Lot 4 Orchard Park

Project Specification

Lot 4, Orchard Park, Wanaka, New Zealand
Project Ref: DW1833
Date: 02 November 2026

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

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1220 PROJECT

1 GENERAL

This general section describes the project including:

- A description of the work
- Design construction safety
- Principal's Health & Safety matters
- Site description, features and restrictions
- Design parameters for design by contractor
- Archaeological discovery

1.1 READ ALL SECTIONS TOGETHER

Read all general sections together with all other sections.

1.2 DESCRIPTION OF THE WORK

New Residential Dwelling addition to be Standard NZS3604 design and Engineered design. Structure to consist of Engineered Concrete Slab and timber framed walls. Cladding to consist of Hermpac Vertical weatherboard Cladding on 20mm Cavity, Dimond HiFive vertical cladding on 20mm cavity and Stria Panel cladding on 20mm cavity. Dimond HiFive roofing roof cladding to roof and Nuraply membrane.

1.3 RESTRICTED BUILDING WORK

This project includes Restricted Building Work.

Design Construction Safety

1.4 DESIGN CONSTRUCTION SAFETY

The project designers are unaware of unusual or atypical features, which a reasonably experienced contractor may not be aware of, that may present a hazard or risk during a typical construction process. The Contractor is still required to undertake its own assessment, to determine if they consider there are any further safety matters and provide for these in carrying out the construction of the work.

Principal's Health & Safety Matters

1.5 PRINCIPAL'S KNOWN SITE HAZARDS

Site hazards known to the principal are:

Obtain a copy of the principal's site health and safety plan.

1.6 PRINCIPAL'S SITE HEALTH AND SAFETY PLAN

Obtain a copy of the principal's site health and safety plan.

Site

1.7 SITE

The site consists of: 550 m2
As shown on drawing: Refer to A001 - SITE PLAN

1.8 LEGAL DESCRIPTION

The site of the works, the street address and the legal description are shown on the drawings.

1.9 SITE FEATURES

Refer to A001 - SITE PLAN

Site environment - Durability

1.10 EXPOSURE ZONE

The exposure zone is to NZS 3604, Section 4 Durability, 4.2 Exposure zones and NZBC E2/AS1.

The site zone is: C (Medium)

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Site environment - Wind

1.11 WIND DESIGN PARAMETERS - NON SPECIFIC DESIGN

The design wind pressures are to NZS 3604, Table 5.4 Determination of wind zone, up to and including Extra High Wind Zone.

Building wind zone High/1.20kPa (refer to NZS 3604, table 5.4)

Site environment - Seismic

1.12 EARTHQUAKE ZONE - NON SPECIFIC DESIGN

The zone is to NZS 3604, Section 5 Bracing design, 5.3 Earthquake bracing demand.

The earthquake zone is: Zone 3

Archaeological discovery

1.13 REPORT FINDING ANY ANTIQUITIES AND ITEMS OF VALUE

Report the finding of any fossils, antiquities and other items of value, to the Contract Administrator. All to remain undisturbed until approval is given for removal.

Pre-1900, items or evidence of human activity on the site, come under the Heritage New Zealand Pouhere Taonga Act 2014. If such items or evidence is discovered work must stop immediately and the Contract Administrator must be notified immediately. The site may be classified as an Archaeological Site under the Act, and the Contract Administrator or Owner must contact the Heritage New Zealand for authority to proceed.

Post-1900 items remain the property of the owner, pre-1900 items may remain the property of the owner or the Crown subject to what is found.



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1233 REFERENCED DOCUMENTS

1 GENERAL

1.1 REFERENCED DOCUMENTS

Throughout this specification, reference is made to various New Zealand Building Code Compliance Documents (NZBC __), acceptable solutions (__ AS_) and verification methods (__ VM_) for criteria and/or methods used to establish compliance with the New Zealand Building Code.

Reference is also made to various standards produced by Standards New Zealand (NZS, AS/NZS, NZS/AS), overseas standards and to listed Acts, Regulations and various industry codes of practice and practice guides. The latest edition (including amendments and provisional editions) at the date of this specification applies unless stated otherwise.

It is the responsibility of the contractor to be familiar with the materials and expert in the techniques quoted in these publications.

Documents cited both directly and within other cited publications are deemed to form part of this specification. However, this specification takes precedence in the event of it being at variance with the cited documents.

1.2 DOCUMENTS

Documents referred to in the GENERAL sections are:

NZBC F5/AS1	Construction and demolition hazards
AS/NZS 1170.2:2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 3012	Electrical installations - Construction and demolition sites
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 4210	Masonry construction: Materials and workmanship
NZS 4781	Code of Practice for Safety in Welding and Cutting
AS/NZS 5131	Structural steelwork - Fabrication and erection
NZS 6803	Acoustics - Construction Noise

Building Act 2004
Building Regulations 1992
Health and Safety at Work Act 2015
Health and Safety at Work (General Risk and Workplace Management) Regulations 2016
Health and Safety at Work (Hazardous Substances) Regulations 2017
Health and Safety in Employment Regulations 1995
New Zealand Building Code
Heritage New Zealand Pouhere Taonga Act 2014
Resource Management Act 1991
Smoke-free Environments Act 1990

WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry
WorkSafe	Good Practice Guidelines - Excavation Safety
WorkSafe	Scaffolding in New Zealand - Good Practice Guidelines
WorkSafe	Managing Work Site Traffic - Good Practice Guidelines

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1240 ESTABLISHMENT

1 GENERAL

This general section relates to site establishment including:

- Notices and approvals
- Inspections
- Site preparation
- Temporary construction

Notices and approvals

1.1 STATUTORY OBLIGATIONS

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

1.2 BUILDING CONSENT AUTHORITY AND NETWORK UTILITY APPROVALS

Attend on building consent authority officers, statutory and network utility inspectors, as necessary to obtain approvals, including those required for the completion of the works.

1.3 NOTIFY NETWORK UTILITY OPERATORS

Notify all network utility operators of proposed works before commencing site operations. Ascertain location of services or confirm that none exist in the vicinity of the works. Take all necessary precautions to avoid damage to existing services.

Inspections

1.4 CARRY OUT INSPECTIONS

As required by QLDC

Site preparation

1.5 SITE AND SOIL SURVEYS

Carry out all investigations necessary and peruse all information available to determine ground conditions and likely ground performance both on the site and adjacent to it. Also refer to the territorial authority project information memorandum (PIM).

1.6 GROUND CONDITIONS

Refer to the geotechnical / soils report included with this specification.

Temporary construction

1.7 TEMPORARY BUILDINGS

Provide as necessary temporary sheds, offices, lunch rooms, sanitary accommodation and other temporary buildings required for storage, management of the works, for the use of workers while on site and as required by Acts and Regulations.

1.8 TEMPORARY SITE FENCING

Provide and maintain a temporary site fence, 2 metres high from ground level on the side accessible to the public. Construct to comply with NZBC F5/AS1 Construction and demolition hazards.

1.9 SITE - SAFETY SIGNAGE

Provide hazard board and other safety signage as required.

1.10 SITE - PROJECT SIGN

Obtain approval to, provide and erect a timber framed sign board. Sign to be, fully painted with vinyl lettering or fully printed, and displaying:

- Title of contract
- Principal's name
- Contractor's name
- Consultants as listed in general section 1222 PROJECT PERSONNEL
- If the contractor wishes, names of subcontractors.

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First aid

1.11 FIRST AID EQUIPMENT
Provide first aid equipment.

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1250 TEMPORARY WORKS & SERVICES

1 GENERAL

This general section relates to temporary works and services required for the construction of the contract works. It includes

- Temporary works and services including temporary fencing and hoardings
- Scaffolding
- General care and protection
- Rubbish removal

Temporary works

1.1 COSTS RELATING TO TEMPORARY WORKS

Pay all rates/fees in respect of temporary works.

1.2 MAINTENANCE OF TEMPORARY WORKS

Maintain alter, adapt and move temporary works and services as necessary. Clear away when no longer required and make good.

1.3 SAFEGUARD THE SITE, THE WORKS AND MATERIALS

Take reasonable precautions to prevent unauthorised access, including access outside working hours, to the site, the works and adjoining property. Safeguard the site, the works, materials and plant from damage and theft.

1.4 TEMPORARY ROADS

Provide as necessary all temporary roads, tracks, crossings and hard standing required for the efficient execution of the works and maintain to approval. Manage traffic safety on-site and related traffic off-site, to WorkSafe. Managing Work Site Traffic - Good Practice Guidelines.

1.5 CONSULTANTS TEMPORARY SITE OFFICE

Provide temporary accommodation and facilities for site meetings and for use by consultants while on site.

1.6 SITE FENCING

Provide and maintain a site fence, 2 metres high from ground level on the side accessible to the public. Construct to comply with NZBC F5/AS1 Construction and demolition hazards. Construct as required for public areas and as shown on the drawings.

Construct the fence with:

- galvanized chain link netting with a 50mm x 50mm maximum grid size
- posts at 2.5 metre centres maximum
- gap at the bottom of the fence no greater than 100mm

1.7 SITE FENCING - NON-PUBLIC AREAS

Provide and maintain a 1 metre high site fence to non-public areas. Construct using:

- warratah stakes at 1.5 metre centres fitted with safety caps
- plastic safety mesh

1.8 SITE HOARDINGS

Provide and maintain hoardings, 2 metres high from ground level on the side accessible to the public. Construct to comply with NZBC F5/AS1 Construction and demolition hazards. Construct as required for public areas and as shown on the drawings.

Construct hoardings with continuous cladding of:

- close butted timber at least 19mm thick; or
- 6mm exterior grade plywood on studs at 600mm centres maximum; or
- 9mm exterior grade plywood on studs at 1 metre centres maximum; or
- continuous metal cladding suitably supported to provide strength and rigidity

1.9 LIGHTING

Provide temporary lighting as necessary to protect the public and others, for the proper execution of the works and to meet the requirements of territorial or other authority.

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1.10 GANTRIES, PLANKED FOOTWAYS, GUARD RAILS

Provide temporary gantries, planked footways and guard rails as necessary to protect the public and others, for the proper execution of the works and to meet the requirements of territorial or other authority.

1.11 PROVIDE SEDIMENT AND SILT RUN OFF PROTECTION

Provide appropriate measures to prevent or minimise sediment generation and silt run off. Comply with territorial and other authority requirements relating to carrying out earthworks.

Prevent silt run off by:

- exposing only as much ground as required at any time
- providing run off channels, contour drains or earth bunds to divert clean water away from the site on to stable sealed or grassed ground
- capture silt by the use of silt fences, vegetation buffer strips, sediment ponds or earth bunds.

Provide sediment control by:

- earth bunds constructed across the slope to control and detain run off
- silt fences constructed using filter fabric stretched between posts at a maximum of 1 metre spacing.

Pump water from trenches and other areas of the site using methods to prevent sediment entering any drain or watercourse. Filter dirty water before discharging into drainage system.

1.12 PROVIDE CONCRETE WASHWATER RUN OFF PROTECTION

Provide appropriate measures to prevent cement/concrete washwater or slurry run off to; drains or waterways, landscaped areas new or remaining and adjoining public or private properties. Comply with territorial and other authority requirements relating to cement/concrete washwater.

Control run off from:

- Cement/concrete based material production, placing and finishing.
- Hosing down and cleaning of, tools and equipment, fresh material, and spilt or surplus material, pumps and mixers etc.
- Wet cutting or grinding.
- Slab watering etc.
- Water cleaning of new concrete elements, fresh used formwork etc.

Small project with relatively large exposed ground areas - prevent run off by:

- directing small amounts of washwater onto the area of ground closest to the work.
- for larger amounts provide run off channels, and small soak pits
- very small amounts of washwater with no aggregate and only a small amount of sand may be spread over existing lawns.

Large project and those without suitable ground area - prevent run off by:

- plan and implement washwater control measures based on the expected volumes, allow for the timely removal and safe disposal of liquids and solids.
- Limit the volume of water used for washing down to the extent required.
- Control the flow of washwater so that it is directed to proper catchments.
- providing watertight bunds, pits or tanks, filtered washwater is not to be discharged to drains.

Spilt or surplus material:

- if possible allow to set and either use or dispose of as hardfill.
- pre-made concrete items, either use or dispose of as hardfill.

Pump washwater away from drains, waterways and adjoining property.

1.13 EXCAVATION SAFETY

To the Health and Safety at Work Act 2015.

Carry out excavation to WorkSafe NZ, Good Practice Guidelines - Excavation Safety. This may include deep excavation, trenching, and areas behind unfilled retaining walls.
Carry out excavation using plant and equipment suitable for the purpose.



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Scaffolding

1.14 SCAFFOLDING

Provide scaffolding for the efficient execution of the works.

Comply with:

- Health and Safety at Work Act 2015
- Health and Safety in Employment Regulations 1995
- Health and Safety at Work (General Risk and Workplace Management) Regulations 2016
- Worksafe - Scaffolding in New Zealand - Good Practice Guidelines

Temporary services

1.15 WATER

Provide clean, fresh water for the works and make arrangements for distributing about the site.

1.16 ELECTRICITY

To AS/NZS 3012.

Nominate the person to install and be responsible for the complete temporary electrical installation. The name and designation of the person responsible is to be displayed prominently and close to the main switch or circuit breaker.

Inspect and overhaul the installation at such intervals as are prescribed by the network utility operator but not more than three monthly intervals.

1.17 TELEPHONE

Provide on-site temporary telephone facilities.

1.18 COMPUTER FACILITIES

Provide on-site temporary computer facilities complete with an email and internet connection capable of sending, receiving and printing site communications.

1.19 PRINTER

Provide on-site temporary printing facilities capable of printing A4 and A3 colour prints.

1.20 IMAGING

Keep available devices able to take and send quality printable digital photographs.

Care and protection - Site

1.21 LOCATE AND PROTECT SURVEY MARKS

Review information provided relating to survey marks. Physically locate and protect survey marks. Where required use a licensed cadastral surveyor to reinstate survey marks disturbed during construction.

1.22 LOCATE EXISTING SERVICES

Review information provided relating to underground and above ground services. Physically locate the position of all such services. Arrange with the network utility operator for all necessary exploratory work, location, protection, isolation, off-setting, reinstatement or alterations required. Record any alterations made to such utilities.

1.23 PROTECT EXISTING SERVICES

Protect existing services and parts of service systems, whether indicated or not, that are to remain in place during the execution of the works. Provide temporary caps or covers to prevent the ingress of dust and other contaminants into the systems, ducts, pipes etc. Reinstate where required and repair any damage resulting from carrying out the contract works.

1.24 PROTECT EXISTING LANDSCAPE ELEMENTS

Protect existing trees, fences, gates, walls, gardens and other designated landscape features which are to remain in position during the execution of the works. Construct a temporary fence at the outer edge of the drip line of trees to be protected. Comply with territorial authority requirements.

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1.25 MAKE GOOD - SITE

Make good all damage to existing roads, footpaths, grounds, services, landscape elements and site features caused in carrying out the contract works.

Care and protection - Project

1.26 TEMPORARY PROTECTION

Provide and maintain temporary protection as required to protect products during transport, storage and handling. Provide temporary protection as required to protect the work in progress and the finished work. Refer to 1270 CONSTRUCTION for removal of protection.

1.27 SPECIAL PROTECTION GENERAL

Refer to individual work sections for any special protection requirements.

Care and protection - miscellaneous

1.28 CONSTRUCTION KEYING AND SECURITY

Provide locksets with temporary keying, or install with the cylinders removed.

1.29 TEMPORARY STORAGE

Provide temporary storage areas and protective covers and screens to meet the requirements of the products to be stored.

Rubbish removal

1.30 PERIODIC RUBBISH REMOVAL

Maintain on site appropriate means for the storage and removal of construction waste material. Where required or appropriate provide for the separate storage of recyclable waste and other materials requiring special disposal.



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1270 CONSTRUCTION

1 GENERAL

This GENERAL section relates to common requirements for construction issues including:

- Quality control and assurance
- Noise and nuisance
- Set-out and tolerances
- Common execution requirements
- Qualifications
- Common product requirements
- Common requirements for samples and prototypes
- Common requirements for spare and maintenance products
- Cleaning during the works
- Removal of protection
- Completion requirements
- Commissioning
- Practical completion submission
- Defects period submissions
- Completion submissions

1.1 SCHEDULE SECTION

Refer to 1270S1 SCHEDULE OF SAMPLES & PROTOTYPES for work sections contained in this specification that have requirements for samples and prototypes.

Refer to 1270S2 SCHEDULE OF SPARES & MAINTENANCE PRODUCTS for work sections contained in this specification that have requirements for spares and maintenance products.

Quality control and assurance

1.2 QUALITY ASSURANCE

Carry out and record regular checks of material quality and accuracy, including:

- Concrete quality and finish.
- Dimensional accuracy of structural column locations (following completion of foundations).
- All perimeter columns and frames for plumb.
- Levels of all floors relative to the site datum.
- Framing timber moisture content.

Where any material, quality or dimension falls outside specified or required tolerances, obtain written direction from the contract administrator. Where building consent approval is affected, confirm remedial action with the Building Consent Authority.

Provide all materials, plant, attendances, supervision, inspections and programming to ensure the required quality standards are met by all project personnel.

1.3 PROVIDE QUALITY PLAN

Prepare a quality plan for the execution of the contract works and submit a copy of the quality plan to the Contract Administrator within 10 Working Days of the date of award of the contract. The quality plan shall describe the procedures for meeting the requirements of the contract in respect of:

- Materials and workmanship
- Monitoring and maintaining subcontractors' performance
- Record keeping
- The level of documentation for signing off the contract works as complete
- Procedures to ensure that all persons engaged in undertaking the contract works are qualified, experienced and trained for the work they are undertaking
- Inspection and testing required by the contract
- Auditing the quality plan

1.4 REVIEW OF QUALITY PLAN

Within 5 working days of the contractor submitting a quality plan to the contract administrator for review, the contract administrator may advise that:

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- they have completed their final review, or
- that they have undertaken a review and require resubmission of the quality plan.

Review by the contract administrator of the quality plan does not make the quality plan a contract document. The contractor at all times remains responsible for the construction of the Works. If resubmission of a quality plan is required, the contract administrator will give their reasons. The contractor shall take account of the reasons and resubmit a revised quality plan within a period of 5 working days.

1.5 COMMENCEMENT OF WORK

Do not commence any part of the contract works, other than establishment, setting out and site preparation until the contract administrator has completed their final review of the quality plan.

1.6 NOTICE

Give notice to the contract administrator and any other nominated person of hold points and notification points. Refer to work sections and 1260 PROJECT MANAGEMENT for hold points and notification points required.

1.7 NOTIFIABLE WORK

Lodge notice of the intention to commence any notifiable work and any work that will at any time include any notifiable work, in accordance with Health and Safety in Employment Regulations 1995.

Noise and nuisance

1.8 LIMIT CONSTRUCTION NOISE

Minimise the effects of noise generation by including in the planning of the work such factors as placing of plant, programming the sequence of operations and other management functions. Limit construction noise to comply with the requirements of NZS 6803, the requirements of the Resource Management Act sections 326, 327 and 328 and the Health and Safety in Employment Regulations 1995 clause 11.

1.9 ACCEPTABLE NOISE LEVELS

Refer to NZS 6803 Tables 2 and 3 for the upper limits of construction work noise received in residential zones, dwellings in rural areas, industrial areas and commercial areas, note also the allowed adjustments. Do not exceed these limits or any limits imposed by regional councils or territorial authorities.

1.10 PROVIDE INFORMATION TO NEIGHBOURS

Provide information to neighbours of any noise generation from the site liable to constitute a problem. Explain to them the means being used to minimise excessive noise and establish with them the timings most suitable for the noise generating work to be carried on.

Discuss with any complainant the measures being used to minimise noise. Where possible modify these measures to accommodate particular circumstances. Finally, determine the sound level at the location under discussion using methods and observation reporting as laid down in NZS 6803. If the noise level is above the upper limits of NZS 6803, table 2 and table 3, cease the noise generating operation and remedy the problem.

1.11 INCONVENIENCE TO OTHERS

When the works are to be carried out in or around occupied premises, ascertain the nature and times of occupation and use. Carry out the works in a manner to minimise inconvenience, nuisance and danger to occupants and users.

1.12 ROADWAY AND FOOTPATH

Keep the adjacent footpath and road clear at all times. Where work must be carried out in the roadway or footpath, obtain required consents from the territorial authority. Where temporary use is made of the footpath or roadway for deliveries and the like ensure that public safety is protected and the goods and materials moved as soon as practicable. Sweep, wash and otherwise clean the roadway/footpath and restore it to its previous condition.

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1.13 VEHICLE CROSSING

Make good damage that has occurred as a result of carrying out the contract works. Where there has been significant damage, contact the territorial authority and obtain instructions for making good. Pay the territorial authority costs associated with making good.

1.14 TRAFFIC SAFETY

The management of traffic safety on-site and related traffic off-site, to WorkSafe Managing Work Site Traffic - Good Practice Guidelines. Movement on- and off-site also to territorial authority and/or NZTA requirements.

1.15 DIRT AND DROPPINGS

Remove dirt and droppings deposited on public or private thoroughfares from vehicles servicing the site to the satisfaction of the appropriate authorities and the contract administrator.

1.16 DAMAGE AND NUISANCE

Take precautions to prevent damage and nuisance from water, fire, smoke, dust, rubbish and all other causes resulting from the construction works.

1.17 SMOKE FREE REQUIREMENTS

In accordance with the Smoke Free Environments Act 1990 smoking is not allowed on site.

1.18 RESTRICTIONS

Do not:

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

Set-out and tolerances

1.19 SURVEY INFORMATION

Locate and verify survey marks and datum points required to set out the works. Where these do not exist or cannot be located advise the contract administrator who will arrange for the required points to be established.

Record and maintain their position. Re-establish and replace disturbed or obliterated marks.

1.20 DATUM

Establish a permanent site datum to confirm the proposed levels and their relationship to all other existing and new levels.

1.21 SET-OUT

Set out the work to conform with the drawings.

1.22 SET-OUT BY LICENSED CADASTRAL SURVEYOR

Before commencing construction provide the contract administrator with a certificate prepared by a licensed cadastral surveyor that the set-out is complete and that the building is accurately placed on the site.

During construction provide the contract administrator with a certificate, prepared by the same licensed cadastral surveyor confirming the set-out of the foundations and grid lines. Necessary adjustments are to be determined and agreed to by the contract administrator before proceeding further.

1.23 CONFIRM HEIGHT IN RELATION TO BOUNDARY

Arrange for the licensed cadastral surveyor to provide a certificate certifying that the building has been constructed within the allowed height in relation to boundary. Obtain details from the principal of the person they have engaged to carry out this certification and advise the surveyor when they can carry out the required survey.

Provide the certificate to the local authority. Provide a copy of the certificate to the contract administrator.

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1.24 USE OF SET-OUT INSTRUMENTS

Permit without charge, the use of instruments already on site for checking, setting out and levels.

1.25 CHECK DIMENSIONS

Check all dimensions both on drawings and site, particularly the correlation between components and work in place. Take all dimensions on drawings to be between structural elements before linings or finishes, unless clearly stated otherwise.

1.26 TOLERANCES

All work to be level, plumb, and true to line and face. Unless otherwise specified in specific work sections of this specification, tolerances for structural work shall comply with the following:

Concrete construction:	To NZS 3109 Concrete construction Clause 3.9 Tolerances for reinforcement Table 5.1 Tolerance for precast components Table 5.2 Tolerance for in situ construction To NZS 3114 Concrete surface finishes
Masonry construction:	To NZS 4210 Masonry construction: Materials and workmanship Clause 2.6.5 Tolerances Table 2.2 Maximum tolerances
Structural steelwork:	To NZS 3404.1 Steel structures standard Section 14.4 Tolerances (after fabrication) Section 15.3 Tolerances (erection)
Timber framing:	To NZS 3604 Timber-framed buildings Clause 2.2 Tolerances Table 2.1 Timber framing tolerances

Refer to work sections for tolerance requirements for finishes.

Execution

1.27 EXAMINE PREVIOUS WORK

Before commencing any part of the work carefully examine the previous work on which it depends, to ensure it is of the required standard.

1.28 REPORT DEFECTIVE PREVIOUS WORK

Refer defects to the contractor to be remedied, if the remedy is outside the scope of the contract documents the contractor shall obtain direction from the contract administrator. Do not carry out work over previous work that is defective and will affect the required standard.

1.29 EXECUTION GENERALLY

Construct the work in accordance with the documents issued for construction including any direction that may have been given by the contract administrator that varies the construction document.

1.30 EXECUTION - NO DETAIL IS PROVIDED

The documents issued for construction will not include all details relating to every material, junction and interface with other materials.

Where the detail provided is of a general nature, or where no detail is provided, refer to the manufacturer's documents for information relating to installation and execution of that part of the work.

Where there is more than one method or detail appropriate to the part of the work in question, refer the options to the Contract Administrator for direction as to which detail or method to use.

1.31 EXECUTION - ACCEPTABLE SOLUTION IS REFERRED TO

Where a NZBC Acceptable Solution is referred to in the specification but not shown on the plans, obtain a copy of that Acceptable Solution and make it available to the workers carrying out that part of the work.

1.32 MINIMISE DELAYS DUE TO WEATHER

Use appropriate techniques and methods to prevent damage and minimise delays due to weather.

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Defective or damaged work

1.33 DEFECTIVE OR DAMAGED WORK

Repair defective, damaged and marked elements, or replace them where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Refer to individual work sections for any special requirements.

Hot work - fire safety

1.34 HOT WORK

Generally, to NZS 4781 Code of Practice for Safety in Welding and Cutting, includes but not limited to: Welding; flame cutting; disc cutting; grinding; bitumen blowers; blow lamps; brazing; burning off; soldering; use of hot air guns.

Note - where the standard refers to the use of asbestos, alternative fire-resistant materials are to be used.

1.35 COMBUSTIBLE MATERIAL

Manage fire risk to adjacent combustible materials by isolating hot work at a safe distance away, or store combustible materials away from fire hazards. Additional precautions may be necessary if combustible material cannot be separated from hot work, refer to NZS 4781, 6.1.4.

1.36 HOT WORK PERMIT

A hot work permit, issued by the main contractor, is required when it is not possible to isolate hot work from adjacent fire hazards. Refer to example in NZS 4781, Appendix A.

1.37 FIRE SYSTEMS

Fire systems should remain operational where possible while welding or cutting work is performed. Where required, shield fire systems to NZS 4781 clause 6.4.

