

Figure & Ground

PROJECT SPECIFICATION

27 -29 Bampton Street

27 - 29 Bampton Street

Burnside

Christchurch

Issued for Consent

22.710

PROJECT OVERVIEW

Scope

16 x Town house development

Address

Site Address	27 - 29 Bampton Street
Suburb	Burnside
City	Christchurch

Site Conditions

Wind Zone	M - Medium Wind Speed
Earthquake Zone	Zone 2
Exposure Zone	Zone C - Medium
Snow Loading Zone	Zone N4

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1 PRELIMINARIES & GENERAL

1.1 Project Overview

1.1.1 Contract Documents

The Contract Documents are complementary and comprise this Specification, the accompanying drawings, the NBC (National Building Contract) together with Schedules as specified below, any written documentation clarifications issued during tendering/estimating, any manufacturer/supplier information issued with this Specification, any list of agreed Subcontractors, the contract establishment letter and any other relevant correspondence, and any Site Instructions or additional details or instructions issued as Variations. (The National Building Contract will be emailed upon request).

If the Architect/Designer has not been engaged to administer the Contract or observe the works, then the term Architect/Designer, where referred to in this specification, means Contract Administrator.

These Project Specific Conditions supersede the Standard Conditions where they are in conflict. Refer any ambiguity or apparent discrepancy within or between any Contract Documents to the Architect/Designer, whose interpretation shall be binding on all parties.

Ensure that all Trades are aware of all Conditions and that subcontract prices are accepted on this basis, and in a form acceptable to the Registered Master Builders Federation or the Certified Builders Association. Ensure that all persons engaged on the works are aware of all items in this specification and on the drawings that may in any way affect their section of the works.

1.1.2 Site

Relevant site conditions are believed to be correctly represented in the Contract Documents, however the Contractor (and Subcontractors where appropriate) are requested to inspect the site to ascertain for themselves the nature and extent of the works and the rights and interests that may be interfered with in the execution of the works, as no claims for additional payment will be recognised on the grounds of insufficient description.

1.1.3 Adjacent Owners

Carry out whatever actions or precautions are required to avoid or to absolutely minimise noise, dirt, dust, access, etc. inconvenience or disruption of any nature to the adjacent owners or tenants. Indemnify the Principal against any claims arising from this source.

1.1.4 Protection

Take all appropriate precautions to protect all third party property, services, etc., and indemnify the Principal against any claims arising from the construction operations. Any damage to third party property caused by construction activities or failure to protect shall be rectified as soon as possible by the person causing the damage, or by appropriately qualified trades-persons employed by the person responsible for the damage if necessary.

Suspend operations during weather which would affect the quality of work in progress. Secure the

works as soon as possible against adverse weather, dust and vandals. Avoid structural damage that is caused by overloading.

Adequately protect all finished work and maintain until the date of Practical Completion. Each trade shall protect the work of all other trades, and each trade is responsible for making good any damage they cause to finished works. Arrange special protection as required for windows and doors, finished timber work, plumbing fittings and hardware, cabinets and other joinery, and similar items.

1.1.5 Responsibility

The Contractor will be held responsible for the full period of his legal responsibility in connection with this Contract for ensuring that all work execution, materials, and fittings, are completely in accordance with Contract requirements.

The Contractor is responsible to the Principal for the appropriateness and fitness, in relation to a reasonable expectation or requirement, of all of the materials and workmanship incorporated into the works by himself or his subcontractors; for this reason few specific guarantees are required in these contract documents. The terms and conditions of any warranty or guarantee required or provided shall not in any way negate the minimum remedies available under common law as if no warranty or guarantee had been furnished.

No apparent expression of the Architect's/Designer's reasonable satisfaction shall be deemed to be acceptance of defective materials or workmanship within the terms of the Contract or to be an authority for any Variation except where such Variation is authorised as provided for in the Contract. Instructions that are given verbally are deemed to be instructions for proper execution of the works and do not involve extra charges.

Workmanship in all trades is required to be equal to or better than recognised good trade practice. The Contractor shall provide all necessary setting out information and component dimensions for subcontractors and shall check and be responsible for the accuracy of their work.

Should any tradesperson consider that the surface finish or general conditions of previous work are unsatisfactory to ensure a proper finish for their own work thereon, that tradesperson shall give immediate notice to the Contractor or Architect/Designer as appropriate and shall not proceed until all necessary improvements have been made. Failing such notice the trade concerned will not be relieved of responsibility for a poor finish due to such unsatisfactory condition.

Specialist Finishes Subcontractors are responsible for ensuring that substrates are completely appropriate for them to achieve first class results, and to this end shall, in sufficient time, instruct the Contractor with regard any fixings, primings, sealings or whatever for the substrate that vary in any way from the substrate manufacturer's standard recommendations. The Contractor shall advise the Architect/Designer with regard these variances, and not proceed until the Architect/Designer has agreed to them.

The Contractor and all Subcontractors affected shall be jointly and severally responsible for completion of the whole of the works in a completely watertight condition and shall therefore examine all details to be satisfied that this condition can be achieved. If any detail is considered unsatisfactory the Architect/Designer shall be notified immediately and he/she will then either interpret the detail to the Contractor's satisfaction, or accept responsibility for watertightness at the points in question, always assuming reasonable workmanship.

Ensure that all materials or items incorporated into any particular construction or finish are compatible and that their individual use is approved by the manufacturers and/or suppliers of the other parts of the system.

For all electronic/electrical/mechanical operating systems all work and all necessary materials and items incidental to the primary item specified, that are incorporated into the works, shall be such as to leave a neat, efficient, easily maintained and robust installation, completely in accordance with all of the recommendations of the primary items' manufacturers. Where appropriate, source all parts of a system from a single supplier or manufacturer.

The Contractor shall make provision for all temporary works and services required for the satisfactory completion of the contract works. The Contractor shall pay all associated costs and fees; carry out all necessary maintenance, alterations and servicing requirements; and remove temporary works and services on completion of the contract works. Temporary works and services shall comply with the requirements New Zealand Building Code.

1.1.6 Specification

This Specification covers contract administration, standards, materials quality, workmanship and the scope of works only: the exact nature of the works and all specialist items, descriptions, etc., are contained on the drawings, which also take full precedence.

All clauses in all specification sections apply to their full extent and meaning to the entire Contract. Trade sections and paragraphs have been introduced into this specification for reference only and it shall not be construed that each trade section is a complete segregation of the materials and labour of that trade. The onus is on all trades to be conversant with any and all clauses which in any way affect their work.

(Be aware that the 'scope' noted in the 'Project Overview', and scope and general extent clauses within this specification, are included to provide a general indication only and must NOT be interpreted as schedules of quantities - the exact nature and extent of all aspects of the works are shown on the drawings).

1.1.7 Standards

New Zealand Standards (NZS), Australian Standards (AS), Joint Standards (AS/NZS), British Standards (BS), Acts of Parliament, Regulations made thereunder, Codes of Practice, and any specific Manufacturer's Instructions or Manufacturer's Recommendations that are referred to in these Contract Documents shall all be deemed to be the latest published edition thereof at the time of drawings issue, and shall be followed by the Contractor and all Subcontractors to the full extent applicable consistent with the intent of this Contract. Documents cited within other cited publications are deemed to form part of this specification.

Where Standards have a number of Divisions, e.g. AS/NZS 3500.1, AS/NZS 3500.2, etc., each of the Divisions relevant to this project is deemed to form part of this specification.

Retain current copies of significant cited documents and manufacturer's technical literature on the site.

1.1.8 Authorities and Charges

Comply with all relevant provisions of the NZ Building Code, and with all relevant territorial or statutory authority regulations, by-laws, obligations, etc. Give all required notices.

The Principal has obtained a Land Use Consent. The Principal has applied for and paid for the Project Information Memoranda, the Building Consent and other approvals required for the works to start. The PIM and Building Consent will be forwarded to the Contractor as quickly as possible after they are issued by the Territorial Authority. Note: It is an offence under the Building Act to carry out work not in accordance with a Building Consent.

Should the Building Consent be subject to any conditions which modify the requirements of the Contract Documents in any way, the Architect/Designer reserves the right to negotiate any or all of these modifying conditions with the Building Consent Authority. If after these negotiations additional work is required, it will be handled as a Variation to the Contract.

1.1.9 Code Compliance Certificate

The Principal will apply for the Code Compliance Certificate (CCC) and any other licenses or approvals for the building to be used. However, Practical Completion will NOT be certified until the CCC inspection has occurred and any additional works required by the local Building Consent Authority have been completed. To this end it is recommended that the Contractor obtains all required certificates, guarantees, Producer Statements, as-built drawings, etc., required for the CCC application as work proceeds, to facilitate application for the CCC as soon as the works are completed. For his part, the Principal hereby undertakes to apply for the CCC within one day of all required material being in hand. Likewise, the Contractor should have capacity available to attend as quickly as possible to any items identified by the Building Consent Authority as being required prior to the issue of the CCC.

1.1.10 Coordination of the Works

Coordinate the works of all trades to ensure efficient progress of the works. Ensure that all holes, sleeves, penetrations, supports, etc., that are required for services are correctly incorporated as work proceeds. Identify and sufficiently forward-notify the appropriate persons of all deadlines for the supply of fittings, components, information, etc.

1.1.11 Documents Interpretation

Except where they are clearly to the contrary, all dimensions are deemed to be to the bare surface of concrete, masonry, timber framing or other basic construction material. All figured dimensions take precedence over scaled sizes. Where any detail is included in more than one drawing the larger scale detail takes precedence. Where any ambiguity exists refer to the Architect/Designer for interpretation.

The word 'provide' and the word 'fix' used separately in the Documents shall be taken to mean 'provide and fix' unless otherwise stated.

When the term 'allow' occurs in the Documents, except with reference to Monetary Allowances, the cost of the item shall be at the risk of the Contractor.

The terms 'approved', 'directed', and 'selected' when used in the Documents refers to the approval, direction or selection of or by the Architect/Designer. Please give adequate notice of when these decisions are required. 'Architect/Designer' shall mean the Architect or Designer, their representative or any Consulting Engineer engaged by the Architect/Designer.

1.1.12 Work Shown and Mentioned

1.1.12.1 Work Shown and Mentioned

The Contract Documents show the extent and nature of the works but there is no warranty expressed or implied that they show each and every minor detail or item required to be included by the Contractor. Should any material, structural member, fixing, or item or work appear to be inadequately described, yet obviously necessary for the neat, strong and satisfactory completion of the work, it shall be incorporated into the Contract Works.

1.1.13 Site 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. Comply with the relevant provisions of the New Zealand Building Code, in particular Clause F5.

So far as is reasonably practicable and according to a PCBU's (person conducting a business or undertaking) primary duty of care, take all necessary steps required to make the site and the contract works safe, and to provide and maintain a safe working environment. Ensure that all those working on or visiting the site are aware of the site safety rules and are not unnecessarily exposed to hazards.

Each PCBU, so far as is reasonably practicable, must ensure the health and safety of workers, and that other people are not put at risk by its work. If more than one PCBU has a duty in relation to the same matter, each PCBU with the duty must, so far as is reasonably practicable, consult, co-operate with, and co-ordinate activities with all other PCBUs who have a duty in relation to the same matter. PCBUs can enter reasonable agreements with other PCBUs to meet their duties, but cannot contract out of their duties.

Notify WorkSafe as soon as possible when a notifiable event occurs. Take all reasonable steps to preserve the site of the notifiable event in accordance with WorkSafe requirements. Ensure that the site of the event is not disturbed until authorised otherwise by WorkSafe. Keep records of all notifiable events.

Scaffolding shall comply with all Statutory and Local Authority Regulations, with the WorkSafe 'Best Practice Guidelines for Scaffolding', AS/NZS 1576 (Scaffolding equipment), AS/NZS 4576 (Guidelines for Scaffolding), and AS/NZS 4994 (Roof edge scaffolding), and shall be maintained for the duration and removed on completion.

The use of ballistic fixings must absolutely comply with all relevant safety recommendations at all times. No rubbish fires are allowed on site. Portable/personal disc/tape players, radios and iPods must not be used anywhere on the site. No smoking on site, except in the designated location in accordance with the Smoke Free Environments Act 1990, the location of which will be determined by the Contractor, with the approval of the Principal.

A PCBU's primary duty of care includes, but is not limited to, so far as is reasonably practicable:

- providing and maintaining a work environment that is without risks to health and safety;

- providing and maintaining safe plant and structures;
- providing and maintaining safe systems of work;
- ensuring the safe use, handling and storage of plant, structures and substances;
- providing adequate facilities for the welfare at work of workers in carrying out work for the business or undertaking, including ensuring access to those facilities;
- providing any information, training, instruction, or supervision that is necessary to protect all persons from risks to their health and safety arising from work carried out as part of the conduct of the business or undertaking;
- monitoring the health of workers and the conditions at the workplace for the purpose of preventing injury or illness of workers arising from the conduct of the business or undertaking.

Before commencing work on the site, the Contractor shall prepare and submit to the contract administrator a health and safety plan. The health and safety plan shall include, but not be limited to:

- the health and safety of all people on the site and on other properties, and the general public;
- identification of existing and potential construction hazards and risks;
- safety procedures to eliminate, isolate or minimise construction hazards;
- the equipment to be used to minimise the hazards;
- the maintenance of a register of hazards for the site;
- the name and qualifications of the site safety person;
- emergency procedures;
- first aid facilities and safety equipment;
- the methodology for notifying, recording and investigating accidents and injuries.

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

1.1.14 Variations

The Architect/Designer will issue Site Instructions (SI) to amend or clarify the works. Upon receipt of a SI the Contractor shall immediately notify the Architect/Designer if he believes there are price or timing adjustment implications. The Architect/Designer will then issue a Variation Price Request (VPR) for pricing of the possible Variation by the Contractor, within the time stipulated, or within 10 days if no time is stipulated. If the Contractor does not return the VPR within the time stipulated the Architect/Designer will assess it at reasonable rates. Once agreement is reached on price and/or timing a Variation Order (VO) for the item will be issued. Note that works covered by a SI or a VPR must NOT be actioned until the VO is issued.

When a Variation is contemplated and timing does not allow SI and VPR action the Contractor is to advise, and record in the site diary, an estimate of price and timing implications. If accepted by the Architect/Designer, a VO will be issued immediately. The Contractor shall then co-operate with the Architect/Designer to establish agreed pricing.

Claims for Variations neither priced nor estimated prior to being put in hand (but considered valid) will be incorporated into Progress Payment Certificates or the Draft Final Accounts as claimed and accepted but with a proviso allowing 5 (five) days for written objections by either the Principal or the Contractor, to any aspect of them, for further consideration.

The Main Contractor's Variations Margin agreed pre-contract will be the maximum accepted for any trade unless higher rates are nominated pre-contract and are accepted. The Main Contractor's

agreed Variations Margin shown shall be deemed to include all preliminary and general costs, overheads, variation processing costs, and profit. If no margin is given, a 5% overall margin will be applied.

Note that 'loss of anticipated profit' claims consequent upon reduction of works extent will NOT be recognised, and that the cost of processing Variations is deemed to be included in the P & G Allowance.

Also note that for Variations pricing all materials shall be charged at the actual net invoiced cost plus margin; i.e. recognised 'Trade Price', volume discounted where appropriate.

1.1.15 Cleaning and Completion

Clear construction debris and rubbish from the works at regular intervals, and additionally if so instructed by the Architect/Designer. Clean each space thoroughly before commencing any finishing works.

In preparation for the Practical Completion inspection carry out the following:

- Clean the works thoroughly, removing all debris, surplus materials, splashes, marks, temporary markings, etc. (All cleaning methods and materials shall be as recommended by the manufacturer of the item being cleaned).
- Remove protective wrappings and coverings unless otherwise directed.
- Touch up minor painting faults, carefully matching colour, and brushing out edges. Repaint any badly marked surfaces back to suitable break-lines.
- Adjust, ease and/or lubricate as required all doors, drawers, controls and other moving parts to ensure their efficient operation.
- Any other works required to leave all spaces ready for immediate occupation and all electronic/electrical/mechanical systems fully operational.
- Clean out all spoutings, gutters, downpipes, and gullies and flush out all drains.
- Clean all sanitary appliances and check all aspects of the water services.
- Thoroughly re-inspect all aspects of the works (and have any defects fully rectified) to be certain that the works are completely ready for the Practical Completion inspection - if an unreasonable number of items are noted by the Architect/Designer during the inspection it will be terminated and then rescheduled for at least a week forward to allow proper completion to be achieved.

(Note that a Code Compliance Certificate must be obtained before Practical Completion will be certified. Obtain all required certificates, guarantees, as-built drawings, etc., as work proceeds to enable the CCC application to be submitted as soon as construction is completed).

2 SITEWORKS

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.

2.3 Site & Scope

2.3.1 Site

Note that no claims will be recognised on the grounds of insufficient description of existing site conditions in the Contract Documents.

Take great care to excavate exactly for the wall foundations to avoid any damage to adjacent property.

2.3.2 Scope

This section covers:

Rabbits control
Demolition work
Boulders salvage

Removal of vegetation
Excavation of topsoil and stockpiling and final distribution
Excavation of topsoil and stockpiling and final distribution (and new topsoil)

Excavation as required for foundations and slabs
Excavation as required for foundations, slabs, and drive
Excavation as required for foundations, slabs, and carpark
Excavation as required for foundations, slabs, carpark and drive

Supply, placing and compaction of hardfill basecourse and sand blinding
Supply and placing of any site concrete required

Supply and installation of retaining walls waterproofing systems and field drains
Backfilling behind retaining walls

Preparation for, and installation of asphalt driveway paving
Supply and installation of asphaltic concrete

Preparation for paving works, and sandstone and asphalt paving

Preparation for sandstone and schist paving

Preparation for and installation of paving

Preparation for, and installation of exposed aggregate paving

Supply and installation of flagstone paving

Preparation for, and installation of topsoil to planter areas

Instant lawn supply and installation

Grass for disturbed areas around the works areas

Polythene groundcover under the timber floor

Preparation for and installations of Gobi blocks

Supply and installation of the trampoline

2.3.3 Waahi Tapu

During excavation, should a waahi tapu or other cultural site be unearthed, cease excavation operations immediately, and inform the Contract Administrator. Inform the local Iwi, and inform Heritage New Zealand Pouhere Taonga and apply for an appropriate authority if required. Take appropriate action, following discussions with Heritage NZ Pouhere Taonga and Territorial Authority, and runanga/runaka/iwi if Maori, to remedy any damage and/or to restore the site.

Note; in accordance with the Heritage New Zealand Pouhere Taonga Act 2014, where an archaeological site is present (or uncovered), an authority from Heritage New Zealand is required if the site is to be modified in any way. An archaeological site is defined in the Heritage New Zealand Pouhere Taonga Act 2014 as any place in New Zealand (including buildings, structures or shipwrecks) that was associated with pre-1900 human activity, where there is evidence relating to the history of New Zealand that can be investigated using archaeological methods.

2.4 Excavation & Siteworks

2.4.1 Excavation

Excavation work shall be carried out in accordance with the WorkSafe NZ Excavation Code of Practice.

Co-ordinate with other trades as to set-out and timing to ensure that all cut faces are covered or finished etc. as soon as possible after the excavation is complete.

Plan the excavation carefully to ensure that stockpiles will not interfere with concrete construction, to stockpile just sufficient material for the filling, backfilling and reshaping required later, and to avoid overlaying areas outside the works area with material.

Cease machine excavation above final levels and trim to the finish profiles by hand where appropriate. Any over excavation in critical foundation, etc. areas made up with 10MPa concrete unless otherwise approved. Trim slab benches exactly to the required level to allow for hardfill and blinding.

Noisy excavation equipment shall be used only during hours which will avoid undue nuisance to the occupants of adjacent properties.

Excavate accurately in position and true to line and minimum sizes and to levels and grades required for all slabs, footings and foundations, and over the rest of the areas shown for levels adjustment.

Excavations down to firm undisturbed ground, and footings and foundations 200mm minimum into solid, except where shown otherwise.

Below slabs on ground the general intent is to excavate to a stable undisturbed subgrade (of 300 kPa ultimate bearing capacity).

From the excavated material select the most appropriate material for compacted filling and stockpile it in appropriate positions sufficient for filling and backfilling (but NOT for hardfilling).

Remove all surplus material from the site as soon as it is excavated, taking care to avoid damaging the footpath or streets or spilling material on to them.

Remove individual boulders from the excavated material and stockpile them where noted for future landscaping use by others.

Report for instruction when any unexpected voids, made-up ground or similar are encountered.

Report the finding of antiquities or other items of value, and leave them undisturbed until approval (and instruction) is given for their removal - they remain the property of the Principal.

2.4.2 Excavation Completion

As soon as excavation and filling is complete and before any concrete is placed or other work proceeded with the foundation material will be inspected by the Engineer, and any necessary changes to foundation widths or details will be directed.

2.4.3 Backfilling

Backfill as soon as possible after retaining walls are in place and sealing, field drains and FormFlow are in place, and fully checked. Remove any timber offcuts and any/all other rubbish prior to backfilling.

