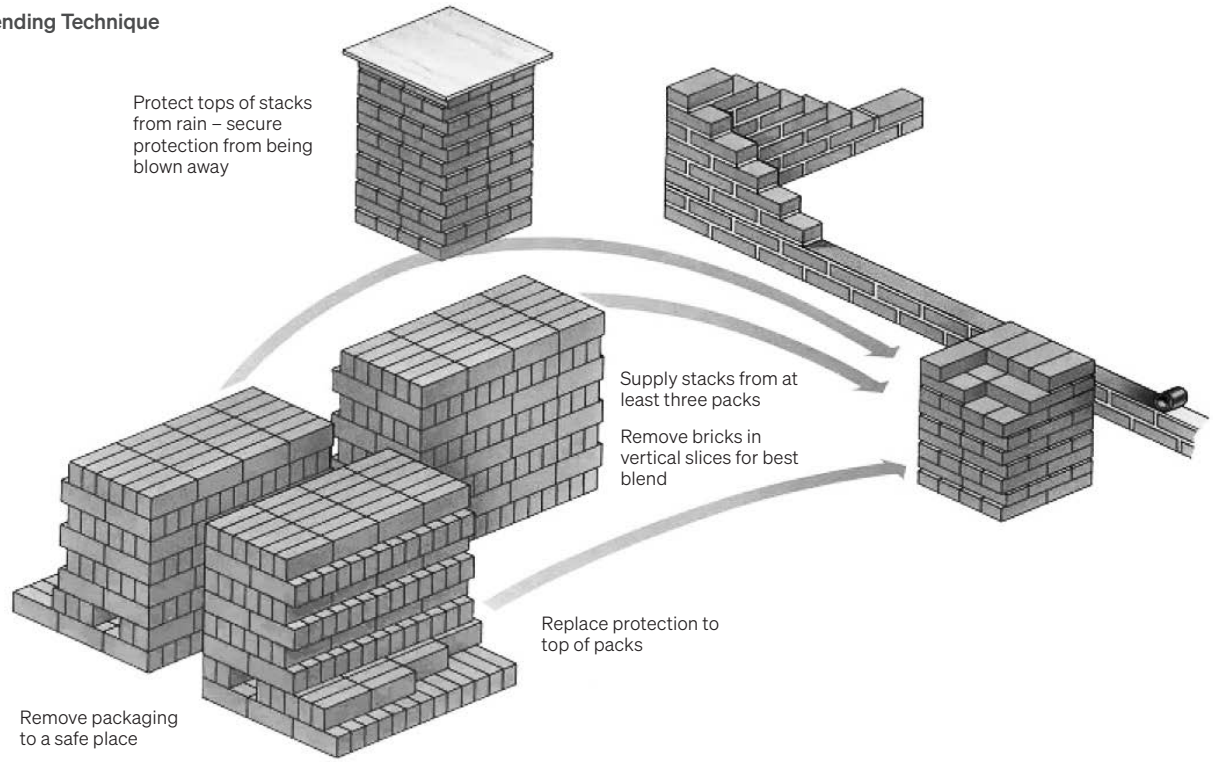
Moisture

Cover the brickwork at the end of each day, especially when rain is expected. Additionally, ensure all bricks stored on-site are not exposed to rain. Failure to prevent moisture from entering the brickwork during construction may result in efflorescence and other leaching issues.

Copings, Sills, Weathering

Storm water should be shed so as to clear the masonry immediately below. Copings and sills should project at least 10 mm beyond the wall face at the underside of the sill or coping. Where downpipes have not been installed water from the guttering should be diverted away from the brickwork.

Correct Blending Technique



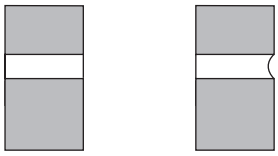
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Mortar Joint
A mortar joint of 8-12mm is recommended. This variance will compensate for the irregular edges of the bricks.

A flushed joint will aid in filling in any spaces created from the irregular brick edges. The mortar can also be lightly smeared over the edges of the brick to enhance the rustic look.

An ironed or raked joint will emphasise the irregular shape of the brick.

In exposure environments, an ironed joint should be used.



Flush Ironed

Cutting
Clean water is to be used for all brick cutting. If the water is not cleaned, the dark water will be absorbed into the brick and cause it to discolour.

Brick Cleaning

The use of the correct cleaning methods will prevent further problems arising.

Safety Precautions
The manufacturer's instructions and safety precautions should always be followed when using acids and other proprietary cleaning chemicals.

Clean As You Go
Cleaning as you go is the best method for ensuring good brickwork. Mortar dag and smears are best cleaned when fresh (within 1-2 days).

Cleaning procedure:

- Wet wall from bottom to top with hose
- Combine 1 part hydrochloric acid to 20 parts water
- Apply the acid solution using a stiff bristle brush and covering a small area at a time (never use a wire brush as this could ruin the surface of the brick). Work always from the top side to the bottom of the wall. Allow 3 to 6minutes for the acid to react
- Thoroughly wash the wall down with a hose. A high-pressure cleaner can be used at a pressure of <1000psi and at a nozzle distance of >500mm. If a high-pressure cleaner is used, carry out a trial on a small area and ensure the appearance of the cleaned surface is acceptable
- Do this uniformly to avoid marks / stains when the wall is dry
- Neutralise with 40g of bi-carb soda per litre of water.

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We also recommend you view current product samples before making your final selections.