1.38 DURING SUSPENDED WORK

Maintain a fire watch at least 30-minutes after hot works are suspended e.g. during lunch breaks or overnight, to NZS 4781, clause 6.2.7.

For hot works in confined spaces, prevent potential ignition of flammable gases, to NZS 4781 clause 6.5.

Qualifications

1.39 QUALIFICATIONS GENERALLY

The work is to be carried out by workers and / or supervisors who are experienced, competent and familiar with the materials and the techniques specified. Workers must also be familiar with the manufacturers' and suppliers' installation and application instructions and standard details provided by them in relation to the use of the products for this project. If requested provide evidence of qualification / experience.

1.40 QUALIFICATIONS WORKERS – RESTRICTED BUILDING WORK

Where restricted building work (RBW) forms part of the contract works, workers, or supervisors of that work must be licensed building practitioners (LBP) holding current licenses for the particular restricted building work.

For rare instances where non-RBW also requires an LBP refer to individual work sections for details.

1.41 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Where required by a manufacturer or supplier, workers must be specifically trained /approved / accredited / registered / licensed / certified by them. Refer to individual work sections for details.

1.42 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

Where workers and / or supervisors of work are required to be licensed, registered or similar under legislation, they must have a current license before they start the work and maintain currency until their part of the work has been completed and all documentation that is required has been provided.

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1.43 QUALIFICATIONS WORKERS – INDUSTRY QUALIFICATION REQUIREMENTS

Where workers and / or supervisors of work are required to be trained / licensed / certified or similar under industry rules or contractual requirements, they must have a current qualification before they start the work and maintain currency until their part of the work has been completed. Refer to individual work sections for details.

1.44 QUALIFICATIONS – PRODUCER STATEMENTS

Where producer statements are required for parts of the work, ensure that person is suitably qualified and authorized to issue such producer statements.

1.45 REPLACEMENT OF PERSON

Should it be necessary to replace a person, ensure that records of work, producer statements, warranties and the like required for the part of the work they have carried out are obtained.

Ensure that the replacement person takes responsibility for the work they carry out and that they are able to provide such records of work, producer statements, warranties and the like required as a condition of the contract and the building consent.

Products

1.46 NEW PRODUCTS

Products to be new unless stated otherwise, of the specified standard, and complying with all cited documents.

1.47 COMPATIBILITY OF PRODUCTS

Ensure all parts of a construction or finish are compatible and their individual use approved by the manufacturers and suppliers of other parts of the system. Source all parts of a system from a single manufacturer or supplier.

1.48 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Protect products during transit and delivery on site and / or off site. Reject and replace goods that are defective or damaged or will not provide the required finish.

Handle products carefully to avoid damage and distortion and in accordance with codes of practice and the manufacturer's or supplier's requirements. Avoid any contact with potentially damaging surfaces or conditions.

Store products to avoid visual damage, environmental damage, mechanical damage and distortion. Store in accordance with codes of practice and the product manufacturer's or supplier's requirements. Maintain the proper condition of any protective packaging, wrapping and support.

Refer to individual work sections for any special requirements.

1.49 SUBSTRATE CONDITIONS

Ensure substrate conditions are within the manufacturer's or supplier's stated guidelines both before and during the installation of any material, product or system. Obtain written instructions on the necessary action to rectify unsatisfactory conditions.

1.50 INSTALLING PRODUCTS

Install in accordance with the manufacturer's or supplier's technical literature. Ensure that all installers are familiar with the required substrate conditions and the manufacturer's or supplier's specified preparation, fixing and finishing techniques.

1.51 COMPLY WITH STANDARDS

Comply with the relevant and/or cited Standard for any material or component. Obtain certificates of compliance when requested by the contract administrator.

1.52 CONDITION OF PRODUCTS

To be in perfect condition when incorporated into the work.

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1.53 INCOMPATIBLE PRODUCTS

Separate incompatible materials and metals with separation layers, sleeves or gaskets of plastic film, bituminous felt or mastic or paint coatings, installed so that none are visible on exposed surfaces.

Samples

1.54 SAMPLES FOR REVIEW

Where specified in the work sections submit samples and any nominated supporting documentation to the named reviewer and notify the contract administrator of the submission. Where no person is named as the reviewer, submit to the contract administrator.

Samples for review may be described as a portable sample for review, portable control sample, fixed sample for review or fixed control sample. A portable sample refers to a sample that is easily movable, convenient for carrying. A fixed sample refers to a sample that is not portable. If the location of a fixed sample is not defined in the work section, obtain direction from the contract administrator.

For samples that are located on site, or by agreement with the contract administrator are located off site, notify the reviewer and contract administrator of their location and availability for review.

Timing for the provision and review of samples is to be included in the contract programme. Where no time is stated in a work section allow 10 working days for each review. Allow for such resubmission and further review as may be required. No extension of time will be allowed for resubmission and further review.

Obtain written instructions in relation to the samples from the contract administrator. Do not proceed further with related work items until advised to continue.

Samples may be incorporated in the finished work if confirmed in writing by the contract administrator, otherwise allow to completely remove any fixed samples. Remove from the site any rejected samples.

Refer to SAMPLES clauses in work sections for further detail.

1.55 CONTROL SAMPLES

Samples become control samples if an instruction is given by the contract administrator to that effect. Control samples will be used for comparison purposes throughout the contract. Control samples may be portable or fixed in place, refer to SAMPLES clauses in work sections for further detail.

Control samples that are to remain on site, or otherwise in the care of the contractor, are to be maintained in original condition.

If confirmed by the contract administrator, fixed control samples may be incorporated in the finished work, otherwise allow to remove fixed control samples from site when instructed by the contract administrator.

1.56 OTHER SAMPLE REQUIREMENTS

Where specified in the work sections obtain samples for the purposes described.

Prototypes

1.57 PROTOTYPES - TESTING

Where specified in the work sections provide and test prototypes. Timing for the provision, testing, disassembling, re-assembling, retesting and review of prototypes and test results is to be included in the contract programme. Where no time is stated in a work section allow 10 working days for each review of test results. Submit test results to the named reviewer and to the contract administrator. Where no person is named as the reviewer submit test results to the contract administrator.



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Obtain written instructions in relation to the prototype from the contract administrator. Do not proceed further with related work items until advised to continue.

Refer to PROTOTYPES - TESTING clauses in work sections for further detail.

1.58 PROTOTYPES - REVIEW

Where specified in the work sections provide prototypes for review. Timing for the provision, disassembling, re-assembling and review of prototypes is to be included in the contract programme. Where no time is stated in a work section allow 10 working days for review by the named reviewer. Where no person is named as the reviewer notify the contract administrator for direction.

Obtain written instructions in relation to the prototype from the contract administrator. Do not proceed further with related work items until advised to continue.

Refer to PROTOTYPES - REVIEW clauses in work sections for further detail.

1.59 PROTOTYPES - GENERAL

Refer to the PROTOTYPES - TESTING and PROTOTYPES - REVIEW clauses in work section for details on what is to happen after the review and or testing of the prototype is complete. Where no information is provided refer to the contract administrator for direction.

Prototypes may become control samples if an instruction is given by the contract administrator to that effect.

Spares & maintenance products

1.60 SPARES & MAINTENANCE PRODUCTS

Collect, protect, package, label and store safely all spares and maintenance products specified in the work sections. Give the contract administrator an inventory of all spares and maintenance products.

If no instruction is given within a work section for the location of spares and maintenance products, then deliver to the owner.

If no instruction is given within a work section for timing in relation to the provision of spares and maintenance products, then provide at practical completion.

Refer to SPARES & MAINTENANCE PRODUCTS clauses in work sections for further detail.

Cleaning during the works

1.61 PERIODIC SITE CLEANING

Carry out periodic site cleaning during the contract period. Place waste material in appropriate storage pending removal from the site. Keep food waste separate from construction waste.

1.62 TRADE CLEANING

Keep the work area clean, remove of all debris, unused and temporary materials and elements from the site as work progresses and on completion. Refer to individual work sections for any specific requirements.

Remove protection

1.63 REMOVE PROTECTION

Remove all temporary markings, labels, packaging and coverings to products unless instructed otherwise, or where they are required for protection.

Maintain temporary protection until removal is required by the manufacturer/supplier, the execution of the work or the requirements of individual work sections. Re-establish protection as necessary.

Remove temporary protection and special protection immediately prior to practical completion or before when there is no further risk of damage.



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Refer to individual work sections for any special removal requirements.

Completion

1.64 SPECIAL REQUIREMENTS

Refer to individual work sections for any special completion requirements.

1.65 LEAVE WORK

Leave work to the standard required for the following procedures.

1.66 COMPLETION - TESTS & CERTIFICATION

Carry out tests as detailed in the work sections. If testing identifies a failure to meet performance requirements, notify the contract administrator and any nominated recipient, identify and correct the cause of failure and repeat the test. Submit test results and certification documentation to the contract administrator and any nominated recipient.

1.67 REMOVE CONSTRUCTION WASTE

Remove all debris, unused materials and the like from the site. Arrange for material to be recycled to be collected or delivered to the recycler.

1.68 COMPLETE ALL SERVICES

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

1.69 CLEANING BY CONTRACTOR

Clear the contract works of all construction materials, waste, dirt and debris. Clean the contract works including:

- Wipe all surfaces to remove construction dust.
- Clean out service ducts and accessible concealed spaces.
- Clean out all gutters and rainwater heads.
- Wipe dust from both sides of glass. Take particular care when removing paint or cementitious materials to not damage the glass. Do not use metal scrappers that may damage the glass.
- Remove adhesive residue left by labels and other temporary protection/markings.
- Clean out the interior of all cabinetry.
- Wash down external concrete including driveways and concrete masonry. Take care when waterblasting to not cause damage to the surface or allow water to enter the building.
- Remove rubbish and building material from the area immediately adjacent to the contract works.

1.70 CLEANING BY COMMERCIAL CLEANER

In addition to cleaning carried out by the contractor, use a commercial cleaning company to clean the whole of the interior of the building, including all appliances, equipment, fittings, surfaces and finishes to leave it without any blemish. Cleaning to include:

- Clean and wash down all external surfaces to remove dirt, debris and marking.
- Clean all interior surfaces including cabinetwork, joinery, sanitary and hardware items.
- Clean all floor finishes.
- Clean and polish all glass, both sides. Take particular care when removing paint or cementitious materials to not damage the glass. Do not use metal scrappers that may damage the glass.

Commissioning

1.71 SPECIAL REQUIREMENTS

Refer to individual work sections for any special commissioning requirements.

1.72 MOVING PARTS

Adjust, ease and lubricate all doors, windows, drawers, hardware, appliances, controls and all moving parts to give easy and efficient operation.

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1.73 COMMISSIONING - TESTS & CERTIFICATION

Carry out tests as detailed in the work sections. If testing identifies a failure to meet performance requirements, notify the contract administrator and any nominated recipient, identify and correct the cause of failure and repeat the test. Submit test results and certification documentation to the contract administrator and any nominated recipient.

1.74 INSTRUCTION AND DEMONSTRATION

Provide instruction and demonstration to the owner/occupier to the extent that is listed below and as required for them to reasonably occupy and use the building. This is to include at least the following:

- Location and isolation of all services connections.
- Operation of all emergency systems.
- Locking and security arrangements.
- Operation of basic building services including lighting, heating, mechanical ventilation, air conditioning and security.
- Special cleaning requirements and procedures.
- Any other features that the owner/occupier needs to know about.

1.75 SECURITY AT COMPLETION

Remove any temporary lock cylinders and complete final keying prior to handing over keys to the principal on completion of the works. Leave the works secure with all accesses locked. Account for all keys/cards/codes and hand to the principal along with an itemised schedule, retaining a duplicate schedule signed by the principal as a receipt.

Practical completion submission

1.76 ADDITIONAL PRACTICAL COMPLETION INFORMATION

In addition to requirements in the contract and contained elsewhere in the specification provide the following information submissions for practical completion:

- All documents which the contractor has obtained on behalf of the owner/occupier.
- Information required by the owner/occupier to be able to use the building.
- Advice that NUO accounts in the contractor's name have been closed and as appropriate changed to be in the name of the owner/occupier.
- A list of persons to be contacted to carry out any emergency or remedial work including 24 hour/7 day contact details.

Defects period submissions

1.77 DEFECTS REMEDIATION - SUBMISSIONS

Provide the following at periods required by the contract administrator, where no period is stated, provide this information monthly:

- A copy of the contractor's check list identifying remaining defects and omissions to be completed recording progress made in completing and correcting the items.
- A copy of lists issued by the principal/employer identifying omissions and defects recording progress made in completing and correcting the items.
- A copy of lists issued by the contract administrator identifying omissions and minor defects recording progress made in completing and correcting the items.

Completion submissions

1.78 FINAL COMPLETION - SUBMISSIONS

In addition to requirements in the contract and contained elsewhere in the specification provide:

- Contractors advice that all defects have been corrected and omissions and deferred work completed.
- All documents which the contractor has obtained on behalf of the owner/occupier.

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1278SR SCHEDULE OF SLIP RESISTANCE TESTING

1 GENERAL

This section relates to the testing of surfaces for slip resistance. It includes:

- test methods and minimum test values required for slip resistance testing.
- general reporting requirements.

This section includes schedules identifying work sections with:

- slip resistant surfaces exempt from testing and slip resistant surfaces that have been tested and comply with NZBC D1/AS1 requirements for testing.
- surfaces that require slip resistance testing.

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- Work sections identified in the schedule(s)

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BPN	British Pendulum Number
COF	Coefficient of friction
SDV	Slope design value
SRV	Slip resistance value

Documents

1.3 DOCUMENTS

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

NZBC D1/AS1	Access routes
AS 4586	Slip resistance classification of new pedestrian surface materials

Slip resistance - surfaces not requiring testing

1.4 SLIP RESISTANCE - SURFACES EXEMPT FROM TESTING

There are no work section requirements.

1.5 SLIP RESISTANCE - PREVIOUSLY TESTED SURFACE

There are no work section requirements.

Slip resistance - surfaces requiring testing

1.6 SLIP RESISTANCE - SURFACES REQUIRING TESTING

Refer to the following work sections for surfaces to be tested for slip resistance, including location, test condition, slope requirement and specific reporting requirements:

6221M Mapei Floor Tiling Solutions

1.7 TEST METHODS & MINIMUM TEST VALUES

Refer to tables below for test methods and minimum test values required for the stated test condition.

Test condition:	Minimum test value required:	Test method:
Level access wet	39 SRV	Wet pendulum test method of AS 4586, Appendix A using the Slider 96 rubber.

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Sloping access wet	Refer to sloping access wet table below, select BPN value for stated slope.	Wet pendulum test method of AS 4586, Appendix A
Stairs wet - with slip resistant nosings	39 SRV	Wet pendulum test method of AS 4586, Appendix A using the Slider 96 rubber.
Stairs wet - without slip resistant nosings	50 BPN	Wet pendulum test method of AS 4586, Appendix A
Wet areas primarily used barefoot	“B” Classification	Obtain classification from the ramp method of AS 4586, Appendix C
Level access dry	0.4 COF	Obtain slip resistance value from the dry floor friction test method of AS 4586, Appendix B
Sloping access dry	Refer to sloping access dry table below, select COF value for stated slope.	Obtain slip resistance value from the dry floor friction test method of AS 4586, Appendix B
Stairs dry - with slip resistant nosings	0.4 COF	Obtain slip resistance value from the dry floor friction test method of AS 4586, Appendix B
Stairs dry - without slip resistant nosings	0.525 COF	Obtain slip resistance value from the dry floor friction test method of AS 4586, Appendix B
Contaminated walking surfaces	R~	Obtain classification from the oil-wet inclining platform test method of AS 4586, Appendix D

Sloping access wet - minimum test values required for a given slope

Minimum test value required (SDV)	Maximum gradient	Maximum slope in degrees
42 BPN	1 in 39	1.5°
43 BPN	1 in 29	2.0°
44 BPN	1 in 23	2.5°
45 BPN	1 in 20	3.0°
45 BPN	1 in 17	3.5°
46 BPN	1 in 15	4.0°
47 BPN	1 in 13	4.5°
48 BPN	1 in 12	5.0°
49 BPN	1 in 11	5.5°
50 BPN	1 in 10	6.0°

Sloping access dry - minimum test values required for a given slope

Minimum test value required (COF)	Maximum gradient	Maximum slope in degrees
0.433	1 in 39	1.5°
0.444	1 in 29	2.0°
0.455	1 in 23	2.5°
0.466	1 in 20	3.0°
0.477	1 in 17	3.5°
0.488	1 in 15	4.0°
0.499	1 in 13	4.5°
0.504	1 in 12	4.76°
0.521	1 in 11	5.5°
0.525	1 in 10	5.7°
0.543	1 in 9	6.5°

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0.557	1 in 8	7.125°

1.8 GENERAL REPORTING REQUIREMENTS

Provide slip resistance test results to the contract administrator, including a statement that the tested surface meets or exceeds the nominated minimum test value. Refer to individual work sections for additional requirements. If no time is nominated for the submission of test results in the work section, then provide test results prior to practical completion.

If testing identifies a failure to meet performance requirements, notify the contract administrator and manufacturer/supplier. Consult with the manufacturer/supplier to identify the cause, then correct the failure and repeat the test.

Slip resistance - additional items

1.9 SLIP RESISTANCE - ADDITIONAL ITEMS

Refer to separate documentation for slip resistance requirements not contained within this specification.

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2210 PREPARATION & GROUNDWORK

1 GENERAL

This section relates to the clearance, excavation and backfilling of the site area in preparation for:

- footings and floor slabs
- backfilling behind basement retaining walls

Documents

1.1 DOCUMENTS

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

NZS 3604	Timber-framed buildings
WorkSafe	Good Practice Guidelines - Excavation Safety

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

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

Manufacturer/supplier contact details;

Company:	Contractor to confirm
Web:	Contractor to supply
Email:	Contractor to supply
Telephone:	Contractor to supply

1.3 SITE SAFETY

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

1.4 ARCHAEOLOGICAL DISCOVERY

If fossils, antiquities and other items of value are found refer to the general section 1220 PROJECT for actions to be taken with archaeological discovery.

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2 PRODUCTS

2.1 EXCAVATED CLEAN FILL

Clean, free of contamination, mineral soil from other formations in the excavation which may be selected and approved as suitable for filling by having grading and moisture content properties that will allow recompaction to 95% of maximum density.

2.2 VOLCANIC TUFF FILL

Scoriaceous tuff of variable grading excluding excessive silt or clay material, capable of being placed and compacted as specified.

2.3 ROCK FILL

Hard material comprising rock, broken stone, hard brick, concrete, run of pit scoria, or other comparable inert material capable of being placed and compacted as specified.

2.4 SAND FILL

Clean sand of such grading in particle size to achieve mechanical compaction to 90% maximum density.

2.5 HARD FILL

Scoria or crushed rock to GAP (General All Passing) 40 grading.

2.6 GRANULAR FILL

Approved screened crushed gravel or scoria, graded in size from 20mm to 7mm, clean. When tested with a standard sieve of 4.75 opening no material is to pass.

2.7 DRESSING COURSE

Scoria to GAP 20 grading, or "dirty footpath scoria", or equivalent "all in" graded crushed metal aggregate.

2.8 FREE-DRAINING AGGREGATE

Scoria or crushed gravel graded 50 to 14 clean.



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3 EXECUTION

3.1 WASHOUT BAY FOR TRUCK

Provide a designated area for trucks to be washed down to avoid mud and dirt being carried off site.

3.2 EXCAVATION GENERALLY

Carry out excavation, using plant suitable for the purpose, to the guidelines set by the WorkSafe, Good Practice Guidelines - Excavation Safety.

3.3 BURNING OF MATERIALS

Burning of materials is not permitted on site.

3.4 PROTECT EXISTING WORK

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

3.5 PROTECT EXISTING TREES, PLANTING, OR LANDSCAPE FEATURES

Protect from damage trees, shrubs, natural site features and existing landscaped areas nominated on the drawings as being retained. Ensure existing levels are undisturbed beneath the dripline of retained trees.

3.6 EROSION CONTROL

Ensure measures are in place to contain silt dislodged as a result of water infiltration and to prevent it being carried off site with stormwater.

3.7 SURFACE PREPARATION

Comply with NZS 3604, section 3.5, **Site preparation**. Remove all turf, vegetation, trees, topsoil, stumps, uncontrolled fill and rubbish from the area to be built on.

3.8 UNDERGROUND ELEMENTS AND SERVICES

Break out and remove old foundations, slabs, drainage pipes, manholes, tanks, cables and redundant services. Report for instructions when any unexpected voids, made-up ground or services are encountered. Seal off the ends of drains or remove to territorial authority approval.

3.9 STOCKPILE TOPSOIL

Stockpile excavated topsoil on site where directed. Keep separate from other excavated materials. Spread and level where directed before completion of the works.

3.10 SHORING AND UNDERPINNING

Carry out shoring and underpinning shown on the drawings and as necessary to prevent subsidence of adjoining public or private property and to ensure the safety of the public and site personnel. Maintain protection throughout the progress of the works, or until foundations and subgrade structures have been completed and the stability of adjoining public and private property secured.

3.11 GENERAL EXCAVATION

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

3.12 ROCK EXCAVATION

If rock is found at any level above the underside of the structural foundations, or above required base levels for site service trenches, immediately notify the owner. Obtain written instructions from the owner on the proposed approach to rock excavation, or consequent alterations to subgrade construction. Confirm any changes with the territorial authority.

3.13 FOUNDATION EXCAVATION

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

3.14 INADEQUATE BEARING

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

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

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

3.15 STANDARD OF COMPACTION

Place fill in layers of not more than 150mm and compact to achieve 95% of maximum dry density. For granular fill material, the fill shall be compacted to 80% of saturated dry density.

3.16 GRANULAR BASE FOR SLABS

To conform to NZS 3604, section 7.5.3, **Granular base**. Consolidate with a vibrating roller. Blind the surface with 20mm of coarse sand or sand/cement and roll ready to receive a damp-proof membrane.

3.17 GENERAL BACKFILLING

Obtain written confirmation from the owner before using any excavated material. Compact approved backfilling in 150mm layers with the last 200mm in clean topsoil, lightly compacted and neatly finished off.

3.18 RETAINING WALLS

Backfill behind retaining walls with free draining granular material and compact in 200mm layers. Ensure any tanking membranes, protection sheets, drain coil and damp-proofing are not damaged.

3.19 SURPLUS MATERIAL

Remove surplus and excavated material from the site.

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3155AS ALLIED SUPERSLAB CONCRETE FLOOR SYSTEM

1 GENERAL

This section relates to the supply and installation of Allied Concrete SuperSlab/SuperSlab+concrete floor systems.
It includes:

- Engineered concrete reinforced floor system in accordance with its CodeMark Certificate of Conformity

1.1 RELATED WORK

Refer to Architectural Plans

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following definitions apply specifically to this section:

DPM	Damp proof membrane
EPS	Expanded polystyrene
GGBS	Ground granulated blast-furnace slag
PE	Polyethylene
PVC	Polyvinyl chloride
SCM	Supplementary cementitious materials
XPS	Extruded polystyrene

The following definitions apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

NZBC B1/AS1	Structural provisions for buildings
AS 1366.3	Rigid cellular plastics sheets for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS - M)
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber-framed buildings
NZS 3631	New Zealand timber grading rules
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4671	Steel reinforcing materials

CodeMark CMNZ30086(ver K) - Allied SuperSlab Concrete Floors System

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Allied Concrete SuperSlab/SuperSlab+ Technical Manual (Rev J)
Allied Concrete Engineered Raft Floor System SuperSlab/SuperSlab+ brochure
Allied Concrete material safety data sheet for ready mixed concrete

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QuickSet Thermal Modelling Report
QuickSet and QuickEdge details drawings
QuickSet Technical Specifications and QuickStart Instruction Manual
QuickSet and QuickEdge Installation Guides
BRANZ Appraisal 964 - Allied SuperSlab Concrete Floors

Manufacturer/supplier contact details:

Company:	Allied Concrete Ltd
Web:	www.alliedconcrete.co.nz
Email:	sales@alliedconcrete.co.nz
Telephone:	0800 4 255433

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

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

1.7 STEEL REINFORCING COMPLIANCE

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

1.8 QUALITY RECORDS

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

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Producer Statement - Construction from the applicator/installer
- Producer Statement - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents

1.10 COMPLIANCE CODEMARK CERTIFICATE

Allied Concrete SuperSlab/SuperSlab+ concrete floor system meets the requirements of the NZBC when used within the conditions and limitations of its Certificate of Conformity CMNZ30086.

2 PRODUCTS

Materials

2.1 BLINDING

Compacted GAP 7 or sand blinding layer.

2.2 DAMP-PROOF MEMBRANE

0.25mm minimum PE to NZS 3604: clause 7.5.4, DPM.

2.3 POLYSTYRENE PODS

Allied Concrete SuperSlab/SuperSlab+ proprietary purpose made moulded expanded polystyrene pods manufactured to AS 1366.3. Sizes 1100mm x 1100mm x 220mm (North Island & South Island) or 1100mm x 1100mm x 300mm (South Island only).

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2.4 QPOD PODS

Allied Concrete SuperSlab/SuperSlab+ proprietary purpose made QPOD moulded plastic pods. Sizes 550mm x 550mm x 220mm deep and 550mm x 550mm x 300mm deep forming an 1100mm x 1100mm pod when 4 pods are clipped together. Each pod has a raised portion in the centre to hold reinforcing steel at the correct height. QPOD extensions and end caps are available.

2.5 SPACERS

Allied Concrete SuperSlab/SuperSlab+ proprietary or QPOD plastic spacers.

2.6 REINFORCEMENT

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

2.7 RE-ENTRANT INTERNAL CORNER STEEL REINFORCEMENT

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

2.8 TOPPING SLAB REINFORCEMENT - MESH

Welded reinforcing mesh to AS/NZS 4671, Class E to NZBC B1/AS1 - Grade 500E, 2.29kg/m², minimum SE62 500E mesh or equivalent.

2.9 TOPPING SLAB REINFORCEMENT - REINFORCING BARS

10mm diameter grade 300 class E reinforcing bars to AS/NZS 4671.

2.10 TYING WIRE

Mild drawn steel wire not less than 1.2mm diameter.

2.11 TIMBER FORMWORK

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

2.12 QUICKEDGE EDGE INSULATION

Insulated edge panels consisting of 20mm thick XPS insulation laminated onto 16mm thick PVC foam board. Refer to SELECTIONS.