3 CONCRETE

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:

2295:2006(NZS)	Pliable, permeable building underlays
2904:1995(AS/NZS)	Damp-proof courses and flashings
3404.1&2:1997(NZS)	Steel Structures Standard
3404:2018(SNZ TS)	Durability requirements for steel structures and components
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
4859.1:2018(AS NZS)	Thermal insulation materials for buildings - Part 1: General criteria and technical provisions
NASH 3405	An alternative solution for steel framed buildings
NZBC E2/VM1	External Moisture

3.3 Thermakraft Underlay, DPM, DPC & Tapes

3.3.1 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 (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.

The following is a list and a general description of the extent of the Thermakraft Underlays and Membranes works, which are more specifically defined in the contract documents, required for the completion of the contract works:

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

[Thermakraft Ltd Product Warranty](#):

- 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.

3.3.2.3 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.

3.3.3 Roof Underlay

[Covertex 407](#). A self-supporting, fire-retardant, absorbent, breathable, synthetic non-woven polyolefin underlay. Nominal weight 220g/m².

Covertex 407 is CodeMark assured with the NZ Building Code: CodeMark Certificate of Conformity No:GM-CM30028-RevH, 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.

Covertex 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.

Covertex 407 roof underlay must be installed in a manner that prevents ponding of water. Provide additional support at no more than 300mm centres when Covertex 407 is installed on roofs with slopes less than 10° (Install guide).

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

Installed Location:

3.3.4 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 Thermakraft Underlays, DPMs, and DPCs as required.

3.3.5 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.

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.

3.3.6 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 use 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 the [OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#), as well as the [Best practice guidelines for working on roofs](#) for roofing installations.

3.3.7 Preparation

3.3.7.1 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 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.

3.3.7.2 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.

3.3.8 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.

3.4 Masons Plastabrick UNI Flexible Air Barrier System

3.4.1 Scope

3.4.1.1 Scope

Supply and install the specified Membranes, Wraps and Flashing Tape from Masons Plastabrick Ltd 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 Masons Plastabrick Ltd technical information and installation requirements (check mpb.co.nz, or call 0800 522 533 for the latest editions), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for the specified Membranes, Wraps and Flashing Tape from Masons Plastabrick Ltd.

3.4.2 Wall Underlay

3.4.2.1 UNI Flexible Air Barrier System

[UNI Flexible Air Barrier](#). A non-woven, water resistant, breathable synthetic flexible air barrier, designed to provide temporary protection from weather conditions and UV exposure to timber framing without the installation of the cladding, which allows for the continuation of internal work on the house for 90 days after installation. Nominal weight 230g/m².

UNI Flexible Air Barrier is CodeMark assured with the NZ Building Code: [CodeMark Certificate of Conformity No: CM40179-I01-01](#), issued by CertMark International Pty Ltd.

To achieve temporary weather protection, UNI Flexible Air Barrier must be used in conjunction with [Masons 40 Below Flashing Tape](#) and be installed in accordance with the current [UNI Flexible Air Barrier Installation Guide](#).

[UNI Flexible Air Barrier](#) can be used with absorbent and non-absorbent direct-fixed wall claddings, and absorbent and non-absorbent wall claddings over a 20mm drained cavity, and masonry veneer cladding over a drained cavity in accordance with E2/AS1 and the CodeMark Certificate of Conformity. UNI Flexible Air Barrier can be installed in NZS 3604 Wind Zones up to and including 'Very High' as a flexible air barrier over timber or steel wall framing in accordance with the manufacturer's requirements and CodeMark Certificate of Conformity.

UNI Flexible Air Barrier can be installed in NZS 3604 Wind Zones up to and including 'Extra High' as a flexible air barrier over a rigid wall underlay in accordance with NZBC E2/AS1 9.1.7.2 to the manufacturer's requirements and CodeMark Certificate of Conformity.

UNI Flexible Air Barrier can be installed in NZS3604 windzone Extra High using a specific fixing method. See the current [UNI FLEXIBLE AIR BARRIER INSTALLATION GUIDE](#). N.B. this is an alternative solution and fall outside the scope of the Codemark Certificate. Do not leave UNI Flexible Air Barrier exposed on walls for more than a total of 90 days before covering.

Installed in accordance with the manufacturer's requirements to the locations and details shown on the drawings.

Installed Location:

3.4.3 Fixing

3.4.3.1 Masons UNI Fasteners

[UNI Fasteners](#) is a Nail & screw washer – It is important to secure UNI with Masons UNI 32mm Nail/washer fasteners. Fasten at 600mm centres over normal 8-10mm staples. For steel frame use UNI washers with either a Phillips or square drive self-drilling screw.

3.4.4 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 the specified membranes, wraps and flashing tape as required.

3.4.5 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.

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.

3.4.6 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 material.

Do not use 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 the [Best practice guidelines for working on roofs](#) and the [OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#).

3.4.7 Membranes, Wraps & Flashing Tape from Masons

3.4.7.1 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 shall 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 of NZS 3602 at the time of installation.

Supporting lightweight steel framed structures shall comply with NASH 3405, or the NZBC for specific design.

Supporting steel structures shall comply with NZS 3404.

3.4.7.2 Timber Frame

Masons Building Wraps installed over Timber Framing - check all aspects of preparatory works, including but not limited to:

- Check that timber framing has been completed as shown on the drawings, complies with NZS 3604 or AS/NZS 1170 for specific design for timber framing, and is in accordance with Masons requirements.
- 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 timber framing has a maximum moisture content of 20% at the time of installation.
- Check that there are no projections due to structural bracing and bracketry etc.

3.4.8 Installation

3.4.8.1 UNI Flexible Air Barrier

Install UNI Flexible Air Barrier in accordance with the manufacturer's [installation instructions](#), to the locations and details shown on the approved drawings.

UNI Flexible Air Barrier must be installed, printed face out, to the exterior face of the wall framing, run horizontally, starting from the bottom edge and finishing at the top edge, extending 50mm or as detailed below slab bottom plates or framed floor structure, and sufficiently tensioned to prevent sagging or bulging.

Lap UNI Flexible Air Barrier such that any water will be shed to the outside of the underlay.

Horizontal side-laps must be no less than 75mm wide and sealed with Masons 40 Below Flashing Tape. Vertical end-laps must be no less than 150mm wide, made over solid framing and sealed with Masons 40 Below Flashing Tape.

Fix UNI Flexible Air Barrier to timber framing with Masons UNI Fasteners at maximum 600mm centers using a hammer or gun. Fix UNI Flexible Air Barrier to steel framing at maximum 600mm centres with Masons UNI Washers and self-drilling metal screws. The underlay must be pulled taut over the framing before fixing.

Framed openings should be left covered with UNI Flexible Air Barrier until window and door joinery is ready to be installed. Carefully cut UNI Flexible Air Barrier at window and door openings just prior to joinery installation; cut underlay at 45° angle away from each corner and return full framing depth and fasten to inside of frame.

For drained cavity wall construction where studs are spaced more than 450mm apart, install Masons WrapStrap™ 19mm/25mm wide polythene embossed strap - horizontally at 300mm centres, or vertically mid-way between battens/studs - as additional restraint to prevent bulk insulation from pushing the underlay into the cavity space.

Install Masons 40 Below Flashing Tape to window and door openings in accordance with Masons requirements.

UNI Flexible Air Barrier can be added as a second layer over the upstand of head flashings and inter-storey flashings, in lieu of flexible flashing tape, when extended up to and lapped under the nearest underlay lap above.

Install all necessary flexible flashing tapes required to seal the underlay at openings, around pipes,

ducts and other services penetrating the underlay, at parapet and balustrade junctions, along head flashings and inter-storey flashings, as shown on the drawings.

Do not leave UNI Flexible Air Barrier exposed to weather and UV light for more than 90 days after installation - replace with new underlay if 90 days' exposure is exceeded.

3.4.9 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 the manufacturer's installation requirements.

Check installed underlays and flashing tapes for defective work and damage before covering - 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.

Complete the [UNI Flexible Air Barrier System On-SITE Checklist](#) and issue to the owner.

Issue to the Owner a copy of the Masons Plastabrick Ltd Product Warranty for all Masons products installed.

4 WATERPROOFING

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:

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

4.3 ARDEX Liquid-Applied Waterproofing Membranes

4.3.1 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.

The following is a list and/or general description of the extent of ARDEX Liquid-Applied Waterproofing Membranes works, which are more specifically defined in the contract documents, required for the completion of the contract works:

4.3.2 Requirements

4.3.2.1 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.

4.3.2.2 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.
- Provide the warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of practical completion.

4.3.2.3 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.

4.3.2.4 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.

4.3.2.5 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 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.

4.3.2.6 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.

4.3.3 Performance

4.3.3.1 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.

4.3.3.2 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.

4.3.4 Interior Undertile Membrane

4.3.4.1 ARDEX WPM 001

Interior Undertile Waterproofing Membrane - [ARDEX WPM 001](#). A 1-part, read-to-use, fast drying, polymer-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.

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 - interior use 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 001 for continuously immersed waterproofing applications.
- Do NOT use ARDEX WPM 001 on substrates subject to negative hydrostatic pressure or rising damp, unless treated with Ardex WPM 300.
- Do NOT allow ARDEX WPM 001 waterproofing membrane to be left exposed and subject to regular foot traffic.
- All floor areas must have adequate built-in drainage falls prior to the application of ARDEX WPM 001 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 001 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 001 to achieve the required total dry film thickness - Floors, 1.0mm; Walls, 0.5mm - in accordance with ARDEX requirements.
- Reinforce ARDEX WPM 001 membrane between coats as necessary using ARDEX Deckweb fabric in accordance with ARDEX requirements.

Application Data (at +23° and 50% RH):

- Application Temperature Range: from +10°C to +35°C (surface temperature).
- Recoat Time: 1-2 hours.
- Complete Dry Time: 48-72 hours after application, depending on humidity, surface temperature and porosity of substrate.
- Fully Cured: 3 days after application.
- Flood Test Time: at least 72 hours after application, and before tiling commences.
- Colour: Blue.

Apply ARDEX WPM 001 undertile waterproofing membrane to properly prepared substrates in strict accordance with the manufacturer's requirements.

Installed Location:**4.3.4.2 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 Technical 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.
- 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:**4.3.5 Continuously Immersed Undertile Membrane****4.3.5.1 ARDEX WPM 002**

Continuously Immersed 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 - [BRANZ Appraisal No.473 \(2017\)](#).
- 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.
- 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 continuously immersed undertile waterproofing membrane to properly prepared substrates in strict accordance with the manufacturer's requirements.

Installed Location:

4.3.6 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.

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

4.3.7 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.

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.

4.3.8 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](#).

4.3.9 Preparation

4.3.9.1 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 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.

4.3.9.2 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.

4.3.10 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.

5 CARPENTRY

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:

1080.1:2012(AS/NZS)	Timber - Methods of test - Method 1: Moisture content
1170.2:2011(AS/NZS)	Structural design actions - Wind actions
1397:2001(AS)	Steel sheet and strip - Hot-dip zinc-coated or aluminium/zinc-coated
1491:1996(AS/NZS)	Finger jointed structural timber
1530.3:1999(AS/NZS)	Methods for fire tests on building materials, components and structures - Simultaneous determination of ignitability, flame propagation, heat release and smoke release
1859.1:2004(AS/NZS)	Reconstituted wood-based panels - Specifications - Particleboard
1859.2:2004(AS/NZS)	Reconstituted wood-based panels - Specifications - Dry-processed fibreboard
2269.0:2012(AS/NZS)	Plywood - Structural - Part 0: Specifications
2270:2006(AS/NZS)	Plywood and blockboard for interior use
2271:2004(AS/NZS)	Plywood and blockboard for exterior use
2295:2006(NZS)	Pliable, permeable building underlays
2588:2018(AS NZS)	Gypsum plasterboard
2589:2017(AS/NZS)	Gypsum linings - Application and finishing
2904:1995(AS/NZS)	Damp-proof courses and flashings
2908.2:2000(AS/NZS)	Cellulose-cement products - Flat sheets
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
3617:1979(NZS)	Specification for profiles of weatherboards, fascia boards, and flooring
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
NZBC B2/AS1	Durability

NZBC C/AS2-AS6	Protection from Fire
NZBC G6	Airborne and Impact Sound
NZBC H1	Energy Efficiency

5.3 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.

5.4 Timber Framing

5.4.1 Scope

Supply and install timber framing to the floors, walls, roofs, and other timber framed elements, as identified and detailed on the drawings. All aspects of this work shall be in accordance with NZS 3604, product manufacturers' recommendations, and as shown on the drawings and the specification.

5.4.2 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 be carried out to current best trade practise by experienced and competent tradesmen, familiar with the materials and installation techniques, in accordance with NZS 3604 and as shown on the drawings.

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

Co-ordinate with other trades to install timber framing as required.

5.4.3 Timber Framing

5.4.3.1 Timber Grade and Quality

Unless otherwise noted or specified on the drawings or specification, all framing timber shall be minimum structural grade SG 8 Radiata pine in accordance with NZS 3622.

Framing timber shall be seasoned or kiln dried, and be straight and true and free from wind, warp and distortion, and in lengths suitable for the members required, and shall have a moisture content of between 12% and 18% before installation.

Do not use damaged, faulty or defective materials.

5.4.3.2 Timber Treatment

All non-durable timber framing shall be appropriately treated against moisture and/or insect decay by treatment plants with recognised quality assurance systems that are administered by the Timber Preservation Council (NZTPC). Treatment of timber and wood-based building products shall be to the

requirements of NZS 3602 as an absolute minimum, and all treated timber shall be identified and marked as required.

Carefully manage treated framing during installation to avoid accidental use of timber with a lower performance or durability treatment than that required or specified.

5.4.3.3 Storage & Handling

Check timber framing upon delivery and reject sub-standard or damaged material.

Store timber framing dry under cover, fillet stacked and well clear of the ground, and protect from damage, moisture, and contamination.

Ensure all appropriate personal protection equipment is worn at all times when handling and cutting treated framing.

5.4.3.4 Framing Installation

All timber framing members, including all dwaning, strutting, blocking, bracing etc, shall be sized, setout, fitted and fixed to the requirements of NZS 3604 and as shown on the drawings to accommodate structural loadings, cladding and lining setout and support, and the installation of other building components, fixtures and fittings.

All framing shall be erected without deviation, true to line, level, angle and plumb, and evenly aligned and square, and within the tolerances allowed in NZS 3604 Table 2.1. Framing members accurately cut, lapped, housed, joined, and seated so as to provide full contact over the bearing surfaces.

Temporarily prop, brace, tie, and secure framing members and elements as required until the framing is complete and self supporting. Leave in place for safety purposes as long as required.

Protect timber framing as required during installation against damage and moisture, and against significant variation of moisture content until ready for lining. Avoid ponding of water around floor plates.

5.4.3.5 Concrete Separation

Separate timber framing with an approved continuous damp proof course when in direct contact with concrete or masonry. Ensure that the DPC material is compatible with the timber treatment.

Free draining separations to external vertical faces shall be 12mm minimum and as noted on the drawings.

5.4.3.6 Timber Re-treatment

All cut or drilled surfaces of H4 and H5 treated timber framing shall be flood coat re-treated, with a suitable product recommended by the original treatment plant, before installation.

5.4.3.7 Edge Notching and Centre Holes

The notching, checking, and boring of framing members shall be in strict accordance with the requirements of NZS 3604.

Avoided checking and cutting where possible and keep to such dimensions so as not to prejudice the purpose for which the member is used. Keep edge notching to a minimum and where possible use centrally bored holes instead.

Concealed services pipes and wiring shall not project beyond the framing face and where possible shall be beyond the lining's fixing reach.

5.4.3.8 Framing Protection

Protect timber framing as required during installation against damage and moisture, and against significant variation of moisture content until ready for lining. Avoid ponding of water around floor plates.

5.4.3.9 Built-up Framing Members

Except for jack studs, bottom plates and top plates, framing members may be substituted with built-up members in accordance with the limitations of NZS 3604 2.4.4.7 with the prior approval of the Architect/Designer only.

5.4.4 Steel Fixings

5.4.4.1 Fastenings and Connectors

Unless otherwise noted or specified, timber framing fastenings and connectors shall be as specified in the relevant fixing schedules of NZS 3604 or have an equivalent capacity as specified therein. Timber framing connectors and fixings shall comply with the product information as required in NZS 3604 2.4.6, and shall be used and installed in accordance with the manufacturer's recommendations. Pre-drill nail holes in split-prone framing as necessary.

5.4.4.2 Durability of Fixings & Fastenings

Unless otherwise noted or specified, the minimum durability of timber framing fixings and fastenings, excluding nails and screws, shall comply with the durability requirements of NZS 3604 Table 4.1.

Galvanised steel fixing components, excluding nails and screws, shall have galvanised coating masses in accordance with NZS 3604 Table 4.2.

Unless noted or specified otherwise, the materials for nails and screws shall be as given in NZS 3604 Table 4.3.

Steel fixings and fastenings in contact with timber treated with copper based timber preservatives (H3.2 or higher) shall be in accordance with NZS 3604 4.4.4.

Stainless steel nails shall be minimum Grade 304 unless otherwise specified or noted.

5.4.4.3 Bolts and Coachscrews

Unless specified or shown otherwise, all bolted and coach screwed connections shall be M12 or M16 in accordance with the relevant fixing requirements given in NZS 3604.

Bolted and coach screwed connections shall have either a 50mm x 3mm square, or a 55mm x 3mm round, washer to each head and nut for M12 and M16 fixings. Washers shall be of the same material and durability as the bolt or coach screw.

5.4.5 Wall Framing

5.4.5.1 Plates

Top and bottom plates shall be to the dimensions and layout shown on the drawings. Unless specified or shown otherwise, top and bottom plates shall be fixed in accordance with NZS 3604 7.5.12 and Tables 8.18 and 8.19, true to line and level or angle.

Joints in top plates shall be made over a stud or over blocking between studs, and all top plate connections shall be in accordance with NZS 3604 8.7.3. Form all holes and edge notches in top and bottom plates in accordance with NZS 3604 8.7.5.

5.4.5.2 Studs

Studs shall be to the dimensions and spacings shown on the drawings, and installed true to line and plumb in both directions between top and bottom plates.

Unless noted otherwise, non-load bearing wall studs shall be to the spacings given in NZS 3604 Table 8.4, stud width as shown on the drawings.

Form all holes and edge notches in studs in accordance with NZS 3604 8.5.1.5. Do not notch, check, cut, or bore holes in the middle third of any trimming stud.

Should the need arise, studs shall be straightened in accordance with NZS 3604 8.5.3 with prior approval from the Architect/Designer only.

Unless noted otherwise, studs in loadbearing walls for 3 kPa floor loads shall be in accordance with NZS 3604 Table 14.10.

5.4.5.3 Lintels

Lintels shall be to the dimensions and locations shown on the drawings, and installed true to line and level, and shall be supported by a 45mm thick doubling stud or jack stud fixed to a trimming stud, and secured against uplift in accordance with NZS 3604 8.6.1.8 as required.

The thickness of a lintel may be made from two or more members, where each member is the length of the lintel, in accordance with NZS 3604 2.4.4.7.

5.4.5.4 Sill & Head Trimmers

Unless specified or shown otherwise, sill and head trimmers to openings shall be the same width as the wall stud and to the thickness given in NZS 3604 Table 8.15, and installed at the required opening height true to line and level, and supported by a 45mm thick doubling stud or jack stud fixed to a trimming stud.

5.4.5.5 Dwargs

Dwargs shall be the same width and thickness as the wall stud, and installed at the centres noted on the drawings, and accurately cut and fixed in place true to line and level and flush with stud edges. Dwargs fixed in accordance with NZS 3604 Table 8.19.

5.4.5.6 Ribbon Boards

Ribbon boards shall be as dimensioned and located on the drawings, and installed on edge and checked 25mm into studs at the required height, true to line and level, and fixed in place in accordance with NZS 3604 Table 8.19.

5.4.6 Roof Framing

5.4.6.1 Rafters

All rafters (including hip, valley and jack rafters) shall be to the dimensions, spacings, pitch, and layout shown on the drawings.

Rafters shall be aligned and paired at the required spacings to ridge boards, ridge beams, hip rafters

and valley rafters, and as shown on the drawings, and installed parallel, true to line, pitch and plane, and fixed in accordance with NZS 3604 Table 10.1.

Any required jointing of rafters shall be made over supports shown on the drawings only.

Unless shown otherwise, rafter seating to top plates, beams, and lintels shall have a minimum bearing of 32mm without reducing the rafter depth to less than 65mm, or 80%, at the birds mouth.

Extend rafter ends to form eaves as detailed on the drawings and in accordance with NZS 3604

10.2.1.14.

Fly rafters and outriggers installed to form gable verges as detailed on the drawings and in accordance with NZS 10.2.1.15.3

5.4.6.2 Purlins

Purlins shall be to the dimensions and spacings shown on the drawings and as required by the cladding material, and fixed to rafters and/or trusses in accordance with NZS 3604 Table 10.10 (purlins on their flat) and/or Table 10.11 (purlins on their edge).

Purlins on their flat shall be continuous over a minimum of two spans.

Provide all necessary blocking and lateral support to purlins laid on edge in accordance with NZS 3604 10.2.1.16.6, and as detailed.

Extend purlins to form gable verges as detailed and in accordance with NZS 3604 10.2.1.15.