2.13 UNDERSLAB INSULATION

Proprietary EPS or XPS insulation board. Refer to SELECTIONS.

2.14 SUPERSLAB CONCRETE

20MPa or 25MPa 100mm slump mix in either 13mm or 19mm nominal aggregate size. Allied Concrete SuperSlab mixes are suitable for direct placement and for pump applications. Refer to SELECTIONS.

2.15 ECRETE™ CONCRETE

A lower carbon concrete mix. 20MPa or 25MPa 100mm slump mix in either 13mm or 19mm nominal aggregate size. Allied Concrete Ecrete™ mix is compatible for use with Allied Concrete SuperSlab/SuperSlab+ concrete floor systems. Ecrete™ mixes are suitable for direct placement and for pump applications. Refer to SELECTIONS.

2.16 NORMAL CONCRETE

Normal concrete 20 or 25MPa grade,100mm slump, maximum aggregate size 19mm to NZS 3104 for concrete work where Allied Concrete SuperSlab/SuperSlab+ or Ecrete™ mix is not required. Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

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Application - general

3.3 SITE CLEARANCE

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

3.4 BUILDING PLATFORM

Create a building platform to a level surface to the required depth below finished floor level to suit Allied Concrete SuperSlab/SuperSlab+ concrete floor systems. Overall foundation height to include slab, blinding and underslab insulation thickness. Cut and/or fill sloping sites. Confirm finished floor level.

3.5 POST-CUT INSPECTION

Inspect and confirm that the soil conditions are as anticipated by the geotechnical investigation and report and conform to the requirements of the Allied Concrete SuperSlab/SuperSlab+ Technical Manual.

3.6 TEMPORARY BUILDING PLATFORM DRAINAGE

Construct suitable drainage to keep excessive ground water off the building platform during and after construction as required, and to ensure run off onto adjoining properties is avoided.

3.7 HARDFILL

Place hardfill in layers not exceeding 150mm thick to NZS 3604. Consolidate hardfill by suitable mechanical equipment to provide a dense stable surface capable of 100kPa safe bearing pressure.

Application - pre-installation

3.8 UNDERGROUND SERVICES

Ensure underfloor services are installed in the subsoil or hardfill in locations as shown on the drawings and according to Allied Concrete SuperSlab/SuperSlab+ concrete floor system requirements, or within the slab depth where applicable.

3.9 BLINDING LAYER

Spread GAP 7 blinding layer to a depth of 10mm minimum and 20mm maximum extending 500mm to 1000mm beyond the perimeter of the slab. Blinding layer to be loose packed and levelled to a tolerance of +/-5mm.

3.10 INSTALL DAMP-PROOF MEMBRANE

Install DPM to NZS 3604 over the prepared blinding layer extending 50mm minimum to the outside of all edge beams. Overlap all joints in the DPM sheets a minimum 150mm. Tape laps and penetrations with 50mm wide pressure sensitive plastic tape. Ensure DPM is not damaged during the construction process. Repair all damage to DPM before proceeding with following procedures.

3.11 TIMBER FORMWORK

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

3.12 QUICKEDGE PANELS

Assemble and install QuickEdge panels to timber formwork in accordance with QuickEdge Installation Guides.

3.13 QUICKSET FORMWORK

Assemble and install QuickSet formwork in accordance with QuickSet Technical Specifications and QuickStart Instruction Manual.

3.14 INSTALL UNDERSLAB INSULATION

Place underslab insulation boards over DPM to the manufacturer's installation instructions.

Application - Allied Concrete SuperSlab/SuperSlab+ concrete floor systems

3.15 PLACE POLYSTYRENE PODS

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

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3.16 PLACE QPOD PODS

Place QPOD pods in a regular pattern using the spacers in the specified grid pattern to fit the floor plan ensuring the correct dimensions for all perimeter footings and internal ribs. If extensions with pods are required ensure that the overall dimension of each pod does not exceed 1100mm x 1100mm. Use beam spaces 100mm, 300mm and 400mm to space pods to form ribs and footings, and to locate and support reinforcing steel. Cut holes for services and trim around piles as required on site.

3.17 INSTALL SPACERS

Install spacers and locations to the Allied Concrete SuperSlab/SuperSlab+ Technical Manual.

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

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

Form ribs to support load-bearing walls using Allied Concrete SuperSlab/SuperSlab+ 300mm spacers. Place the spacers at a minimum of one spacer along the edge of each pod or part pod.

3.18 PLACE REINFORCING: GENERAL

Install specified reinforcing to Allied Concrete SuperSlab/SuperSlab+ Technical Manual. Ensure specified minimum cover requirements are maintained.

3.19 PLACE REINFORCING STEEL TO INTERNAL RIBS

Place rib reinforcing bars in the bottom of the internal ribs and supported in the correct position by the Allied Concrete SuperSlab/SuperSlab+ spacers. Lap HD12 bars 600mm minimum. At the junction with the edge beam, each rib bar to sit on top of the edge beam bars and extend to the outermost bar. Allow for 40mm side cover within the rib. Place 1 x HD12 bar in each 100mm wide rib and 2 x HD12 bars in each 300mm wide rib. Allow 50mm bottom cover to bars where DPM is used.

3.20 PLACE REINFORCING STEEL TO EDGE BEAM

Place the two edge beam reinforcing bars in the bottom of the edge beam and supported in the correct position by the Allied Concrete SuperSlab/SuperSlab+ spacers. Tie one top edge beam bar below the mesh at the perimeter of the area covered by the polystyrene pods. Lap HD12 bars 600mm minimum. At corners, the inner bottom bars and the top bars cross each other and extend to 50 mm from the outside face of the edge beam. Tie these bars together where they cross. Tying of edge beam steel is only required at corners.

3.21 PLACE REINFORCING FOR RE-ENTRANT CORNER STEEL

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

3.22 TOPPING SLAB REINFORCING MESH - POLYSTYRENE PODS

Place topping slab reinforcing mesh over the pods and support on the mesh chairs spaced at 1200mm centres minimum, with at least two transverse bars of adjacent mesh minimum placed per pod and with one mesh chair minimum per part pod. Lap mesh 225mm minimum or to suit mesh suppliers details and tied at all laps.

3.23 TOPPING SLAB REINFORCING MESH - QPODS

Place topping slab reinforcing mesh over the Qpods built in chairs and lapped 225mm minimum or to suit mesh suppliers details and tied at all laps.

3.24 TOPPING SLAB REINFORCING BARS - POLYSTYRENE PODS

Place topping slab reinforcing bars at 300 centres each way, chaired and tied as per NZS 3109.

3.25 TOPPING SLAB REINFORCING BARS - QPODS

Place topping slab reinforcing bars at 300 centres each way over the Qpods built in chairs and tied as per NZS 3109.

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3.26 FORM SLAB AND OPENING REBATES

Form rebates, as detailed on drawings. Form a rebate in slab for masonry veneer construction with a width dependent on the veneer width, cavity width and overhang. Waterproof the rebate with a bituminous sealer on both the vertical and horizontal faces.

3.27 IN-SLAB HEATING

Confirm with in-slab heating system installer that the required installation is completed prior to the pouring of the concrete slab.

3.28 TOPPING SLAB DEPTH

Concrete slab thickness 85mm minimum/100mm maximum. Refer to Allied Concrete SuperSlab/SuperSlab+ details.

3.29 PRE-PLACEMENT INSPECTION

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

3.30 EQUIPOTENTIAL BONDING REINFORCING

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

3.31 CONCRETE PLACEMENT AND COMPACTION

Ensure the rib and edge beam canals are clean, free of debris. Pour the floor in a single pour using only Allied Concrete SuperSlab/SuperSlab+ mix concrete and ensuring that the pods remain in position during placing. Pour concrete onto the top of each pod prior to filling the ribs around the pod to help prevent them from floating and lifting.

Use Allied Concrete SuperSlab/SuperSlab+ mix for placement in the floor directly from the concrete truck chute or by concrete pump.

Compact concrete using a suitable poker vibrator for the ribs and ground beams and into all corners of the formwork. Screed as required. Confirm levels with a laser level and ensure minimum specified topping thickness is achieved.

3.32 CONCRETE FINISHING

Float and trowel to provide a U3 finish to NZS 3114: table 2, Classes of floor, exterior pavement and invert finishes. Exposed edges of foundation to F5 finish.

3.33 CONCRETE CURING

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

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

3.34 SHRINKAGE CONTROL JOINTS

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

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

Bay dimensions formed by the shrinkage control joints to be limited to a maximum ratio of length to width of 2 to 1 with a maximum dimension of 6 metres. Where a shrinkage control joint runs along the line of a 300mm wide loadbearing rib, locate the cut directly above one edge of the 300mm rib. Do not place supplementary reinforcing bars (including re-entrant corner steel) across any shrinkage control joints.

3.35 CLEAN OUT SHRINKAGE CONTROL JOINTS

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



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3.36 STRIKE FORMWORK

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

3.37 SURFACE DEFECTS

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

Application - other concrete work

3.38 PLACE CONCRETE

Do not place fresh concrete against the preceding layer after more than 45 minutes, or such lesser time as required by the circumstances, to NZS 3109: clause 7.4, Handling and placing.

3.39 SCREED THE SURFACE

Screed the concrete surface by straight edge or vibrating screed immediately after compaction and to tolerances in NZS 3109: table 5.2, Tolerances for in situ construction.

3.40 CONCRETE FINISHING

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

Completion

3.41 COMPLETION MATTERS

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

3.42 CLEAN UP

Clean up surrounding areas following completion of the concrete placement.

4 SELECTIONS

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

4.1 ALLIED CONCRETE SUPERSLAB+ INSULATED CONCRETE FLOOR SYSTEM

Brand:	Allied Concrete SuperSlab+ insulated concrete floor system
DPM type/thickness:	Masons DPM
Formwork type/height:	Timber with QuickEdge Taper panels - 305mm, 320mm, 340mm, 385mm, 400mm, 420mm, 600mm x 2430mm long
Underslab insulation type/thickness:	50mm Expol SLABX200 (R1.5)
Pod type/size:	Contractor to confirm
Topping slab reinforcement:	Contractor to confirm
Concrete mix:	SuperSlab
Concrete strength/mix code:	Contractor to confirm
Aggregate size:	Contractor to confirm
Topping slab thickness:	85mm minimum - 100mm maximum
Concrete surface finish:	U3 (interior)

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3811M MITEK (GANG-NAIL) PREFABRICATED TIMBER TRUSSES

1 GENERAL

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

1.1 RELATED WORK

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

DPC	Damp proof course

Documents

1.3 DOCUMENTS

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

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Manufacturer/supplier contact details

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

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

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

1.7 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

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

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Compliance Information

1.8 COMPLIANCE - PRODUCER STATEMENT DESIGN

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

1.9 SHOP DRAWINGS

Provide drawings showing the trusses and their layout;

- one prior to fabrication (buildable truss layout) for consent purposes.
- one post fabrication As Built (as fabricated layout) for construction and code compliance purposes.

The drawing shall be identified as 'Buildable' or 'As Built' (as fabricated) and shall include the following:

- The name and contact details of the accredited fabricator
- The job/design reference name or number
- The site address/location

Site specific structural and loading information including

- Pitch
- Cladding type
- Wind and snow loading values
- Date drawn
- A truss layout with truss labels and dimensions to locate the trusses on the supporting structure
- Identification of all load bearing walls/beams used to support trusses
- Specification and location of truss to truss and truss to top plate fixings or notification that such items are specified by others
- Identification of the location of any resulting loads where the design of the supporting member will be outside the scope of NZS 3604 (point loaded lintels and point loads on internal walls where the downward and upward loads are higher than 16kN) and where appropriate, any slab thickening required
- Reference to the Fabricator Design Statement

1.10 AS BUILT DOCUMENTS

Refer to the general section 1238 AS BUILT DOCUMENTATION for the requirements for submission and review of as built documents and records.

Provide the following as built documents and records:

- Provide final post fabrication as built information for construction and code compliance purposes. .

2 PRODUCTS

Materials

2.1 MITEK PREFABRICATED TIMBER TRUSSES

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

Components

Accessories

2.2 MITEK GANG-NAIL TOOTHED CONNECTOR PLATES

Toothed connector plate. Available 1.0mm and 1.6mm thick G300 grade Z275 zinc coated steel, and 1.2mm thick 304 grade stainless steel. Refer to SELECTIONS.

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2.3 LUMBERLOK TIMBER CONNECTORS

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

2.4 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Moisture content timber:	18% maximum

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

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

3.6 INSTALLATION ROOF TRUSSES

Lift and place first truss onto supporting structure and temporarily brace with a prop to a rigid element (e.g. wall or ground). Place each successive truss using a gauging rod set to the required spacing. Longitudinally brace trusses back to the first truss with a temporary timber tie nailed at each top chord panel point. Fix trusses to the supporting structure to buildable truss layout design requirements.

3.7 ROOF BRACING

Refer to 3821M MITEK TIMBER FRAMING for roof bracing of trussed roofs.

3.8 SEPARATION

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

Completion & Commissioning

3.9 COMPLETION MATTERS

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

4 SELECTIONS

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

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4.1 MITEK (GANG-NAIL) ROOF TRUSSES

Location:	Refer to Architectural Plans & Truss Design Documentation
Brand/type:	**MiTek® (GANG-NAIL®) timber roof trusses**
Species:	Radiata pine (gauged)
Moisture content:	20% maximum
Treatment:	H1.2
Connector finish:	Galvanized - Refer to Truss Design Documentation
End connectors:	LUMBERLOK® - Refer to Truss Design Documentation

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3820 CARPENTRY

1 GENERAL

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

1.1 RELATED WORK

Refer to Architectural Plans

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

1.3 DOCUMENTS

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

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

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Contractor to supply

Manufacturer/supplier contact details

Company:	Contractor to confirm
Web:	Contractor to supply
Email:	Contractor to supply
Telephone:	Contractor to supply

1.5 QUALIFICATIONS

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

1.6 DIMENSIONS

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

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2 PRODUCTS

2.1 TIMBER FRAMING, TREATED

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

2.2 LAMINATED TIMBER

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

2.3 ENGINEERED WOOD

LVL members to AS/NZS 4357.0, to required sizes and lengths and the manufacturer design properties.

Treatment to NZS 3640 and AS/NZS 1604.1.

2.4 TIMBER TRUSSES

To FTMA CoP. Moisture content 16% at supply.

2.5 WALL DWANGS, NOGS AND BLOCKING

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

2.6 EXTERIOR CAVITY WALL BATTENS - TIMBER - NON-STRUCTURAL

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

2.7 EXTERIOR CAVITY WALL BATTENS - PROPRIETARY - NON-STRUCTURAL

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

Components

2.8 NAILS

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

2.9 SCREWS

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

2.10 BOLTS AND COACH SCREWS

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

2.11 NAIL PLATES

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

2.12 CONNECTORS

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

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2.13 CORROSION RISKS

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

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

2.14 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

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3 EXECUTION

3.1 EXECUTION GENERALLY

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

3.2 SEPARATION

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

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

3.3 ATTENDANCE

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

3.4 MOISTURE CONTENT

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

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

3.5 SET-OUT

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

3.6 FRAMING WALLS

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

3.7 FRAMING ROOFS

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

3.8 FRAMING CEILINGS

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

3.9 INSTALLING WALL UNDERLAYS

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.10 FIT JAMB BATTENS

For walls with direct fix cladding, fit 20mm (nominal) jamb battens over the wall underlay, to the jambs of window and door rough openings, to NZBC E2/AS1, Figure 9.1.9.4: General window and door opening for direct fixed. Cut around sill flashings. Fix with 60 x 2.8 flat head galvanized nails at 300mm centres.

3.11 FIT CAVITY BATTENS

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

3.12 DPC TO LOSP TREATED TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

3.13 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section.

4 SELECTIONS

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4.1 EXTERIOR WALL FRAMING - RADIATA PINE

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

4.2 CAVITY BATTENS

Cavity battens	Species	Grade	Treatment
Timber - Non Structural:	Radiata pine	Merchantable	H3.1
Proprietary - non structural:	Manufacturer ~	Type ~	Reference ~
Cavity closer:	Manufacturer ~	Type ~	Reference ~

4.3 ROOF FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Rafters:	Radiata pine	SG8	H1.2
Trusses:	Radiata pine	SG8	H1.2
Purlins:	Radiata pine	SG8	H1.2
Ceiling joists and battens:	Radiata pine	SG8	H1.2
Valley boards:	Radiata pine	Merchantable	H1.2
Sarking:	Radiata pine	Merchantable	H1.2
Skillion roof framing:	Radiata pine	SG8	H1.2
Enclosed flat roof framing:	Radiata pine	SG8	H1.2

4.4 INTERIOR FRAMING - RADIATA PINE

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

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4161MP MASONS UNDERLAYS & DPC

1 GENERAL

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

- DPC
- Roof underlays
- Wall underlays
- Installation accessories

1.1 RELATED WORK

Refer to Architectural Plans

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

The following definitions apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC E2/AS4	External moisture - Light steel framing weathertight solution for buildings up to 3 storeys or of 10m or less in height with a floor area not exceeding 300m²
NZS/AS 1530.2	Methods of fire tests on building materials - Components and structures - Test for flammability of materials
NZS 2295	Pliable, permeable building underlays
AS/NZS 2904	Damp-proof courses and flashings

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NZS 3604	Timber-framed buildings
AS/NZS 4201.4	Pliable building membranes and underlays - Methods of test - Resistance to water penetration
AS/NZS 4389	Roof safety mesh
AAMA 711-13	Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products
MRM CoP	NZ Metal roof and wall cladding code of practice
NASH Building Envelope Solutions	2019 Light Steel Framed Buildings
NASH Standard Part 2	May 2019 Light Steel Framed Buildings
CodeMark™ CMNZ70072 ver 4	Masons Barricade FR
CodeMark™ CMNZ70075 ver 4	Masons Flashing Tapes
CodeMark™ CMNZ70098ver 4	Masons Roof Underlays - VHP® Value, VHP® Strong, VHP® Ultra, VHP® Maxi
CodeMark™ CMNZ70116 ver 2	Masons UNI® and UNI® PLUS Flexible Air Barriers
CodeMark™ CMNZ70117 ver 1	Masons UNI® PRO Flexible Air Barrier
CodeMark™ CMNZ70142 ver 1	Masons Barricade WD Self-Adhesive Weather-Resistive Barrier
CodeMark™ CMNZ70172 ver 0	White-faced Foil Composite Underlay

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

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

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

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

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

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

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

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and Standards Comparison Report

Masons UNI® PRO Flexible Air Barrier:

- Specification Guide V1.0 January 2022
- Design and installation guide V2.0 May 2025
- Material safety data sheet
- Technical data sheet V1.0 January 2022

Masons Insul-Baffle,

- Design and Installation Guide V1.1 February 2025
- Data sheet V1.1 February 2025

Masons 40 Below™ Flashing Tapes:

- Specification guide V3.0 March 2024
- Installation instructions
- Material safety data sheet

Masons Hydro™ Window Flashing Tape & Corner Guards:

- Specification guide V2.0 March 2024
- Installation instructions

Masons PEF Backer Rod:

- Specification guide V2.0 March 2024

Masons Penetration Seals:

- Product brochure
- Durability appraisal

Masons WrapStrap™ House Wrap Strapping:

- Product brochure
- Specification guide

Masons Insulation Strap

- Product brochure

Manufacturer/supplier contact details

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

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years For ~

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of purchase or dispatch from Masons NZ Ltd whichever is earlier.
- Provide the completed On-Site check sheets, where applicable.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS - GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

Compliance Information

1.8 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70072

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

1.9 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70075

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

1.10 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70098

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

1.11 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70116

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

1.12 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70117

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

1.13 COMPLIANCE - CODEMARK CERTIFICATE CMNZ70142

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

2 PRODUCTS

Masons DPC

2.1 MASONS DRY FIX™ DAMP-PROOF COURSE

Black, embossed, flexible, impervious polyethylene film. Manufactured to AS/NZS 2904, Meets the requirements of NZBC E2/AS1, Table C.2.1.1: Properties of roof underlays and wall underlays, and NZBC E2/AS4 10.3 and Table 23 as a DPC.

Masons Roof Underlays

2.2 MASONS ROOF UNDERLAY - VHP® STRONG

Breathable, self supporting, fire retardant, synthetic roof underlay, comprising two white, embossed outer layers of nonwoven polyethylene fabric with a water-resistant, vapour-permeable central membrane. The outer face is marked "VHP® Strong Roof Underlay". CodeMark certified and tested to NZS/AS 1530.2 for flammability index ≤ 5, to meet NZBC C/AS2.

2.3 MASONS ROOF UNDERLAY - VHP® VALUE

Breathable, self supporting, synthetic roof underlay, comprising grey upper and white lower, embossed outer layers of nonwoven polyolefin fabric with a water-resistant, vapour-permeable central membrane. The outer face is marked "VHP® Value Roof Underlay". CodeMark certified.

2.4 ROOF UNDERLAY SUPPORT

Masons roof underlays are all self-supporting, but require underlay support in specific situations - refer to relevant EXECUTION clauses.

Roof underlay support must be as per NZBC E2/AS1, paragraph 8.1.3.3 or NZBC E2/AS4 - NASH Building Envelope Solutions, 8.1.5.1, as applicable. Masons WrapStrap™ or Insulation Strap.

Masons Wall Underlays

2.5 MASONS BARRICADE™ FR BUILDING WRAP

Fire retardant, absorbent, water-resistant, nonwoven synthetic spun bonded polypropylene wall underlay, coloured white. CodeMark certified and tested to NZS/AS 1530.2 for flammability index ≤ 5, to meet NZBC C/AS2.

2.6 MASONS UNI® PLUS FLEXIBLE AIR BARRIER

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

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2.7 MASONS UNI® PRO FLEXIBLE AIR BARRIER

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

Masons Flexible Air Barriers - Fastening Systems

2.8 MASONS UNI® FASTENERS FOR TIMBER FRAME

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

2.9 MASONS UNI® FASTENERS FOR LIGHT STEEL FRAME

32mm diameter plastic domed washer for use with square or phillips head self-drilling galvanized screws (screws supplied by others).

Masons Flashing Tapes & Corner Guards

2.10 MASONS 40 BELOW™ 'ULTRA STICKY' FLASHING TAPE

Self-adhesive flexible flashing tape with white woven facing. Tape thickness 0.2mm, available in roll width 75mm - 230mm. 180days UV resistance. CodeMark certified, nail and screw sealability to AAMA 711-13.

2.11 MASONS 40 BELOW™ PLATINUM FLASHING

Self-adhesive flexible polyacrylic flashing tape with silver foil facing. Tape thickness 0.2mm, available in roll width 60mm - 230mm. 180days UV resistance. CodeMark certified, nail and screw sealability to AAMA 711-13.

2.12 MASONS 40 BELOW™ FLEX FLASHING TAPE

Self-adhesive flexible acrylic flashing tape with white facing. Tape thickness 0.2mm, available in roll width 75mm - 230mm. 270days UV resistance. CodeMark certified, single layer nail and screw sealability to AAMA 711-13.

2.13 MASONS HYDRO™ WINDOW FLASHING TAPE

Self-adhesive modified bituminous flexible flashing tape with aluminium facing. CodeMark certified. Tape thickness 1.0mm, available in rolls from 75mm - 200mm width.

2.14 MASONS HYDRO™ CORNER GUARDS

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

Masons Sealing & Underlay Accessories

2.15 MASONS™ PEF BACKING ROD

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

2.16 MASONS PENETRATION SEALS

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

2.17 MASONS WRAPSTRAP™ HOUSE WRAP STRAPPING

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

2.18 MASONS INSULATION STRAP

Blue, 25mm wide polypropylene woven and coated straps

2.19 MASONS INSUL-BAFFLE

A semi-rigid crenelated spacer made from clear PET. Supplied in sheets 45mm high x 650mm wide x 6m long.



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3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 GENERAL REQUIREMENTS

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

3.4 INSPECT SUBSTRATE

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

Application - Masons DPC

3.5 MASONS DRY FIX™ DPC

Install Masons Dry Fix™ polyethylene DPC between timber, including LOSP treated timber, concrete and steel, and between other dissimilar materials that require separation. Install in a single layer with 75mm overlaps at joints to provide a waterproof barrier. Fix with galvanized clouts at 300mm centres. Select appropriate roll width to cover required separation. Follow Masons installation instructions.

3.6 MASONS DRY FIX™ DPC - JAMB FLASHING

Install Masons Dry Fix™ DPC up the side of window jambs and under the head flashing as part of the UNI PRO installation, or optionally for any UNI installations. Fasten the DPC to the frame over the wrap using UNI fasteners.

3.7 MASONS DRY FIX™ DPC - MASONRY AND BRICK VENEER

Install Masons Dry Fix™ DPC as a concealed flashing as per NZBC E2/AS1, 9.2 Masonry veneer, for masonry veneer. Select appropriate roll width for specific application.

Application - Masons Roof Underlays

3.8 MASONS VHP® ROOF UNDERLAYS

Masons VHP® Roof Underlays to be installed as per Masons installation instructions, and to meet current MRM COP.

Lay horizontally across framing, starting at lower edge of roof, with succeeding sheets in true alignment and lapping 150mm. Underlay support required only for spans over 1200mm.

Alternatively, lay vertically across framing starting at one edge of roof, with succeeding sheets in true alignment and lapping 150mm. Underlay support required for roofs under 10° pitch and/or where the span is greater than 1200mm.

Ensure underlay is taut to prevent ponding, and fix onto framing at 300mm centres using stainless steel 8-12mm staples or 20mm flat head clouts (or suitable proprietary fastenings) for timber framing. Or using self-drilling screws and washers (or suitable proprietary fastenings) for light steel framing. Install roof cladding within 21 days.
If sealed laps are required, use Masons 40 Below™ Platinum Flashing Tape. Refer to MRM COP for more detail.

3.9 WEATHER CONDITIONS

Underlay may be installed in rain but extra care to be taken in windy conditions due to the large sail effect.

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3.10 PENETRATIONS AND REPAIRS TO SHEET DAMAGE

Masons Roof Underlay must be free of rips and holes, fitted tightly and be lap taped around all penetrations (except flue penetrations), to assist with moisture and drainage. Flue penetrations must have a minimum distance of 50mm clear between underlay and flue, as required by MRM COP.

Make sheet repairs by patching with new material, with edges to lap damaged area by 150mm minimum and taping edges down. Repair small tears with Masons 40 Below™ Platinum Flashing Tape.

Masons Roof Underlays - Accessories

3.11 ROOF UNDERLAY SUPPORT - MASONS STRAPPING

Fix lines of Masons WrapStrap™ or Masons Insulation Strap, 25mm wide polypropylene strapping across spans to provide support to roof underlay. Installation to meet NZBC E2/AS1 or NZBC E2/AS4, as applicable.

Application - Masons Wall Underlays

3.12 MASONS BARRICADE™ FR BUILDING WRAP - TIMBER FRAME

Fix horizontally as per Masons installation instructions, and NZBC E2/AS1, 9.1.6 Wall underlay, to outside face of framing (printed side facing out) in true alignment, with horizontal joins overlapping 75mm, and vertical joins overlapping 150mm. Ensure underlay is taut and extends from upper side of top plate to below the bottom plate or bearer. Fix at max 300mm centres using 20mm large-head clouts, 8mm staples, self-drilling screws or proprietary underlay fixings according to Masons installation guide. Keep clean and undamaged until closed in. Install exterior cladding over Masons Barricade™ FR as soon as practicable, but within 60 days.

3.13 MASONS BARRICADE WD SELF-ADHESIVE WEATHER-RESISTIVE BARRIER

Install internal and external corner reinforcement strips by cutting 400mm wide strips of Barricade WD. Position strip with length centred to corner, peel away backing film and adhere to rigid wall underlay using firm pressure with a wide plastic scraper or hard roller. Measure and mark the height of the first layer of Barricade WD. Install self-adhesive barrier from bottom of wall and applying roll from right to left by peeling away backing film from top right corner of Barricade WD roll and adhere onto rigid wall underlay using firm pressure with a wide plastic scraper or hard roller true to the measured line. Fully overlap internal & external corner underlay strips. Apply next roll of underlay, overlapping 150mm at horizontal and vertical underlay joints. Press overlaps firmly with hard roller.

3.14 WALL OPENINGS

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

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

3.15 MASONS WALL UNDERLAY AS NON-RIGID BACKING FOR STUCCO

Use Barricade™ FR, UNI® PLUS or UNI® PRO wall underlays as a non-rigid backing material for stucco plaster to NZBC E2/AS1, 9.3.4 Non-rigid plaster backings, for timber framed buildings or NZBC E2/AS4, 9.3.5.1. for light steel framed buildings. The underlay must be supported with 75mm galvanized wire mesh, or polypropylene or plastic tape, drawn taut and fixed at 150mm maximum centres, over cavity battens fixed at 300mm maximum centres.

3.16 EXPOSURE LIMIT AND TEMPORARY WEATHER PROTECTION

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

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

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

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3.17 WEATHER CONDITIONS

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

3.18 REPAIR DAMAGE

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

Application - Masons Flashing Tapes & Corner Guards

3.19 MASONS 40 BELOW™ FLASHING TAPES & CORNER GUARDS

Install Masons 40 Below™ Flashing Tape and if required, Corner Guards to NZBC E2/AS1, 9.1.4 Wall underlays to wall openings, for timber framing, or to NZBC E2/AS4, 9.1.5 for light steel framing and in accordance with Masons instructions.

3.20 MASONS HYDRO™ WINDOW FLASHING TAPE & CORNER GUARDS

Install Masons Hydro™ Window Flashing Tape and if required, Corner Guards to NZBC E2/AS1, 9.1.4 Wall underlays to wall openings, or to NZBC E2/AS4, 9.1.5 for light steel framing and in accordance with Masons instructions.

3.21 FIXING OVER LOSP TIMBER

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

Application - Masons Sealing & Underlay Accessories

3.22 MASONS PEF BACKING ROD

Install Masons PEF backing rod to NZBC E2/AS1, 9.1.5 Air seals, or E2/AS4, 9.1.6 and in accordance with Masons instructions. Diameter of foam backing rod to be sized 25% - 30% larger than the width of the gap requiring filling.

3.23 MASONS PENETRATION SEALS

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

3.24 MASONS WRAPSTRAP™ HOUSE WRAP STRAPPING

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

3.25 MASONS INSULATION STRAP

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

Completion

3.26 COMPLETION MATTERS

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

4 SELECTIONS

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

Masons DPC

4.1 MASONS DRY FIX™ DAMP-PROOF COURSE

Location:	Refer to Architectural Plans
Brand/Type:	Masons Dry Fix™ damp-proof course
Thickness:	750micron
Roll length:	30m
Roll width:	Contractor to confirm

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Masons Roof Underlays

4.2 MASONS ROOF UNDERLAY - VHP® STRONG

Location:	Refer to Architectural Plans
Brand/Type:	Masons VHP® Strong roof underlay
Size/Coverage:	Contractor to confirm

4.3 MASONS ROOF UNDERLAY - VHP® VALUE

Location:	Refer to Architectural Plans
Brand/Type:	Masons VHP® Value roof underlay
Size/Coverage:	Contractor to confirm

Masons Wall Underlays

4.4 MASONS BARRICADE™ FR FIRE RETARDANT BUILDING WRAP

Location:	Refer to Architectural Plans
Brand/Type:	Masons Barricade™ FR fire retardant building wrap
Roll size: (W x L / m²)	Contractor to confirm

4.5 MASONS UNI® PLUS FLEXIBLE AIR BARRIER

Location:	Refer to Architectural Plans
Brand/Type:	Masons UNI® PLUS flexible air barrier
Roll Size:	Contractor to confirm

Masons Flexible Air Barriers - Fastening Systems

4.6 MASONS UNI® NAIL FASTENERS - TIMBER FRAME

Location:	Refer to Architectural Plans
Frame type:	Timber
Brand/Type:	Masons UNI® Nail Fasteners
Fixing Type:	Contractor to confirm

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4221JV JSC VERTICAL WEATHERBOARD CLADDING

1 GENERAL

This section relates to the supply and fixing of JSC vertical timber weatherboard cladding systems. The range includes:

- JSC Vertical Shiplap weatherboards
- JSC Board and Batten weatherboards
- Proprietary cavity battens
- Fascia
- Moulding

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

ALYC	Alaskan Yellow Cedar
BSF	Band sawn face
DF	Dressed face
FSC	Forest Stewardship Council
PBS	Pacific Build Supply Ltd. (Butyl tape supplier)
PEFC	Programme for the Endorsement of Forest Certification
WRC	Western Red Cedar 90

Documents

1.2 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
NZBC C/AS1	Protection from fire for buildings with sleeping (residential) and outbuildings (risk group SH)
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3617	Profiles of weatherboards, fascia boards and flooring
NZS 3631	New Zealand timber grading rules
NZS 4211	Specification for performance of windows
BRANZ BU 411	Recommended Timber Cladding Profiles
CodeMark™ CMNZ30083verJ	JSC Board & Batten Cladding System
CodeMark™ CMNZ30084verQ	JSC VertiClad Cladding System

1.3 MANUFACTURER/SUPPLIER DOCUMENTS - JSC VERTICLAD VERTICAL SHIPLAP WEATHERBOARD CLADDING SYSTEM

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

- JSC VertiClad Vertical Shiplap Weatherboard Cladding Installation, Version 3.7
- JSC VertiClad Vertical Shiplap Weatherboard Cladding Design Guide, Version 1.1
- JSC VertiClad Vertical Shiplap Weatherboard System Technical Drawings
- JSC VertiClad System Installation Checklists
- JSC Exterior Weatherboard Cladding Maintenance Guide
- JSC Structural Cavity Battens Setout and Fixing Guide
- JSC Profile Charts
- JSC Coatings Exterior Wood Oil Range

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Third Party certificate documents, samples of machined profiles, colour chips, coating colours are available on request.

1.4 CONTACT DETAILS

Manufacturer/supplier contact details

Company:	J.Scott and Company Ltd.
Trading as:	JSC
Web:	www.jsc.co.nz
Email:	techhelp@jsc.co.nz
Telephone:	Auckland 09 412 2800 Christchurch 03 348 9726

Performance

1.5 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed cladding system, including all penetrations. To NZBC B2/AS1, NZBC E2/AS1 and grading rules to NZS 3631. Refer to JSC Weatherboard Cladding Installation Guides.

Ensure the JSC Weatherboard Cladding System Installation Checklist has been signed off by the main contractor on completion.

1.6 FIXINGS - WIND

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

1.7 EXTERNAL FIRE SPREAD - CLADDING EXEMPT FROM TESTING

To NZBC C/AS1, 5.3 External cladding systems, or NZBC C/AS2, 5.5 External cladding systems, where external walls are located at a distance greater than or equal to 1.0m from a relevant boundary and a building height is less than 10m

Requirements

1.8 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.9 NO SUBSTITUTIONS

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

1.10 COMPLIANCE - VERTICAL SHIPLAP WEATHERBOARDS ON CAVITY

For information pertaining to Code Compliance refer to CodeMark Certificate No: CMNZ30084 - JSC VertiClad Cladding System.

- Risk Score to NZBC E2/AS1 no greater than 20.
- Wind zone to NZS 3604 up to & including Extra High
- All corrosion zones to NZS 3604 subject to use of fixing material as prescribed in NZS 3604

1.11 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for the requirements for submission and review of operation and maintenance manuals.

Provide the following operation and maintenance manual(s) prior to Practical Completion:

- JSC Exterior Weatherboard Cladding Maintenance Guide

Compliance information

1.12 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Signed declaration that the JSC product has been installed in accordance with the installation conditions of the CodeMark certificate.
- Other information required by the BCA in the Building Consent Approval documents.



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1.13 CODEMARK CERTIFICATE CMNZ30083

The JSC Board & Batten cladding system meets the requirements of the NZBC when used within the Conditions and Limitations of its CodeMark Certificate of Conformity CMNZ30083.

1.14 CODEMARK CERTIFICATE CMNZ30084

The JSC VertiClad cladding system meets the requirements of the NZBC when used within the Conditions and Limitations of its CodeMark Certificate of Conformity CMNZ30084.

2 PRODUCTS

Materials - Species

2.1 TIMBER SPECIES - WESTERN RED CEDAR 90

JSC Western Red Cedar 90 (Thuja Plicata) purchased under recognised environmental schemes, harvested from sustainably managed forests of British Columbia, Canada.

2.2 TIMBER SPECIES – ALASKAN YELLOW CEDAR

JSC Alaskan Yellow Cedar, (Callitropsis nootkatensis) heartwood purchased under recognised environmental schemes, harvested from sustainably managed forests. Alaskan Yellow Cedar is a consistent pale-yellow colour with a fine, even texture and straight grain.

2.3 TIMBER SPECIES - RADIATA PINE

New Zealand Radiata Pine, (Pinus radiata) No1 Clears treated with H3.2 MicroPro® treatment. Supplied from New Zealand forest sources, certified legal and sustainable under third party verified FSC Mix classification.

2.4 TIMBER SPECIES - NORDIC PINE

JSC Nordic Pine, (Pinus Sylvestris) with H3.2 MicroPro®; treatment. Purchased under recognised environmental schemes, harvested from sustainably managed forests.

Materials - weatherboards

2.5 VERTICAL WEATHERBOARDS

Selected weatherboards machined to JSC profiles, lap and rebate details in accordance with BRANZ BU 411 'Recommended Timber Cladding Profiles', and general design to NZS 3617 'Profiles of weatherboards, fascia boards and flooring', grading to NZS 3631 'New Zealand timber grading rules', species and durability to NZS 3602, Table 2, reference 2A.1, 'Requirements for wood-based building components to achieve a 15-year durability performance'. Weatherboards in lengths to suit specific weatherboard type and construction method with all loose knots and bark-encased knots removed. Refer to SELECTIONS.

2.6 ASSOCIATED MOULDINGS

To JSC profiles as detailed. Refer to SELECTIONS and JSC Weatherboard Cladding System Technical Drawings.

2.7 FASCIA BOARDS

To JSC profiles as detailed. Refer to SELECTIONS and JSC Weatherboard Cladding System Technical Drawings.

Materials - Cavity battens

2.8 CAVITY BATTENS - NON-STRUCTURAL

Ref. JSC-U; CCA 3.2 treated Radiata Pine timber non-structural battens, used horizontally, are castellated on both faces with 18-degree slope to provide drainage and ventilation. Size: 45mm x 20mm.

Treatment to NZBC B2/AS1 and NZS 3602, Table 1, reference 1D.10.

2.9 SOLID CORNER BATTEN

A CCA 3.2 treated Radiata Pine timber solid batten sized to match adjacent battens and weatherboard cladding system technical drawing details. Sizes: 45mm x 20mm, 45mm x 45mm, and 45mm x 70mm.

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Components

2.10 WALL UNDERLAY

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

2.11 CAVITY CLOSER/VERMIN-PROOFING

Perforated UPVC, aluminium or stainless steel trays with upstands. Flashing to NZBC B2/AS1, Table 1, NZBC E2/AS1, 4.0 Flashings, PBS vermin closure or as per NZBC E2/AS1, paragraphs 9.1.7.5 - 9.1.7.7.

2.12 NAILS, SILICONE BRONZE/STAINLESS STEEL - STAIN / OIL FINISH

JSC rose head, flat head or pentagon head annular groove fixings, to NZBC E2/AS1, Table C.3.1.1: Fixing selection for wall claddings. Refer to JSC Weatherboard Cladding Installation Guides and SELECTIONS for fixing sizes and details.

NOTE: Select appropriate nail size / length to achieve the minimum required embedment into the framing as per installation guide.

2.13 NAILS, STAINLESS STEEL - PAINT FINISH

JSC jolt head, flat head, pentagon head or rose head annular grooved grade 316 stainless steel fixings to NZBC E2/AS1, Table C.3.1.1: Fixing selection for wall claddings. Refer to JSC Weatherboard Cladding Installation Guides and SELECTIONS for fixing sizes and details.

NOTE: Select appropriate nail size / length to achieve the minimum required embedment into the framing as per installation guide.

2.14 CLINCH NAILS, STAINLESS STEEL

40mm x 2.0mm Clinch Nail, annular grooved shank Grade 316 stainless steel. Used to retain hidden lap tongues of rebated weatherboard profiles such as vertical shiplap.

2.15 FLASHING

To NZBC E2/AS1, 4.0 Flashing. Material, grade and colour as detailed and scheduled and to NZBC E2/AS1, Table C.1.1.1B: Compatibility of materials in contact, and Table C.1.1.1C: Compatibility of materials subject to run-off. Ensure materials used for flashing are compatible with the cladding and joinery materials and fixings. Refer to JSC Weatherboard Cladding Installation Guides.

2.16 SHARKS TOOTH FLASHING

UPVC compressible flashing strip for use in high wind zones with JSC Board and Batten profiles J120, J121 and J123.

Finishes

2.17 JSC FACTORY COATING

In-house factory coating system involves applying the selected coating using vacuum coating machines under controlled conditions. Options include oil or water-based stain and paint coating systems from all recognised NZ available manufacturers.

2.18 SITE COATING

Coating/s to be applied on-site by others to coating manufacturer's specification. During installation all end grain, bare surfaces and cut edges to be double sealed. Additional coating/s to be applied on-site to manufacturer's specification. Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to the general section 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

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3.3 PRE-INSTALLATION REQUIREMENTS

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

Moisture content: Timber framing 14 - 18% maximum at fixing

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 GENERALLY

Execution to NZBC E2/AS1, 3.0 Weather-tightness risk factors, NZBC E2/AS1, 9.0 Wall claddings, NZBC E2/AS1, 9.1.7 Drained cavities and NZBC E2/AS1, 9.4 Timber weatherboards.

3.6 SUBSTRATE

Before starting fixing ensure that the substrate conforms to NZS 3604: 2, Table 2.1, 'Timber framing tolerances' and the requirements of NZS 3604: 6, 'Foundation and sub-floor framing' and NZBC E2/AS1, 9.4 Timber weatherboards.

Application - preparation/general

3.7 JSC FACTORY COATING - STAIN / PAINT

JSC In-house Coating System provides factory-applied coating on all 4x sides of weatherboard profiles within a controlled environment delivering a full envelope seal of premium exterior grade coating system. Additional coatings to be applied on site to the coating manufacturer's recommendations.

3.8 SITE-APPLIED COATING - STAIN / PAINT

Coat uncoated weatherboards with one coat of exterior grade premium stain or specified base coats of premium exterior grade primer & undercoat on all four sides to JSC Weatherboard Cladding Installation Guides.

Open stack each board to dry with the back facing down, ensuring the surfaces remain well finished, untouched and unblemished. Once dry, place boards in fillet stack, laid flat and true, until fixed. Keep dry and undamaged.

Ensure all end grain and cut edges are primed twice or stained prior to installation to coating manufacturer and JSC specification.

3.9 CAVITY CLOSER/VERMIN-PROOFING

Install cavity closer/vermin proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters, etc.) to JSC Weatherboard Cladding Installation Guides.

Fix 75mm upstand to framing one side and 10mm upstand to cladding the other. Length and width to suit cavity.
Ensure the openings in cavity closer/vermin-proofing are kept clear and unobstructed in order to maintain draining and venting of the cavity.

3.10 PENETRATIONS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding to JSC Weatherboard Cladding Installation Guides.

Required preparatory work includes the following:

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

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Application - cavity battens

3.11 INSTALLATION - HORIZONTAL NON-STRUCTURAL CAVITY BATTENS

Ensure timber framing consists of studs at 600mm maximum and horizontal noggs at 480mm centres maximum.

Install to JSC 20mm Cavity Setout For Vertical Weatherboards instructions. Install JSC-U 45mm x 20mm cavity battens horizontally over noggs and vertically at corners and around openings. Horizontal JSC-U cavity battens to be installed sloping away from the wall underlay towards the back of weatherboard ensuring water is shed away from the framing when installed horizontally.

Temporarily fix to wall framing studs using stainless steel clout nails over the wall underlay. Battens are firmly fixed by cladding fixings which penetrate wall framing studs; refer to NZBC E2/AS1, 9.1.7 Drained cavities. Allow 10mm gap between vertical and horizontal cavity battens.

Seal top of cavity and install PBS cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters, etc.)

3.12 INSTALLATION - VERTICAL NON-STRUCTURAL CORNER CAVITY BATTENS

Install a solid 20mm deep batten down one side of an external corner to provide pressure isolation between different walls. Fix using 50mm stainless clouts or similar.

Application - fixing nails

3.13 FIXING - OILED / STAINED FINISH

Install to NZBC E2/AS1, 9.4 Timber weatherboards and JSC Weatherboard Cladding Installation Guides.

Coat all cut edges before fixing with specified oil/stain to the product manufacturer's specification.

Pre-drill all fixings 1mm smaller than nail gauge to ensure a snug fit and to minimise risk of moisture entry. Finish the nail heads flush onto and not into the board surface. Do not 'over drive' the nail head and crush the timber surface beneath and surrounding the nail.

Refer to NZBC E2/AS1, Table C.3.1.1: Fixing selection for wall claddings, for dimensions and fixing details.

3.14 FIXING - PAINT FINISH

Install to NZBC E2/AS1, 9.4 Timber weatherboards and JSC Weatherboard Cladding Installation Guides.

Dressed faced (DF) profiles to have a radius to outer edges and be pre-sanded prior to undercoating and priming. Coat all cut edges before fixing with the correct undercoat and primer to manufacturer's specification.

Pre-drill all fixings 1mm smaller than nail gauge to ensure a snug fit and to minimise risk of moisture entry. Finish the jolt-head nails 3mm below the surface and undercoat and prime prior to filling and sanding.

NOTE: All undercoat, primers, fillers and surface paints to be as specified. Ensure boards are well sealed with all exposed ends top coated twice, the same as face of boards.

Refer to NZBC E2/AS1, Table C.3.1.1: Fixing selection for wall claddings, for dimensions and fixing details.

Application - fixing

3.15 SET-OUT

Using laser or mechanical devices set-out the overlap boards to ensure dimension to exposed face in line of weather is constant and that boards remain true. Use a string line to set out all nailing that will be visible in the finished work. Align all nailing accurately in straight lines.

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3.16 FIXING JSC VERTICLAD VERTICAL SHIPLAP WEATHERBOARDS

Install to JSC VertiClad Vertical Shiplap Weatherboard Cladding Installation Guide.

Adjust set-out to ensure there is a 2mm expansion gap between lapped boards. All nail fixings are to be pre-drilled with 1mm diameter smaller than the nail shank to reduce the risk of moisture entry.

To NZBC E2/AS1, Table C.3.1.1: Fixing selection for wall claddings, single-fix each vertical shiplap weatherboard 35mm from overlapping edge, with nail driven in with a slight (0-2º) upward slope. Refer to installation guide for minimum embedment of nails into the framing. Note: Do not pin laps of weatherboards.

All corners to be weatherproofed using corrosion resistant back flashing behind the weatherboards at all external corners to JSC Weatherboard Cladding Installation Guides.

Ensure all cut edges are sealed and manufacturer's coating schedules adhered to prior to installation.

Where vertical weatherboards have an exposed bottom edge such as at the bottom plate, window head, inter storey junction, overhead soffit junctions, etc. the bottom edge of the weatherboards is to be cut with a 15° degree slope to form a drip edge. From the bottom edge the back of the weatherboards to be coated up to 75-150mm.

Application - Ancillary

3.17 WINDOW FIXING

Fix to JSC Weatherboard Cladding Installation Guides and technical specifications.

3.18 ALUMINIUM WINDOWS

To NZS 4211.

3.19 FLASHING

Fix to JSC Weatherboard Cladding Installation Guides. Material compatibility to NZBC E2/AS1, Table C.1.1.1B: Compatibility of materials in contact, and Table C.1.1.1C: Compatibility of materials subject to run-off.

3.20 SCRIBERS

Scribers are to be wet-sealed in place and fixed in accordance with JSC Weatherboard Cladding Installation Guides.

Completion & Commissioning

3.21 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials - specific timber weatherboards

4.1 JSC RADIATA PINE - VERTICLAD WEATHERBOARDS

Location:	Refer to Architectural Plans
Species:	JSC Radiata Pine
Profile number:	Contractor to confirm
Grade:	No 1 Clears
Treatment:	H3.2 MicroPro® treatment
Dimensions:	Contractor to confirm
Surface finish:	Contractor to confirm
Moisture content:	14 - 18 % at fixing

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Materials - cavity battens

4.2 JSC - CAVITY BATTENS - NON-STRUCTURAL

Profiles:	JSC-U
Timber species:	Pinus Radiata
Timber grade:	Merchant
Treatment:	H3.2
Size:	45mm x 20mm

Materials - accessories

4.3 NAILS

Type:	Refer to manufacturer's details for type

4.4 CAVITY CLOSER/VERMIN-PROOFING

Brand/type:	PBS Vermin closure to NZBC E2/AS1, paragraphs 9.1.7.5 - 9.1.7.7
Material:	UPVC

4.5 INTERNAL AND EXTERNAL CORNER BACK FLASHINGS

Material:	Compatible with NZBC E2/AS1, Table C.1.1.1B: Compatibility of materials in contact
Size:	Un-hemmed 75mm x 75mm x 90º angle or hemmed 50mm x 50mm x 90º angle



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4231HO JAMES HARDIE® OBLIQUE™ WEATHERBOARD CLADDING

1 GENERAL

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

1.1 RELATED WORK

Refer to Architectural Plans
Refer to painting section(s) for the protective coating required to meet the NZBC durability requirements.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FRR	Fire resistance rating

Documents

1.3 DOCUMENTS

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

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Manufacturer/supplier contact details

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

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

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

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

1.8 SAFE WORKING

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

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

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

Provide this information prior to practical completion.

1.10 OBLIQUE™ WEATHERBOARD INSTALLATION CHECKLIST

Installer to complete, sign and provide a James Hardie® Installation Checklist.

Compliance information

1.11 CODEMARK CERTIFICATE

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

Performance - wind

1.12 PERFORMANCE, WIND

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

Performance - fire

1.13 EXTERNAL FIRE SPREAD - CLADDING MATERIALS

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

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2 PRODUCTS

Materials

2.1 OBLIQUE™ WEATHERBOARDS

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

2.2 WALL UNDERLAY

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

2.3 HARDIE™ 20MM HORIZONTAL TIMBER CAVITY BATTENS

Radiata pine castellated cavity battens minimum 45mm wide x 20mm thick with bevelled edge H3.1 treated to NZS 3602. Refer to SELECTIONS.

2.4 20MM VENT STRIP/VERMIN-PROOFING

Perforated uPVC, with upstands.

2.5 HARDIE™ 14MM ALUMINIUM JAMB FLASHING

Aluminium moulding used beside window opening to end butt the Oblique™ Weatherboard.

2.6 HARDIE™ 14MM ALUMINIUM TRIMLINE JOINT FLASHING

Aluminium flashing extrusion used behind cladding joints.

2.7 TRIMLINE JOINTERS

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

2.8 HARDIE™ 14MM ALUMINIUM INTERNAL CORNER

Anodised aluminium extrusion to create internal corners.

2.9 WEATHERBOARD INTERNAL "W" CORNER

Anodised aluminium extrusion to flash behind cladding at internal corners.

2.10 HARDIE™ 14MM ALUMINIUM EXTERNAL BOX CORNER

Anodised aluminium extrusion to flash behind cladding at external corners.

2.11 HARDIE™ AXENT™ TRIM

19mm thick pre-primed fibre cement trim.

2.12 FASTENER TYPE

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

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

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

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

2.13 CAVITY BATTEN NAILS

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

2.14 HOT DIPPED GALVANIZED NAILS

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

2.15 GRADE 316 STAINLESS STEEL NAILS

Grade 316 stainless, 65 x 2.87mm D head or 65 x 2.87mm RounDrive steel ring shank nails for fixing Oblique™ Weatherboards over cavity battens over flexible underlay.

2.16 FLEXIBLE SEALANT

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

2.17 PRIMER

Refer to SELECTIONS.

2.18 EXTERIOR GRADE FILLER

CRC® ADOS® Builders Fill, two part filler to fill over nail holes.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

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

Application - particular installations

3.4 FIRE RESISTANCE RATING

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

Application - generally

3.5 INSTALL CAVITY BATTENS - OBLIQUE™ VERTICAL WEATHERBOARDS

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

3.6 PENETRATIONS AND FLASHINGS

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

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

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3.7 INSTALL OBLIQUE™ WEATHERBOARDS - VERTICAL INSTALLATION

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

Completion & Commissioning

3.8 COMPLETION MATTERS

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

4 SELECTIONS

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

4.1 JAMES HARDIE® OBLIQUE™ WEATHERBOARDS

Location:	Refer to Architectural Plans
Type/Brand:	Oblique™ Weatherboards
Thickness:	14mm
Width:	Contractor to confirm
Length:	Contractor to confirm
Construction:	Cavity fix
Fixing:	Refer to items under 2.0 PRODUCTS

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

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

Finishing

4.3 PAINTING

Refer to painting section(s) for details.