5.4.6.3 Roof Trusses

Roof trusses shall be Specific Engineering Design (SED) in accordance with NZBC B1/VM1 and manufactured by an accredited fabricator, and shall comply with all aspects of NZS 3604 10.2.2. Roof trusses shall be fabricated to meet the specific design requirements of the roof including, but not limited to; roof layout, pitch, and details, in accordance with the drawings and specification.

Roof trusses shall be supported and fixed to the truss fabricator's specifications but shall be no less than that required by NZS 3604 Tables 10.14 and 10.15. Roof trusses shall be braced as shown on the drawings and in accordance with NZS 3604 10.3.

5.4.6.4 Roof Bracing

Roof bracing shall be as shown on the drawings and in accordance with NZS 3604 10.3 and 10.4 as necessary.

5.5 Workmanship & Materials

5.5.1 Workmanship

5.5.1.1 Supervision

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. It is the main contractor's responsibility to ensure that the construction of all structural timber complies in all respects with the drawings and the specification.

All non-restricted building work shall be carried out by or under the direct supervision of competent tradespersons, suitably qualified for the work undertaken, and in accordance with the best and latest trade practice.

5.5.1.2 Sub-floor Ground Cover

Just prior to closing-in suspended sub-floor framing, clear all framing offcuts and other rubbish, and rake loose material even with the ground shaped in a manner will allow accumulated moisture to drain to the exterior. Lay 0.25mm thick black polythene sheeting as a vapour barrier over the prepared sub-floor ground surface. Cut polythene to neatly butt or lay up against foundations. Lap polythene joints minimum 100mm and seal with polythene tape. Hold polythene sheeting in place with pegs, masonry units or similar.

5.5.1.3 Timberwork

All timber shall be worked and cut to be true and square and free from wind and warp with all joints matching and mating to a proper contact fit over the full surface of the joint. All connections whether nailed, screwed, glued, mortised or dovetailed shall be accurately made and properly executed to provide sound satisfactory connections for the class of work required.

Timber containing unacceptable defect or distortion shall not be cramped to provide mating at connections but shall be discarded and replaced by true defect-free timber before connections are made. Distribute any acceptable defects in timber so as not to impair the strength or the appearance of the finished work. Do not cut studs across the grain to straighten them.

The checking and cutting away of timbers shall be avoided where possible and shall be limited to such dimensions as will not prejudice the purpose for which the timber is used. Observe NZS 3604 restrictions on holing and checking of timber joists and beams. Concealed services pipes and wiring shall not project beyond the framing face and where possible shall be beyond the linings/claddings fixings reach.

Neatly punch exposed nailing to the diameter of the nail head below the surface. Completely remove bruises and tool marks, and replace all split timbers and hammer-marked finishing timbers.

Fit a 3-ply bituminous DPC or a single layer high impact polyethylene DPC at all timber to concrete junctions to provide complete separation. Ensure that the DPC material is compatible with the timber treatment.

Clean out framing voids before fixing sheathings or linings. Ensure framing voids are fully vermin proofed to the exterior. Build in as necessary all required flashings (supplied by others) to windows, doors, roof edges, etc.

5.5.1.4 Wall Underlay

Install a flexible heavyweight building paper or breathable/absorbent wall underlay behind all exterior wall claddings, fixed horizontally, with minimum 150mm horizontal laps and minimum 150mm vertical joint laps made over a stud, and kept taut without sagging or bulging.

Fix wall underlay at maximum 300mm centres, with 6mm - 8mm stainless steel staples or 20mm large-head galvanised clouts or galvanised proprietary fixings, fixed through nylon vertical strapping at every stud in exposed locations. Provide additional fasteners fixed through the underlay around framed openings. Cut window and door openings just prior to joinery installation; cut underlay at 45° angle away from each corner and return full framing depth and fasten to inside of frame.

Finish wall underlay at edges as detailed, and return full framing depth into window and door

openings. Install all necessary flexible flashing tapes to openings, around pipes, ducts and other services penetrating the underlay, parapet and balustrade junctions, along head flashings and inter-storey flashings when installed, as required to seal the underlay, in accordance with wall underlay manufacturer's requirements and as shown on the drawings.

For drained cavity construction to framed walls without a rigid wall underlay and where the studs are at greater than 450mm centres, restrain the underlay with nylon strapping to prevent the underlay from bulging into the cavity space.

Any damaged underlay shall be made good by lapping in a new section.

Do not leave wall underlays exposed before covering with wall cladding for more than the manufacturer's recommended duration.

5.5.1.5 Roof Underlay

Install heavyweight building paper or breathable/absorbent roof underlay behind roof cladding as detailed, with minimum 150mm side and end laps, lapped such that any water will be shed to the outside of the underlay, and sufficiently tensioned in a manner that prevents sagging or ponding. R1 class roof underlays shall be fully supported on nylon straps or non-corrosive netting/mesh; R2 class self-supporting underlays shall be laid to maximum 1200mm span between adjacent supports. Run roof underlay horizontally or vertically up the roof slope on roof pitches above 10° pitch, and horizontally on roof pitches 10° or less.

Fix roof underlay at maximum 300mm centres to purlins, with 6mm - 8mm stainless steel staples or 20mm large-head galvanised clouts or proprietary underlay fixings.

For tiled roofs, lay the roof underlay over the anti-ponding board and no-corrosive support netting/mesh, and fix at maximum 300mm centres to the rafters/trusses before the tile battens are installed.

Finish roof underlay along roof edges and junctions, valley gutters, and at the ridge as shown on the drawings. Carefully cut underlay at roof openings at 45° angle away from each corner and lap-tape closed to framed up-stands, ducts and other services penetrating the underlay in accordance with the underlay manufacturer's requirements and as detailed. Roof underlay must be separated from chimneys and flues in accordance with the requirements of the NZBC C1-C6 Acceptable Solutions. Any damaged underlay shall be made good by lapping in a new section.

Do not leave roof underlays exposed before covering with the roof cladding for more than the manufacturer's recommended duration.

5.5.1.6 Window Installation

Prepare window and external door framing openings for joinery installation by neatly cutting the building wrap at 45° into corners, returning turning the wrap through the frame depth and fixing to the inside face.

Over-flash the underlay along the sill with a flexible flashing tape, installed full frame depth and length of the opening, returned minimum 100mm up the jambs, and with minimum 50mm return over the outside edge.

Over-flash the underlay at head/lintel corners with a flexible flashing tape, extending minimum 100mm each way from the corner, full frame depth, and with minimum 50mm return over the outside face.

Install external joinery frames with metal flashings as detailed and/or as required to completely weatherproof all frame-to-cladding junctions.

Unless shown otherwise, head flashings shall be carried minimum 75mm up behind claddings, extended at 15° out over the joinery head or facing board and returned down to cover the joinery or facing board minimum 10mm and finished with a 5mm, 45° 'kick out' drip-edge.

Neatly dress down the head flashings at the ends of the facings - for drained cavity construction, also form up-turned stop-ends in-line with the outside edge of cavity above.

Install metal (as specified) head flashings, fixed over the wall underlay, with the flashing upstand over-flashed minimum 50mm with a flexible flashing tape against the underlay, or with an additional piece of underlay extended over and lapped behind the underlay above, behind the inter-storey flashing or sill flashing above, or to the underside of the eaves.

Unless shown otherwise, sill flashings, where required, shall have a minimum 5° slope, minimum 8mm rear upstand with sealed sloping stop-ends, and be carried down minimum 35mm over the lower cladding and finished with a 5mm, 45° 'kick out' drip-edge.

Take delivery of window and door joinery. Check substrates for correct profile and alignment and that the joinery is fabricated to the correct wall construction set-out and depth. Set shims or pack as necessary to install joinery exactly true and square. Use appropriate separators between aluminium and other materials, and fix securely with due regard for any anticipated movements and for linings, trim, etc.

Install neat sealant beads as detailed or required.

After joinery installation, install closed cell backing rods as required and expanding foam seal the gap between the opening substrate and joinery liners/reveals (all round, from the inside).

On completion ensure that all sashes and doors neatly fit the openings with regular tolerances to all edges, and that all moving components and hardware are correctly adjusted and operating smoothly, without binding, to the required functionality.

5.5.1.7 Joinery Installation

Take delivery of all scheduled joinery items (doors, cabinets, shelves, etc.) and install in the positions shown, accurately aligned, true to level, plumb and square, and securely fastened as noted and in accordance with best trade practice and with due regard for adjacent linings, finishes and trim, and anticipated movements.

Cabinets scribed and/or recessed packers scribed to adjacent surfaces as detailed or directed. Protect all installed Joinery from damage including surface marking and contamination, dirt and dust, and moisture until completion. Do not use Joinery items for working supports or platforms or for storage of materials or tools and equipments.

On completion ensure that joinery item doors and drawers all neatly fit the openings with regular tolerances to all edges, and that all moving components and hardware are correctly adjusted and operating to the required functionality.

5.5.2 Timber

5.5.2.1 Timber Materials

All timber shall be graded in accordance with NZS 3631 - Structural Grade MSG8 or better for all framing timber - (to meet the requirements of Table 2.3 of NZS 3603 for mechanically graded timber), and Dressing Grade for all finishing timber. Timber that is deemed below standard, in the opinion of the Architect/Designer, shall be removed from the site.

All non-durable timber, including components in manufactured items, shall be appropriately treated against moisture and/or insect decay by treatment plants with recognised quality assurance systems that are administered by the Timber Preservation Council (NZTPC). Treatment of timber and wood-based building products shall be to the requirements of NZS 3602 as an absolute minimum, and all treated timber shall be identified and marked as required.

Ensure that similar timbers with different treatment levels are carefully managed during construction to avoid accidental use of an H1 treated item where H3 hazard class treatment is required by the NZS 3602.

Do not use LOSP (light organic solvent-based preservative) treated timber that has not adequately 'flashed-off'.

Ensure that all cut or drilled surfaces of H4 and H5 hazard class treated timbers are flood coat re-treated, with the product recommended by the original treatment plant, before installation.

All timber shall be seasoned or kiln dried, to the stable moisture content, be straight and true and free from wind, warp and distortion, and in lengths suitable for the members required and the location in the finished construction. All framing timber shall have a moisture content between 12% and 18 % before being installed. If the use of inadequately seasoned timber results in damage or opening joints in the finished building the timber shall be replaced. Fixing of internal linings shall be delayed after closing in until the timber framing has dried back below 20% moisture content and to allow for the maximum settling of substrates.

All kiln dried, dressed and/or finishing timbers shall be stacked under cover on delivery to the site, and all timber shall be full to the nominal sizes shown or specified, subject only to normal cutting and dressing tolerances.

All finishing timber shall have machine marks, stains and roughness removed and shall be sanded smooth.

Ensure that enclosed surfaces and ends of paint-finished exterior finishing timbers are fully primed before fixing. If this trade (Carpentry) carries out the priming it shall be to the specification and standard required of the Painter.

Unless specified otherwise, exposed framing timbers shall be unfinished to the exterior, and be fine bandsawn milled, treated with a minimum of discolouration, handled carefully at all times to avoid surface damage, and delivered free of crayon or pencil or other markings. Hazard class treatment markings shall be on the ends, NOT on the faces.

5.5.2.2 Timber Species

Unless noted or specified on the drawings, in the list below, or elsewhere in this specification all timber used shall be Radiata pine.

Other timbers shall be as follows:

- Douglas Fir (*NZ Oregon, Psuedotsuga menziesii*)
- Jarrah Clears (*Eucalyptus marginata*)
- Kwila Clears (*Merbau*)
- Balau (*Shorea spp*)
- Kwila (*Merbau*)
- Cedar Clears (*Western Red Cedar, Thuja plicata*)
- Rimu - (*NZ Red Pine*)
- Vitex Clears - (*Vitex cofassus*)
- Eucalypt Saligna Clears - (*Sydney Blue Gum*)
- Tasmanian Oak - (*Eucalyptus delegatensis / obliqua / regnans*)

Note: the use of alternate grades and varieties to those specified is subject to approval in each instance.

5.5.2.3 Timber Cavity Battens

To wall areas as noted install H3.1 treated ex.50mm x 25mm timber battens to form a drained vertical cavity complying with E2/AS1 in all respects. Ensure that flexible wall underlay and flexible flashing tape are completely and correctly installed before fixing battens in place. Fix the battens with 60mm hot-dip galvanised flat head nails at maximum 400mm centres, ensuring that the batten set-out completely fulfils the cladding's fixing requirements. Install 1:12 sloping horizontal cavity spacers where required to suit claddings, keeping the ends 50mm clear of the vertical battens.

5.5.2.4 Other Materials

Materials shall be delivered to site with the packaging and labelling intact, shall be of the same type, finish or colour to maintain continuity, shall be stored, and conditioned if required, in accordance with manufacturer's recommendations, and shall be protected from damage, contamination, and moisture - as appropriate.

Handle all materials in accordance with best practice and the manufacturer's requirements, and in a manner that prevents damage or deterioration to the material. Do not use damaged or defective materials or products, or products that are beyond their designated shelf life.

5.5.3 Laminated Veneer Lumber

Laminated Veneer Lumber (LVL) shall comply with AS/NZS 4357.0. Each piece of structural LVL shall be branded at least once with the manufacturer's logo and a registered brand or marking that clearly identifies the structural properties that apply to the product and its limitations on end use; all in conjunction with associated published literature.

Structural properties identified in the associated published literature shall be:

- details of marking specific to the product
- veneer details
- physical properties including
 - modulus of elasticity

- bending stress
- tension stress parallel to grain
- compression stress perpendicular to grain
- compression stress parallel to grain
- shear stress
- joint group
- density
- dimensional tolerances
- adhesives used
- limitations on end use

The storage and handling of LVL shall comply with Appendix A of AS/NZS 4357.0. In particular:

- LVL should be kept dry during storage and transit
- LVL should be stacked on bearers well clear of the ground and arranged so that their supporting surfaces are in the one plane
- Bearers should be spaced sufficiently close so that LVL spanning between them does not deflect excessively under its own weight.
- Bearers or spacers within a stack should be located near direct vertical alignment
- Care should be taken in lifting and handling LVL in order to avoid mechanical damage
- Wrapping should avoid and prevent entrapment of moisture
- LVL should not be used in high humidity conditions or exposed to the weather.

5.5.4 Proprietary Sheet Bracing Systems

Proprietary sheet bracing systems to walls, ceilings and sub-floor foundations shall be installed in strict accordance with the manufacturer's technical literature and design guides. No materials specified in the manufacturer's technical literature and design guide can be substituted without the written approval from the Architect/Designer.

5.5.5 Proprietary Roof Trusses

Roof trusses shall be of proprietary design, complying with the requirements of NZS 3603, NZS 3604, and AS/NZS 1170, and manufactured by suitably qualified fabricators.

Make allowance for all notching and holing to timber members to accommodate roof bracing etc., in the design of member sections of the roof trusses. Allow for all additional rafters, purlins, fixings and bracing necessary to complete the roof framing system with all accessories and incidental items necessary for proper installation even where not specifically shown on the drawings.

Proprietary roof trusses shall be designed to carry all imposed gravity and lateral loads. Refer to the approved design drawings for truss set-out and specified design loads. Roof trusses are assumed to be generally at 900mm centres spanning clear between walls or roof beams as shown on the drawings. The Main Contractor is responsible for the design of proprietary roof trusses, including their layout and interaction with and dependence on adjoining elements.

Provide all necessary design information and shop drawings for all proprietary roof trusses to be incorporated in the works for review prior to fabrication.

Provide Producer Statements from a Chartered Professional Engineer covering the design and

construction of the roof trusses. Provide all information required by the Territorial Authority for the purpose of obtaining a Building Consent.

5.5.6 Fixings

5.5.6.1 Nails

Comply with the requirements of NZS 3604 Section 2.4.4 and the Nailing Schedules of NZS 3604 as applicable. Unless noted or specified on the drawings or elsewhere in this specification, all nails fixing exterior timbers shall be Grade 304 or 316 stainless steel. Nails that will be covered with plaster or any similar material shall be hot-dipped galvanised, unless noted or specified otherwise.

Finishing brads to all finishing timbers shall be set out neatly and punched to the diameter of the nail below the surface. Bore slightly undersize holes for nailing that could cause splitting of the timber. Power-driven staples are completely unacceptable in finishing timbers.

5.5.6.2 Screws

Screw fastenings shall be of suitable gauge, head type, thread design, and length to provide secure fastening into the substrate material, and be suitable for the assembly/construction of the fixed item/element and the substrate material.

Unless noted or specified otherwise, screws exposed to the exterior shall be Grade 304/316 stainless steel or hot-dipped galvanised, and hot-dipped galvanised or similar corrosion resistant for damp situations.

Self-drilling screws shall be in accordance with AS 3566 for fastener type and corrosion resistance class.

Unless noted or specified otherwise, screws fixing hardware or similar shall be of the same material and finish as the hardware. Except where raised head screws are shown or specified, screws shall be countersunk flush or recessed where stopped/filled.

5.5.6.3 Bolts

Where bolts are used they shall be complete with nuts and washers unless specified otherwise. All bolts, nuts and washers shall at least meet the durability requirements of NZS 3604 Table 4.1. Where a higher durability material is specified on the drawings, the higher durability material shall be used. The diameter of a hole for a bolt shall not be less than the bolt diameter nor exceed it by 1.5mm.

For the following bolt diameters use washer sizes as below unless noted otherwise on the drawings:

- up to M8: 25 x 25 x 1.5mm;
- up to M12: 50 x 50 x 3mm;
- up to M20: 65 x 65 x 5mm;
- up to M20: 75 x 75 x 6mm.

Round washers may be used providing they are of a thickness and area not less than those specified above.

Subfloor framing - unless noted otherwise on the drawings, cast-in holding down bolts for subfloor framing fixed to concrete foundation walls shall be M12 Grade 304 stainless steel, embedded minimum 150mm into concrete, to the spacings required by NZS 3604, and located centrally on the

timber.

Bottom plates - unless noted otherwise on the drawings, cast-in holding down bolts for bottom plates fixed to a concrete slab shall be M12 galvanised, embedded minimum 120mm into concrete, to the spacings required by NZS 3604, and located centrally on the timber.

Framing - timber/timber and timber/steel - Unless noted otherwise on the drawings, M16, hexagonal head mild steel and with 50 x 50 x 3mm washers.

Timber/concrete (dry situations) - Unless noted otherwise on the drawings, Ramset Trubolts, T12140 at maximum 900mm centres - for damp or exterior situations use stainless steel Trubolts.

Bolts shall be tightened until the washer just indents the timber surface. Exposed bolts shall be re-tightened just prior to Practical Completion to remove any slack consequent on timber shrinkage. Allow to countersink bolt heads and nuts as necessary to clear linings.

5.5.6.4 Framing Hardware

Proprietary timber framing hardware and fixings, including multigrips, joist shoes, Z nails, gang nails and similar hardware, may be used where specifically approved, or where required on the drawings or by NZS 3604 schedules, in accordance with the manufacturer's requirements.

Proprietary timber framing structural brackets and ties, including post and bearer brackets, beam supports, angle brackets, tie cleats and similar hardware, shall be as noted on the drawings and installed in accordance with the manufacturer's requirements.

Refer to Metalwork or Structural Steel section of this specification for specific design engineered fabricated steel components that connect structural timber framing.

5.5.6.5 Powder Fastening Systems

Powder powered fasteners are not permitted for fastening structural timber framing unless specifically noted on the drawings. All applications are subject to specific approval.

5.5.6.6 Adhesives

Aliphatic PVA for dry timber applications - all other adhesives for timber jointing are subject to specific approval or as specified. Check surfaces are in appropriate condition to receive adhesive, and that adhesives are used strictly in accordance with the manufacturer's instructions. Clamp adhesive-jointed timber connections and check alignment of members before the adhesive has set.

5.5.7 Flashings

Flashing materials shall be in accordance with the requirements of NZBC E2/AS1 Sections 2.2 Materials, 4.0 Flashings, Table 20 - Material Selection, Table 21 - Compatibility of Materials in Contact, and Table 22 - Compatibility of Materials Subject to run-off, and as noted on the drawings.

All flashings around windows, doors and other openings and apertures, at internal and external corners, inter-storey junctions, soffit junctions, and at junctions with other building elements and cladding systems, etc., shall all be carefully constructed, fixed and finished to the details shown on the drawings.

5.5.8 Sealants

5.5.8.1 Sealants

For critical joints such as primary water/weatherproofing seals, precast panels primary seals, structural floor slab control joints, structural glazing, immersion or hydrostatic pressure seals, etc.,

either use the sealant noted on the drawings or obtain a reputable sealant manufacturer's recommendation for the precise situation, and submit the manufacturer's specifications covering all relevant criteria and characteristics of the proposed sealant, primers, joint surfaces preparation, etc. to the Architect/Designer for review and confirmation to proceed.

If so requested, additionally submit a sample of the proposed sealant made up into a demonstration joint, incorporating the same materials, preparation, finish tooling, etc. After confirmation to proceed with the proposed sealant install a sample joint to approval, length approximately 2% of the overall length of the joints required, with a minimum length of two metres; when accepted this joint becomes the quality control sample for all subsequent similar joints.