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4239JH JAMES HARDIE® SOFFITS

1 GENERAL

This section relates to the supply and fixing of James Hardie® soffit and eave linings.
It includes:

- James Hardie® Eclipsa™ Eaves Lining
- James Hardie® Hardie™ Flex Eaves Lining
- James Hardie® Hardie™ Groove Soffit Lining
- James Hardie® Villaboard™ Soffit Lining

Documents

1.1 ABBREVIATIONS AND DEFINITIONS

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

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 1170.2:2011	Structural design actions - Wind actions
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3604	Timber-framed buildings

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Eaves and Soffits Installation Manual by James Hardie® (Feb 2025)
Fire and Acoustic Design Manual by James Hardie, May 2025
James Hardie® Eclipsa™ Eaves Lining Product Technical Statement
James Hardie® Hardie™ Groove Lining Product Technical Statement
James Hardie® Villaboard™ Lining Product Technical Statement
James Hardie® Eaves and Soffit Care and Maintenance
BRANZ Appraisal 1285 (2025) - James Hardie Fire And Acoustic Wall Systems - Amended 16 June 2026

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For lining product and accessories

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - MANUFACTURER/SUPPLIER - ECLIPSA EAVES LINING

Provide a material manufacturer/supplier warranty:

15 years:	For Eclipsa™ lining product and accessories

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10 years: For coating

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.7 NO SUBSTITUTIONS

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

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

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

James Hardie® Eaves and Soffit Care and Maintenance

Performance

1.9 PERFORMANCE - UP TO AND INCLUDING VERY HIGH WIND ZONE

The design wind speeds/zones are to NZS 3604, up to and including Very High Wind Zone. Eaves and Soffits Installation Manual by James Hardie® requirements are suitable for these conditions.

2 PRODUCTS

Materials

2.1 HARDIE™ FLEX EAVES LINING

James Hardie® Hardie™ Flex Eaves Lining 4.5mm and 6mm thick cellulose fibre reinforced cement sheet. Manufactured to AS/NZS 2908.2 from Portland cement, ground sand, cellulose fibre and water.

Components

2.2 FASTENER TYPE

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

Exposure	Fixing	Fixing Material	Zone
Sheltered	Nail	Hot-dip galvanized steel	B
Sheltered	Nail	Stainless steel	B, C, D, E
Sheltered	Screw	Stainless steel	B, C, D, E

Check against SED (specific engineering design) requirements for microclimate conditions. Refer to SELECTIONS for fastener type.

Components - Hardie™ Flex Eaves Lining

2.3 SOFFIT JOINTERS AND MOULDS

Extruded uPVC jointer, capping and scotia mould.

2.4 HARDIE™ FLEX NAILS

Hardie™ Flex Nail, 40 x 2.8mm stainless steel or galvanized nail, Refer to SELECTIONS.

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2.5 FASTFIX FASTENER
38 x 12mm, Nylon / White Fastfix Fasteners.

2.6 ADHESIVE
Refer to SELECTIONS.

2.7 INSEAL TAPE
Inseal® 3259, 1.5mm thick x 48mm wide black compressible medium density closed cell foam tape.

2.8 POLYPROPYLENE TAPE
Polypropylene tape, 30mm minimum width.

Components - General

2.9 FLEXIBLE JOINT SEALANT
Refer to SELECTIONS.

Accessories

2.10 MASKING TAPE
3M Scotch Blue painters tape 2090-18E or Sellotape 5855 Long Life.

3 EXECUTION

Conditions

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

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

3.3 PRE-INSTALLATION REQUIREMENTS
Check work previously carried out and confirm it is of the required standard for this part of the work.
Moisture content timber framing: 18% maximum

Installation/application

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

3.5 FIRE RESISTANCE RATING
Install fire rated soffit as part of a James Hardie® FRR exterior system. Refer to project drawings for FRR system construction details and Fire and Acoustic Design Manual by James Hardie® for further information.

3.6 CURVED APPLICATIONS
Install in accordance with James Hardie® installation manual requirements, mechanically fix at 200 mm centres maximum.

Application - general

3.7 SHEET LAYOUT
All sheet edges must be fully supported by framing or rebates in fascia and barge boards.

3.8 OFFSET PATTERN SHEET LAYOUT
All sheet edges must be fully supported by framing or rebates in fascia and barge board. Sheets must be laid in an offset pattern so that adjacent end joints do not coincide.

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3.9 CUTTING SOFFIT CLADDING

Cut sheets dry using score and snap method, hand guillotine method or fibreshear heavy duty method. If these methods are not feasible, use an alternative manufacturer approved method.

3.10 CIRCULAR HOLE FORMING

Mark the centre of the hole on the sheet, pre-drill a pilot hole. Use the pilot hole as a guide for a hole saw fitted to a heavy duty electric drill.

3.11 IRREGULAR HOLE FORMING

Drill a series of small holes around the perimeter of the proposed hole, tap out the waste piece from the sheet face.

3.12 INSTALL HARDIE™ FLEX EAVES LINING

Install in accordance with James Hardie® installation manual requirements. Refer to SELECTIONS for fixing and jointing methods.

3.13 SEAL EDGES

Seal Villaboard™ Soffit Lining sheet edges with Multiplast Resin in a diluted form prior to flush stopping.

3.14 BUTT JOINT

Paint sheet edges prior to installation.

3.15 CONTROL JOINT

Install control joint to James Hardie® installation manual requirements.

3.16 FASTENER - SIZE AND LAYOUT

Fix sheets to framing using fasteners as nominated in SELECTIONS. Fix to James Hardie® installation manual requirements.

3.17 INSTALL FASTFIX FASTENERS

Drill a 6mm diameter hole through the sheet and framing, insert Fastfix Fastener.

3.18 ADHESIVE

Application and use of adhesive to manufacturer's instructions and to suit the fastener layout requirements.

3.19 SEALANTS

Application and use of sealants to manufacturer's instructions. Check with sealant manufacturer prior to coating over sealants.

3.20 FINISHING OVER DRIVEN FASTENERS

Fill over driven fasteners with Hardie™ Base Coat to the required level of finish.

3.21 PAINTING

Refer to painting section/s for protective coating system.

Completion

3.22 COMPLETION MATTERS

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

4 SELECTIONS

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



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Materials

4.1 HARDIE™ FLEX EAVES LINING

Location:	Refer to Architectural Plans
Brand/type:	James Hardie® Hardie™ Flex Eaves Lining
Thickness:	4.5mm
Width:	Contractor to confirm
Fixing Method:	Hardie™ Flex nails (usual fixing method) Alternatively use Fastfix method (Fastfix fastener, adhesive & nails) for 4.5mm thick sheet.
Fixing type:	Stainless steel Hardie™ Flex Nail, 40 x 2.8mm
Joint detail:	Hardie™ Jointer 5mm for 4.5mm thick sheet. Soffit 4.5mm PVC 2-way Jointer (for negative detail) for 4.5mm thick sheet. - Contractor to confirm

Painting

4.2 PAINTING

Refer to painting section/s for details.

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4311D DIMOND PROFILED METAL ROOFING

1 GENERAL

This section relates to the supply and fixing of Dimond Roofing profiled metal roofing complete with associated accessories and components.

1.1 RELATED WORK

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

Refer to Architectural Plans

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
LBP	Licenced Building Practitioner
NZMRM	New Zealand Metal Roofing Manufacturers Inc
MS	Modified silicone

Documents

1.3 DOCUMENTS

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

BPS	Building Product Specifications
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC G12/AS1	Water Supplies
AS/NZS 2728	Prefinished / prepainted sheet metal products for interior / exterior building applications
NZS 3604	Timber-framed buidings
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 3566	Self-drilling screws for the building and construction industries
ISO 5660.1	Reaction to fire tests - heat release, smoke production and mass loss rate. Part 1 Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction to fire tests - heat release, smoke production and mass loss rate. Part 2 Smoke production rate (dynamic measurement)
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Dimond Roofing and Cladding Systems Manual (January 2021)
Dimond Roofing Profile BPIR
Dimond Roofing UniCote® LUX Brochure
UniCote® LUX Data Sheet
AWTA Product Testing Reports for UniCote® Lux

Manufacturer/supplier contact details:

Company:	Fletcher Steel Ltd
Trading as:	Dimond Roofing
Web:	www.dimond.co.nz
Email:	roofspec@dimond.co.nz
Telephone:	0800 346 663 (0800 DIMOND)

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:.

~ years:	for failure of coating adhesion
~ years:	for weatherproofing by material penetration

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years	for installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

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

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following maintenance information contained in the Dimond Roofing & Cladding Systems Manual - Routine Maintenance, as electronic PDF format.

Provide this information prior to practical completion.

Compliance information

1.10 COMPLIANCE - PROPOSED ALTERNATIVE SOLUTION

Dimond various metal roofing profiles, are presented as an alternative solution for:

Clause:	E2-External moisture
Performance:	E2.3.1 Roofs must shed precipitated moisture. In location subject to snow, roofs must also shed melted snow. E2.3.2 Roofs and exterior walls must prevent the penetration of water that could cause undue dampness, damage to building elements, or both.

Profiles:

Trapezoidal profile:	Dimond DP955, Solar Rib, Steelspan 900 & Topspan
Clip fixed, trough:	Dimondek 630

Proposed alternative solution is supported by:

- In-service history
- NZMRM CoP
- Dimond standard details and installation guidelines

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Performance - General

1.11 INTERIOR SURFACE FIRE PROPERTIES - GROUP NUMBER

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

COLORSTEEL® Maxam® Dridex®	Group Number 1-S

1.12 DRINKING WATER

Roofing for collecting potable water to NZBC G12/AS1.

Quality control and assurance

1.13 INSPECTIONS

As required by QLDC

2 PRODUCTS

Materials

2.1 STEEL - TYPE AZ COATING (ALUMINIUM/ZINC ALLOY), PREPAINTED

Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397.

Fixings

2.2 FASTENERS GENERALLY

Fixings and fasteners are to be compatible with all materials, the environment and meeting the requirements of the NZ Building Code. Installation is to be in accordance with NZBC E2/AS1 and/or the NZMRM CoP and Dimond Roofing requirements.

For fixing patterns refer to Dimond Roofing Fixing Charts for the selected profile.

2.3 FIXING SCREWS

To AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by Dimond Roofing and with a minimum Class 4 or 5 durability and not less than the material being fixed.

Screw into timber to penetrate by minimum 30mm and into steel to penetrate by minimum 3 threads. Screw fasteners to be head stamped identifying the manufacturer and class. Refer to SELECTIONS

2.4 RIVETS - ALUMINIUM

Sealed aluminium, minimum diameter 4mm, for use with zinc coated, zinc/aluminium coated or aluminium roofing.

Components

2.5 FLASHINGS GENERALLY

To NZBC E2/AS1, 4.0 Flashings.

Formable grade 0.55 BMT for galvanized, Type AZ or AM - coated and pre-painted steel, 0.5mm BMT for Copper 0.7mm and 0.90 for aluminium (or 0.7mm for small aluminium flashings) to the same standards as the profiled sheets, notched where across profile or provided with a soft edge.

2.6 BOOT FLASHINGS

Generally to NZBC E2/AS1, 8.4.12 Roof penetrations

EPDM proprietary pipe flashing laid on 45° bias to roofing, with over-flashing (soaker flashing) if required.
A boot flashing should be positioned so that it dams a roofing pan no more than 50%, if this cannot be avoided use an over-flashing back to the ridge and fix the boot flashing to that.

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Accessories

2.7 WIRE NETTING AND SAFETY MESH

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.8 UNDERLAY AND REFLECTIVE FOIL

Refer to 4161 UNDERLAYS, FOIL AND DPC

2.9 SEALANT

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

2.10 CLOSURE STRIPS

Non-bituminous compressible, profiled foam strips to fit the sheet profile.

2.11 LAP SEALING TAPE

Closed cell self adhesive nitrile tape.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Inspect the roof framing and supporting structure to ensure that it is complete and fully braced ready for roofing and free from any misalignments or protrusions that could damage the roofing. Provide a fall for roof drainage minimum as required by selected profile.

Ensure moisture content is:

Timber framing: 18% maximum (16% or preferably less for under transverse flashings)

Transverse flashings can be temporarily tacked in place and final fixing done when moisture content is acceptable.

3.4 SEPARATION

Isolate dissimilar materials in close proximity as necessary by painting the surfaces or fitting separator strips of compatible or inert materials. Place isolators such as flashing tapes or drainage mat between metals and CCA treated timber, cement based materials, and mixing aluminium sheet and steel mesh.

3.5 INSTALLATION DAMAGE

Take care to avoid damaging pre-finished roofing both during and after fixing. Wear only soft-soled shoes on the finished surface.

Installation/application

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

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3.7 INSTALLATION GENERALLY

Install Dimond profile metal roofing in accordance with Dimond Roofing requirements and NZMRM CoP and to form a complete water tight roofing system, including all flashings, cappings and penetrations.

3.8 SET-OUT

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

3.9 END LAPS

End laps should be avoided, except where specifically detailed. Where end laps are necessary, seal both ends of the lap with lap sealing tape or sealant and 4mm sealed pop rivets at maximum 50mm centres, to detail in NZMRM CoP.

3.10 SEAL CUT EDGES

In very severe marine environments seal cut edges of pre-coated steel sheet with edge protection lacquer before fixing to the cladding manufacturer's requirements.

3.11 THERMAL MOVEMENT

For sheet lengths more than 18 metres, make provision for thermal expansion where required

3.12 FIXING GENERALLY

Install and fix in accordance with NZBC E2/AS1, the NZMRM CoP and the Dimond Roofing required fixing patterns and details to suit project wind loadings stated in the general section 1220 PROJECT or in accordance with specific design in accordance with project engineer's requirement.

Use only screws and clips as required by Dimond Roofing. Paint colour matched fixings and accessories before installation.

When a load spreading washer is required, pre-drill a 10mm oversized hole to accommodate the EPDM washer.

3.13 MARKING AND CUTTING

Use chalk line, Chinagraph pencils or coloured pencil for marking roof sheets prior to cutting. Do not use lead pencil for marking Zincalume®, Colorsteel® and Colorcote®. Cut by shear only, using nibblers or hand snips. Remove all cutting and drilling debris from the roof.

3.14 STOP ENDS AND DOWNTURNS

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

3.15 TREAT DRIDEX® FLEECE AT DRIP EDGES

Heat treat fleece of Dridex® roofing sheets at all drip edges 30-60mm from drip edge during the roll forming process or on site prior to sheet installation in accordance with manufacturers requirements.

Application - Flashings

3.16 FLASHINGS

Flash roof to parapets, walls and penetrations to detail. Flashings to be installed on timber framing with moisture content of less than 18%. Where no detail is provided flash to NZMRM CoP recommendations and Dimond requirements. Cut accurately and fix using sealant and rivets to detail and to Dimond requirements to form a weatherproof cover. For highly visible flashings, plan joints/junction to take account of the aesthetic requirements.

3.17 USE OF SEALANTS

Select and use sealants only as recommended by Dimond. Remove any swarf and clean down, apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces. Do not use sealant on Copper material, these materials are required to be soldered to complete any joint.

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3.18 FLASHING PENETRATIONS

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

Completion & Commissioning

3.19 COMPLETION MATTERS

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

4 SELECTIONS

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

Roofing

4.1 DIMOND ROOFING - HI FIVE ROOFING

Location:	Refer to Architectural Plans
Profile:	Hi Five
BMT/material:	0.55mm Steel
Coating system:	Contractor to confirm
Colour:	Contractor to confirm
Protective film:	Contractor to confirm
Effective cover:	Contractor to confirm
Profile height:	Contractor to confirm
Purlin material:	Timber
Fixing:	Class 5, Timbertite, 12gx65 with neo - Load spreading washer - steel with 30mm EPDM washer*
Fixing pattern:	Refer to Dimond Hi-Five literature for details

Accessories

4.2 FLASHINGS - GENERALLY

Profile:	Refer to Architectural Plans
BMT/material:	0.55mm BMT
Coating system:	To match roofing
Paint colour:	To match roofing

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4521 ALUMINIUM WINDOWS AND DOORS

1 GENERAL

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

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

1.1 RELATED WORK

Refer to glazing sections for glass types

1.2 ABBREVIATIONS AND TERMS

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

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC F4/AS1	Safety from falling
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
NZBC H1/VM1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/VM2	Energy efficiency for buildings greater than 300m²
AS/NZS 1170.2:2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1580.108.1	Methods of test for paints and related materials - Determination of dry film thickness on metallic substrates - Non destructive methods
AS/NZS 1734	Aluminium and aluminium alloys - flat sheets, coiled sheet and plate
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
NZS 3604	Timber-framed buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
BS EN 673	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
AAMA 2603	Voluntary specification, performance requirements, and test procedures for pigmented organic coatings on aluminium extrusions and panels (with coil coating appendix)
AAMA 2604	Voluntary specification, performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels.
AAMA 2605	Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminium extrusions and panels.

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BS 3900	Methods of tests for paints, Part C5: Determination of film thickness
ISO 10077-1	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - General
ISO 10077-2	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Numerical method for frames
BRANZ BU 636	Protecting Glass From Damage

Window & Glass Association NZ (WGANZ) documents:

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

US Federal Specification:

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

1.4 MANUFACTURER'S DOCUMENTS

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

Contractor to supply

Copies of the above literature are available from

Web:	Contractor to supply
Email:	Contractor to supply
Telephone:	Contractor to supply

Warranties

1.5 WARRANTY - MANUFACTURER / SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years: For fabrication

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

1.6 WARRANTY - INSTALLER / APPLICATOR

Provide an installer/applicator warranty:

2 years: For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 SHOP DRAWINGS

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

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

- Jointing details and method of fixing between individual elements and between this installation and adjacent work
- Interaction between claddings and linings
- Flashing details

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- Sealants and air seals
- Non standard fixing details including bracketing

And where required the following:

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

If requested provide the following additional information:
Information of Professional Indemnity Insurance held by the person providing the shop drawings

Submit shop drawings for review to ~.

- ~ working days (at least) before fabrication is planned to commence, provide shop drawings for review.
- Complete shop drawing review before commencing fabrication and/or installation.

1.8 QUALIFICATIONS

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

1.9 COMPLIANCE

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

1.10 SEISMIC SUB-FRAMES

Where required units to have seismic sub-frames. Refer to NZS 1170.5. Refer to SELECTIONS for requirements

1.11 CERTIFICATION

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

Performance

1.12 PERFORMANCE - WINDOWS AND DOORS

To NZS 4211, including:

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

Refer to SELECTIONS.

1.13 PERFORMANCE - STRUCTURAL/WEATHER-TIGHTNESS

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

Performance - Wind (design by contractor)

1.14 WIND - NON SPECIFIC DESIGN

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

Refer to SELECTIONS for wind zone.

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Finishes

1.15 CERTIFY COATINGS - POWDER COATING

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

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

2 PRODUCTS

Materials

2.1 WINDOWS

Refer to SELECTIONS for type and finish.

2.2 DOORS

Refer to SELECTIONS for type and finish.

2.3 ALUMINIUM EXTRUSIONS

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

2.4 ALUMINIUM SHEET AND STRIP

Complying with AS/NZS 1734 of suitable thickness. Rolled for anodising or powder coating.

Alloy designation: 5251 - H16 or 5005 - H16

2.5 STAINLESS STEEL SHEET AND STRIP

Type: 316 austenitic steel
Finish grade: 2B (satin lustre)

2.6 GLASS

Refer to the glazing section for glass types and installation.

2.7 REVEALS - TIMBER PAINTED

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

2.8 FLASHINGS GENERALLY

To NZBC E2/AS1, 9.1.9 Windows and doors. Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

Components - for cavity systems

2.9 STANDARD CAVITY CLOSER

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

2.10 SUPPORT BAR

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

Components

2.11 GLAZING GASKETS

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

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2.12 HARDWARE AND FURNITURE

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

2.13 SAFETY STAYS

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

Sealants

2.14 STRUCTURAL SEALANT

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

2.15 WEATHERING / INSTALLATION SEALANT

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

2.16 FOAM TAPE

Foam tape to NZBC E2/AS1, paragraph 9.1.9.9.

Finishes

2.17 POWDER COATED ALUMINIUM - EXTRA-DURABLE POLYESTER

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

3 EXECUTION

Conditions - generally

3.1 DO NOT DELIVER

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

3.2 UNLOAD WINDOW JOINERY

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

3.3 AVOID DISTORTION

Avoid distortion of elements during transit, storage and handling.

3.4 PREVENT DAMAGE

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

3.5 PROPRIETARY ELEMENTS

Fix in accordance with the window manufacturer's requirements.

3.6 PROTECTIVE COVERINGS

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

3.7 ADDITIONAL PROTECTION

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

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Conditions - fixings and fastenings

3.8 SUPPLY OF FIXINGS

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

3.9 INSTALLATION FIXING

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

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

Assembly

3.10 FABRICATION

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

3.11 TIMBER / PVC REVEALS

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

3.12 HARDWARE GENERALLY

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

3.13 SAFETY STAYS

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

Installation - windows and doors

3.14 CORROSION PROTECTION

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

3.15 CONFIRM PREPARATION OF EXTERIOR WALL OPENINGS

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

Required preparatory work includes the following:

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

3.16 INSTALLATION

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

3.17 INSTALLATION CAVITY CONSTRUCTION

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

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For thresholds with support bars fixed through membranes, pre-fill support bar screw holes with silicone sealant to NZBC E2/AS1, Figure 8.5.6.1D: Junctions with walls for membrane.

3.18 INSTALL FLASHINGS

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

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

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

3.19 COMPLETE AIR SEAL

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

3.20 FIX HARDWARE

Fix all sash and door hardware and furniture as scheduled.

Application - jointing and sealing

3.21 SEAL FRAMES ON SITE

Seal frames to each other and to adjoining structure and finishes, all as required by the window manufacturer and to make the installation weathertight. In very high and extra high or greater wind zones, seal between the window head and the head flashing. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.

3.22 PREPARE JOINTS

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

3.23 BACK UP

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

3.24 SEALANT FINISH

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

Completion - cleaning

3.25 REMOVE TRADE DEBRIS

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

3.26 TRADE CLEAN

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

Completion

3.27 PROTECTIVE COVERINGS

Retain protective coverings and coatings and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades.

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3.28 SAFETY

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

3.29 IN SITU TOUCH-UP TO POWDER COATED ALUMINIUM

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

3.30 REMOVE

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

3.31 REPLACE

Replace damaged, cracked or marked elements.

4 SELECTIONS

Performance

4.1 THERMAL PERFORMANCE - VERTICAL WINDOWS & DOORS

Window /Door Number:	Construction R-value:
Refer to Architectural Plans	R0.5

Performance - Wind (design by contractor)

4.2 WIND - NON SPECIFIC DESIGN

Building wind zone H (High wind speed of 44 m/s) (refer to NZS 3604, table 5.4)

Window and door system

4.3 ALUMINIUM WINDOWS

Manufacturer: Contractor to confirm
Type / location: Refer to Architectural Drawings, Floor plans & window & door Schedules.

4.4 ALUMINIUM DOORS

Manufacturer: Contractor to confirm
Type / location: Refer to Architectural Drawings, Floor plans & window & door Schedules.

4.5 TIMBER REVEALS

Timber species: Radiata Pine
Grade / Treatment: Clears Grade / H3.1
Thickness: 19mm
Reveals: Grooved for wall linings
Finish: Paint finish

4.6 FLASHINGS

Material/type: Steel/0.55BMT
Pattern: Formed to suit details provided

4.7 WEATHERING SEALANT

Brand/type: Main contractor to confirm MS sealant - 1-part polyurethane moisture curing, elastic joint sealant

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Finishes - Powder Coating

4.8 POWDER COATED ALUMINIUM - EXTRA-DURABLE POLYESTER

Type:	Polyester organic powder coating, Extra-durable powder coating (AAMA 2603)
System integrity:	Minimum 10-years film integrity; 10-years colour integrity
Thickness:	Average of 90 microns with a minimum of 50 microns
Colour:	Refer to Architectural Drawings, Window & Door schedule
Finish:	Contractor to confirm

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4610 GLAZING RESIDENTIAL

1 GENERAL

This section relates to the supply and fixing of glass products for external and internal joinery in residential type buildings and includes:

- windows and doors
- frameless shower and bath screens
- splashbacks, wall linings
- balustrade systems, pool fences
- mirrors and mirror frames

1.1 RELATED WORK

Refer to Architectural Plans

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

PVB	Polyvinyl Butyral
CIP	Cast in place

Documents

1.3 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
NZBC F4/AS1	Safety from falling
NZBC F9/AS1	Means of restricting access to residential pools
NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
NZBC H1/VM1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/VM2	Energy efficiency for buildings greater than 300m²
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
NZS 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.Supp1	Glazing in buildings - Supplement 1 to NZS 4223.1:2008 and NZS 4223.4:2008
NZS 4223.2	Glazing in buildings - Insulating glass units
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live action
AS/NZS 2208	Safety glazing materials in buildings
AS/NZS 4666	Insulating glass units
BRANZ BU 636	Protecting Glass From Damage

1.4 MANUFACTURER'S DOCUMENTS

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

Contractor to supply

Copies of the above literature are available at

Company:	Contractor to confirm
Web:	Contractor to supply
Email:	Contractor to supply
Telephone:	Contractor to supply

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Warrant glass under normal environmental and use conditions against failure of materials.

10 years:	for insulating glass units
10 years:	for laminated glass
10 years:	for toughened glass

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

Performance

1.6 THERMAL PERFORMANCE - EXTERNAL GLAZING

Provide external glazing to comply with H1 Energy efficiency requirements of NZBC H1/AS1 or H1/AS2 and NZBC H1/VM1 or H1/VM2.

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

2 PRODUCTS

Materials

2.1 CLEAR FLOAT GLASS

Clear ordinary annealed transparent float glass for general window glazing. Thickness to NZS 4223.1 and NZS 4223. Supp 1.

2.2 TEXTURED, PATTERNED OR OBSCURE GLASS

Translucent, annealed, rolled glass with a decorative pattern on one surface.

2.3 LAMINATED GLASS

Grade A Safety Glass to AS/NZS 2208 with PVB or CIP resin interlayer.

2.4 TOUGHENED GLASS

Grade A Safety Glass to AS/NZS 2208.

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

2.5 TINTED FLOAT GLASS

Body tinted float glass.

2.6 REFLECTIVE AND COATED FLOAT GLASS

Either coated float glass incorporating both solar and thermal insulation properties; or coated float glass with only the thermal insulation properties.

2.7 INSULATING GLASS UNITS (IGU'S)

To AS/NZS 4666, NZS 4223.2 and the IGU Manufacturers Association (IGUMA) requirements.

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

Materials, mirrors

2.8 MIRROR GLASS

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

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Materials, screens

2.9 GLASS SCREENS SHOWER & BATH

Proprietary shower / bath screens, formed to shape before toughening, complete with matching hardware.

Components, aluminium and uPVC glazing

2.10 GLAZING TAPE AND GASKETS

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

2.11 SETTING BLOCKS

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

Components, wall mounted glass (mirrors and splashbacks)

2.12 GLASS ADHESIVE

Adhesive mirror-mastic and double-sided adhesive tape.

2.13 GLASS MOUNTING CHANNELS

Refer to SELECTIONS/drawings for type and finish.

3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

To NZS 4223.1, NZS 4223.3, NZS 4223.4. All external glazing to be wind and watertight on completion.

3.2 DELIVERY

Keep glass dry and clean during delivery and bring on to site when ready to glaze directly into place. Comply also with the storage requirements set out in BRANZ BU 636.

3.3 GLASS CONDITION

All glass to have undamaged edges and surfaces.

3.4 GLASS THICKNESS

If not specifically stated in the glazing schedule determine the minimum thickness of glass for each sheet as required by NZS 4223.1, NZS 4223.3, NZS 4223.4 and NZS 4223. Supp 1. For windows tested to NZS 4211, ensure glass meets the requirements of the window testing.

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

3.5 REBATE DIMENSIONS

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

3.6 JOINTING, PUTTY AND SEALING MATERIAL COMPATIBILITY

Ensure jointing, putty and sealing materials are compatible with glass substrates. Confirm compatibility with laminated glass, IGUs and coatings.

Conditions - human impact safety requirements

3.7 SAFETY GLAZING, GENERAL REQUIREMENTS

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

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3.8 SAFETY GLAZING MATERIAL

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

3.9 CONTAINMENT

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

Assembly

3.10 WORKING OF GLASS

All working of glass as required in NZS 4223.1.

3.11 EDGE WORK AND BEVELLING

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

3.12 SURFACE TREATMENT

Refer to SELECTIONS/drawings for finish.

3.13 SURFACE CUTTING

Refer to SELECTIONS/drawings for finish.

3.14 INSTALL SAFETY GLASS

To NZS 4223.3.

Application aluminium

3.15 INSTALL GLASS TO ALUMINIUM FRAMES

Install glass to NZS4223.1.

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

Application - wall mounted glass (mirrors and splashbacks)

3.16 WALL MOUNTED GLASS, SCREW FIXED

For mirrors and splashbacks, fix with proprietary zinc-plated steel countersunk-head screws, fitted with black neoprene washers with fine-threaded upstands to receive chrome plated dome screw covers.

3.17 WALL MOUNTED GLASS, CHANNEL MOUNTED

For mirrors and splashbacks,fix with proprietary mounting channels, to the channel manufacturer's requirements.

3.18 WALL MOUNTED GLASS, ADHESIVE FIXED

For mirrors and splashbacks, fix with adhesive mirror-mastic and double-sided adhesive tape. Adhesive area 0.2 m2 per 1 m2 of glass to NZS 4223.3.

Application miscellaneous

3.19 INSTALL GLASS SHOWER & BATH SCREENS

Install shower and bath screens and doors to manufacturer's requirements.

Finishing

3.20 SAFETY

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



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Completion

3.21 TRADE CLEAN
Clean off or remove safety indicators at completion of the building.

3.22 REPLACE
Replace damaged, cracked or marked glass.

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

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

4 SELECTIONS

Performance - wind

4.1 WIND ZONE - NON-SPECIFIC DESIGN
Building wind zone: H (High wind speed of 44 m/s) (as determined from NZS 3604, NZS 4223.4)

Glass by type

4.2 CLEAR FLOAT GLASS

Location:	Refer to Architectural Plans
Brand/type:	Contractor to confirm
Thickness:	Contractor to confirm

4.3 TEXTURED, PATTERNED OR OBSCURE GLASS

Location:	Refer to Architectural Plans
Brand/pattern:	Contractor to confirm
Thickness:	Contractor to confirm

4.4 TOUGHENED GLASS

Location:	Refer to Architectural Plans
Brand/type:	Contractor to confirm
Thickness:	Contractor to confirm

4.5 LOW EMISSIVITY (LOW E) COATED GLASS

Location:	Refer to Architectural Plans
Brand/type:	Contractor to confirm
Coating:	Low E
Thickness:	Contractor to confirm
Colour:	Contractor to confirm

Bath and shower screens and doors

4.6 FRAMELESS GLASS SHOWER SCREENS AND DOORS

Location:	Refer to Architectural Plans
Brand/type:	Safety Glass - Contractor to confirm
Thickness:	Contractor to confirm

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4710EW EARTHWOOL® GLASSWOOL INSULATION

1 GENERAL

This section relates to the supply and installation of Earthwool® glasswool thermal and acoustic insulation.

It includes:

- ceiling insulation
- wall insulation
- underfloor insulation

1.1 RELATED WORK

Refer to 4161 UNDERLAYS, FOIL AND DPC for underlays, foil, DPC and for wire netting used to support insulation.

Refer to Architectural Plans

1.2 ABBREVIATIONS AND DEFINITIONS

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

Documents

1.3 DOCUMENTS

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

NZBC H1/AS1	Energy efficiency for all housing, and buildings up to 300m²
NZBC H1/AS2	Energy efficiency for buildings greater than 300m²
AS/NZS 3000	Electrical installations (Australian/New Zealand Wiring Rules)
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
AS/NZS 4859.1	Thermal insulation materials for buildings - General criteria and technical provisions
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance
CodeMark™ CMNZ30095 verC	Knauf Insulation

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Earthwool® glasswool Insulation Technical Data Sheets
Earthwool® glasswool Insulation Material Safety Data Sheets
Earthwool® glasswool Insulation Installation Instructions
BRANZ Appraisal 648 [2022] - Knauf Glasswool Insulation
Eurofins Gold Certificate for Indoor Air Comfort: IACG-323-01-25-2022
Certifire Certificate: AC100.2
ISO 9001 Certificate Registration No. 44 100 190742

Manufacturer/supplier contact details

Company:	Knauf Insulation Limited
Web:	knauf.com/en-NZ/knauf-insulation
Email (Technical):	tech.nz@knaufinsulation.com
Email (Sales):	sales.nz@knaufinsulation.com
Telephone:	0800 562 834

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

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50 years: For unfaced Earthwool® glasswool insulation materials
15 years: For Earthwool® glasswool insulation underfloor

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years For installation workmanship

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to experience, skill, and qualifications.

1.8 NO SUBSTITUTIONS

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

Performance

1.9 FIRE PROPERTIES

Earthwool® glasswool insulation is deemed non-combustible in accordance with AS 1530.1 and non-combustible to test criteria under the 30's Needle Flame Test to AS/NZS 60695.11.5.

Compliance

1.10 CODEMARK CERTIFICATE

Earthwool® glasswool insulation meets the requirements of the NZBC when used in accordance with the conditions and limitations of its Certificate of Conformity CMNZ30095.

2 PRODUCTS

Materials

2.1 CEILING & SKILLION ROOF INSULATION SEGMENTS

Earthwool® glasswool insulation: Ceiling, non-combustible and certified Red List Free glasswool insulation segments to AS/NZS 4859.1, manufactured using up to 80% recycled glass with DriTherm® silicone treatment, ECOSE® Technology plant-based binder and TwinTech® smooth finish on both faces. Available in ceiling and skillion roof variations in a range of segment sizes, thicknesses and R-values. Refer to SELECTIONS.

2.2 WALL INSULATION SEGMENTS

Earthwool® glasswool insulation: Wall, non-combustible and certified Red List Free glasswool insulation segments to AS/NZS 4859.1, manufactured using up to 80% recycled glass with DriTherm® silicone treatment, ECOSE® Technology plant-based binder and TwinTech® smooth finish on both faces. Available in a range of segment sizes, thicknesses and R-values. Refer to SELECTIONS.

Accessories

2.3 WIRE NETTING

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

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2.4 PLASTIC STRAPPING TAPE

Proprietary plastic strapping tape.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation - generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

Lay, install, fit and fix insulation without gaps, tucks, folds and over compaction to NZBC H1/AS1 or AS2 and Earthwool® Glasswool Installation Instructions. For all housing and buildings up to 300m², install in accordance with NZS 4246 sections 5 Walls, 6 Ceilings & Roofs, 7 Underfloor - Suspended Framed Floors and 10 Concrete Slab-on-Ground Insulation, for residential light timber or steel framed buildings. Allow insulation to re-loft/relax prior to installation. Do not cover vents. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath.

3.6 INSULATION CLEARANCES

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

3.7 LAY WIRE NETTING - UNDER JOISTS / PURLINS

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

3.8 LAY PLASTIC STRAPPING TAPE

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

3.9 CUTTING INSULATION

Cut insulation using a sharp craft knife.

Installation

3.10 FIT INSULATION BETWEEN CEILING FRAMING

Friction fit Earthwool® glasswool insulation segments/rolls between ceiling framing members, leaving no gaps and maintaining full thickness of insulation over whole installation. R7.0 & R8.0 Ceiling batts are designed to expand over truss chords / ceiling joists without the need for notching of batts. Cut insulation pieces as required to fill small spaces, gaps around penetrations and other obstructions. Without compressing, tuck insulation behind wiring, plumbing or ductwork.

3.11 FIT INSULATION OVER CEILING FRAMING

Loose lay Earthwool® glasswool insulation rolls over the ceiling framing and between truss chords, leaving no gaps and maintaining full thickness of insulation over whole installation. Cut insulation pieces as required to fill small spaces, gaps around penetrations and other obstructions. Without compressing, tuck insulation behind wiring, plumbing or ductwork.

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3.12 FIT DOUBLE LAYERED CEILING INSULATION

Friction fit Earthwool® glasswool insulation segments/rolls between ceiling framing members, level with the top of the framing. Loose lay a layer of Earthwool® glasswool insulation rolls over the ceiling framing, laid at 90° to the framing direction. Leave no gaps and maintain full thickness of insulation over whole installation. Cut insulation pieces as required to fill small spaces, gaps around penetrations and other obstructions. Without compressing, tuck insulation behind wiring, plumbing or ductwork.

3.13 FIT WALL INSULATION - TIMBER WALL FRAMING

Measure distance between studs and cut Earthwool® glasswool insulation segments/rolls minimum 10mm wider and friction fit between framing members with front face of insulation flush with framing. Leave no gaps and maintain full thickness of insulation over whole installation. If cavity depth is greater than the insulation nominal thickness, fix or strap the insulation to secure. Cut insulation pieces as required to fill small spaces, behind outlet boxes, gaps around penetrations and other obstructions. Without compressing, tuck insulation behind wiring, plumbing or ductwork.

Completion & Commissioning

3.14 COMPLETION MATTERS

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

Earthwool® glasswool insulation packaging is recyclable.

4 SELECTIONS

For further details on selections go to https://knauf.com/en-NZ/knauf-insulation
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 EARTHWOOL® GLASSWOOL THERMAL CEILING INSULATION - SINGLE LAYER

Location:	Refer to Architectural Plans
Brand:	Earthwool® glasswool insulation
Application:	Between ceiling framing
Product:	Ceiling segments
R-value:	R7.0 (not covered by CodeMark) & R4.1
Thickness:	330mm & 195mm
Size:	460mm x 1200mm & 430mm x 1160mm
Density:	8.0kg/m³ & 7.8kg/m³

4.2 EARTHWOOL® GLASSWOOL THERMAL WALL INSULATION

Location:	Refer to Architectural Plans
Brand:	Earthwool® glasswool insulation
Product:	R2.8 Soundshield Plus
R-value:	R2.8
Thickness:	90mm
Size:	580mm x 1160mm or 430mm x 1160mm
Density:	30.7kg/m³

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4821 FLASHINGS

1 GENERAL

This section relates to the fabrication and installation of flashing systems not forming part of a proprietary system.

1.1 RELATED WORK

Refer to Architectural Plans

Documents

1.2 DOCUMENTS

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

NZBC B2/AS1	Durability provisions for building elements
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 3566	Self-drilling screws for the building and construction industries - General requirements and mechanical properties
NZS 3604	Timber-framed buildings
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

Requirements

1.3 QUALIFICATIONS

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

1.4 VERIFY DIMENSIONS

Verify dimensions against site measurements prior to fabrication.

Standards of performance

1.5 DURABILITY REQUIREMENTS

Design and install the flashings appropriate for the durability applications in accordance with NZBC B2/AS1. The Building Code B2, 3.2 requires that all hidden elements have at least the same durability as that of the element that covers it. Refer to NZBC B2/AS1, Table C.1.1.1 and NZBC E2/AS1, Table C.1.1.1A: Material selection.

1.6 COMPATIBILITY REQUIREMENTS

Each flashing material shall be selected in accordance with NZBC E2/AS1, Table C.1.1.1A: Material selection, to minimise corrosion. Refer to either NZS 3604 Clause 4.2 or AS/NZS 2728 for the relevant exposure conditions. For compatibility of materials in contact and subject to run-off, refer to NZBC E2/AS1, Table C.1.1.1B: Compatibility of materials in contact, and Table C.1.1.1C: Compatibility of materials subject to run-off.

1.7 PROTOTYPES - REVIEW

Refer to the general section 1270 CONSTRUCTION for details of how prototypes will be reviewed and how instructions to proceed will be given. For flashings where there are no specific details or drawings, provide full size prototypes of the flashings to integrate components into the weathertight system. Co-ordinate with the trades affected by the installation. Provide the prototype flashings to the contract administrator for review.

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2 PRODUCTS

2.1 FLASHING MATERIALS

Acceptable materials for flashings are described in NZBC E2/AS1, 4.0 Flashings. Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the building and cladding materials and their fixings.

2.2 FLASHING FABRICATION

Fabricate flashings generally to NZBC E2/AS1, 4.0 Flashings, from a ductile grade of metal designed for lateral strength by folding, stiffening or ribbing on external edges, having a maximum un-stiffened width of 300mm. Provide all hooks, hems, kick outs, bird's beaks, stop ends, soft edges and turn downs etc. to NZBC E2/AS1, 4.0 Flashings, or as shown on the drawings.

2.3 FIXINGS

Rivets, screws, nails and cleats to be compatible with the materials being fastened. Fasteners complying with the corrosion requirements of AS 3566 are suitable for use with ZINCALUME® steel products. Use only low carbon non-conductive sealing washers.

2.4 JOINTS - SEALANTS

Neutral Curing silicone or MS polymer sealant as required, with low resistance to compression and be-able to withstand large temperature variations. MS polymer sealant to be used where the sealant is exposed and the surrounding surfaces are to be subsequently painted or coated.

2.5 JOINTS - SOLDER

Eutectic solder of 60% tin/40% lead using a suitable proprietary flux.

3 EXECUTION

Conditions

3.1 DELIVERY

Keep flashings dry in transit. Take delivery of flashings in an undamaged condition. Reject all damaged materials.

3.2 STORAGE

Store materials and accessories on a level, firm base, in dry conditions, well ventilated, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until fixed.

3.3 HANDLING

Avoid distortion and contact with potentially damaging surfaces/substances. Do not drag flashings across each other, or across other surfaces. Protect edges, corners and surfaces from damage.

3.4 SUBSTRATE

Do not commence work until the substrate is of the standard required by the installer for the specified flashings, level and in true alignment.

3.5 PROTECT

Protect surfaces, window and door joinery, and finishes already in place, from the possibility of damage during the installation process.

3.6 CONFIRM LAYOUT

Before commencing work confirm the proposed installation of the flashings and expansion joints and other visual considerations of the finished work.

3.7 CO-ORDINATE INSTALLATION

Co-ordinate installation of flashings with associated trades.

Application

3.8 INSTALLATION

Install flashings in accordance with NZMRM CoP and in compliance with NZBC E2/AS1, 4.0 Flashings. For very high wind zones and where the pitch of the roof is below 15° the flashing joint laps shall be sealed with sealant at each end of the lap to prevent the ingress of water.

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Refer to NZBC E2/AS1, Table 4.5.1.1: General dimensions of metal flashings and other flashings as listed, for general dimensions of flashings.

3.9 FIXINGS

Fix flashings with fasteners appropriate to the situation. For fixing flashings with proprietary brackets or clips ensure they are aligned to allow for movement and are compatible with the flashing material.

Fix screws with the shank perpendicular to the surface of the flashing with the washer fitted firmly against the flashing. Screws to be compatible with the flashing material.

Rivets 'blind' or 'pop' are to be sealed when used. Aluminium rivets are compatible with zinc or AZ coated steel. Monel and stainless steel rivets can be used to fix galvanized steel flashings. Minimum diameter of rivet to be used is 4.0mm. Drill hole 1mm larger than the rivet size. Seal head of rivet with neutral cured silicone.

3.10 JOINTING - SEALANTS

Clean surfaces to be lapped using a solvent ensuring all traces of the solvent are removed with a clean rag. Apply sealant by gun in a continuous bead of approximately 5mm diameter. Width of sealant when compressed should not exceed 25mm. Sealant joints shall be mechanically fixed for strength. Refer to NZMRM CoP for details.

3.11 JOINTING - SOLDER

Solder joints in galvanized steel and non-ferrous metals when specified with lead/tin solder. Clean joint ensuring it is dry and free of grease immediately prior to applying a proprietary flux. Lap the flashing 25mm in the direction of the water flow and fasten the lap with rivets or screws at 50mm centres. Completely sweat the joint to avoid leaving any flux residue. Wash down the joint to remove any trace of flux.

3.12 FINAL INSPECTION

A final inspection by the installer to take place after completion of the flashing work. Any defects or subsequent damage to be made good.

Completion

3.13 PROTECT

Protect new work from damage.

3.14 REPLACE

Replace all damaged or marked elements.

3.15 LEAVE

Leave work to the standard required for following procedures.

3.16 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 FLASHINGS

Type	Refer to Architectural Plans, Details
General flashings:	0.55mm Colorsteel
Material and finish/colour	Roof flashings to match roofing. Window flashings to match window & door joinery.

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5113G GIB® PLASTERBOARD LININGS

1 GENERAL

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

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.2 DOCUMENTS

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

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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

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

Manufacturer/supplier contact details

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

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years For GIB® products and systems

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years For workmanship

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 NO SUBSTITUTIONS

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

1.7 INFORMATION FOR OPERATION AND MAINTENANCE

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

Provide this information prior to practical completion.

1.8 COMPLIANCE - BRANZ APPRAISAL 1048

GIB Weatherline® Rigid Air Barrier Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 1048.

1.9 BRACING

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

1.10 INTERIOR SURFACE FIRE PROPERTIES - WALLS & CEILING, GROUP NUMBER

GIB® plasterboards have been tested to ISO 5660 and have been assigned Group Number 1-S to BPS, 8.5.1 Group Numbers.

1.11 FIRE RESISTANCE RATINGS - FRR SYSTEMS

GIB® Fire Rated Systems have been tested to AS 1530.4. Refer to SELECTIONS for systems FRR.

1.12 ACOUSTIC RATED SYSTEMS

GIB® Noise Control Systems have been tested for Sound Transmission Class STC and/or Impact Insulation Class. Refer to SELECTIONS for STC/IIC ratings.

1.13 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

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Compliance information

1.14 COMPLIANCE - BRANZ APPRAISAL 289

GIB® Fire Rated Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 289.

1.15 COMPLIANCE - BRANZ APPRAISAL 394

GIB® Noise Control Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 394.

1.16 COMPLIANCE - BRANZ APPRAISAL 427

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

1.17 COMPLIANCE - BRANZ APPRAISAL 928

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

Performance

2 PRODUCTS

Materials

2.1 GIB® STANDARD PLASTERBOARD

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

2.2 GIB AQUALINE® PLASTERBOARD

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

2.3 GIB TOUGHLINE® AQUA PLASTERBOARD

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

2.4 GIB WEATHERLINE® PLASTERBOARD

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

2.5 GIB TOUGHLINE® PLASTERBOARD

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

2.6 GIB BRACELINE®/GIB NOISELINE® PLASTERBOARD

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

2.7 GIB FYRELINE® PLASTERBOARD

Paper-bound, high-density gypsum plaster core sheet lining with glass fibres and fire-resistant additives, manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.8 GIB CURVELINE® PLASTERBOARD

Paper-bound gypsum plaster core sheet lining, formulated for forming tight curves, manufactured to AS/NZS 2588. Refer to SELECTIONS.

2.9 STRUCTURAL PLYWOOD

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

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Components

2.10 GIB® RONDO® METAL BATTEN SYSTEM

Hot-dipped galvanized steel ceiling battens, batten joiners, fixing clips, and perimeter channel. Refer to SELECTIONS.

2.11 GIBFIX® ANGLES

45mm x 45mm metal angles.

2.12 GIB® GRABBER® SCREWS

Proprietary drywall screws. Refer to SELECTIONS.

2.13 GIB® TRIMS AND EDGES

Proprietary corner trims and edge beads available as paper-faced galvanized steel, perforated galvanized steel, and composite moulds. Refer to SELECTIONS.

2.14 GIB® CONTROL JOINTS

Proprietary control joints available as paper-laminated galvanized steel, perforated galvanized steel, and plastic. Refer to SELECTIONS.

Accessories

2.15 GIBFIX® ADHESIVE

Proprietary wallboard adhesive. Available in water-based and solvent-based formulations. Refer to SELECTIONS.

2.16 GIB® JOINTING COMPOUND

Proprietary jointing compounds. Available in a range of plaster-based and polymer-based compounds. Refer to SELECTIONS.

2.17 GIB® JOINT TAPE

Proprietary joint tape. Available in paper and fibreglass. Refer to SELECTIONS.

2.18 GIB HANDIBRAC® HOLD DOWN BRACKET

Galvanized steel bracket supplied with 5 Tek screws and 2 BOWMAC blue head screw bolts.

2.19 PINK BATTS GLASS WOOL INSULATION

Bio-soluble fibrous glass wool insulation. Refer to SELECTIONS.

2.20 GIB-COVE®

Paper-encased gypsum plaster cornice. Available in a range of profiles and sizes. Refer to SELECTIONS.

2.21 RONDO® FLEXIBLE TRACK

0.50 BMT steel track with Z275 corrosion resistant coating. Available in a range of widths to suit framing. Refer to SELECTIONS.

2.22 GIB WEATHERLINE® FLASHING TAPE

Proprietary self-adhesive flashing tape.

2.23 GIB FIRE SOUNDSEAL®

Proprietary water-based acrylic sealant with fire and acoustic properties.

2.24 GIB GAP FILLER

Proprietary flexible water-based acrylic gap filler.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Timber framing: 18% maximum moisture content

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

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

3.6 INSTALL RONDO FLEXIBLE TRACK

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

GIB® Rondo® Ceiling Batten System

3.7 LAYOUT CEILING BATTEN SYSTEM

Determine the ceiling height datum. Set out and mark batten centres along the framing to the required batten spacing.

3.8 INSTALL PERIMETER CHANNEL/ANGLE

Install ceiling perimeter channels/angles level to walls at determined datum height.

3.9 INSTALL FIXING CLIPS

Set a string line on the datum along the framing. Install fixing clips to the required batten spacing, using the string line to maintain level.

3.10 INSTALL CEILING BATTENS - DIRECT FIX

Cut battens to allow a 5mm gap at the perimeter. Seat batten ends in the perimeter channel/angle. Fix battens to framing and perimeter channels without distortion.

3.11 INSTALL CEILING BATTENS - CLIP FIX

Seat batten ends in the perimeter channel/angle. Clip fit battens into fixing clips and fix battens to perimeter channels without distortion.

GIB® Plasterboard

3.12 INSTALL GIBFIX® ANGLES

Install angles continuously to the timber framing at wall and ceiling junctions. Overlap adjacent angles by a minimum of 300mm at joints.

3.13 INSTALL PLASTERBOARD LININGS - WALLS

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

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

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



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3.14 INSTALL PLASTERBOARD LININGS - GIBFIX® FRAMED WALLS

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

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

At GIBFix® Angle junctions, fix the sheet to the stud side first, then to the angle-only side. Where the angle-only side must be fixed first, install additional clouts into the framing at maximum 500mm centres before lining. Place fasteners 12mm from paper-bound edges, 18mm from cut edges, and 50mm in each direction from corners. Touch fit adjacent sheets. Leave a 5mm-10mm gap at floor level.

3.15 INSTALL PLASTERBOARD LININGS - CEILINGS

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

GIB® Tough Systems

3.16 INSTALL PLASTERBOARD LININGS - TOUGH SYSTEM WALLS

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

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

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

GIB® Wet Area Systems

3.17 INSTALL CORNER REINFORCING - TILED WET AREA WALLS

Install angles continuously to the framing at internal corner junctions in tiled showers and tiled showers over bath to a minimum height of 1800mm.

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

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

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

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

3.19 INSTALL PLASTERBOARD LININGS - NON-TILED STEEL FRAMED WET AREA WALLS

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



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

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

3.20 INSTALL PLASTERBOARD LININGS - TILED WET AREA WALLS

Horizontally fixed sheets: Install sheets with vertical sheet end joints fully supported. Fix to framing at 150mm centres around the wall perimeter and to intermediate framing. Fix a single fastener each side of horizontal sheet edge joints where crossing a stud. Support horizontal sheet edge joints on nogs in showers and shower-over-bath walls.

Vertically fixed sheets: Install full-height sheets with the sheet perimeter fully supported. Fix to framing at 150mm centres around the sheet perimeter. Fix to intermediate framing at 150mm centres.

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

3.21 INSTALL PLASTERBOARD LININGS - WET AREA CEILINGS

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

GIB EzyBrace® Systems

3.22 INSTALL HOLD DOWN BRACKETS

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

3.23 INSTALL PLASTERBOARD LININGS - BRACED WALLS

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

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

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

3.24 INSTALL STRUCTURAL PLYWOOD - BRACED WALLS

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

3.25 INSTALL PLASTERBOARD LININGS - CEILING DIAPHRAGM

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

GIB® Noise Control Sub-intertenancy Systems

3.26 INSTALL INSULATION

Refer to relevant Pink Batts section(s) for insulation installation requirements.