For less critical joints such as those in covered or protected situations, and bathroom and kitchen ceramics and sanitaryware etc., either use the sealant noted on the drawings or select the sealant from a reputable manufacturer's range for the substrate materials involved, with due regard for the flexibility required, acid or neutral curing, mould resistance, paintability or clear or standard colours, slumping characteristics, temperature range expected, etc. - silicone, polymer or polyurethane sealants are anticipated.

For all simple gap-filling and draught sealing situations, either use the sealant noted on the drawings or select from a reputable manufacturer's range for a paintable acrylic sealant with good adhesion characteristics for the substrates involved - pay particular care in the sealant selection where bare metal, polycarbonate, polystyrene or similar substrates or where bituminous-based membranes are adjacent or where exposure to solvents is possible.

All joint surfaces preparation and priming and all sealant application work shall be exactly in accordance with the sealant manufacturer's recommendations, and carried out by competent and experienced applicators familiar with the materials and techniques required.

Ensure that the sealant is being used within the manufacturer's stated design parameters, particularly with regard joint design and anticipated cyclic movement.

Check that the joint faces are sound, completely dry, and frost free, clean and free of dirt, rust, oil, grease, laitance, etc., and they are primed to suit the surface porosity - particularly for critical locations.

Insert a polyethylene tape slip layer at the back of the joint or a closed cell polyethylene PEF backer rod where required and to the sealant manufacturer's recommendations. Mask off joint edges where a clean straight finish line is required.

Check the toxicity of the selected sealant and handle it appropriately. Check that the temperature during sealant installation is within the manufacturer's guidelines.

Apply the sealant and tool the filled joint's surface smooth and even, utilising a lubricant as necessary and strictly within the manufacturer's guidelines.

Remove any masking tape immediately after tooling, clean up all adjacent surfaces using the recommended cleaning agents as required, and protect the finished joint until the sealant has properly cured.

5.5.9 Interior Finishing Trim

All interior finishing trim shall be cut to the exact dimensions and fine sanded smooth, and with lightly sanded arrisses, and all fixed with plated finishing pins. Machine staple fixing is NOT acceptable.

Note that even traces of planer marks are unacceptable on architraves. Margins between interior trim and other elements shall be exactly even, and all mitres shall be exact and tight.

No scotia (all square stopped).

No architraves.

5.6 GIB® Plasterboard Sheets

5.6.1 Scope

Supply and install the selected GIB® Plasterboard sheets, complete with all accessories, as sheet lining material to the walls, ceilings and other elements identified on the drawings. All aspects of this work shall be in complete accordance with Winstone Wallboards Ltd technical literature and installation guidelines (call Winstone Helpline on 0800 100 442 or check www.gib.co.nz for the latest editions) and other relevant product manufacturers' recommendations.

Substitution of any specified GIB® system, GIB® System component or GIB® plasterboard is not permitted.

5.6.2 Performance

To the areas noted on the drawings as 'General Plasterboard Wall or Ceiling Lining', comply with all relevant aspects of the [GIB® Site Guide \(2018\)](#) publication, complete with all recommended components and accessories, and other relevant manufacturers recommendations.

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 Specification and installation manual \(2021\)](#) publication, BRANZ Appraisal No.427, and other relevant product manufacturers' recommendations. Refer to separate specification GIB Aqualine® Wet Area Systems.

Bracing Performance - GIB EzyBrace® Systems - Steel Framing. To the steel framed elements noted as 'Bracing' on the drawings, additionally comply with all relevant aspects of the latest [GIB Ezybrace® For Light Steel Frame Systems](#) publication and GIB Ezybrace® Bracing Software according to the specified bracing unit rating, and other relevant product manufacturers' recommendations. Refer to separate specification GIB EzyBrace® Systems.

Fire Rating Performance - GIB® Fire Rated Systems. To the areas noted as 'Fire-rated' on the drawings, additionally comply with all relevant aspects of the [GIB® Fire Rated Systems \(2018\)](#) publication according to the specified fire resistance rating (FRR), BRANZ Appraisal No.289, and other relevant product manufacturers' recommendations. Refer to separate specification GIB® Fire Rated Systems.

Sound Insulation Performance - GIB® Noise Control Systems. To the areas noted as 'Sound-rated' on the drawings, additionally comply with all relevant aspects of the [GIB® Noise Control Systems \(2017\)](#) publication according to the specified sound transmission class (STC) rating, BRANZ Appraisal

No.394, and other relevant product manufacturers' recommendations. Refer to separate specification GIB® Noise Control Systems.

5.6.3 GIB Plasterboard

GIB® Standard plasterboard, 10mm thick.

Location:

GIB® Standard plasterboard, 13mm thick.

Location:

GIB Aqualine® plasterboard, 10mm thick.

Location:

GIB Aqualine® plasterboard, 13mm thick.

Location:

GIB Braceline® / GIB Noiseline® plasterboard, 10mm thick.

Location:

GIB Braceline® /GIB Noiseline® plasterboard, 13mm thick.

Location:

GIB Fyreline® plasterboard, 10mm thick.

Location:

GIB Fyreline® plasterboard, 16mm thick.

Location:

5.6.4 Fixings

Fix sheets with adhesive and GIB® Grabber® drywall screws in accordance with Winstone Wallboards Ltd requirements.

Fix sheets with GIBFix® adhesive and GIB® Nails in accordance with Winstone Wallboards Ltd requirements.

GIBFix® All-Bond adhesive. Use to adhere the sheets and accessories to the framing in accordance with Winstone Wallboards Ltd requirements.

GIBFix® One. Use to adhere the sheets to the timber framing and battens in accordance with Winstone Wallboards Ltd requirements.

5.6.5 Level of Plasterboard Finish

To the areas noted as a specific Level of Finish (3-5) on the drawings, additionally comply with all relevant aspects of Winstone Wallboards Ltd literature 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.

To the areas noted as 'control joint', comply with all relevant aspects of Winstone Wallboards Ltd literature and AS/NZS 2589.

5.6.6 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.

Coordinate with other trades to ensure that appropriate clearances are allowed from adjacent internal linings, fixtures, products, and associated services, etc, that the sheets correctly allow for door and window installation, and that services penetrations are correctly handled to maintain sheet integrity.

5.6.7 Workmanship

All installation work shall be carried out by experienced tradesmen familiar with the techniques and materials specified and in accordance with the current requirements of Winstone Wallboards Ltd.

5.6.8 Delivery & Handling

Store GIB® plasterboard sheets undercover inside a watertight building and keep sheets dry at all times. Stack sheets flat on a dry level surface in accordance with Winstone Wallboards Ltd recommendations. Avoid damage to sheet edges, ends, and surfaces. Carry all sheets on edge. Do not use damaged or faulty sheets.

5.6.9 Preparation

Check that the timber framing elements are in accordance with NZS 3604, or in accordance with NZS 3603 and AS/NZS 1170 for specific design, and otherwise in accordance with the specified Level of Finish and Winstone Wallboards Ltd requirements. Framing shall be plumb and in true alignment, complete and suitable for the sheets, and maximum moisture content 18% or as recommended by Winstone Wallboards Ltd. Ensure that the framing is true to line and plane and with no projections due to structural and bracing bracketry etc. Ensure that all framing brackets, plates, braces and hold-downs etc. are correctly installed.

Check that the building has been completely finished to all penetrations including doors, windows, services, etc so that the sheets can be installed without being affected by any weather conditions. Check junctions to all other building elements and ensure that all necessary works have been completed eg. flooring, setout of services, etc. that will enable the sheets and accessories to be

installed. Clear building debris and rubbish from framing voids and keep clean until GIB sheet linings are installed.

5.6.10 Installation

Install the sheets, complete with all accessories, to the framing in accordance with the relevant Winstone Wallboards Ltd recommendations and literature, and as noted and detailed on the drawings.

5.6.11 Completion

Ensure that the sheets have been cut, fitted and joined, and fixed correctly. Check for damage and replace as necessary.

Clean up thoroughly on completion and remove all waste and rubbish from site.

Provide a copy of the Winstone Wallboards Ltd maintenance requirements to the owner.

5.7 GIB® Intertenancy Barrier Systems for Terrace Homes

5.7.1 Scope

Supply and install the specified GIB® Intertenancy Barrier Systems for Terrace Homes to the locations identified on the drawings, incorporating GIB Barrierline® central barrier 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® Intertenancy Barrier Systems for Terrace Homes Specification and Installation Manual](#) and the current GIB® Site Guide (check www.gib.co.nz, or call 0800 100 442 for the latest editions), BRANZ Appraisal No.940, other relevant product manufacturers' recommendations, and as shown on the drawings.

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

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

For the purpose of this specification, the GIB® Intertenancy Barrier System for Terrace Homes Specification and Installation Manual has been abbreviated to 'GIB® Intertenancy Manual'.

5.7.2 Requirements

5.7.2.1 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.

5.7.2.2 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.

5.7.2.3 Piped & Cabled Services

GIB® Intertenancy Barrier Systems for Terrace Homes allow installation of piped and cable services in the cavities either side of the central barrier. Refer to page 9 of the [GIB® Intertenancy Manual](#) for further information.

Only where shown and specified on the approved drawings shall penetrations be made through the GIB Barrierline® central barrier within a roof space and fire-sealed to the specified fire resistance rating. Do not permit piped or cabled services to penetrate the GIB Barrierline® central barrier under any circumstances unless clearly shown and specified on the approved drawings, or without prior written approval from the Architect/Designer.

5.7.2.4 Exposure to Elements

The construction programme must ensure that the GIB Barrierline® central barrier is left exposed to the elements for as short a time as possible. Take all necessary precautions to protect the erected central barrier from exposure to moisture and adverse weather conditions.

Once installed and in a vertical orientation, GIB Barrierline® plasterboard can be exposed to the elements for up to 12 weeks before the building is closed in.

Once installed and in a vertical orientation, 16mm GIB Fyrelite® plasterboard can be exposed to the elements for up to 4 weeks before the building is closed in.

GIB® plasterboard linings must not be exposed to water or be installed in situations where extended exposure to humidity above 90% RH can reasonably be expected. GIB® plasterboard linings must not be exposed to temperatures in excess of 52°C for prolonged periods.

5.7.2.5 Quality Assurance

Ensure that the installation and finishing of GIB® Intertenancy Barrier Systems for Terrace Homes 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.

5.7.2.6 Inspection & Acceptance of GIB® Intertenancy Barrier Systems for Terrace Homes

Carry out all necessary pre-installation, installation and finishing inspections necessary for GIB® Intertenancy Barrier Systems for Terrace Homes for each area of work in accordance with the requirements of the GIB® Intertenancy Manual, GIB® Site Guide, GIB® Systems literature.

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

Complete the [GIB® Plasterer/Stopper Installation Sign-Off Certificate](#) upon completion and before handover for subsequent decoration.

5.7.2.7 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® Intertenancy Barrier Systems for Terrace Homes 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.

5.7.2.8 Substitution of GIB® Plasterboard Linings

GIB® plasterboard linings shall be as specified herein and as indicated on the approved drawings. The substitution of GIB® branded plasterboard linings and other GIB® System components for alternative brands is not permitted under any circumstances.

The substitution of a specified GIB® plasterboard lining for an alternative GIB® plasterboard lining by the Contractor shall be in strict accordance with the requirements of the GIB® Site Guide: 2.3 - Board Substitution Options, and relevant GIB® Systems literature. Such substitutions shall only be permitted with the Architect's/Designer'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 GIB® Plasterboard Linings to satisfy design, performance and compliance requirements, then the cost of these shall be borne by the Contractor.

5.7.3 Performance

5.7.3.1 Bracing Performance

Bracing Performance - GIB EzyBrace® Systems. 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.

5.7.3.2 Fire Rating Performance

Fire Rating Performance - GIB® Fire Rated Systems. To the areas noted as 'Fire-rated' on the drawings, additionally comply with all relevant aspects of the latest [GIB® Fire Rated Systems \(2018\)](#) publication according to the specified fire resistance rating (FRR), [BRANZ Appraisal No.289 \(2018\)](#), and other relevant product manufacturers' recommendations. Refer to separate specification GIB® Fire Rated Systems.

5.7.3.3 Sound Insulation Performance

Sound Insulation Performance - GIB® Noise Control Systems. To the areas noted as 'Sound-rated' on the drawings, additionally comply with all relevant aspects of the [GIB® Noise Control Systems \(2017\)](#) publication according to the specified sound transmission class (STC) rating, [BRANZ Appraisal No.394 \(2017\)](#), and other relevant product manufacturers' recommendations. Refer to separate specification GIB® Noise Control Systems.

5.7.3.4 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 latest [GIB Aqualine® Wet Area Systems](#) publication, [BRANZ Appraisal No.427 \(2007\)](#), and other relevant product manufacturers' recommendations. Refer to separate specification GIB Aqualine® Wet Area Systems.

5.7.4 GIB® Intertenancy Barrier System

5.7.4.1 GBTLAB 60c

GIB® Intertenancy Barrier System for Terrace Homes - [GBTLAB 60c](#). Refer to the GIB® Intertenancy Manual.

5.7.5 System Components

5.7.5.1 System Components

System Components, including, but not limited to:

- GIB Barrierline®;
- 16mm GIB Fyrelime®;
- GIB® H-Stud;
- GIB® Rondo® 140 Perimeter Channel;
- GIB® Wall Clip;
- GIB® Wall Strap;
- Timber framing;
- Wall cavity insulation;
- Fire stopping consisting of treated timber battens or mineral wool cavity insulation;
- GIB® plasterboard wall linings;
- Fasteners.

Refer to pages 10-11 of the [GIB® Intertenancy Manual](#) for further information.

5.7.6 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.

Coordinate with other trades to install GIB® Intertenancy Barrier Systems for Terrace Homes to the required layout and standard, and to ensure:

- the clear distance between the GIB Barrierline® central barrier and wall framing on both sides is between 25-40mm.
- the appropriate tolerances and clearances allow for correct installation of the central barrier, mineral wool cavity insulation; and
- any building services located within the wall cavities are correctly installed to maintain the integrity and performance of the system; and
- when installed and in a vertical orientation, GIB Barrierline® is not exposed to the elements for more than 12 weeks before the building is closed in; and
- when installed and in a vertical orientation, 16mm GIB Fyrelime® is not exposed to the elements for more than 4 weeks before the building is closed in.

Refer to the GIB® Intertenancy Manual for further information.

5.7.7 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 of GIB® Intertenancy Barrier Systems for Terrace Homes 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® 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.

5.7.8 Delivery & Handling

GIB Barrierline® has a water and mould resistant core. Despite this it is important to remember that paper-faced gypsum plasterboard should only be handled when dry. Therefore GIB Barrierline® and GIB Fyrelite® must be kept dry after delivery and before installation. All GIB Barrierline® and GIB Fyrelite® pallets shall be delivered with waterproof covers fitted.

Once installed and in a vertical orientation, GIB Barrierline® plasterboard can be exposed to the elements for up to 12 weeks before the building is closed in.

Once installed and in a vertical orientation, 16mm GIB Fyrelite® plasterboard can be exposed to the elements for up to 4 weeks before the building is closed in.

Store all GIB® plasterboard ceiling and wall 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.

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 the [OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#).

5.7.9 Preparation

Carry out all necessary inspections and preparatory work to the supporting elements in accordance with the GIB® Site Guide prior to installation.

Check that all preliminary and preparatory building works have been completed to specification and as shown on the drawings.

Supporting elements and substrates for plasterboard wall linings shall be at least to the requirements of AS/NZS 2589.

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 18% at the time of installation of plasterboard linings.

Supporting concrete structures shall comply with NZS 3109, and new concrete must have aged for a minimum of 28 days prior to installation.

Supporting steel structures shall comply with NZS 3404.

The building must be fully enclosed, weathertight and suitably dry before installation of internal GIB® plasterboard ceiling and wall linings commences.

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

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.

5.8 James Hardie Linea Weatherboard

5.8.1 Scope

Supply and install Linea 150mm Weatherboards as a fibre-cement weatherboard cladding material to the walls identified on the drawings, complete with all accessories. The Linea Weatherboards are to be finished with a paint system. All aspects of this work shall be in complete accordance with the James Hardie Linea Weatherboard Technical Specification (check www.jameshardie.co.nz, or

call 0800 808 868 for the latest edition), Linea BRANZ Appraisals, and other relevant product manufacturers' recommendations.

James Hardie Linea Weatherboard [Direct Fixed](#) and [Cavity Fixed](#) Cladding is CodeMark assured with the NZ Building Code: CodeMark Certificate of Conformity No:GM-CM30018 (Rev N), issued by Global-Mark Pty Ltd.

5.8.2 Co-operation

Co-ordinate with other trades to ensure that appropriate clearances are allowed from roofing products and associated flashings etc, that the panels correctly allow for door and window installation, and that services penetrations are correctly handled to maintain full weathertightness and panel integrity.

Ensure that other trades are aware of the James Hardie Safe Working Practices.

5.8.3 Preparation

Check that the timber framing elements are in accordance with NZS 3604, or in accordance with NZS 3603 and AS/NZS 1170 for specific design, and in accordance with James Hardie requirements. Framing shall be plumb and in true alignment, complete and suitable for the weatherboards, and maximum moisture content as per NZS 3602. Ensure that the framing is true in line with no projections due to structural and bracing bracketry etc. Ensure that the bottom plate hold-downs are correctly installed.

Check that the flexible underlay or rigid air barrier has been installed in full accordance with the manufacturer's requirements and the drawings, and completely finished to all penetrations including doors, windows, services, etc. Check junctions to all other building elements and ensure that all necessary works have been completed eg. flashings etc that will enable the weatherboards and all accessories to be installed.

Check that the ground levels are sloping away from the building so that there will be no ponding water against the building, and that the ground will be remain clear of the weatherboards by at least 100mm at all times in accordance with E2/AS1.

5.8.4 Sealants

Flexible silicone sealant to be SIKA Silaflex MS. Use to seal the weatherboards and accessories in accordance with the sealant manufacturer's recommendations and to James Hardie requirements. Ensure sealant compatibility with selected finish.

5.8.5 Workmanship

All installation work shall be carried out by an LBP, or supervised by an LBP, in accordance with Linea Weatherboards Technical Specification and other relevant product manufacturers' recommendations.

5.8.6 Delivery & Handling

Carry all boards on edge. Stack boards flat on a level platform off the ground ie. use the supplied delivery pallet on level ground (if no pallet then evenly spaced bearers on level ground at 600mm crs

maximum). Keep boards and accessories dry at all times. Avoid damage to board edges, ends, and surfaces. Keep uPVC flashings etc out of direct sunlight, and store all accessories on flat and avoid damage. All installers to be familiar with and comply with the James Hardie Safe Working Practices in the Installation Manual, to use appropriate safety gear, and in particular to be aware to avoid breathing silica dust. Do not use any damaged or blemished weatherboards or accessories.

5.8.7 Installation

Fix uPVC vent strip through the flexible underlay or rigid air barrier. Ensure that the openings in the vent strip are kept clear and unobstructed at all times. Fix H3.1 timber cavity battens through the building underlay or rigid air barrier to the framing. Install the weatherboards through the cavity battens and building underlay or rigid air barrier to the framing in accordance with the Technical Specification and BRANZ Appraisal No.447, complete with all accessories eg. corner mouldings, cant strip, sealant, soakers, etc. Weatherboard end joints are to be formed off framing with a tongue & groove joint and sealant.

Ensure that all cut edges of weatherboards are primed prior to installation with Dulux 1 Step Prep, Resene Quick Dry, or similar. Ensure that the bottom edge of the weatherboard overhangs below the bottom plate by 50mm, and is clear of the ground surface by at least 100mm; the finished ground clearance shall be in accordance with E2/AS1. Install flexible flashing tape to all junctions and penetrations (including cables etc), with the addition of a pipe bandage for pipes to maintain weathertightness and air pressure resistance, and seal around.

Install H3.1 finger-jointed pine timber trim, scribes, eaves moulds, etc to complete the weatherboard junctions as shown on the drawings. Fix with jolt-head galvanised nails punched below the surface and flushed with exterior builder's fill.

5.8.8 Fixings

Fix timber cavity battens and other accessories with galvanised nails in accordance with James Hardie requirements.

Fix weatherboards and accessories with galvanised nails using the concealed nailing method in accordance with James Hardie requirements.

Fix soakers with nails in accordance with James Hardie requirements.

Optional face nail as required in accordance with James Hardie requirements.

Fix corners and vertical edges of openings with galvanised nails using the face nailing method in accordance with James Hardie requirements.

Fix timber trim with jolt-head galvanised nails punched below the surface and flushed with exterior grade builders fill.

5.8.9 Completion

Ensure that the Linea Weatherboards have been fixed correctly, that all vertical joints and accessories have been completed correctly, and that all penetrations have been taped correctly. Check that no

damage has occurred to any installed weatherboard element or associated component, replace as necessary. Check that no dirt has been mounded up within 175mm of the weatherboards, and maintain the clearance. Ensure that the weatherboards are painted within 90 days of the sheet installation, complete with all accessories and flashings. Hand over a copy of the latest edition of the Linea Weatherboard Product Warranty to the client. Hand over a copy of the latest Linea Weatherboard Maintenance Schedule to the client.