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3.27 APPLY SEALANT - SUB-INTERTENANCY WALLS

Apply a continuous bead of GIB Fire Soundseal® around the wall perimeter. Where a two-layer system is required, apply sealant to the perimeter over first plasterboard layer before installing the second layer.

3.28 INSTALL PLASTERBOARD LININGS - QUIET STUD SUB-INTERTENANCY WALLS

Install full-height sheets vertically with the sheet perimeter fully supported. Fit sheets hard to the floor. Fix to framing at 300mm centres. In two-layer systems offset joints 600mm. Place fasteners 12mm from sheet edges and 50mm from sheet ends. Touch fit adjacent sheets.

3.29 INSTALL PLASTERBOARD LININGS - SUB-INTERTENANCY WALLS

Single layer, or inner layer (two-layer system): Install full-height sheets vertically with the sheet perimeter fully supported. Fit sheets hard to the floor. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres.

Where a two-layer plasterboard system is required, offset sheet joints by 600mm. The outer layer can be fixed horizontally or vertically.

Horizontally fixed sheets (outer layer): Fix to framing at 300mm centres around the wall perimeter. Fix to intermediate framing at 300mm centres with fasteners. Fix a single fastener each side of horizontal sheet edge joints where crossing a stud.

Vertically fixed sheets (outer layer): Fix full-height sheets to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres.

Place fasteners 12mm from paper-bound edges, 18mm from cut edges, and 50mm in each direction from corners. Touch fit adjacent sheets.

3.30 APPLY SEALANT - SUB-INTERTENANCY CEILINGS

Apply a continuous bead of GIB Fire Soundseal® around the ceiling perimeter. Where a two-layer system is required, apply sealant to the perimeter over first plasterboard layer before installing the second layer.

3.31 INSTALL PLASTERBOARD LININGS - SUB-INTERTENANCY CEILINGS

Install sheets perpendicular to ceiling framing with sheet end joints supported on the framing. Fix to ceiling battens at 200mm centres and along sheet end butt joints at 100mm centres. Place fasteners 12mm from sheet edges. Touch fit adjacent sheets. Where a two-layer plasterboard system is required, offset sheet joints by 600mm.

GIB® Fire Rated Boundary Firewall

3.32 INSTALL GIB® FIRE RATED SYSTEM BOUNDARY FIREWALL

Inner layer (two-layer system): Install sheets horizontally or vertically with the sheet perimeter fully supported. Fix to framing at 600mm centres along studs and 200mm centres along sheet end butt joints.

Single layer, or outer layer (two-layer system): Install sheets horizontally or vertically. In two-layer systems offset joints 600mm. Fix to framing at 300mm centres along studs and 200mm centres along sheet end butt joints.

Place fasteners 12mm from sheet edges and 18mm from sheet ends. Touch fit adjacent sheets.

3.33 INSTALL GIB WEATHERLINE® BOUNDARY FIREWALL

Weatherline® plasterboard layer: Install full-height sheets vertically with the sheet perimeter fully supported. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres. Leave a 5mm-10mm gap at floor level. Apply GIB Weatherline® Flashing Tape over exterior joints and fasteners.

Fyreline® plasterboard layer: Install sheets horizontally or vertically with the sheet perimeter fully supported. Fix to framing at 300mm centres around the sheet perimeter. Fix to intermediate framing at 300mm centres.



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Place fasteners 12mm from sheet edges and 18mm from sheet ends. Touch fit adjacent sheets.

GIB Curveline® Systems

3.34 PRE-WETTING PLASTERBOARD LININGS - CONCAVE CURVED WALLS

Lightly wet both sides of the plasterboard with a sponge or roller. Allow to penetrate for at least 5 minutes before installation.

3.35 PRE-WETTING PLASTERBOARD LININGS - CONVEX CURVED WALLS

Lightly wet both sides of 10mm and 13mm plasterboard with a sponge or roller. For 6.5mm GIB Curveline®, wet the rear face only. Allow to penetrate for at least 5 minutes before installation.

3.36 INSTALL PLASTERBOARD LININGS - CURVED WALLS

Install sheets horizontally with the sheet perimeter fully supported. Extend sheets a minimum of 300mm beyond each end of the curve. Fix to framing at 200mm centres. In two-layer system, stagger joints a minimum of 200mm.

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

3.37 INSTALL PLASTERBOARD LININGS - CURVED CEILINGS

Install sheets perpendicular to ceiling framing. Extend sheets a minimum of 300mm beyond each end of the curve. Fix to ceiling battens at 200mm centres. Place fasteners 12mm from paper-bound edges, 18mm from cut edges, and 50mm from sheet ends.

GIB® Jointing and Finishing Systems

3.38 FIX GIB® SLIM ANGLE METAL TRIM

Screw fix metal trims over plasterboard at 300mm centres.

3.39 FIX GIB® PLASTIC/GIB® RONDO® P35 METAL CONTROL JOINTS

Fit the control joint trim into the gap between plasterboard sheets. Staple to the plasterboard at 150mm centres on each side of the joint.

3.40 JOINTING AND STOPPING

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

3.41 INSTALL COVES

Apply continuous beads of GIB-Cove® Bond jointing compound to the wall and ceiling contact faces of the selected cornice profile. Press firmly into position and wipe off excess adhesive.

Completion & Commissioning

3.42 COMPLETION MATTERS

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

4 SELECTIONS

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

4.1 GIB® STANDARD SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to Architectural Plans, Finishes Plan	GIB® Standard plasterboard	10mm	Refer to Architectural Plans, Finishes Plan

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4.2 GIB® STANDARD SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to Architectural Plans, Finishes Plan	GIB® Standard plasterboard	13mm	Refer to Architectural Plans, Finishes Plan

4.3 GIB® WATER RESISTANT SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to Architectural Plans, Finishes Plan	GIB Aqualine® plasterboard	13mm	Refer to Architectural Plans, Finishes Plan

4.4 GIB® RONDO® CEILING BATTENS

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

Accessories

4.5 GIB® FIRE RATED SYSTEMS

Refer to GIB® Residential Garage Boundary Walls.

Location / Type	Plasterboard type / Lining requirements	FRR / System specification	Finish Level
Refer to Architectural Plans, Finishes Plan	GIB Fyreline® plasterboard	30/30/30	Refer to Architectural Plans, Finishes Plan

4.6 GIB® BRACING SYSTEMS

Refer to:

- GIB Ezybrace® Systems (2016)
- GIB Ezybrace® Systems (2011)

For bracing element location refer to drawn documentation.

GIB® Plasterboard

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5171GI GIB® INTERTENANCY BARRIER SYSTEMS

1 GENERAL

This section relates to the supply and installation of GIB® Intertenancy Barrier Systems for Terraced Homes. An intertenancy acoustic and fire rated wall system for timber framed or steel framed buildings consisting of 2x plasterboard lined, timber or steel framed walls incorporating a 25mm thick fire-resistant proprietary central barrier between the framed walls.
It includes:

- GIB® plasterboard linings.
- GIB Barrierline® central barrier.
- Associated components and accessories necessary to complete the system

Winstone Wallboards provides a full suite of technical literature, available at www.gib.co.nz . The main technical literature pertaining to this specification is 'GIB® Intertenancy Barrier System for Terraced Homes - Specification and Installation Manual, dated December 2022.

1.1 RELATED WORK

Refer to 5113G GIB® PLASTERBOARD LININGS for standard plasterboard linings.

Refer to 5174G GIB® PLASTERBOARD IMPACT RESISTING LININGS for high impact linings.
Refer to 5171G GIB® PLASTERBOARD FIRE & SOUND LININGS for fire rated and acoustic linings.

1.2 ABBREVIATIONS

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

The following abbreviations apply specifically to this section:

AWCINZ	Association of Wall and Ceiling Industries New Zealand
FRR	Fire resistance rating
STC	Sound transmission class
IIC	Impact insulation class

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS.

The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
ISO 5660.1	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 1: Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 2: Smoke production rate (dynamic measurement)

1.4 MANUFACTURER/ SUPPLIER DOCUMENTS

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

GIB® Site Guide (April 2024)
GIB® Noise Control Systems (September 2017)
GIB® Fire Rated Systems (September 2024)
GIB® Wet Area Systems (February 2021)
GIB Toughline® Aqua (July 2018)
GIB Ezybrace® Systems (August 2016)
GIB Ezybrace® Bracing Design Software
GIB Ezybrace® Bracing Supplement Document (December 2016)
GIB Ezybrace® for Light Steel Frame Systems (March 2017)

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GIBFix® Framing System (August 2016)
GIB Rondo® Metal Batten System (September 2024)
GIB-Cove®
GIB RocTape®
GIB® Goldline™ Platinum Tape-on Trims
GIB UltraFlex® high impact corner mould
GIB® Tough Systems (Nov 2014)
GIB® Intertenancy Barrier Systems for Terraced Homes Specification & Installation Manual (December 2022)
BRANZ Appraisal 289 (2024) GIB® Fire Rated Systems
BRANZ Appraisal 394 (2025) GIB® Noise Control Systems
BRANZ Appraisal 427 (2021) GIB® Wet Area Systems
BRANZ Appraisal 928 (2021) GIB EzyBrace® Systems
BRANZ Appraisal 940 (2022) GIB® Intertenancy Barrier Systems for Terraced Homes

Manufacturer/supplier contact details

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

1.5 INFORMATION FOR OPERATION AND MAINTENANCE

Provide the following general operation and maintenance information in electronic PDF format documents:

- completed GIB® Installation Sign-Off sheet
- GIB® Plasterboard Lining Systems Care and Maintenance bulletin.

Warranties

1.6 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	for all GIB® products and systems installed

- Provide the GIB® Product & System Warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of purchase.

Requirements

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

1.8 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.9 INSPECTIONS AND ACCEPTANCE

Refer to 5113G GIB® PLASTERBOARD LININGS section for inspection criteria of the finished plasterboard surface:

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

1.10 SOUND INSULATION REQUIREMENTS

GIB® Intertenancy Barrier Systems for Terrace Homes provide STC options of 61-68 for separating walls. Refer to SELECTIONS for system details and STC ratings. Penetrations through the linings are permitted within limitations. Refer to the GIB® Intertenancy Barrier Systems for Terrace Homes literature to ensure correct forming and treating of penetrations to ensure the specified performance is met. Ensure absence of adjoining flanking paths.

1.11 FIRE RATING REQUIREMENTS

GIB® Intertenancy Barrier Systems for Terrace Homes literature provides an FRR of 60/60/60. Refer to SELECTIONS for system details.

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1.12 BRACING REQUIREMENTS

Refer to 5113G GIB® PLASTERBOARD LININGS section and GIB EzyBrace® Systems literature for bracing requirements of plasterboard linings.

Compliance

1.13 COMPLIANCE - BRANZ APPRAISAL 289

GIB® Fire Rated Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 289.

1.14 COMPLIANCE - BRANZ APPRAISAL 394

GIB® Noise Control Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 394.

1.15 COMPLIANCE - BRANZ APPRAISAL 427

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

1.16 COMPLIANCE - BRANZ APPRAISAL 928

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

1.17 COMPLIANCE - BRANZ APPRAISAL 940

GIB® Intertenancy Barrier Systems for Terraced Homes has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 940.

Performance - Fire

1.18 SURFACE FIRE PROPERTIES - UNFINISHED BOARD

All GIB® unfinished plasterboard sheet materials achieve a Group Classification of Group 1-S following testing in accordance with ISO 5660.1 and ISO 5660.2.

2 PRODUCTS

Materials: general

2.1 GIB® PLASTERBOARD

Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use, exceeding the requirements of AS/NZS 2588. Refer to SELECTIONS for location, type, thickness and finish.

Central barrier:
GIB Barrierline® - 25mm glass-fibre reinforced core plasterboard encased in heavy-duty liner

Roof space lamination boards:
GIB Weatherline 10mm or 13mm; or GIB Fyreline® 13mm over lining laminate in a ceiling space

Linings to framed walls:
GIB® Standard plasterboard - 10mm and 13mm
GIB Ultraline® - 10mm and GIB Ultraline® Plus 13mm
GIB Braceline/Noiseline® - 10mm and 13mm
GIB Aqualine® - 10mm and 13mm

2.2 GIB® COVING

Refer to 5113G GIB® PLASTERBOARD LININGS section for all finishing items.

Components: central barrier

2.3 GIB H STUD

GIB® metal framing comprising GIB® H-Stud, 34mm wide x 25mm folded steel sections from 0.55mm BMT G275 galvanised steel in 3000mm lengths.

To the following limitations;

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- NASH Standard Part 2, Paragraph 1.1 and a maximum building height of 10.0m from the lowest ground level to the highest point of the roof when designed in accordance with NASH Standard Part 2.

or;

- with a maximum Gib Barrierline® wall height of 12.0m when used with light steel framing subject to a specific engineering design.

2.4 PERIMETER CHANNEL

GIB Rondo® P140 Perimeter Channel; 28mm wide folded steel channel section and channel joiners from 0.55mm BMT G275 galvanised steel in 3000mm lengths.

2.5 GIB® WALL CLIP

40mm high x 90mm long x 50mm wide, unequal angle bracket, from 2.0mm extruded aluminium provides lateral support for the central barrier.Install GIB® Wall Clip as a component of the central barrier in accordance with the GIB® Intertenancy Barrier Systems for Terrace Homes literature.

2.6 GIB® WALL STRAP

30mm wide x 110mm long from 3.0mm extruded aluminium provides lateral support for the ends of the central barrier.

Install GIB® Wall Strap as a component of the central barrier in accordance with the GIB® Intertenancy Barrier Systems for Terrace Homes literature.

2.7 FIRE RESISTANT MINERAL WOOL PACKING

Installed to fire-stop at the top of the GIB Barrierline® wall below roofing. Thickness to match cavity. Minimum density 40kg/m3. Refer to relevant insulation section.

Components: framed walls

2.8 METAL ANGLE TRIMS

GIB® galvanized steel slim angle trims.

2.9 CONTROL JOINTS

Refer to 5113G GIB® PLASTERBOARD LININGS section for detail and location of control joints in plasterboard linings.

2.10 TAPE ON TRIMS AND EDGES

Refer to 5113G GIB® PLASTERBOARD LININGS section for tape on trims and edges to plasterboard linings.

2.11 WALL CAVITY INSULATION

Pink Batts R2.2 (90mm) glass wool insulation installed between the studs and nogs in both wall frames. Refer to appropriate PINK BATTS® section. Glass-wool thermal insulation segments for use in framed walls.

Components: general

2.12 FASTENERS

Fastener durability shall be appropriate for the application and environment; be no less than the durability of the material being fixed and be compatible with the material to which it is fixed.



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2.13 SCREWS

Type	Size	Purpose
GIB® Grabber® high thread needle point screw	25mm x 6g	Fixing plasterboard to timber Fixing metal components to timber
GIB® Grabber® self tapping drywall screw	25mm x 6g	Fixing plasterboard to steel stud.
GIB® Laminator	38mm x 10g	Fixing 16mm GIB Fyreline® to 25mm GIB Barrierline®
Drill-tip wafer-head screw	16mm x 10g	Joining metal components
Drill-tip wafer-head screw	30mm x 10g	Fixing GIB® Wall Clip to GIB® H-Stud through 16mm GIB Fyreline®
Expansion anchor	40mm x 6mm	Fixing metal components to concrete

Refer to 5113G GIB® PLASTERBOARD LININGS section and GIB® Site Guide for fixing of plasterboard linings.

2.14 JOINTING COMPOUND

System-match bedding compound and finishing compound. Follow the manufacturers' requirements on the appropriate compounds to use with each accessory, specific to each location, to achieve the required level of finish.

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

2.15 JOINTING TAPE

GIB® jointing tape.

2.16 GENERAL GAP FILLER

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

Finishes: framed walls

2.17 SKIM COAT PLASTER

Refer to 5113G GIB® PLASTERBOARD LININGS section for proprietary spray-on surface finishes to plasterboard linings.

3 EXECUTION

Conditions: general

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

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

Framing substrates shall be in accordance to AS/NZS 2589 and GIB® Intertenancy Barrier Systems for Terrace Homes requirements. Refer to GIB® Site Guide.

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

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

3.4 INSTALLATION - GENERALLY

Install GIB® Intertenancy Barrier Systems to the GIB® Intertenancy Barrier Systems for Terraced Homes literature to the locations and details shown on the drawings, complete with all system components and accessories, including timber or steel wall framing, cavity insulation, plasterboard wall linings, GIB Barrierline® central barrier, mineral wool packing and fire resistant sealant.

3.5 PRE-INSTALLATION REQUIREMENTS - STEEL FRAMING

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

Framing substrates shall be in accordance to AS/NZS 2589 and GIB® Intertenancy Barrier Systems for Terrace Homes requirements. Refer to GIB® Site Guide.

3.6 LEVELS OF PLASTERBOARD FINISH

Provide the selected plasterboard surfaces to the pre-decorative levels of finish specified in AS/NZS 2589. Refer to 5113G GIB® PLASTERBOARD LININGS section for levels of plasterboard linings required.

3.7 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE

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

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

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

3.8 FIRE REQUIREMENTS

To maintain fire rating and integrity of the areas noted as 'fire rated' on the drawings between residential units, comply with all relevant aspects of the GIB® Intertenancy Barrier Systems for Terrace Homes literature according to the fire resistance rating (FRR), BRANZ Appraisal 940 and other relevant product manufacturers' recommendations.

Piped and cabled services within GIB® Intertenancy Barrier System timber framing cavities shall be securely fastened to the timber framing, and must not be in contact with, or pass through, the GIB Barrierline® central barrier. Minimum 10mm clearance must be provided between any plumbing or electrical services and the GIB Barrierline® central barrier.

3.9 ACOUSTIC REQUIREMENTS

To maintain acoustic integrity of the areas noted as 'sound rated' on the drawings, comply with all relevant aspects of the GIB® Intertenancy Barrier Systems for Terrace Homes publication according to the specified sound transmission class (STC) rating, BRANZ Appraisal 940 and other relevant product manufacturers' recommendations.

3.10 BRACING REQUIREMENTS

To maintain bracing integrity of the areas noted as 'bracing' on the drawings, comply with all relevant aspects of the latest GIB Ezybrace® Systems literature and GIB Ezybrace® Systems Software according to the specified bracing unit rating, BRANZ Appraisal 928 and other relevant product manufacturers' recommendations. Refer to 5113G GIB® PLASTERBOARD LININGS section.

3.11 WET AREA REQUIREMENTS

To the areas noted as 'wet area' on the drawings, comply with all relevant aspects of the latest GIB Aqualine® Wet Area Systems publication, BRANZ Appraisal 427 and other relevant product manufacturers' recommendations.

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Installation - general

3.12 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Installation: central barrier - plasterboard

3.13 INSTALL GIB BARRIERLINE®

Install 25mm GIB Barrierline® plasterboard between GIB® H-Stud metal framing and GIB Rondo® 140 Perimeter Channel to the GIB® Intertenancy Barrier Systems for Terraced Homes.

Installation: framed walls - plasterboard

3.14 INSTALL FIRE RATED SYSTEMS

Install GIB® plasterboard types to selected GIB Barrierline® system specification and GIB® Intertenancy Barrier Systems for Terraced Homes recommendations.

3.15 INSTALL SOUND CONTROL SYSTEMS

Install GIB® plasterboard linings and frame types to GIB Barrierline® system specification and GIB® Intertenancy Barrier Systems for Terraced Homes recommendations.

3.16 INSTALL BRACING SYSTEMS

Refer to 5113G GIB® PLASTERBOARD LININGS section.

3.17 INSTALLATION IN WET AREAS

Refer to 5113G GIB® PLASTERBOARD LININGS section.

In areas classified as 'Wet Areas' the following linings should be used in lieu of specified internal linings in order to achieve required fire and acoustic ratings:

Specified internal lining	Equivalent Wet area lining
10mm GIB® Standard plasterboard	10mm Aqualine® plasterboard
2x 10mm GIB® Standard plasterboard	2x 10mm Aqualine® plasterboard
10mm Noiseline® plasterboard	13mm Aqualine® plasterboard
13mm Noiseline® plasterboard	13mm Aqualine® plasterboard

Finishing: general

3.18 FINISHING GENERALLY

To GIB® Plasterboard Installation Manual and AS/NZS 2589.

Finishing: framed walls - sections and trim

3.19 FIX FINISHING SECTIONS AND TRIM

Refer to 5113G GIB® PLASTERBOARD LININGS section for fixing of finishing sections and trim.

3.20 FORM CONTROL JOINTS

For control joints to plasterboard linings refer to 5113G GIB® PLASTERBOARD LININGS section.

3.21 FIX COVER MOULDS, CORNICES, SQUARE STOP CORNERS, TAPE ON TRIMS & EDGES

Refer to section 5113G GIB® PLASTERBOARD LININGS section for fixing of cover moulds, cornices, square stop cornices, tape on trims and edges.

Finishing: framed walls - stopping

3.22 FINISHING AND STOPPING

Refer to 5113G GIB® PLASTERBOARD LININGS section for finishing and stopping of plasterboard linings.



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Completion

3.23 DOCUMENTS

Ensure that the GIB® Installation Sign-Off Certificate has been completed and signed by the plasterer/stopper. Issue to the owner a copy of the GIB® Plasterboard Lining System Care and Maintenance Bulletin and a copy of the completed GIB® Product and System Warranty.

3.24 COMPLETION MATTERS

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

4 SELECTIONS

To maintain the Winstone Wallboards warranty, substitutions of alternative brands are not permitted to any specified GIB® System, GIB® System components, GIB® plasterboard linings, associated GIB® product or accessories.

For further details on selections go to www.gib.co.nz.

GIB® Intertenancy Barrier Systems for Terraced Homes

4.1 GIB® INTERTENANCY BARRIER SYSTEM TYPE GBT(L)AB 60b - TWO-WAY FRR 60/60/60

Location:	Refer to Architectural Plans
System:	GBT(L)AB 60b - load bearing
FRR:	60/60/60
Acooustics:	STC 64, Rw 63
Partition width:	~mm overall width
Framing:	Double timber framing
Spacing:	~mm between framing
Acoustic Insulation:	Pink Batts® R2.2
Central barrier:	25mm thick fire-resistant GIB Barrierline® central barrier panel between GIB® H-Studs at 600mm centres
Lining:	1x 10mm GIB Noiseline®/GIB Braceline® plasterboard - one side 1x 10mm GIB Noiseline®/GIB Braceline® plasterboard - other side
Finish level:	The default level of plasterboard finish is 4 unless otherwise specified with Level 5 for where a high quality finish is required.

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5230 INTERIOR DOORS

1 GENERAL

This section relates to the supply and installation of interior doors.

1.1 RELATED SECTIONS

Refer to glazing section/s for glass type and thickness.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

1.3 DOCUMENTS

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

NZS 3602	Timber and wood-based products for use in building
NZS 3610	Specification form profiles of mouldings and joinery

1.4 MANUFACTURER'S DOCUMENTS

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

Contractor to supply

Copies of the above literature are available from

Web:	Contractor to supply
Email:	Contractor to supply
Telephone:	Contractor to supply

2 PRODUCTS

2.1 TIMBER

To NZS 3602.

2.2 PROFILES, FACINGS, SCRIBERS AND ARCHITRAVES

Traditional profiles to NZS 3610. Proprietary profiles and special profiles as detailed. Pencil radius corners of profiled schedules for paint finish.

2.3 DOORS, PAINTED

Doors as scheduled (without clashing strips).

2.4 CAVITY SLIDERS

Doors hung within a proprietary cavity slider frame and complete with brand-matched sliding door gear.

2.5 DOOR HINGES

Size and gauge to carry door. 3 hinges per door.

3 EXECUTION

3.1 SITE MEASURE

Confirm framed openings on site for dimension, plumb and straightness prior to fabrication or ordering of timber joinery. Confirm lintel head and sill deflection for sliding or bi-fold door systems is within the manufacturer's specified tolerances. Provide not less than 10mm unless otherwise required.



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3.2 EXECUTION GENERALLY

Manufacture to the methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.3 FACTORY FIT HARDWARE

Factory fit the following where specified:

- Hinges

3.4 FACTORY FINISHING

Before delivery to site:

- Brace square and provide protection to assemblies during delivery to site. Where factory glazed, indicate the presence of transparent glasses with whiting, tape or signs compatible with the glass type.

Internal doors

3.5 INTERNAL JOINERY FRAMES

Fabricate as detailed. Wedge and rigidly fix in place without distortion, plumb, and true to line and face. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish.

3.6 DOOR FRAMES, SOLID REBATED

Fabricate as detailed. Hang doors to operate freely on hinges, sliding, or bi-fold gear and to the door manufacturer's requirements. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish. Fit hardware.

3.7 DOOR LINERS

Heads and jambs finished minimum 18mm, with 10mm planted door stops. Width to match width of lined walls. Hang doors on hinges, sliding, or sliding-folding gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.

3.8 DOOR LINERS, EXTENDED

Heads and jambs finished 30mm, rebated for wall linings and extended a minimum of 10mm. 10mm planted door stops. Hang doors on hinges, sliding and bi-fold gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.

3.9 CAVITY SLIDERS

Install in accordance with the door manufacturer's requirements, allowing for removal of top trim for maintenance.

Completion

3.10 CHECK

Check and adjust operation of all sashes, doors, hardware and furniture.

3.11 TEMPORARY PROTECTION

On completion remove any temporary protection and leave ready for following work.

4 SELECTIONS

4.1 SOLID CORE DOOR

Refer to Architectural Plans, Window and Door schedule

4.2 CAVITY SLIDER DOOR

Refer to Architectural Plans, Window and Door schedule

Accessories

4.3 DOOR HINGES

Interior doors

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Type:	Loose pin
Size:	89mm
Material:	Zinc-plated steel
Pin:	Loose-pin zinc-plated steel



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6221M MAPEI FLOOR TILING SOLUTIONS

1 GENERAL

This section relates to the supply and installation of MBP (NZ) Ltd internal and external floor tiling systems.