6 PLASTERWORK

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:

2311:2017(AS/NZS)	Guide to the painting of buildings
3604:2011(NZS)	Timber-framed buildings

6.3 Resene Construction Systems Plaster Cladding

6.3.1 Scope

All of the wall surfaces identified for Rockcote on the drawings, together with all associated flashings, reveals finishing and other details. Note that no substitutions are permissible for any of the products specified herein.

6.3.2 General

All materials and workmanship incorporated into the house construction by this subcontract shall be such as to qualify in every detail and respect for the Rockcote 15 year Product Performance Warranty and the Licensed Rockcote Plasterers 5 year Workmanship Warranty.

If the Cladding Plasterer considers that general conditions of previous work is unsatisfactory to ensure a proper finish for the cladding work required they shall give immediate notice to the Contractor or Designer as appropriate and shall not proceed until necessary improvements have been made. Failing such notice the Cladding Plasterer will not be relieved of the responsibility for a poor finish due to such unsatisfactory condition.

(and)

'The Contractor and Subcontractors affected shall be jointly and severally responsible for completion of the whole of the works in a completely watertight condition and shall therefore examine all details to be satisfied that this condition can be achieved. If any detail is considered unsatisfactory the Designer shall be immediately notified and they will then either interpret the detail to the Contractor's satisfaction, or accept responsibility for watertightness at the points in question, always assuming reasonable workmanship.'

6.3.3 Workmanship

All work shall be carried out by experienced and skilled PPCS (Proprietary Plaster Cladding Systems) Registered Tradesmen licensed to apply Rockcote Systems exterior cladding renders, and be in

accordance with best and latest trade practice. Ensure that all plant and tools are kept clean and free from earlier mixes.

Apply all materials and install all Rockcote and Resene sealers, renders and protective coatings in strict accordance with manufacturer's recommendations.

Carefully proportion each batch and thoroughly mix. No re-tempering of any partially set or dried material. Observe Rockcote specification requirements with regard working in direct sun and protecting work from rain or frost for 24 hours or until cured.

Arrange plastering sequence to avoid conspicuous join marks or badly set out joints in large surfaces. Properly cure all plaster to prevent shrinkage or druminess. Leave all plastered surfaces clean, sound, smooth, even and with a true finish, and free from blemishes of any kind.

6.3.4 Work

Arrange for all appropriate or required inspections by Rockcote Systems registered PPCS assessors to qualify for their 15 year warranty.

Submit a clearly identified 300 x 300mm sample of the selected texture finish and colour for signed approval of the Designer or Owner as appropriate, and do not proceed until this is returned.

Ensure that the work of other trades does not reduce the cladding to ground, deck or roof clearances that are required by the Code.

Clean up thoroughly on completion, and provide the producer statement and appropriate warranties to the main contractor. Provide on-going maintenance instructions to ensure that NZBC Durability requirements are met.

6.3.5 Preparation

Check that any other fixings, brackets or electrical or plumbing elements that in any way affect the cladding plaster system are correctly in place, are flashed or taped as required, and are appropriate for finish sealing.

Install pre-primed Rockcote uPVC flashings exactly as noted, detailed, or recommended, and saddle and apron flashings, balustrades and handrails junctions, etc. as detailed or required, using sealants, adhesives and fixings as recommended by Rockcote.

Prepare for control joints in the positions shown on the drawings and elsewhere as required to fully comply with Rockcote recommendations, and arrange for a Rockcote technical inspector to confirm that the control joints are in their appropriate positions and they are all that are required. Prepare drained movement junctions at all positions where the Rockcote abuts other materials.

Mask all adjacent windows, doors or other joinery, roofs, plumbing or electrical items, and pre-finished surfaces etc. that could possibly be marked by the render work, and use drop cloths and ground covers to keep the works area clean.

Immediately prior to applying coatings check the full substrate surfaces and brush, scrub, wash, or rasp as required to remove any dirt, dust, oxidation, formwork release agents or similar. Prime to improve adhesion or damp down to control suction before applying render on hard or smooth or absorbent surfaces.

6.3.6 Wall Structure/Substrate

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 dwangs at maximum 800mm centres, is plumb and in true alignment, includes all blocking required for cavity battens fixing at openings, joints, corners and soffits etc., and has a maximum moisture content of 18% at the time of Rockcote substrate installation.

Check that the building wrap as specified has been installed in accordance with NZBC requirements and the manufacturers recommendations, and with all finishing tapes, flashings etc. at windows, doors, corners and penetrations all correctly incorporated to provide a continuous seal.

Where the studs are at greater than 450mm centres, check that appropriate additional restraint is correctly installed to the wrap, to keep bulk insulation from pushing the wrap into the cavity.

Check that all preparatory materials are lapped such that any water will run down to the exterior.

6.3.7 Cavity Battens

Class H expanded polystyrene cavity battens.

6.3.8 Installation

6.3.8.1 50mm Integra

Install the specified ventilated cavity base strip. Install the selected cavity battens and the Integra panels exactly in accordance with all NZBC E2/AS1 requirements, BRANZ Appraisal No.681, all relevant Rockcote Specifications, and with manufacturer's recommendations.

Ensure additional cavity battens are provided for cladding junctions, openings edges, corners etc. as detailed or required. Cavity battens fixed sufficiently to hold in place until the Integra is installed.

Panel joints maximum 5mm, and 2mm notched trowel apply Rockcote Multistop bedding compound to the joints immediately before installing each panel.

Integra fixing screws as specified, or selected for corrosion zone and exposure class, with the length sufficient to go through the Integra (and rigid air barrier if one is installed) and penetrate the timber or steel by 30mm minimum. Fixings countersunk flush, at centres to suit wind zone, and at edge distances and layout as recommended by the manufacturer.

Ensure that the Integra is finished at openings, corners etc. exactly as detailed.

6.3.9 Mesh Coat

Mesh Coat applied to Integra: Rockcote PM 100 Quick Render, 4-6mm,

Plus - Rockcote Red Mesh (160 g/m², 4 x 5mm mesh),

Plus - Rockcote PM 100 Quick Render 1-2mm (floated to true surface).

Mesh Coat applied to Integra: Rockcote PM 100, applied with a notched trowel,
Plus - Rockcote LiteRock Solid Render, 8-10mm thickness minimum,
Plus - Rockcote Blue Mesh (170 g/m², 8 x 9mm mesh),
Plus - Rockcote PM 100 Quick Render 1-2mm (floated to true surface).

6.3.10 Finish

Finish Coat applied to Integra mesh coat: Apply one coat Rockcote RenderPrime,
Plus - Classico Swirl (acrylic-based texture/flexible coating) floated to desired finish.

Finish Coat applied to Integra mesh coat: Apply Tasman Fast Float (mineral-based texture) floated to desired finish,

Plus - One coat of Resene Limelock.

6.3.11 Protective Finish Coat

Protective Finish Coating applied to plastered Integra: One coat of Rockcote Armour - applied to Classico Swirl plaster finish coat.

Note: various render and texture coating combinations provide solutions for a wide range of substrates and required finishes. If in any doubt as to any particular combination consult your nearest Rockcote agent or contact Rockcote direct on 0800 507 040.

Protective Finish Coating applied to plastered Integra: Two coats of Rockcote Armour - applied to Tasman Fast Float plaster finish coat.

Note: various render and texture coating combinations provide solutions for a wide range of substrates and required finishes. If in any doubt as to any particular combination consult your nearest Rockcote agent or contact Rockcote direct on 0800 507 040.

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:

1170.2:2011(AS/NZS)	Structural design actions - Wind actions
2295:2006(NZS)	Pliable, permeable building underlays
3604:2011(NZS)	Timber-framed buildings
4200.1:2017(AS NZS)	Pliable building membranes and underlays - Part 1: Materials
4201.2:1994(AS/NZS)	Pliable building membranes and underlays - Methods of test - Resistance to wet delamination
4389:2015(AS/NZS)	Roof safety mesh
4534:2006(AS/NZS)	Zinc and zinc/aluminium-alloy coatings on steel wire
NZMRM Code of Practice	NZ Metal Roof and Wall Cladding Code of Practice - Version 3.0

7.3 Steel & Tube Profiled Metal Roofing

7.3.1 Scope

Supply and install the specified Profiled Metal Roofing from Steel & Tube to the roofs identified on the drawings, complete with all accessories. All aspects of this work shall be in complete accordance with Steel & Tube manuals and technical literature (check www.steelandtube.co.nz, or email roofing@steelandtube.co.nz or call 0800 333 247 for the latest editions), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for Steel & Tube Profiled Metal Roofing.

Steel & Tube - profiled Metal Roofing can be designed as an external wall cladding for residential, commercial & industrial buildings where the application is within the performance criteria's shown within the 'Steel & Tube Product Technical Statement'.

Extent of work:

The following is a list and/or general description of the extent of the Steel & Tube - Profiled Metal Roofing works, which are more specifically defined in the contract documents, required for the completion of the contract works:

7.3.2 Requirements

7.3.2.1 Warranty - Roofing Material

Provide a Roofing Manufacturer/Supplier Material Warranty:

- Minimum 15 Years for Perforation.
- Minimum 10 Years for Coatings.
- Provide the warranties on the Steel & Tube Standard Warranty Plus Warranty Form.
- Commence the warranty from the date of installation.

Factory Applied Coatings: The warranty is determined by the specified product and the site location and environment - contact Steel & Tube to evaluate the warranty conditions.

7.3.2.2 Warranty - Installation

Provide an Installer's Installation Warranty:

- Minimum 5 Years for Workmanship.
- Warrant this work under normal environmental conditions and use against waterproofing failure.
- Provide the Installation Warranty on the Installer's Standard Warranty Form.
- Commence the warranty from the date of installation.

Include a copy of the Steel & Tube maintenance requirements with the Installation Warranty.

7.3.2.3 Design Wind Pressure - Low Wind Zone

Design Wind Pressure - Non-Specific Design Wind Zone Classification:

- NZS 3604 Wind Zone: L = Low.
- Wind Speed: <32m/s.
- Ultimate Limit State: 0.61kPa.

Refer to the relevant Steel & Tube Product Technical Statement for wind load design parameters.

7.3.3 Roofing Profile

7.3.3.1 Plumbdek (C2)

Steel & Tube [Plumbdek](#) - a low-rib trapezoidal profile; 27mm deep; 191mm crest pitch; 26mm wide crest; 131mm wide pan; 765mm effective cover.

- Manufactured from the material type, thickness and finish as specified herein.
- The minimum roof pitch for Plumbdek is 3° (approx 1:20).
- Sheets shall be continuous from ridge to gutter; where a step is designed into the roof, sheets shall be continuous from ridge to step and step to gutter.
- Sheet ends must be stop-ended under flashings.
- Installed in accordance with the manufacturer's requirements to the locations and details shown on the drawings.

Installed Location:

7.3.4 Components & Accessories

7.3.4.1 Insulation

Roof Insulation. Refer to separate section - Insulation.

7.3.4.2 Roofing Underlay

Roof Underlay. Refer to separate specification section.

7.3.4.3 Roofing Fasteners

Roofing Fasteners. Roofing 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 roofing profile, and material and the supporting structure material; all in accordance with the NZMRM Code of Practice and Steel & Tube manuals and technical literature.

7.3.4.4 Metal Flashings

Metal Flashings. Metal roof flashings shall comply with the lap, cover, expansion and compatibility provisions of the NZMRM Code of Practice. Flashings shall be formed to suit the details shown on the drawings, and shall include all folded metal sections required to make the specified profiled metal roofing weathertight at:

- the building periphery,
- roof and wall junctions,
- changes of direction in the roof,
- intersections with other buildings,
- any wall penetration,
- junctions with other materials.

Metal flashings shall be fabricated from ductile grade metal of same material and coating as the roofing material, to maintain durability and compatibility requirements.

Metal flashings shall be designed for lateral strength by folding, stiffening or ribbing on external edges, and have a maximum un-stiffened width of 300mm.

The minimum thickness for metal flashings shall be:

- Coated steel: 0.55mm,
- Aluminium: 0.9mm,
- Copper: 0.6mm,
- Zinc: 0.7mm,
- Stainless steel: 0.45mm.

Flashing fastenings and fastening frequency shall be in accordance with the NZMRM Code of Practice. Do not fix flashings to timber with a moisture content greater than 18%.

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

Where a flashing is hidden, or is otherwise difficult to access or replace, it shall have a durability of the life of the building or not less than 50 years.

7.3.4.5 Profiled Foam Closure Strip

Profiled Foam Closure Strip. Non-bituminous, compressible, closed-cell foam strips, formed to fit the metal roofing profile. Installed in accordance with the NZMRM Code of Practice and Steel & Tube recommendations, and as shown on the approved drawings.

7.3.4.6 Sealant

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

7.3.4.7 Proprietary Collar Flashings

Proprietary Collar Flashings. Dektite® or similar approved EPDM or silicone-polymer proprietary flexible collar flashings for weatherproofing roof-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. Use only high-temperature silicone (not EPDM) collar flashings for heated flues and pipes with temperature range between 60°C - 200°C.

7.3.5 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.

Co-operate with other trades to ensure that framed roof members and/or roof substrates are in accordance with the drawings and design documentation.

Coordinate to ensure that all roof members required for ridges, hips, valleys, barges, penetrations, junctions with vertical faces, etc., are correctly installed.

Coordinate with the rainwater system installer, and generally with other trades as required, to install Steel & Tube roofing systems.

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.

7.3.6 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 or supervised by an Licensed Building Practitioner.

Roof Installers shall be experienced and competent, familiar with the products being used, and preferably a member of RANZ with appropriate qualifications such as the National Certificate in Metal

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

Install and fix in accordance with the NZMRM CoP and NZBC E2/AS1 requirements where applicable and to Steel & Tube's requirements.

Always maintain isolation of dissimilar materials in accordance with the NZMRM Code of Practice and NZBC E2/AS1. Isolate dissimilar materials (metal and nonmetal) in close proximity as necessary by painting the surfaces or fitting separator strips. Place isolators between metals and treated timber or cement-based materials. Do not use unpainted lead-sheet or copper materials to come in contact with, or allow water run-off from these onto, galvanised or Zinalume® materials.

7.3.7 Delivery & Handling

Store profiled metal roofing, flashings and accessories undercover, clear of level ground, on bearers at evenly spaced centres as recommended by the roofing manufacturer. Keep stored materials and accessories dry and protected from damage and distortion 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 material, including surface marking. Do not use damaged or defective materials or products, 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 the [Best practice guidelines for working on roofs](#) and the [OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#).

For all work undertaken on the roof, installers shall always wear soft, clean footwear with a light-coloured sole. Do not walk on translucent/natural lighting sheet roofing.

7.3.8 Installation

7.3.8.1 Roofing Underlay

Install roofing underlay in accordance with the underlay manufacturer's requirements with minimum 150mm side and end laps, and lapped such that any water will be shed to the outside of the underlay.

Non self-supporting underlay must be supported by hexagonal wire mesh, safety mesh or alternative support, as specified and/or as shown on the approved drawings, in accordance with the roofing underlay manufacturer's recommendations.

Underlay shall be installed in a manner so that it is sufficiently tensioned without sagging, overhangs fascia boards 20mm - 25mm, and finished along roof edges, ridges, valley gutters, roof/wall junctions and at penetrations to the details shown on the drawings.

Underlayment for fully-supported roofing shall be in accordance with NZMRM Code of Practice Sections 4.3.11: Separation, 11.4.2: Substrate, and 11.5.1: Ventilation.

Separate roof underlay from chimneys and flues in accordance with the requirements of NZBC Acceptable Solutions C/AS2 to C/AS6, Paragraph 7.5.9.

7.3.8.2 Roofing

Install profiled metal roofing in accordance with the NZMRM Code of Practice and as shown on the drawings, and to fully comply with all warranty requirements. As shown on the drawings, confirm any specific roofing detailing requirements prior to installation.

Accurately set-out roofing sheets exactly square to the building axis and with sheets lapped away from the prevailing wind; maintain this accurate set-out throughout installation. Check for and eliminate any creep and/or spread of sheets during installation.

Cut metal roofing and flashings by shear only – do not use abrasive cutting tools on or near the roof. Do not use black lead pencils for marking pre-finished roofing and flashings.

Prevent contact with, or run-off from, incompatible materials in accordance with the recommendations in the NZMRM Code of Practice. Observe the cladding material manufacturer's recommendations where flues discharge above roofs, and for the installation of solar heating panels. 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).

Screw-fixed sheets shall be fixed with fasteners appropriate for the roofing profile and material, substrate/structure and the environment in accordance with Steel & Tube manuals and technical literature and the NZMRM Code of Practice recommendations (minimum Class 4).

Screw fastening placement and spacings shall be strictly in accordance with Steel & Tube requirements and the NZMRM Code of Practice, to fully comply with the Wind Zone requirements, purlins spacings, etc.

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

Use fixing systems that will accommodate thermal expansion for long lengths and/or dark colours.

Clip-fastened sheets shall be fixed with concealed proprietary fastening clips appropriate for the roofing profile and material, substrate/structure and the environment in accordance with the roofing manufacturer's requirements.

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

Ridges, hips, barges and flashings generally, shall be in accordance with Steel & Tube's recommendations and Design Solutions, and the NZMRM Code of Practice.

7.3.8.3 Penetrations

Penetrations in the roofing that are greater than 150mm in any direction must have support framing installed around the perimeter of the penetration. Penetration flashings shall not rely solely on

silicone sealant to achieve weathertightness of the flashing.
Flash pipes penetrating the roofing with a proprietary pipe collar flashing.

7.3.8.4 Flashings

Install flashings to roof edges, ridges, roof/wall junctions, parapets and roof penetrations as detailed on the drawings and in accordance with the Steel & Tube manuals and technical literature and the NZMRM Code of Practice.

All flashings shall be neatly formed and finished, securely fastened to the structure, weatherproof and have falls set to avoid water ponding.

For highly visible flashings, plan each flashing joint and/or junction with specific regard to aesthetic requirements.

7.3.8.5 Cleaning

Completely clean off all drill and other swarf and pop-riquet shanks as the work proceeds (at least daily), and keep them and other rubbish out of the spoutings.

Remove trade debris from the roof and from the site progressively, and on completion leave the roof and rainwater system completely clean.

7.3.9 Completion

Check that the profiled metal roofing and associated components have been installed and finished correctly, and fully tested for weathertightness.

Check roofing for defective work, damage, surface marking, and leaks - replace and/or repair as necessary to the required standard.

Sweep down completed roof, and clean out spouting, gutters and rainwater pipes.

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

Issue to the Owner a copy of the Steel & Tube maintenance requirements upon completion of the contract works.

Issue to the Owner a copy of the cladding material manufacturer's/supplier's 'Product Warranty' for the installed metal cladding product on the Steel & Tube standard 'Warranty Plus' warranty form.

Issue to the Owner a copy of the installer's 'Installation Warranty' on the installer's Standard Warranty Form.

7.4 ARDEX Butynol® Membrane Roofing

7.4.1 Scope

Supply and install ARDEX Butynol® Membrane Roofing, as specified herein, to the locations identified 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), BRANZ Appraisal No.436, and within the conditions and limitations of the Butynol® Roofing Membranes CodeMark Certificate of Conformity, and other relevant product manufacturers' recommendations.

Butynol® Roofing Membranes are CodeMark assured to comply with the NZ Building Code - refer to CodeMark Certificate of Conformity No:CM20182, issued by Sai Global.

No substitutions are permitted for ARDEX Butynol® Membrane Roofing.

The following is a list and/or general description of the extent of the ARDEX Butynol® Membrane Roofing works, which are more specifically defined in the contract documents, required for the completion of the contract works:

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

ARDEX NZ Ltd Warranty. Warrant this work under normal use and environmental conditions, against failure of materials and application, according to the warranty conditions.

- 20 Years' Warranty Materials and Workmanship - for all ARDEX Butynol® Membrane Roofing products.
- Provide the warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of practical completion.

Include a copy of the ARDEX Butynol® Roofing Membrane 'Care & Maintenance' document with the Warranty.

7.4.2.3 Substitutions

ARDEX Butynol® Membrane Roofing products 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 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.

7.4.2.4 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, installation and finishing inspections of ARDEX Butynol® Membrane Roofing for each area of work in accordance with the requirements of industry best practice recommendations and code of practice guidelines.

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

Complete all necessary ARDEX Installation Sign-Off Certificates before handing over completed work.

7.4.2.5 Quality Assurance

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

7.4.2.6 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 Butynol® Membrane Roofing 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 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.

7.4.2.7 Flood Testing

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

7.4.3 Butynol® Membrane

7.4.3.1 Butynol® 1.0

[ARDEX Butynol® 1.0 Roofing Membrane](#). A 1.0mm thick x 1400mm wide, single-ply, flexible, synthetic rubber membrane, made of butyl rubber. Supplied in 17.86m long rolls. 1.2 kg/m² nominal weight. Black coloured. BRANZ appraised - refer to BRANZ Appraisal No.436.

Butynol® 1.0 roofing membrane is suitable for use on roofs, pedestrian decks and balconies constructed to drain water to gutters and drain outlets, on buildings complying with the structural requirements of the New Zealand Building Code, in all wind zones up to and including Extra High for buildings designed to NZS 3604:2011 or up to 3.0 kPa ULS pressure differential for specifically designed buildings (SED), and where the membrane is applied to a plywood or reinforced concrete substrate.

Where used on decks and balconies, there shall be no steps within the deck level, and no integral roof gardens, and no downpipe discharging directly onto the deck/balcony.

Butynol® 1.0 roofing membrane is designed to be fully adhered to the substrate as a single layer membrane system on roofs and decks. Do not apply Butynol® 1.0 membrane under tension.

Applied to properly prepared substrates in strict accordance with the manufacturer's installation requirements, complete with all accessories required for proper installation and performance, to the locations and details shown on the approved drawings.

Installed Location:

7.4.3.2 Butynol® 1.5

[ARDEX Butynol® 1.5 Roofing Membrane](#). A 1.5mm thick x 1400mm wide, single-ply, flexible synthetic rubber membrane, made of butyl rubber. Supplied in 17.86m long rolls. 1.8 kg/m² nominal weight. Available in Black or Dove Grey colours - *to the colour specified*. BRANZ appraised - refer to BRANZ Appraisal No.436.

Butynol® 1.5 roofing membrane is suitable for use on roofs, pedestrian decks and balconies constructed to drain water to gutters and drain outlets, on buildings complying with the structural requirements of the New Zealand Building Code, in all wind zones up to and including Extra High for buildings designed to NZS 3604:2011 or up to 3.0 kPa ULS pressure differential for specifically designed buildings (SED), and where the membrane is applied to a plywood or reinforced concrete substrate.

Where used on decks and balconies, there shall be no steps within the deck level, and no integral roof gardens, and no downpipe discharging directly onto the deck/balcony.

Butynol® 1.5 membrane is designed to be fully adhered to the substrate as a single layer membrane system on roofs and decks. Do not apply Butynol® 1.5 membrane under tension.

Applied to properly prepared substrates in strict accordance with the manufacturer's installation requirements, complete with all accessories required for proper installation and performance, to the locations and details shown on the approved drawings.

Colour:

Installed Location:

7.4.4 Ancillary Components & Accessories

7.4.4.1 Ancillary Components

As necessary, install ARDEX Butynol® roofing membranes in conjunction with the following ancillary components in strict accordance with Ardex requirements:

- [ARDEX WA 98 Adhesive](#): A high performance adhesive for bonding Butynol® membranes, including broadspan bonding and lap jointing applications, in non-aggressive or non-immersed condition exposure.
- ARDEX Seam Tape: A 50mm wide, uncured butyl, cold gum tape for the general lap bonding of Butynol® membranes. Used in conjunction with ARDEX WPM 299 Seam Primer.
- ARDEX Cover Tape (Butyseal): A 150mm wide, cured silicone backed joint tape used for the lap jointing of Butyseal membrane.
- [Ardex Detail Tape](#): A 150mm wide, self-adhesive sealing tape made of butyl rubber compound protected by a polypropylene fleece, for sealing the joint between a floor slab and wall.
- ARDEX Uncured Flashing: A 100mm wide malleable underflashing tape applied behind Butynol® membranes in corners and around pipes and penetrations.
- [ARDEX CA 20 P Adhesive Sealant](#): A multipurpose construction adhesive sealant for fixing and sealing Butynol® membrane edges into pre-formed rebates and chases.

7.4.4.2 ARDEX Rainwater Accessories

As required, or as specified or indicated on the approved drawings, install ARDEX Butynol® roofing membranes in conjunction with the following Ardex rainwater accessories in strict accordance with ARDEX requirements:

- [ARDEX Rainheads](#) - 10802, 10804, 10805, 10806: moulded, bed-mount rainwater heads with overflow. Suit 100mm or 150mm downpipe.
- [ARDEX External Rainhead](#) - 10803: moulded, external wall-mount rainwater head with metal fixing strip. Suits 100mm or 150mm downpipe.
- [ARDEX Rainwater Scuppers](#) - 10275, 10276: moulded rainwater overflow scuppers - 105mm or 210mm wide channel with 2° built-in fall.
- [ARDEX Rainwater Droppers](#) - 10784; 10785; 10786: Ø80mm, Ø100mm and Ø150mm moulded rainwater outlet droppers with a square flange.
- [ARDEX Drain Inlets](#) - 10564, 10562, 10563: Ø80mm, Ø100mm and Ø150mm, 3-piece moulded rainwater drain inlets with clamp, round flange and leaf guard.

7.4.5 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 the rainwater system installer, and generally with other trades as required, to install ARDEX Butynol® Membrane Roofing.

7.4.6 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 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, [BRANZ Appraisal No.436](#) as applicable, 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 Ardex-approved primers and adhesives compatible with the roofing membrane specified and the membrane substrate, 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.

Ensure that each section of roof is waterproofed as soon as practicable after preparatory work is complete; allow to carry out the works in several operations if necessary to comply with this condition.

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

7.4.7 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, in a weatherproof environment, on a flat, even surface, and out of direct sunlight, in accordance with the manufacturer's requirements. Keep stored materials and accessories dry and protected from damage, moisture and contamination, and away from ignition sources and open flame at all times.

Do not use damaged or defective materials and products, or products that are beyond the 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 Butynol® Membrane Roofing components and accessories in accordance with the manufacturer's requirements as set out in the relevant Technical Data Sheets, and in a manner that prevents damage to the material and does not reduce its performance.

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](#).

7.4.8 Preparation

7.4.8.1 General

Substrates shall be structurally sound, clean and dry, smooth and free of all sharp edges, loose or foreign materials, oil, grease and other materials and contaminants likely to cause damage to the 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 primers, adhesives and roofing membranes.

Check that the substrate is free of voids and depressions, and is in correct alignment - true to line and level 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 tape.

The commencement of work on each section of the membrane roofing 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.

7.4.8.2 Plywood Substrate

Plywood materials shall comply with AS/NZS 2269, and be minimum 17mm thick, H3.2 CCA treated structural grade, minimum C grade face veneer with sanded C face up, and installed and fixed exactly to the plywood manufacturer's requirements. LOSP treated plywood must NOT be used. The plywood substrate and supporting timber structure shall have a moisture content no greater than 20% when Butynol® membrane is adhered.

Plywood must be fixed using a suitable glue adhesive and with countersunk head, 10g x 50mm stainless steel screws at maximum 150mm centres along edges and maximum 200mm centres in the body of the sheets.

Install a 20 x 20mm H3.2 treated timber edge fillet at the base of any 90° internal corner and upstand. Chamfer external corners and edges with a minimum radius of 5mm.

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

Tape over all joints in the sheet substrate using an ARDEX-approved 25mm wide pressure sensitive tape prior to the application of Butynol® membrane.

Plywood Substrates - check all aspects of preparatory works, including but not limited to:

- Check that any built-in falls are at the required slope - minimum 1:30 for roofs, minimum 1:40 for decks; and minimum 1:100 for gutters (1:60 preferred).
- Check that sheets have been laid with staggered joints (stretcher bond) to falls, with joints flush and gapped 3mm apart, edges arrised, upstands filleted, with no bumps or hollows.
- Check that the plywood sheets are rigid, and fully supported on all edges, on roof framing members spaced at maximum 400mm centres unless detailed otherwise.
- Check that the plywood substrate is smooth, clean, dry and free of debris.
- Check that any protruding or exposed bare metal has been treated with a suitable corrosion-inhibiting primer.

7.4.9 Installation

7.4.9.1 General

Install ARDEX Butynol® Membrane Roofing, as specified, in strict accordance with ARDEX requirements and details, including all surface preparation and membrane application, jointing, flashing and sealing, etc., and with the use of ARDEX Butynol® components and accessories required for proper installation and performance.

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

Unroll Butynol® membrane over the substrate and allow it to relax for at least 20 minutes prior to application.

Commence membrane installation at sumps and proceed through gutters to the main deck installing the membrane up the slope from the lowest edge.

Membrane sheets shall be applied in two stages along the sheet length. Apply the membrane adhesive to the substrate only to the area where the membrane sheet will be laid, leave adhesive to activate, then fold the sheet along its length over the adhesive avoiding wrinkles and air bubbles, and thoroughly roll to achieve full bonding. Repeat the process to apply the other half of the sheet along its length. Ensure the sheet is free from wrinkles, distortion and entrapped air before applying the next sheet.

Membrane joints shall be overlapped 50mm and bonded using ARDEX Seam Primer and ARDEX Seam Tape. All membrane jointing shall be neatly finished, straight and true-to-line, and parallel with adjacent seams.

Use neatly cut strips of membrane for gutters, upstands, etc., and install ARDEX supplied preformed corners, gutter outlets, metal edge trims, etc., as required and/or indicated on the drawings to complete installation details.

Ensure unobstructed drainage flow at rainwater outlets.

Finish movement control joints to ARDEX requirements and as detailed.

Consult ARDEX regarding any detail where a standard Butynol® membrane detail does not exist.

Protect installed membrane roofing as required, avoid puncturing or damaging the membrane during installation; repair or replace as necessary.

7.4.10 Completion

Check that the ARDEX Butynol® Membrane Roofing has been installed correctly, including all membrane jointing, welding, fixing and sealing. Check that membrane edges, penetrations, rainwater outlets, movement control joints and other detailing are correctly finished.

Check the membrane installation for defects, surface damage and punctures, and repair or replace as necessary. Carry out all remedial work in accordance with ARDEX instructions to the required standard.

Where practical, flood test box gutters and low-fall decks in accordance with ARDEX requirements, and carry out any additional works necessary as a result of the testing.

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 and excess material from site.

Complete and sign the project-specific ARDEX Membrane Roofing Checklist for Project Sign-off, and the ARDEX Checklist for Roof Readiness, and the project-specific ARDEX Membrane Roofing Maintenance Programme.

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

8 ALUMINIUM JOINERY

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:

1734:1997(AS/NZS)	Aluminium and aluminium alloys - Flat sheets, coiled sheet and plate
1866:1997(AS/NZS)	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
2208:1996(AS/NZS)	Safety glazing materials in buildings
4211:2008(NZS)	Specification for performance of windows
4223.1:2008(NZS)	Code of practice for glazing in buildings - Glass selection and glazing
4223.2:2016(NZS)	Glazing in buildings - Part 2: Insulating glass units
4223.3:2016(NZS)	Glazing in buildings - Part 3: Human impact safety requirements
4223.4:2008(NZS)	Glazing in buildings - Part 4: Wind, dead, snow, and live actions
4667:2000(AS/NZS)	Quality requirements for cut-to-size and processed glass
4668:2000 (AS/NZS)	Glossary of terms used in the glass and glazing industry
AS/NZS 4666:2012	Insulating glass units

8.3 Aluminium Windows & Doors

8.3.1 Alternatives

No specific supplier is nominated, although a list of acceptable brands is given below. The Contractor shall state with their tender which brand they are using.

Thermal performance (NZBC H1/AS1) must be as required to meet the Designer's Thermal Evaluation.

APL Brands:

- Altherm
- First
- Vantage
- Smartwood
- Metro Series
- Thermal Heart
- Architectural Series
- Commercial

ASL Brands:

- Elite
- Fairview
- Residential
- Evolution
- Architectural
- Commercial

Fletcher Aluminium Brands:

- Pacific Residential
- Pacific Thermal
- Pacific Architectural
- Atlantic High Performance
- ALTI
- Nubulite
- Rylock

Nalco Brands:

- Nulook
- Bradnams

8.3.2 Installation Type**8.3.2.1 Timber Frame Installation - Cavity Construction**

All windows (and aluminium frame external doors) installation work shall be exactly in accordance with NZBC E2/AS1, the Windows Association's Windows Installation System (WANZ:WIS), and details on the drawings or supplied by the windows manufacturer.

Check framing alignment, and that window openings are square and the correct size for fitting tolerances.

Prepare framing openings by neatly cutting the building wrap at 45° into the corners, turning wrap through the frame depth and fixing to the inside face, flashing the bottom corners with moulded plastic and over-flashing the full sill and 200mm up the jambs with the specified flexible flashing tape, stapled to hold the stretched external corners. At head corners install flashing tape 200mm each way from the corners.

Install the WANZ extruded aluminium support bar with built in drainage and ventilation to NZBC E2, to provide continuous support to the window unit. Install the head cavity closer, positioned to provide a 15mm drip edge to the cladding.

Set shims or pack as necessary and install the frames exactly true and square, blocked-up off the support bar as required. Use appropriate separators between aluminium and other materials, and fix securely with due regard for any anticipated movements and for linings, trim etc.

Install the head flashing, extending 35mm up behind the cladding (and in turn over-flashed with an additional piece of wrap cover extended up under the wrap or flashing or eaves above), sloping at 15° down to the exterior, and turning down to cover the top of the aluminium frame by at least 10mm,

before finishing with a 5mm 45° 'kick out'. Upstand the head flashing ends as detailed. Install jamb flashings/ sealant or scribes as detailed.

After frames installation install closed cell backing rods as required and expanding foam air-seal the gap between framing and liners.

8.3.3 Interior Finish

GIB Groove.

8.3.4 Reveal

Timber reveals for paint finish with all sides primed.

8.3.5 Glass Platform

Double Glazed.

8.3.6 Finish

8.3.6.1 Powder Coated Aluminium - Semi Gloss

Polyester powder coating in accordance with WANZ Powder Coating Quality Assurance System and AAMA 2603-98 performance is required.

8.3.6.2 Powder Coated Aluminium - Matt

Polyester powder coating in accordance with WANZ Powder Coating Quality Assurance System and AAMA 2603-98 performance is required.

8.3.7 Hardware

Hardware colour matched to Aluminium Joinery.

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

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

8.3.8 Workmanship

These windows will be manufactured in workshops containing all mechanical equipment appropriate for the work, and by experienced and competent tradesmen who are familiar with the techniques and materials specified.

The manufacturer will co-ordinate with other trades to establish the exact sizes for all frames before fabrication. Frames and sashes will be fabricated true, square, rigid, and 'out of wind', with all joints strongly mechanically fixed, and with mitres tight and fully sealed. Potential thermal, wind and seismic movements will be accommodated within the construction. All cavities will drain to the exterior, and all drilling swarf etc. will be removed during fabrication.

Stays, hinges, running gear and glazing will be installed as scheduled (the Designer will be notified if any scheduled hardware of fixing position appears to be inappropriate for this project).

Hardware will be fixed true to line and position, and adjusted and oiled as required for correct operation.

Glass will be cut true and square, sized to provide correct edge clearances, blocked into place as required, and all units will be delivered either pressure fit, pocket glaze, or beaded/wedged, unless site glazing is required. Glazing gaskets will be compatible with all adjacent materials, and cut 1% over-length to absolutely avoid stretching during installation. Frames will be braced etc. as necessary for transportation to the site.

Flashings as detailed will be supplied. Flashing materials will be compatible with the windows.

8.3.9 Delivery and Installation

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

Arrange for delivery of windows to the site only when a suitable storage situation is available for them, handle the windows in accordance with the manufacturers requirements, avoid any frame distortion, avoid rubbing damage, avoid contact with concrete, plaster, mud etc. and keep them dry. Retain protective coverings for as long as possible, and remove them at completion.

Experienced and competent tradesmen who are familiar with the techniques and materials specified shall carry out all installation work. Fix in accordance with the manufacturer's instructions. Take utmost care to avoid damage to anodized or powder coated surfaces - correction of any such disfigurement requires written authority - replace any badly damaged items.

Use fixings compatible with the materials involved, as recommended by the windows manufacturer and to comply with the DWP requirements, basically aluminium or Type 316 stainless steel where exposed externally; galvanized to AS/NZS 4680, 610g/m², may be used where not exposed.

Thoroughly check all preparatory work to openings prior to installation, including underlay, corner seal tapes, adjacent cladding, pre-installed flashings, waterproofing systems etc. as appropriate. Use inert barriers or coatings to prevent contact between dissimilar metals or between aluminium and concrete.

Install flashings as detailed and supplied by the windows manufacturer, installed tightly and neatly with absolute minimum tolerances, with head weathering jamb, jamb weathering sill, and sill open (draining) to exterior. Except where the window is recessed all head flashings shall extend 30mm minimum beyond the frame.

Air-seal all frame perimeters to adjacent structure to a depth of 15 - 20mm with expanding foam or appropriate sealant including a PEF rod at head, sill and jambs to retard the spread of sealant.

Weather-seal frame jambs etc. to adjacent surfaces (or to each other) as detailed or as required by the windows manufacturer, to achieve a fully watertight installation. In preparation for sealant the joints shall be clean, dry, and primed if necessary. Insert closed cell polyethylene backer rods or a polyethylene tape slip layer if required. Mask adjacent surfaces if appropriate, install the sealant fully in accordance with the sealant manufacturer's recommendations, and finish to even smooth surfaces.

Remove trade debris progressively, appropriately clean any affected adjacent surfaces, thoroughly clean the windows, check that all hardware is in full working order, and provide safety indication of the glass for the balance of adjacent works.

9 GLAZING

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:

1170.0:2002(AS/NZS)	Structural design actions - Part 0: General principles
2208:1996(AS/NZS)	Safety glazing materials in buildings
3604:2011(NZS)	Timber-framed buildings
4211:2008(NZS)	Specification for performance of windows
4223.1:2008(NZS)	Code of practice for glazing in buildings - Glass selection and glazing
4223.2:2016(NZS)	Glazing in buildings - Part 2: Insulating glass units
4223.3:2016(NZS)	Glazing in buildings - Part 3: Human impact safety requirements
4223.4:2008(NZS)	Glazing in buildings - Part 4: Wind, dead, snow, and live actions
4232.2:1988(NZS)	Performance criteria for fire resisting enclosures - Part 2: Fire resisting glazing systems
4667:2000(AS/NZS)	Quality requirements for cut-to-size and processed glass
4668:2000 (AS/NZS)	Glossary of terms used in the glass and glazing industry
AS/NZS 4666:2012	Insulating glass units

9.3 Non-Structural Glazing

9.3.1 Scope

Supply and install the selected glass products to the windows, doors, curtain wall systems, roofs and canopies, balustrades and barriers, partitions and screens, and other non-structural glazing elements, as noted and shown on the drawings. All aspects of this work shall be in accordance with the glass manufacturer's installation requirements and recommendations, other relevant product manufacturers' recommendations, and as shown on the drawings.

9.3.2 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 for all necessary holes and cut-outs, etc., for glass-mounted hardware, fittings and fixtures, and to install all glass and glazed elements as required.

9.3.3 Workmanship

All installation work shall be carried out by experienced and competent tradesmen familiar with the products specified and installation techniques, to the manufacturer's requirements and recommendations, and the requirements of the relevant Glazing Standards, and to the layout and details shown on the drawings.

Handle and store glass in accordance with the manufacturer's recommendations.

Provide temporary safety markings to all glass panes as the installation work progresses.

Finish all external glazing wind and watertight.

Do not use damaged, marked or faulty materials.

9.3.4 Glass Type

9.3.4.1 Clear Float Glass

Clear Float Glass. Clear annealed float glass, complying with AS/NZS 4667 and in accordance with NZS 4223.1. Installed to the locations identified on the drawings and schedules.

Manufacturer, brand name & type:

9.3.4.2 Obscure & Patterned Glass

Obscure and Patterned Glass. Surface patterned glass and/or obscure glass, complying with AS/NZS 4667 and in accordance with NZS 4223.1. Installed to the locations identified on the drawings and schedules.

Manufacturer, brand name & type:

9.3.4.3 Toughened Safety Glass

Toughened Safety Glass. Toughened Grade 'A' Safety Glass, complying with AS/NZS 2208 and AS/NZS 4667 and in accordance with NZS 4223.1. Installed to the locations identified on the drawings and schedules. All cutting and drilling and other processing requirements must be done prior to toughening.

Manufacturer, brand name & type:

9.3.5 Insulating Glass Units

9.3.5.1 Standard Double Glazing

Standard Double Glazing. Air-filled and sealed insulating glass units (IGUs) complying with NZS 4223.2, with clear float glass complying with NZS 4223.1. Double glazed IGUs shall be manufactured and installed in accordance with AS/NZS 4666. Factory-fitted to the windows and doors identified as 'double glazed' on the drawings and schedules.

9.3.6 Components & Accessories

9.3.6.1 Aluminium Framed Glazing

Provide all necessary glazing components and accessories including glazing tape, setting and distance blocks, sealants, gaskets, etc., to complete aluminium framed glazing as required.

9.3.7 Installation

9.3.7.1 Aluminium, Double Glazed (IGU's)

Install Insulated Glass Units into aluminium frames in accordance with the glazing manufacturer's recommendations and NZS 4223.1, and as detailed.

9.3.8 Completion

Check that all glass has been installed correctly to the required standard and as shown on the drawings. Check for damage and surface marking and replace as necessary. Clean off and remove all temporary safety markings, as programmed and when instructed, and leave glass trade clean.

Remove all rubbish and waste material from site.

Issue to the Owner a copy of the Glass Manufacturer's maintenance requirements and all necessary Manufacturer Warranties.

10 INSULATION

10.1 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.

10.2 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

10.3 Pink Batts Insulation

10.3.1 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. All aspects of this work shall be in complete accordance with Tasman Insulation technical information and installation requirements (check pinkbatts.co.nz, call 0800 746 522, or email customer@pinkbatts.co.nz for the latest editions), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for Pink® Batts® Insulation.

Pink® Batts® insulation is certified under the GREENGUARD Certification Program (UL 2818). Being certified for indoor air quality gives an assurance that products meet strict chemical emissions limits (including minimal levels of VOCs and formaldehyde), to help create healthier indoor environments.

The following is a list and/or general description of the extent of the Pink® Batts® Insulation works, which are more specifically defined in the contract documents, required for the completion of the contract works:

10.3.2 Requirements

10.3.2.1 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.

10.3.2.2 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.

10.3.2.3 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.

10.3.2.4 Inspections

Carry out all necessary pre-installation and pre-line inspections of Pink® Batts® Insulation for each area of work in accordance with the requirements of industry best practice recommendations and manufacturer guidelines.

Complete a Pre-Installation Checklist prior to installation, and a Pre-Line Checklist before handing over for subsequent work.

Note: Pink® Batts® checklist applies only to Pinkfit.

10.3.3 Wall Thermal Insulation

10.3.3.1 Pink® Batts® Ultra® R2.8 Wall

[Pink® Batts® Ultra® R2.8 Wall](#) - product code 7127128. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-2.8. 90mm thick x 560mm wide x 1140mm long segments.

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.

Pink® Batts® Ultra® R2.8 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:

10.3.4 Ceiling Thermal Insulation

10.3.4.1 Pink® Batts® Ultra® R4.0 Ceiling

[Pink® Batts® Ultra® R4.0 Ceiling](#) - product code 7110140. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-4.0. 195mm thick x 432mm wide x 1220mm long segments.

Pink® Batts® ceiling insulation is a lightweight flexible glasswool insulation product 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® Ultra® R4.0 Ceiling is BRANZ Appraised - refer to BRANZ Appraisal No.238.

Pink® Batts® Ultra® R4.0 Ceiling is licenced with Environmental Choice New Zealand: Thermal Building Insulants [Licence No.2504017](#).

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

Installed Location:

10.3.5 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 trades to install Pink® Batts® Insulation as required.

10.3.6 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.

The building envelope must be fully enclosed and weatherproof, with construction materials framing at or below the required moisture content, before insulation installation commences.

All installation work shall be carried out by registered PinkFit® 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.

Carry out all necessary pre-installation and pre-line inspections of Pink® Batts® Insulation for each area of work in accordance with the requirements of industry best practice recommendations and the manufacturer's guidelines. Inspect all Pink® Batts® insulation work before it is closed off with linings or made inaccessible.

Insulation should be installed without leaving gaps or compressing the material. Always maintain full insulation thickness to ensure that the stated thermal and acoustic values are achieved. Do not install insulation into closed cavities with a cavity depth less than the insulation's stated thickness.

10.3.7 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.

Do not use damaged or defective materials.

Should a problem be encountered with any Pink® Batts® Insulation product, immediately contact Pink® Batts® on 0800 746 522. Do not continue to use the product that is not performing to specification or expectation. Keep the product in question and where possible, the bale package documentation with batch number and/or date of manufacture.

Handle Pink® Batts® Insulation products in accordance with the manufacturer's requirements and in a manner that prevents damage to and contamination of the product. Ensure installed Pink® Batts® Insulation remains dry at all times.

Installers shall be familiar with and comply with the manufacturer's [Safety Data Sheet](#) precautions for use, and use recommended 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](#).

10.3.8 Installation

10.3.8.1 General

Install Pink® Batts® Insulation in accordance with NZS 4246 and the manufacturer's requirements.

Each installation is unique, so prior to installation:

- check for all hazards that may cause injury; and
- carry out any required repair work before starting installation; and
- ensure there's adequate lighting to identify any hazards; and
- treat all electrical cables as live, being careful not to cut or expose cables and wires; and

- beware of other sharp objects (protruding nails, splinters etc.), pests (bees and wasps), loose boards and pipe work.

10.3.8.2 Pink® Batts® Ceiling - Truss/Framed Roof

Pink® Batts® insulation segments shall be oversized by no more than 10mm wider than the ceiling framing spacings.

Lay the insulation segments over the ceiling, friction fitted between the ceiling joists/truss chords, ensuring there is no undue compression, gaps, creases, tucks or folds in the insulation.

Firmly butt all insulation segment joins together, ensuring there are no gaps, and maintain full thickness of the insulation to ensure maximum thermal performance.

Cover the entire ceiling, including the outer edge of the top plate of external walls - the insulation must cover at least 50% of external top plates.

Maintain a minimum 25mm clearance between the top of the ceiling insulation and any roofing material, including underlay. If required, trim the insulation or use a thinner product around the perimeter.

Ensure that the appropriate clearances are maintained for electrical equipment, heating and ventilation equipment, heated flues and pipes, etc. Where possible, place insulation beneath electrical wiring and plumbing. Take extreme care when working around exposed electrical cables - treat all cables as live.

10.3.9 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.

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.

11 TILING

11.1 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.

11.2 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:

2358:1990(AS)	Adhesives - For fixing ceramic tiles
3103:1991(NZS)	Specification for sands for mortars and plasters
3122:2009(NZS)	Specification for Portland and blended cements (General and special purpose)
3661.2:1994(AS/NZS)	Slip resistance of pedestrian surfaces - Part 2: Guide to the reduction of slip hazards
3740:2010(AS)	Waterproofing of domestic wet areas
4586:2004(AS/NZS)	Slip resistance classification of new pedestrian surface materials
4858:2004(AS/NZS)	Wet area membranes
BRANZ Good Practice Guide	Tiling
NZBC B2/AS1	Durability
NZBC D1/AS1	Access Routes
NZBC E3/AS1	Internal Moisture

11.3 Tiling

11.3.1 Scope

Supply, install and finish all Tiling works, complete with all necessary components and accessories required for proper installation and performance, as specified herein and to the locations, layouts and details shown on the approved drawings. All aspects of this work shall be carried out to comply with the New Zealand Building Code and relevant standards, and in accordance with the approved project design documentation, and with any relevant product manufacturers' technical literature.

The following is a list and a general description of the extent of Tiling work, which are more specifically defined in the contract documents, required for the completion of the contract works:

11.3.2 Requirements

11.3.2.1 Quality Assurance

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

11.3.2.2 Inspection & Acceptance of Tiling Work

Carry out all necessary pre-installation, installation and finishing inspections of Tiling for each area of work in accordance with the requirements of industry best practice recommendations and code of practice guidelines.

Complete all necessary Pre-Installation/Application Checklists prior to installing proprietary under-tile waterproofing systems and heating systems and floor levelling systems, and relevant Installation/Application Checklists.

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

11.3.2.3 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. Rejected Tiling 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.

11.3.2.4 Provision for Spare Tiles

Provision for Spare Tiles - refer to Reserve Material clause.

11.3.3 Performance

11.3.3.1 Slip-Resistance Performance of Access Routes

Slip-Resistance Performance of Access Routes. The slip-resistance performance of tiled access routes, ramps and stairs shall comply with the requirements of NZBC D1/VM1 and NZBC D1/AS1.

11.3.3.2 Interior Wet Area Performance

Interior Wet Area Performance. The performance of tiled interior wet areas shall comply with the requirements of NZBC E3/AS1.

11.3.4 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 tiling as required, and to ensure that:

- appropriate tolerances and clearances allow for adjacent finishes, fixtures and fittings, etc; and
- penetrations for piped and cabled services are correctly located to maintain tile integrity and tiling performance.

11.3.5 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.

All Tiling work shall be carried out to best trade practice by qualified and experienced tradespersons, familiar with the specified materials and installation and finishing techniques, in accordance with AS

3958.1 and relevant product manufacturers' technical literature, to the layout and details shown on the approved drawings, and to fully comply with all warranty requirements.

Submit evidence of experience on request, e.g. National Certificate in Floor and Wall Tiling, or certified member of Master Plasterers and Tilers Association.

All substrate preparation, tile laying and tiling accessories application and finishing techniques shall be exactly as recommended by the specified product manufacturer. All work shall be such as to leave a neat, efficient and robust installation.

Interior wet-area tiling shall be waterproof and installed over a waterproof membrane as shown on the drawings.

Exterior floor tiling shall be waterproof and weathertight, and where necessary installed over a waterproof membrane as shown on the drawings.

As recommended by the tile manufacturer, use only an approved adhesive that is compatible with the specified tile, its substrate and its application/use.

Where necessary, delay tiling to allow maximum curing and settling and initial creep of the substrates, particularly to load bearing structural elements.

Do not cover or bridge movement control joints with tiles and tile underlay.

Tiling shall not be undertaken when the ambient and surface temperatures are outside the specified product manufacturer's permissible temperature range.

Where necessary, mask off and protect from contamination adjacent surfaces, joinery, fixtures and finished work before commencing.

Exterior tiling shall not be undertaken during inclement weather. As necessary and in accordance with the manufacturer's requirements, protect exterior tiling from rain, hot dry winds and direct sunlight to aid proper drying and curing.

Leave all tiled surfaces clean, sound, and free from blemishes of any kind.

11.3.6 Delivery & Handling

Upon delivery to site, inspect the tile packs and reject those items that are found to be damaged, defective or contaminated. Contact the supplier for replacement of rejected items at time of delivery to site.

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

Store all tiling materials undercover, in a weatherproof environment, off the floor, on a flat, even and level surface in accordance with the manufacturer's requirements. Keep products and materials dry, out of direct sunlight and protected from damage, moisture and contamination at all times.

Handle tiling materials in accordance with the manufacturer's requirements and in a manner that prevents damage to and contamination of the materials and works.

Installers shall be familiar with and comply with all associated product 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 [Worksafe Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#).

11.3.7 Preparation

11.3.7.1 General

All substrates to be tiled shall be structurally sound, even and smooth, clean, dry, and free from dirt, dust, grease, oil, wax, paint residue, loose plaster and laitance, curing compounds and other materials and contaminants likely to affect the bonding and performance of the specified tile adhesive and grout.

Carry out all necessary moisture readings of substrates. Do not commence installation until the moisture readings for the whole area are below the required level.

Carry out all necessary substrate inspections and preparatory work in accordance with the relevant product manufacturer's recommendations prior to application.

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

Confirm the location of any movement control or crack control joints prior to commencement of the works, and ensure that they are appropriately trimmed. Do not cover or bridge movement control joints with tiles, adhesive and grout.

Allow self-levelling underlayments and mortar screeds to properly cure in accordance with the manufacturer's recommendations before commencing tiling.

Allow new concrete substrates to cure for at least four weeks prior to tiling.

Ensure that the back of each tile is clean and free from dust or other contaminants prior to laying.

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

11.3.7.2 New Particle Board Floor

New Particle Board Floor - check all aspects of preparatory works, including but not limited to:

- Check that the sheets have been installed, jointed and fixed in accordance with the manufacturer's requirements and indicated on the drawings, and that all sheet edges are fully supported.
- Check that the sheet joints are flush and even, and that all fixings are countersunk and filled with a compatible filler.
- Using a proprietary levelling compound, repair flush with smooth, feathered edges any damaged areas in the floor surface.
- Mechanically sand to remove all surface irregularities and contaminants likely to affect adhesion.
- Leave the surface completely clean and free of dust and contaminants, then fully prime the substrate with an appropriate primer in accordance with the particle board manufacturer's recommendations.

11.3.7.3 Plasterboard Wall Lining

Plasterboard Lining - check all aspects of preparatory works, including but not limited to:

- Check that the plasterboard sheets have been installed in accordance with the manufacturer's requirements, are supported on all edges on framing, are securely fastened, and that all joints and junctions have been stopped flush with reinforcing tape embedded in the jointing compound.
- 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.

11.3.8 Installation

11.3.8.1 Floor Tiles

Floor Tiles. Install floor tiles by direct-stick method to clean, dry and properly prepared substrates in accordance with AS 3958.1 and the adhesive manufacturer's instructions. Accurately set-out and lay tiles to the layout and details shown on the drawings. Confirm the floor tile layout and pattern requirements prior to installation.

As required by the adhesive manufacturer, seal or prime porous substrates or substrates where dusting or powdering exists. The use and application of adhesive shall be exactly to the adhesive manufacturer's instructions.

All tile cutting, boring and shaping shall be carried out using appropriate tools and equipment and methods suitable for the tile type and in accordance with the tile manufacturer's recommendations. Only install cut tiles that have smooth, uniform cut edges - do not use tiles with jagged or flaked edges.

Mechanically mix powdered adhesive at the recommended ratio with clean potable water to a smooth, lump-free paste in accordance with the manufacturer's requirements. Do not mix more than can be used within the specified open time.

Apply tile adhesive evenly using a suitably notched trowel to properly prepared substrates in accordance with the manufacturer's instruction.

- Do not apply more adhesive than can be covered within the specified open time.
- Do not over spread the adhesive, and avoid surface skinning - particularly when used in unfavourable conditions such as direct sunlight, wind and/or high temperatures.
- Ensure to follow the adhesive manufacturer's recommended setting and curing periods.

Lay floor tiles into adhesive to achieve maximum contact and bonding before skinning occurs. Re-trowel any adhesive that has skinned - do not apply water to skinned adhesive. Where necessary, back-butter tiles with adhesive to ensure maximum contact and bonding - do not spot-fix floor tiles.

Floor tiles shall be laid so that the finished surface and edges are true and even, level and/or to the falls shown on the drawings, and finished flush with adjoining finished work as appropriate or as detailed.

Tile joints shall be to the required layout, uniform, accurately aligned, straight and true to line, and set even and parallel to the specified joint width.

Where indicated on the drawings, return floor tiles along walls, upstands, toe spaces, etc., to the height and details shown on the drawings.

Remove excess adhesive from tile joints as each tile is laid to ensure full depth grouting can be achieved, and leave the tile surface completely clean.

11.3.8.2 Wall Tiles

Wall Tiles: Install wall tiles by direct-stick method to clean, dry and properly prepared substrates in accordance with AS 3958.1 and the adhesive manufacturer's instructions. Accurately set-out and lay tiles to the layout and details shown on the drawings. Confirm the wall tile layout and pattern requirements prior to installation.

As required by the adhesive manufacturer, seal or prime porous substrates or substrates where dusting or powdering exists. The use and application of adhesive shall be exactly to the adhesive manufacturer's instructions.

All tile cutting, boring and shaping shall be carried out using appropriate tools and equipment and methods suitable for the tile type and in accordance with the tile manufacturer's recommendations. Only install cut tiles that have smooth, uniform cut edges - do not use tiles with jagged or flaked edges.

Mechanically mix powdered adhesive at the recommended ratio with clean potable water to a smooth, lump-free paste in accordance with the manufacturer's requirements. Do not mix more than can be used within the specified open time.

Apply tile adhesive evenly using a suitably notched trowel to properly prepared substrates in accordance with the manufacturer's instruction.

- Do not apply more adhesive than can be covered within the specified open time.
- Do not over spread the adhesive, and avoid surface skinning - particularly when used in

unfavourable conditions such as direct sunlight, wind and/or high temperatures.

- Ensure to follow the adhesive manufacturer's recommended setting and curing periods.

Press wall tiles into adhesive to achieve maximum contact and bonding before skinning occurs. Re-trowel any adhesive that has skinned - do not apply water to skinned adhesive. Where necessary, back-butter tiles with adhesive to ensure maximum contact and bonding - do not spot-fix wall tiles.

Wall tiles shall be installed so that the finished surface and edges are true and even, level, and finished flush with adjoining work as appropriate or as detailed.

Tile joints shall be to the required layout, uniform, accurately aligned, straight and true to line, level and plumb, and set even and parallel to the specified joint width. Use proprietary tile spacers, sized for the specified joint width, to ensure accurate jointing.

Form internal and external wall corner junctions true and plumb and with tile joints continued around corners level and true.

Remove excess adhesive from tile joints as each tile is laid to ensure full depth grouting can be achieved, and leave the tile surface completely clean.

11.3.8.3 Edge Trim

Edge Trim. As required and indicated on the drawings, install all necessary tiling edge trim - including edge cappings, corner mouldings, transition strips, etc., - all neatly finished, accurately aligned and true, to the required layout and as detailed on the drawings.

11.3.8.4 Stairs & Steps

Stairs & Steps. Accurately lay tiles to steps and stair treads, risers and landings as detailed on the drawings. Finish tiles neatly along tread/riser junctions and against trim. Ensure that the tile joints on treads and risers are aligned, straight and true along each stair flight. As indicated on the drawings, install nosing tiles or proprietary stair-nosings to treads.

11.3.8.5 Movement Control Joints

Movement Control Joints. Form movement control joints in tiling to the locations and details shown on the drawings and in accordance with AS 3958.1.

Movement control joints in tiling shall coincide with control joints in the substrate and structure, and at junctions between dissimilar substrates and other surface finish materials in the same plane.

Ensure to carry movement control joints through tiling from the substrate. Do not bridge movement control joints with underlayment, membranes, adhesive or tiles.

Seal movement control joints after grouting with the specified flexible sealant in accordance with the sealant manufacturer's instructions and as detailed.

Proprietary movement control joints shall be installed in strict accordance with the manufacturer's instructions and to the layout and details shown on the drawings. Finish tiling against proprietary movement control joints as detailed.

11.3.8.6 Grouting

Grouting. Grouting shall be in accordance with the grout manufacturer's requirements and recommendations. Coloured grout shall be to the colour specified.

Prior to grouting, ensure that the tile adhesive has completely set, and that the tile joints are clean, dry and free from excess adhesive and any foreign material. Rake out any excess adhesive from joints to ensure a maximum, uniform grout joint is achieved. Tile spacers must be removed prior to grouting.

Mechanically mix powdered tile grout with clean water at the required ratio to a smooth, lump-free paste in accordance with the manufacturer's requirements. Do not mix more than can be used within the manufacturer's specified open time. Ensure to follow the manufacturer's recommended drying and curing periods.

Apply tile grout evenly with a rubber squeegee or grouting float, ensuring that the tile joints are completely filled and smoothed to a dense, uniform surface. Do not spread more grout than can be cleaned within the specified open time. Remove excess grout immediately. In hot or windy conditions, dampen the joints to prevent the grout from drying out too quickly.

Clean the tiles with a damp sponge when the grout joints have firmed, making sure not to wash-out the joints. Finish grout joints to a smooth, uniform effect and leave grout free of pin holes and blemishes.

Allow grout joints to dry before cleaning with a clean, dry, soft cloth, to completely remove any grout haze and residue from the surface of the tiles.

11.3.8.7 Protection

Protection. Take all necessary measures to protect exterior tiling from the extremes of weather and climate during the fixing and grouting operation and for as long as possible thereafter.

Keep the working area cordoned off during the whole tiling installation. Protect completed tiling from excessive loads, damage and contamination until hand-over or as directed.

Restrict foot traffic from completed floor tiling in accordance with the tile manufacturer's time frames for 'set-to-light-foot-traffic' and 'ready-for-service-use'.

Where necessary, cover completed floor tiling with a heavy-duty temporary floor protection such as Ovaboard, Ram Board, Buffalo Board; laid in accordance with the manufacturer's requirements.

Protect exterior tiling, immediately after laying and grouting, from rain and moisture for at least 24 hours, and from frost and strong sunlight after laying in accordance with the tile adhesive and grout technical specifications.

11.3.9 Completion

Check that all Tiling work has been correctly installed to the required layout, and that all tile joints, edge-trimming and other detailing is correctly finished, grouted and sealed.

Check all Tiling installations for damage, marks and defects - repair or replace as necessary. Carry out any repairs to the required standard.

Thoroughly clean tiled surfaces in accordance with the manufacturer's recommended procedures and techniques. Lightly buff where appropriate.

Leave this work complete and to the required standard, and in accordance with the associated warranty requirements.

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

Protect the completed installation from damage, trafficable dirt and grime, and stains as necessary until hand-over as scheduled or directed.

Issue to the Owner a copy of all relevant product manufacturers' maintenance requirements, and a copy of relevant manufacturer Product Warranties and the installer/applicator Installation Warranty for the installed products and completed works.

12 PLUMBING

12.1 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.

12.2 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:

1221:1997(AS/NZS)	Fire hose reels
1254:2010(AS/NZS)	PVC-U pipes and fittings for stormwater and surface water applications
1260:2017(AS NZS)	PVC-U pipes and fittings for drain, waste and vent applications
1477:2017(AS NZS)	PVC pipes and fittings for pressure applications
1546.1:2008(AS/NZS)	On-site domestic wastewater treatment units - Septic tanks
1596:2014(AS/NZS)	The storage and handling of LP Gas
2032:2006(AS/NZS)	Installation of PVC pipe systems
2033:2008(AS/NZS)	Installation of polyethylene pipe systems
2492:2007(AS/NZS)	Cross-linked polyethylene (PE-X) pipes for pressure applications
2537.1:2011(AS/NZS)	Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications - Part 1: Plastics piping systems for hot and cold water installations - Crosslinked polyethylene (PE-X) - General
2642.2:2008(AS/NZS)	Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications
2712:2007(AS/NZS)	Solar and heat pump water heaters - Design and construction
3500.1:2015(AS NZS)	Plumbing and drainage - Part 1: Water services
3500.1:2018(AS NZS)	Plumbing and drainage Part 1: Water services
3500.2:2015(AS NZS)	Plumbing and drainage - Part 2: Sanitary plumbing and drainage
3500.2:2021 (AS NZS)	Plumbing and drainage Part 2: Sanitary plumbing and drainage
3500.3:2018(AS NZS)	Plumbing and drainage Part 3: Stormwater drainage
3500.4:2015(AS NZS)	Plumbing and drainage - Part 4: Heated water services
3500.4:2018(AS NZS)	Plumbing and drainage Part 4: Heated water services
3501:1976(NZS)	Specification for copper tubes for water, gas, and sanitation
4020:2018(AS NZS)	Testing of products for use in contact with drinking water
4121:2001(NZS)	Design for access and mobility: Buildings and associated facilities
4517:2010(NZS)	Fire sprinkler systems for houses
4602:1988(NZS)	Low pressure copper thermal storage electric water heaters

4603:1985(NZS)	Installation of low pressure thermal storage electric water heaters with copper cylinders (open-vented systems)
4606.1:1989(NZS)	Storage water heaters - General requirements
4607:1989(NZS)	Installation of thermal storage electric water heaters: valve-vented systems
4613:1986(NZS)	Domestic solar water heaters
4614:1986(NZS)	Installation of domestic solar water heating systems
4617:1989(NZS)	Tempering (3-port mixing) valves
4692.1:2005(AS/NZS)	Electric water heaters - Energy consumption, performance and general requirements
5601.1:2013(AS NZS)	Gas installations - Part 1: General installations
7602:1977(NZS)	Specification for polyethylene pipe (Type 5) for cold water services
7643:1979(NZS)	Code of practice for the installation of unplasticized PVC pipe systems
7646:1978(NZS)	Specification for polyethylene pipes and fittings for gas reticulation
AS/NZS 3500.5:2012	Plumbing and drainage - Part 5: Housing installations
NZBC B2/AS1	Durability
NZBC G11	Gas as an Energy Source
NZBC G12	Water Supplies

12.3 General

Carry out all works necessary to leave the water, waste, vent and soil systems serving the sanitary fittings and the plumbing hardware shown on the drawings or specified below in correct working order complete with all ancillary systems (safetrays, floor drains, overflows, relief valves, etc.) required, and with all normal incidentals customarily installed by this trade.

Comply with the Building Code, Territorial Authority By-laws and statutory authority Regulations as appropriate. Obtain all necessary permits and consents, serve all necessary notices, arrange for all tests and pay all fees and customary charges in connection with the required works.

12.4 Workmanship

12.4.1 Co-operation

Co-operate with all other trades. Attend upon Concretor, Drainlayer and Carpenter to set out the exact positions of pipe runs before adjacent work is put in hand, and to ensure that all pipes, sleeves, fixings, flashings etc. are correctly incorporated into the structure as construction proceeds.

12.4.2 Workmanship

All plumbing work shall be carried out by, or under the direct control of, properly qualified tradesmen, and shall be to recognised high standards.

Observe best local trade practice to avoid problems which arise from freezing winter conditions.

The cutting away and checking of timbers shall be limited to such dimensions as will not prejudice the purpose for which the timber is used; observe NZS 3604 restrictions on the holing and checking of joists and beams. Chasing and checking of other materials only to approval. Install seismic restraints to storage tanks and HWCs.

Weatherseal wherever pipes, screws, bolts or other fastenings penetrate an external surface, and particularly roofing; seal with gaskets, flashings (and overflashings if necessary) or mastic as appropriate - any damage that results from failure of such seals will be made good at the Plumber's expense.

Adequately protect all surfaces. Any damage to fittings or surfaces made good by the appropriate trade at the Plumber's expense.

12.4.3 Pipework

Joints between pipes of different materials shall always be to the approval of the TA Plumbing Inspector.

Pipework set-out neatly with a minimum number of bends, and more or less parallel to and at right angles to structural elements - avoid diagonal piping.

All internal pipework shall be concealed except where otherwise is either shown or approved. Exposed pipework shall be accurately and neatly run. Arrange all pipework (and particularly traps) in a manner which will allow maximum future accessibility for repairs or maintenance. Arrange for access panels to any primary maintenance positions, and install conveniently located isolating valves for each group of fittings. Wingbacks securely and squarely fixed. Crox unions usually acceptable only at the final connection to fittings. Install white plastic flanges where pipes penetrate linings in visible locations.

Where pipes are covered with nail fixed linings and trim ensure that their positions are marked on the linings to minimise the risk of subsequent nailings penetrating the pipe. Any such damage shall be rectified immediately, with all consequential damage made good.

Set pipework out in straight runs to even gradients. Fix all pipes to the structure sufficiently to fully support and to prevent sagging or vibration. Clips and saddles shall be the same material as the pipe. Exterior pipes on stand-off brackets. Fixings to the exterior or damp locations shall all be hot dip galvanized unless otherwise noted. Sleeves for pipes or drains penetrating concrete or masonry shall be uPVC, 20mm minimum larger internal diameter than the external diameter of the pipe, finished flush with concrete or masonry, and packed and mastic sealed.

Close open ends of the systems during construction to prevent the entry of foreign matter.

12.4.4 Temperature Movement

All work shall respect in full all probable thermal movements - layouts, fixings and jointings shall be arranged to allow thermal movement without risk of prejudice to watertight conditions, or risk of damage from straining of the pipes which will generate failures.

In particular, observe best local trade practice to avoid problems arising from freezing conditions.

12.4.5 Excavation

Allow to carry out all excavation that is required to suit the services installed by this trade. Check for other services before excavation. Trenches true to line and level, base of trenches clear of loose material, and shore trenches as required to suit the ground conditions. Backfilling shall be carried out by this trade, and be to the requirements specified in Siteworks.

12.4.6 Fire Wall/Ceiling Penetrations

Ensure that where drainage pipe work penetrate through fire rated floor or wall areas that these penetrations are stopped with intumescent foaming sealant for joints up to 10mm, and with intumescent stopping putty where the gap exceeds 10mm. Where required fit approved intumescent type fire collars to pipes located such that the fire rating of the wall or ceiling is maintained.

12.4.7 Testing

All plumbing services shall be completed in stages which will allow for proper testing under normal working pressures prior to the application of insulation, concealment or other enclosure. Testing of piped water services shall be by hydrostatic testing in accordance with AS/NZS 3500.1 and shall not show any leakage when subjected to a hydrostatic pressure of 1500kPa for a period of not less than 30 minutes. All leaks remedied and retested. On completion the whole of the plumbing services to be subjected to full operational tests in the presence of the plumbing inspector, with any defects revealed in these tests properly remedied.

12.4.8 Warranties

Warranty cards and manufacturer's guarantees for all items supplied and installed by this trade shall be correctly filled in and handed over at Practical Completion.

12.5 Systems

12.5.1 Wastes & Vents

Fit bird proof domes to all vents.

12.5.2 Cold Water System

12.5.2.1 Supply From New Connection to Reticulated Supply

All cold water supply pipework shall be medium/high-density polyethylene (MDPE/HDPE), arranged and fixed so that all joints are in a fully 'relaxed' condition, without any stress or tension.

Make complete arrangements for the installation of a new connection to the reticulated supply in the street and the main feed and toby in the position shown. Lay on a 20mm main from the toby along the route shown on the Site Plan to the connection position noted on the Floor Plan (pipe depth, protection, backfilling, signal strip etc. to comply with all Supply Authority requirements). At the connection position take a branch feed off for the hosecocks (and reticulate to the positions shown and install angle hosecocks) and toilet cisterns and then take the main feed through an accessibly positioned cleanable in-line sediment and dirt filter.

Primary distribution from the water filter shall be in 20mm piping, reducing to 12mm for the final feed to individual items. Install conveniently located isolating valves to turn off each group of fittings,

and install a small isolating valve alongside each toilet cistern not integrally fitted with one. (Note that these isolating valves and the hosecocks are not covered by the Plumbing Hardware Prime Cost Sum).

12.5.3 Hot Water System

12.5.3.1 Electric Storage, High Pressure Hot Water Cylinder

Supply the electric storage high pressure hot water cylinder noted on the drawings and install it where shown. Where appropriate install the cylinder on a safetray, with its drain discharging in a visible location.

Install temperature and pressure relief valves, cold water expansion valves, flow control valves, line strainers, pressure limit valves, and non-return/isolating valves as required to leave the hot water system in full design operational order. Install a tempering valve for each cylinder to control the hot water temperature at any sanitary fixture used for personal hygiene at not more than 55°C.

Check that the water pressure is suitable for the cylinders operation, and install PRV's if excessive.

Pressure relief discharges shall be copper and to the exterior in approved positions.

Flush all pipework before making the final connections. Lag the main distribution pipes full length with wall pipe insulation.

Showers shall have priority feeds, without 'tees', and the pipework layout shall ensure that the showers temperature and pressure remain as even as possible.

Irrespective of whether a mixing device is installed, the storage water heater control thermostat shall be set at a temperature of not less than 60°C to prevent the growth of Legionella bacteria.

13 DRAINLAYING

13.1 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.

13.2 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:

1254:2010(AS/NZS)	PVC-U pipes and fittings for stormwater and surface water applications
1260:2017(AS NZS)	PVC-U pipes and fittings for drain, waste and vent applications
1546.1:2008(AS/NZS)	On-site domestic wastewater treatment units - Septic tanks
1547:2012(AS/NZS)	On-site domestic wastewater management
2032:2006(AS/NZS)	Installation of PVC pipe systems
3500.2:2018(AS NZS)	Plumbing and drainage Part 2: Sanitary plumbing and drainage
3500.3:2018(AS NZS)	Plumbing and drainage Part 3: Stormwater drainage
7643:1979(NZS)	Code of practice for the installation of unplasticized PVC pipe systems
BS 5572	Code of practice for sanitary pipework
NZBC G13	Foul Water

13.3 General

Carry out all required works to leave the sewer and stormwater systems shown on the drawings in correct working order complete with all normal incidentals.

Comply with Local Authority By-laws and Health Department Regulations as appropriate. Obtain all necessary permits and consents, serve all necessary notices, arrange all tests and pay all fees and customary charges in connection with the works.

13.4 Workmanship

13.4.1 General

Carry out all required works to leave the sewer and stormwater systems shown on the drawings in correct working order complete with all normal incidentals. Comply with Local Authority By-laws and Health Department Regulations as appropriate. Obtain all necessary permits and consents, serve all necessary notices, arrange all tests and pay all fees and customary charges in connection with the works.

13.4.2 Co-operation

Cooperate with all trades and attend upon the Concretor and Plumber to set out exact pipe runs before any adjacent work is put in hand and ensure that all sleeves etc. are correctly incorporated as work proceeds.

13.4.3 Materials

All pipes and other materials shall comply with the appropriate Standards, and shall be protected from damage of any kind until installation is complete. All incidentals appropriate for the applications involved. Concrete shall be 17.5MPa and as specified under Concretor, Mortar shall be as specified in Blocklayer.

13.4.4 Workmanship

All drainlaying shall be carried out by, or under direct control of, properly qualified tradesmen, and shall be to recognised high standards. Ensure cast-in items are installed when required so that no delay is caused by this trade. Adequately protect all adjacent surfaces - clean down to remove dirt etc., and any damage shall be made good by the appropriate trade at the Drainlayer's expense.

On completion of drainlaying clean up full area affected by this trade to the condition it was in before drainlaying commenced.

Site is to be returned as close as possible to its present condition on completion of the contract.

13.4.5 Excavation

As required for sewer and stormwater. Check for other service lines before excavation - the Drainlayer is responsible for making good any damage. Trenches true to line and with even gradients between gullies, soil stack terminations or downpipes, etc.

Keep the bottom of trenches clear of loose material. All pipes shall be laid in appropriate bedding material, compacted as required. Shore trenches if required to suit ground conditions. Backfilling shall be by this trade, to the standards required in Siteworks.

13.5 Elements

13.5.1 Drainlaying

Commence drainlaying at the low end of even fall sections of drains and proceed in a continuous sequence to the fittings connections.

Sumps, gullies, etc. solidly bedded. Lay 110mm uPVC drains to connect gullies, sumps, stacks, and downpipes through to the street edge connections.

Every junction and bend shall be an inspection position. Temporarily seal the open ends of incomplete drains to prevent entry of foreign matter. Make appropriate provision for any anticipated differential settlement. Place signal strip above all drains.

Ensure that stormwater drains are very accurately positioned so that downpipes can drop directly into them, without offsets.

13.5.2 Testing

The sewer and stormwater systems shall both be fully tested to the approval of the Territorial Authority Inspector before being covered in. If any defects show rectify and then fully retest.

13.5.3 As Built Drawings

During drainlaying plot the location of all bends and changes in direction and all cleaning access positions. Locate each item by two diagonal measures from structure corners, etc. and record on a blank plan copy (supplied by Architect/Designer when requested).

Note that Practical Completion of the contract will not be certified until this as-built drawing has been produced (made available to the Contractor in time for the Code Compliance Certificate application).

14 ELECTRICAL

14.1 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.

14.2 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:

2201.1:2007(AS/NZS)	Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance
2293.2:1995(AS/NZS)	Emergency evacuation lighting for buildings - Inspection and maintenance
3000:2018(AS NZS)	Electrical installations - Known as the Australian/New Zealand Wiring Rules
3012:2010(AS/NZS)	Electrical installations - Construction and demolition sites
3085.1:2004(AS/NZS)	Telecommunications installations - Basic requirements
3100:2009(AS/NZS)	Approval and test specification - General requirements for electrical equipment
3112:2011(AS/NZS)	Approval and test specification - Plugs and socket-outlets
3191:2008(AS/NZS)	Electrical flexible cords
5000.1:2005(AS/NZS)	Electric cables - Polymeric insulated - For working voltages up to and including 0.6/1 (1.2) kV
60227.5:2003(AS/NZS)	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Flexible cables (cords)
60335.2.30:2009(AS/NZS)	Household and similar electrical appliances - Safety - Particular requirements for room heaters
60335.2.35:2004(AS/NZS)	Household and similar electrical appliances - Safety - Particular requirements for instantaneous water heaters
60598.2.2:2001(AS/NZS)	Luminaires - Particular requirements - Recessed luminaires
60598.2.22:2005(AS/NZS)	Luminaires - Particular requirements - Luminaires for emergency lighting
60898.1:2004(AS/NZS)	Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations - Circuit-breakers for a.c. operation
61009.1:2015(AS/NZS)	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules
6104:1981(NZS)	Specification for emergency electricity supply in buildings
AS/NZS 2053	Specification for unplasticized PVC conduit and fittings for electrical wiring
AS/NZS 3439	Electrical switchgear and controlgear

NZECP 54

Recessed luminaires

14.3 Workmanship

14.3.1 General

Supply and install all materials, including all necessary minor and incidental items, for proper completion of all of the electrical services specified or shown on the drawings. The contract will not be deemed to be complete until the Electrician has provided an Electrical Certificate of Compliance (made available to the Contractor in time for the Code Compliance Certificate application).

Obtain all necessary permits and consents, serve all notices and pay all fees in and customary charges connection with the works.

The position of switches, light and power outlets and other fittings, although shown specifically in some instances, are in general only shown diagrammatically. The exact location of each of these items will be as directed on site by the Architect/Designer; the Electrician shall give reasonable notice of when this information is required. Items positioned in contravention of this shall be repositioned if directed, including rewiring if necessary, all at the Electrician's expense.

Unless drawn (on 1:20 wall elevations) or specified otherwise the mounting height to the centreline of the following items above the floor shall be:

- 1000mm for lighting switches;
- 2000mm for wall mounted lights;
- 2100mm for the bayonet of pendant lights;
- 300mm for power points, except at benches.

(Notify the Architect/Designer if either the actual fitting or mounting position seem to make the mounting height noted above inappropriate).

Warranty cards and manufacturers guarantees for items supplied and installed by this trade shall be filled in correctly and handed over at Practical Completion. Arrange all circuits to obtain an optimum balance of the system, and check and reconnect where necessary to achieve this on completion. Leave the works clean and tidy and in full operational order.

14.3.2 Co-operation

Co-operate with all other trades and attend upon the Concretor and Carpenter to set out all required penetrations and to ensure that all wiring and fittings are correctly incorporated as work proceeds. The Carpenter will provide and fix all necessary dwangs and timber supports in locations determined by the Electrician.

14.3.3 Workmanship

All electrical work shall be carried out by, or under the direct control of, registered tradesmen, and shall be to recognized high standards. All work shall be such as to leave a neat, efficient and robust installation. Neatly label switchboards to identify each circuit.

The cutting away and checking of timbers shall be limited to such dimensions as will not prejudice the purpose for which the timber is used; observe NZS 3604: 2011 restrictions on the holing and checking of joists and beams. Chasing and checking of other materials shall be only to approval.

Adequately protect all surfaces. Any damage to fittings or surfaces made good by the appropriate trade at the Electrician's expense.

14.3.4 Wiring

Joints within cable runs will not normally be accepted. TPS cable shall be adequately supported, and clipped at regular intervals. At terminations all strands of conductors shall be fully secured in a terminal block or clamped under a screw head washer; do not cut away any strands. Wiring which terminates in enclosed fittings and/or where subject to heat liable to cause deterioration, shall be high temperature type, with the tails made off with heat resisting sleeves, to protect the permanent wiring.

Wire lights in 1.5mm 3 core - 7.5 amps loading max per circuit (allow for 100w to all light fittings unless identified otherwise).

Wire power outlets in 2.5mm 3 core - 7 maximum GPO singles or doubles per circuit. Assess power outlets for specific equipment and allow accordingly.

Conceal all wiring except as noted on drawings or below. All wiring cast into concrete shall be run in conduit pipes. All cables shall be stranded (single core is unacceptable).

Wire more or less parallel to and at right angles to the structural elements - avoid any diagonal wiring. Layout of the principal distribution wiring shall be to approval. Position all wires to minimise the risk of damage from subsequent nailing of linings etc.

Generally, do not run TPS horizontally within timber walls except in the area up to 300mm above floor. Wire in the ceiling framing and drop vertically to outlets and switches.

Do not run TPS horizontally within partitions except in the area up to 300mm above floor. Wire in the ceiling void and drop vertically to outlets and switches. Principal wiring in the ceiling void shall be supported on adequate catenaries.

Wire exterior lighting in screened cable.

Where cables pass through fire rated walls or floors use a fire barrier or fire rated sealing compound to seal the space after installation of the cables.

14.4 Materials & Control

14.4.1 Materials

All materials delivered with packaging and labeling intact. All required incidentals (insulating tape, seals, fixings, etc.) shall be completely appropriate for the application involved. The use of items damaged in any way is subject to approval in each instance.

14.4.2 Switchboard

The switchboard shall be an appropriate size standard PDL DBF series board installed fully recessed where shown and at 2m to the top of the board. Install appropriate sized MCB's for all circuits, including a minimum of two power and one lighting RCDs as required to cover all outlets.

14.5 Systems

14.5.1 Earth

Provide a driven main earth suitable for the full installation, close to the meterboard, complying fully with all appropriate regulations and to the complete approval of a certified inspector. Bond all exposed metals, including light fittings and piped services and provide earth conductors for the entire system. Sheathing to any neutral screened cables may be used for earthing.

14.5.2 Mains

Install a neutral screened 16mm main cable underground (depth, cover/protection, backfilling, signal strip etc. to comply with all relevant regulations) from the grid connection position noted on the Site Plan along the route indicated to the meterboard, positioned where shown on the Floor Plan, and make appropriate arrangements for the grid connection. Install pilot as required. The meterboard shall be metalclad with a meter reading window, recessed maximum depth into the wall and at 2m to the top of the board, with the meters and water heater controllers by the supply company nominated by the Principal. Install all switches and fuses that are necessary. From the meterboard run (route to approval) a neutral screened 16mm main plus controllers etc. to the switchboard.

1. BRANZ Appraisal No.651 - Thermakraft Covertex 407 Fire Retardant Self-Supporting Roof Underlay
2. Covertex 407 Data Sheet
3. Covertex 407 Install Guide
4. CodeMark Certificate of Conformity - Thermakraft Covertex 407
5. CodeMark Certificate of Conformity - UNI Flexible Air Barrier System
6. BRANZ Appraisal No.289 - GIB Fire Rated Systems
7. BRANZ Appraisal No.394 - GIB Noise Control Systems
8. BRANZ Appraisal No.427 (2021) - GIB Aqualine Wet Area Systems
9. BRANZ Appraisal No.940 - GIB® Intertenancy Barrier Systems for Terrace Homes
10. CodeMark Certificate of Conformity - James Hardie Linea Weatherboard Direct Fixed and Cavity Cladding
11. BRANZ Appraisal No.447 - Linea Weatherboard Cavity Cladding
12. CodeMark Certificate of Conformity - ARDEX Butynol® Roofing Membranes
13. BRANZ Appraisal No.436 - Butynol® and Butyseal Roofing Membrane Systems
14. BRANZ Appraisal No.436 - Butynol® and Butyseal Roofing Membrane Systems
15. CodeMark Certificate of Conformity - Butynol® Roofing Membranes
16. BRANZ Appraisal No.681 - Integra Light Weight Concrete System
17. BRANZ Appraisal No.473 - ARDEX Undertile External Liquid Membranes
18. BRANZ Appraisal No.472 - ARDEX Undertile Internal Liquid Membranes
19. BRANZ Appraisal No.238 - Pink® Batts® Insulation
20. BRANZ Appraisal No.238 - Pink® Batts® Insulation