It includes:

- primers
- screed and levelling compounds
- acoustic underlays
- waterproofing membranes
- adhesives
- grouts
- sealants

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

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

Documents

1.2 DOCUMENTS

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

NZBC D1/AS1	Access routes
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC E3/AS1	Internal moisture
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
ISO 13007.1	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for adhesives
ISO 13007.3	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for grouts
NZS 4121	Design for access and mobility - Buildings and associated facilities
WMAI CoP	Code of Practice for Internal Wet Area Membrane Systems

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Mapei® Technical Manual - Tile Installer's Manual - Products for Ceramic Tiles (Sept 2016)
Mapei® Technical Manual - Cementitious adhesives for installing ceramic tiles and natural stone (Sept 2016)
Mapei® Technical Manual - Guide for the Installation of Ceramic Materials (Sept 2018)
Mapei® product Technical Data Sheets
BRANZ Appraisal 484 (2018) - Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes - Amended 6 October 2022
BRANZ Appraisal 485 (2018) - Mapelastic Smart and External Waterproofing Membranes - Amended 6 October 2022
Mapei® product BPIR

Manufacturer/supplier contact details

Company:	MBP (NZ) Ltd.

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Web: www.mbpltd.co.nz
Email: enquiries@mbpltd.co.nz
Telephone: 09 921 1994

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a tile manufacturer/supplier warranty:

2 years: For tiling products

- Provide this warranty on the manufacturer/supplier standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years: For Mapelastic AquaDefense, Mapelastic Smart and Mapegum WPS

10 years For other Mapei ceramic tile products (excluding Ultracare products)

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years: For installation

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Waterproofing applicators to be approved by MBP (NZ) Ltd. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.9 NO SUBSTITUTIONS

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

Compliance information

1.10 COMPLIANCE - BRANZ APPRAISAL 484

Mapegum WPS, Mapelastic AquaDefense and Mapelastic Smart internal wet area membranes have been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 484.

1.11 COMPLIANCE - BRANZ APPRAISAL 485

Mapelastic Smart external wet area membrane has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 485.

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1.12 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

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

Performance - fire

1.13 SURFACE FIRE PERFORMANCE - FLOORS

Tiles composed entirely of ceramic are non-combustible.

Performance - slip resistance

1.14 TEST - SLIP RESISTANCE

Test walking surfaces for slip resistance, refer to SELECTIONS for test condition.

2 PRODUCTS

Underlay

2.1 FIBRE CEMENT UNDERLAY

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

Levelling compounds

2.2 FIBERPLAN

Cement-based, fibre-reinforced, self-levelling compound for thicknesses from 3mm to 10mm.

2.3 ULTRAPLAN RENOVATION

Cement-based, fibre-reinforced, self-levelling compound for thicknesses from 3mm to 40mm.

2.4 ULTRAPLAN ECO

Cement-based, self-levelling smoothing compound for thicknesses from 1mm to 10mm.

2.5 NIVORAPID

Cement-based, thixotropic levelling mortar for thicknesses from 3mm to 20mm.

2.6 NIVORAPID & LATEX PLUS

Cement-based, thixotropic levelling mortar with flexible polymer water dispersion for thicknesses from 3mm to 20mm.

2.7 PLANITOP SMOOTH & REPAIR R4 ZERO

Cement-based, fibre reinforced levelling mortar for thicknesses from 3mm to 40mm.

2.8 PLANITOP FAST 330

Cement-based, fibre-reinforced levelling mortar with synthetic resin additives, for thicknesses from 3 to 30mm.

2.9 UC LEVELLER

Cement-based, self-levelling compound for thicknesses from 3mm to 70mm.

2.10 MAPECEM

Cement-based, rapid setting hydraulic binder for shrinkage-compensated screeds.

2.11 MAPECEM PRONTO

Cement-based, pre-mixed, rapid setting shrinkage compensated screed.

2.12 TOPCEM

Cement-based, hydraulic binder for shrinkage-compensated screeds.



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2.13 PLANICRETE

Synthetic-rubber latex additive for use with cement based screeds and adhesives to improve mechanical and adhesive characteristics.

Primers

Waterproofing membrane

2.14 PRIMER 3296

Acrylic polymer based primer in water dispersion for porous substrates.

2.15 ECO PRIM T PLUS

Acrylic resin primer in water dispersion.

2.16 ECO PRIM GRIP PLUS

One component synthetic resin primer in water dispersion.

2.17 PLANISEAL MR

Two component water based epoxy primer/barrier hydrostatic resistant coating.

Adhesives

2.18 GRANIRAPID

Two component, cementitious adhesive with synthetic rubber latex. Classified C2FS1 to ISO 13007.1.

2.19 KERAQUICK MAXI S1

Cementitious adhesive. Suitable for application in layers up to 15mm thick. Classified C2FTS1 to ISO 13007.1.

2.20 KERAQUICK MAXI S1 & LATEX PLUS

Cementitious adhesive with flexible polymer water dispersion. Suitable for application in layers up to 15mm thick. Classified C2FS2 to ISO 13007.1.

2.21 KERABOND PLUS & ISOLASTIC

Cementitious adhesive with elastic polymer water dispersion. Classified C2TS2 to ISO 13007.1.

2.22 KERALASTIC T

Two component, polyurethane adhesive. Classified R2T to ISO 13007.1.

2.23 KERAFLEX MAXI S1 ZERO

Cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.24 KERAPOXY ADHESIVE

Two component epoxy adhesive. Classified R2T to ISO 13007.1.

2.25 ADESILEX P10 & ISOLASTIC FOR MOSAICS

Two component cementitious adhesive with elastic polymer water dispersion. Classified C2TES1 to ISO 13007.1.

2.26 ULTRALITE S1 FLEX ZERO

One component cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.27 ULTRALITE S2 T FLEX

One component thixotropic cement and synthetic resin based adhesive. Classified C2ES2 to ISO 13007.1.

Grouts

2.28 ULTRACOLOR PLUS

Cement-based, polymer-modified grout for joints from 2mm to 10mm, with water repellent DropEffect and anti-mould with BioBlock technologies.

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2.29 KERAPOXY

Two component, chemical resistant epoxy grout for joints 3mm to 10mm wide. Classified RG to ISO 13007.3.

2.30 KERAPOXY EASY DESIGN

Two component, chemical resistant epoxy grout with anti-mould BioBlock technology for joints 3mm to 15mm wide. Classified RG to ISO 13007.3.

Components - waterproofing

2.31 MAPEBAND SA TAPE

Alkali resistant butyl self-adhesive waterproofing tape, 100mm wide roll.

2.32 MAPEBAND SA GASKET

Alkali resistant butyl self-adhesive waterproofing gasket, 370mm x 370mm square.

2.33 MAPEBAND EASY TAPE

Alkali resistant rubber waterproofing tape with a non-woven fabric face and back, 130mm wide roll.

2.34 MAPEBAND EASY GASKET

Alkali resistant rubber waterproofing gasket with a non-woven fabric face and back, available 200mm x 200mm and 400mm x 400mm square.

2.35 MAPENET 150 REINFORCING MESH

Alkali-resistant fiberglass reinforcing mesh.

2.36 MAPETEX SEL REINFORCING FABRIC

Alkali resistant non-woven polypropylene reinforcing and anti-fracture fabric.

2.37 MAPEGUM WPS

One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Grey colour.

2.38 MAPELASTIC AQUADEFENSE

One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Light blue colour.

2.39 MAPELASTIC SMART

Two component flexible cementitious liquid waterproofing membrane.

Components - anti-fracture membrane

2.40 MAPEGUARD 2 ANTI-FRACTURE MEMBRANE

1mm thick, semi-rigid reinforced fabric, self-adhesive, crack isolation membrane for in plane cracks up to 10mm wide.

Components - sound control

2.41 ULTRABOND ECO V4 EVOLUTION ADHESIVE

Synthetic polymer-based adhesive.

2.42 MOVEMENT JOINT - INSERT

Polyurethane or neoprene insert. Refer to SELECTIONS.

2.43 MOVEMENT JOINT - BACKING ROD

Polyethylene foam (PEF) backing rod. Refer to SELECTIONS.

2.44 MOVEMENT JOINT - POLYURETHANE SEALANT

Mapeflex PU40, one part flexible thixotropic polyurethane based sealant. Refer to SELECTIONS.

2.45 MAPESONIC STRIP

Expanded polyethylene strip roll, 3mm thick x 50mm high.



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2.46 MAPESONIC CR SOUND CONTROL MEMBRANE

Rubber and cork soundproofing membrane, 4mm thick.

Components - cleaning

2.47 ULTRACARE KERANET EASY

Acid-based, pre-mixed general tile and grout cleaner.

2.48 ULTRACARE KERAPOXY CLEANER

Concentrated liquid detergent for removing epoxy grout.

Accessories

2.49 UNDERTILE HEATING

Proprietary electric undertile heating system complete with thermostat/controller.

Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for undertile heating.

2.50 TRIMS

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

2.51 MOVEMENT JOINT - ANGLE

Metal or PVC angle. Refer to SELECTIONS.

2.52 MOVEMENT JOINT - SILICONE SEALANT

One part, flexible silicone sealant, Mapesil AC for acetic cure or Mapesil LM for neutral cure. Refer to SELECTIONS.

3 EXECUTION

3.1 PRE-INSTALLATION REQUIREMENTS

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

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

Conditions

3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.3 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 APPLY LEVELLING COMPOUND

Mix levelling compound to Mapei instructions. Trowel onto prepared substrate to required thickness and fall, where required:

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

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3.6 SOUND CONTROL SYSTEM

Lay self-adhesive Mapesonic Strip along base of wall to entire perimeter of room and around columns. Spread Ultrabond Eco V4 Evolution adhesive to prepared substrate with a trowel. Lay Mapesonic CR with edges butted. Working in rows lengthwise, fold back half of the underlay width and trowel flooring adhesive. Unfold the underlay and press into adhesive.

Trim the Mapesonic Strip flush with the finished tiled surface when installed.

Installation/application

3.7 FIBRE CEMENT UNDERLAY

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

3.8 ADHESIVE APPLICATION GENERAL

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

For large format tiles, use a 12mm x 12mm x 12mm notched trowel.
For mosaics, use a 4.5mm x 4.5mm x 4.5mm notched trowel.

3.9 INSTALL TRIM

Press trim into wet adhesive.

3.10 INSTALL MOVEMENT JOINT ANGLE

Press angle into wet adhesive.

3.11 LAY TILES

Firmly press tiles into the adhesive bed for full contact between tile and adhesive with no voids. Butter the back of tiles with ribbed underside before laying into adhesive bed by spreading a thin layer of adhesive on the back of the tile to AS 3958.1. Remove a tile periodically during installation to check for correct adhesive coverage. Allow for grout joints between laid tiles to tile manufacturer's recommended width. Do not fix tiles over skinned adhesive. Promptly remove surplus adhesive from the tile surface.

3.12 APPLICATION GENERALLY

To AS 3958.1, Mapei technical data sheets, and to WMAI CoP recommendations. Surfaces to be clean, sound and free of dust, oil, grease, curing compounds or release agents.

3.13 APPLY PRIMER

Brush or roll primer over surface.

3.14 ANTI-FRACTURE MEMBRANE

When applied primer is clear in colour and tacky, lay Mapeguard 2 membrane over the prepared substrate. Peel back film of self-adhesive underside of membrane in short sections and roll over with a weighted roller to bond the membrane to the substrate.

3.15 INSTALL UNDERTILE HEATING

Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for installation of undertile heating.

3.16 APPLY WATERPROOFING MEMBRANE

Reinforce corners and penetrations with waterproofing tape. Mix waterproofing components to Mapei instructions. Trowel, brush or roll on liquid waterproofing membrane over prepared surface. Apply two coats to achieve required minimum total dry film thickness to Mapei product technical data sheet.

3.17 SETTING OUT

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

3.18 MOVEMENT JOINTS GENERAL

Provide movement joints to AS 3958.1:

Depth:	Movement joints to go right through the tile and bed to the background.



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

3.19 APPLY ADHESIVE

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

3.20 APPLY GROUT

Mix grout to Mapei instructions. Work grout into joints with a rubber trowel to AS 3958.1. Allow the grout to firm up in the joint before wiping tile surface with a damp, dense sponge.

3.21 INSTALL MOVEMENT JOINT INSERT

Place insert between movement joint angles.

3.22 INSTALL MOVEMENT BACKING ROD & SEALANT

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

Completion & Commissioning

3.23 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 MAPEI INTERNAL TILING SYSTEM OVER CONCRETE FLOOR - WET AREA

Location:	Refer to Architectural Plans
Supplier:	MBP (NZ) Ltd.
Substrate:	Concrete
Levelling:	Contractor to confirm
Primer:	Contractor to confirm
WPM:	Mapelastic Aquadefense
Adhesive:	Contractor to confirm
Grout:	Contractor to confirm
Grout colour:	Contractor to confirm

4.2 CERAMIC TILES

Location:	Refer to Architectural Drawings: Finishes Plans & Details.
Manufacturer:	Contractor to confirm
Pattern/number:	Contractor to confirm
Colour:	Contractor to confirm
Edging:	Contractor to confirm

Components

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6411 VINYL SURFACING

1 GENERAL

This section relates to the supply and installation of vinyl surfacing including skirtings, nosings, trims and edges.
It includes:

- PVC sheet
- PVC tiles

1.1 RELATED WORK

Refer to Architectural Plans

Documents

1.2 DOCUMENTS

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

NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC D1/AS1	Access routes
NZS/AS 1884	Floor coverings - Resilient sheet and tiles - Installation practices
BPS	Building Product Specifications

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Contractor to supply

Manufacturer/supplier contact details

Company:	Contractor to confirm
Web:	Contractor to supply
Email:	Contractor to supply
Telephone:	Contractor to supply

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

~ years:	For materials

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 years:	For execution

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

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1.7 NO SUBSTITUTIONS

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

Performance

1.8 SURFACE FIRE PROPERTIES FOR FLOORING

Flooring to be non-combustible or have a Critical Radiant Flux to NZBC C/AS2, Table 4.12.3.1: Critical radiant flux requirements for flooring (kW/m2). Refer to SELECTIONS.

1.9 SURFACE FIRE PROPERTIES FOR LININGS

Group Number to NZBC C/AS2, Table 4.12.1.1: Maximum permitted Group Number for internal surface finishes. Refer to SELECTIONS.

Performance - Slip resistance

1.10 TEST - SLIP RESISTANCE

Test walking surfaces for slip resistance, refer to SELECTIONS for test condition.

2 PRODUCTS

Materials

2.1 VINYL SHEET

High vinyl content homogeneous monolayer flexible PVC sheet flooring.

2.2 VINYL TILES

High vinyl content monolayer flexible PVC tiles.

2.3 COVINGS

Commercial applications:	Pencil cove with butterfly mitres to all external and internal corners. Fillet cove for safety flooring.
Domestic applications:	Pencil or fillet cove method.

2.4 VINYL SHEET WALL COVERING

High vinyl content homogenous flexible PVC sheet wall covering.

2.5 WALL AND FLOOR VINYL JOINING STRIP

White PVC floor to wall finishing strip.

2.6 TRIMS AND EDGING

PVC as supplied by the sheet manufacturer to complete the work.

Accessories

2.7 ADHESIVE

Standard acrylic adhesive to suit the material and substrate and to the vinyl manufacturer's requirements.

2.8 PRIMER AND SEALER

To the adhesive manufacturer's requirements for the particular substrate.

2.9 FLOOR LEVELLING COMPOUND

Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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Maintain rolls of sheet, packages of tiles and accessories undamaged and dry. Store rolls upright with other material on level surfaces in non-traffic, non-work areas that are enclosed, clean and dry.

Avoid distortion, stretching, marking and damage to edges while shifting, unrolling and handling sheet, tiles and accessories.

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Carry out such additional preparatory work as required in bringing the substrate to suitable condition.

Confirm moisture content of substrate in accordance with NZS/AS 1884. Appendix A and for pH for concrete substrates in accordance with NZS/AS 1884. Appendix B. Do not commence laying vinyl until readings for the whole area are within acceptable levels as follows:

Moisture content:	Timber substrate - 8 -12% for air conditioned buildings - 10 -14% for intermittently heated buildings - 12 -16% for unheated buildings
	Concrete substrate 75%RH
pH:	Concrete substrate 9-10pH

3.4 BEFORE COMMENCING WORK

Ensure that the building is enclosed, wet work complete, doors hung and lockable, finishes and trim complete, and good lighting available, before starting work.

3.5 PREPARATION

Check that each colour supplied is from the same batch. Follow the vinyl manufacturer's requirements for conditioning of rolls and the working temperatures and conditions before, during and after laying. Protect work from solar heat gain and switch off under-floor heating during and for 48 hours either side, of the work period.

3.6 PROTECTION

Protect adjoining work surfaces and finishes during the installation.

3.7 LAYING GENERALLY

Carry out the whole of the work to NZS/AS 1884, and to the flooring manufacturer's requirements.

3.8 LAYOUT

Before beginning the installation confirm the proposed layout of material, location of seams and other visual considerations of the finished work.

Application - General / substrate preparation

3.9 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.10 PREPARATION NEW CONCRETE

Clear substrate of debris, clean off surface contamination and carry out surface repairs using a proprietary levelling compound. Carefully feather out at perimeters of repaired areas. Grind level, then vacuum to remove all dust.

3.11 PREPARATION, NEW PLYWOOD OR PARTICLEBOARD

Clear substrate of debris, clean off surface contamination and carry out surface repairs using a proprietary levelling compound. Carefully feather out at perimeters of repaired areas. Grind smooth, then vacuum to remove all dust.

3.12 PREPARATION FOR WALL LININGS

Prepare wall linings to requirements of wall lining manufacturer and vinyl manufacturer,for vinyl over.



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3.13 INSTALL FLOOR LEVELLING COMPOUND

Install floor levelling compound in accordance with manufacturer’s requirements.

3.14 APPLY PRIMER OR SEALER FOR VINYL SHEET

Prime and/or seal porous plaster, concrete and timber substrates to the adhesive manufacturer's requirements.

Application - laying

3.15 ADHESIVE APPLICATION

Apply approved adhesive as required by the vinyl manufacturer and without trowel marks after setting. Follow requirements for open time, taking note of substrate porosity, ambient temperature and relative humidity. Remove excess adhesive as the work proceeds using required techniques.

3.16 LAYING VINYL SHEET

Roll out, cut, leave to condition and install sheet vinyl to the vinyl manufacturer's requirements. Ensure there are no air bubbles or twisting, that the seams are kept clear of adhesive, and immediately the sheet is adhered roll with a 68 kg roller.

3.17 THERMO-WELDING VINYL SHEET

Machine groove and thermo-weld all seams in specified areas, heating the sheet and weld rod to a sufficient temperature to melt and fuse them together into a single mass. Trim the weld to leave a smooth, flush surface with the sheet.

3.18 CROSS JOINS

Plan and allow cuts to avoid cross joins. Obtain written approval of the owner before proceeding if cross joins are unavoidable. Cross joins are not acceptable in wet areas.

3.19 COVE VINYL

Pencil cove flooring to the specified height and finish off as detailed.

3.20 MITRES

Perform butterfly method to internal and external mitres. Thermo-weld all mitres.

3.21 VINYL TO STAIRCASES

Fit selected nosing to each tread and at the top of each stair flight, in accordance with the nosing manufacturer's requirements. Lay pre-cut vinyl sheets to each tread and riser, pencil coved at the rear of each tread.

3.22 LAYING VINYL TILES

Set out from the centre of the area in two preparatory runs and modify to suit before laying tiles from the centre to the vinyl manufacturer's requirements. Ensure air is expelled and, as each section is completed, immediately roll with a 68 kg roller. Complete sections before scribing the perimeter tiles.

3.23 FIT VINYL SKIRTING

Fit skirting in accordance with the skirting manufacturer's requirements.

3.24 FIT VINYL EDGING

Fit tapered vinyl edging to all borders, except where abutting carpet.

3.25 WALL SURFACES

Clean off surface contamination, carry out minor repairs and bring to a smooth, even surface.

3.26 FLOOR TO WALL FINISHING STRIP

Adhere to walls in a true, straight line using contact adhesive. Roll immediately using a seam-roller to ensure maximum bond strength is achieved.

3.27 APPLY VINYL WALL SHEET

Apply sheet to walls and heat weld seams under the technical direction of the wall sheet manufacturer's representative for each particular location.



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Obtain written approval of the proposed joint layout approach from the owner, then adhesive fix either vertically or the T-method, ensuring all corners are wrapped and joints are no closer than 200mm to internal or external corners.

Cut vinyl neatly to recess on the floor/wall finishing strip and chemically weld this joint using Werner Mueller, type C welding compound.

3.28 THERMO-WELD VINYL WALL SHEET

Hand groove and thermo-weld all seams, heating the sheet and weld rod to a sufficient temperature to melt and fuse them together into a single mass. Trim the weld to leave a smooth, flush surface with the sheet.

Cleaning

3.29 CLEAN VINYL

Leave vinyl flooring surfaces free of adhesive, dirt and debris. Clean and finish vinyl to manufacturer's requirements.

Completion

3.30 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 VINYL FLOORING

Location:	Refer to Architectural Drawings, Finishes Plan.
Manufacturer/brand:	Contractor to confirm
Colour/number:	Contractor to confirm
Size/Gauge:	Contractor to confirm

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6511 CARPETING

1 GENERAL

This section relates to the supply and installation of carpet laid conventionally (stretched), direct stuck or double bonded (double direct stuck).
It includes:

- carpet underlay
- woven sheet carpet

1.1 RELATED WORK

Refer to Architectural Plans

Documents

1.2 DOCUMENTS

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

NZBC C/AS2	Protection from fire for buildings other than risk group SH
AS/NZS 2270	Plywood and blockboard for interior use
AS/NZS 2455.1	Textile floor coverings - Installation practice - General
BPS	Building Product Specifications

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Contractor to supply

Manufacturer/supplier contact details

Company:	Contractor to confirm
Web:	Contractor to supply
Email:	Contractor to supply
Telephone:	Contractor to supply

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

1 year:	For materials

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year:	For execution

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

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1.7 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

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

1.8 NO SUBSTITUTIONS

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

Performance

1.9 SURFACE FIRE PERFORMANCE

Flooring to be non-combustible or have a Critical Radiant Flux to NZBC C/AS2, Table 4.12.3.1: Critical radiant flux requirements for flooring (kW/m2). Refer to SELECTIONS.

2 PRODUCTS

Materials

2.1 UNDERLAY

To AS/NZS 2455.1 Soft underlay and underlays manufacturer's requirements.

Refer to SELECTIONS for product selection.

2.2 CARPET

To AS/NZS 2455.1 Textile floor coverings.

Refer to SELECTIONS for product selection.

Components

2.3 BINDER BARS

Anodised aluminium section with fluted face.

2.4 DIVIDER STRIPS

Hardwood strips 20mm x 15mm or as specified. Refer to SELECTIONS for type and size.

2.5 EDGE GRIPPER

Timber/plywood to AS/NZS 2270 with steel grippers to carpet manufacturer's requirements, constructed of sufficient pins and nails so as to withstand a minimum stretching force of 6580N over a 1220 mm length.

Accessories

2.6 ADHESIVE, UNDERLAY

To AS/NZS 2455.1, clause 1.5.3. and underlay manufacturer's requirements.

2.7 ADHESIVE, CARPET

To AS/NZS 2455.1, clause 1.5.3. and carpet manufacturer's requirements.

2.8 TAPE

To carpet manufacturer's requirements.

2.9 FLOOR LEVELLING COMPOUND

Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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Handle carpet on flat dollies using carpet cradles, with probes on fork- lifts and without sharp bending or folding. Store carpet in flat bins with a maximum height of three rows. Keep dry. Protect from damage.

3.2 ROUTINE MATTERS

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

3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Ensure all fittings and fixtures around which the carpet is to be scribed are in place. Carry out such additional preparatory work as required in bringing the substrate to suitable condition.

Confirm moisture content of substrate in accordance with AS/NZS 2455.1. Appendix B Do not commence laying carpet until readings for the whole area are within acceptable levels as follows:

Moisture Content:	Timber substrate - 8 -12% for air conditioned buildings - 10 -14% for intermittently heated buildings - 12 -16% for unheated buildings
	Concrete substrate 75%RH

3.4 BEFORE COMMENCING WORK

Ensure that the building is enclosed, wet work complete, doors hung and lockable, finishes and trim complete, and good lighting available, before starting work.

3.5 TEMPERATURE

Acclimatise carpet to a room temperature above 15°C through the whole of the installation.

3.6 PROTECTION

Protect adjoining work surfaces and finishes during the carpet installation.

3.7 TAPE

Tape for binding and seaming using type and width required by the carpet manufacturer to suit the specified carpet and the standard of performance required.

3.8 LAYING GENERALLY

Carry out the whole of the work to AS/NZS 2455.1 and to the flooring manufacturer's requirements.

3.9 LAYOUT

Plan the general layout so that:

- seams run lengthways
- traffic runs along the seam
- light from windows is not across the seam
- pile faces away from the light source.

Application - general / substrate preparation

3.10 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.11 PREPARING NEW CONCRETE FLOOR

To be level, smooth, clean, cured and dry. Remove loose material and dust.

3.12 PREPARING NEW WOOD PRODUCT FLOOR

To be level, sanded smooth and dry with loose material and dust removed.

Application - carpet laying

3.13 INSTALLATION, UNDERLAY

Installation to underlay manufacturer's requirements. Lay at right angles to the carpet direction.

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3.14 INSTALLATION, CONVENTIONAL SYSTEM

Tape carpet joints, fix grippers to floor and install underlay and carpet to AS/NZS 2455.1, section 3. Stretch carpet tight in both width and length evenly without bowing, square with walls.

3.15 LAYING TO STAIRS

Install on stairs in accordance with AS/NZS 2455.1.

3.16 FIXING TRIMS

Fix binder bars, carpet to carpet bars, and trims to all junctions with other materials and to carpet edges, to the carpet manufacturer's requirements. Ensure that junctions with other materials are neatly formed, with bars and trim securely fastened to the substrate, 20mm from each end and at a maximum of 100mm centres.

Completion

3.17 PROTECTION

Provide the following temporary protection of the finished work.

3.18 SPECIAL PROTECTION

Self Adhesive carpet protective film: if required to protect the carpet surface from later trades' operations.

3.19 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 CARPET & UNDERLAY

Location	Brand	Type/thickness/weight
Refer to Architectural Plans, Finishes Plan	Contractor to confirm	Conventionally (stretched)

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6700 PAINTING GENERAL

1 GENERAL

This section relates to the general matters related to painting work

1.1 RELATED WORK

Refer to 6711 PAINTING EXTERIOR for exterior paint systems.

Refer to 6721 PAINTING INTERIOR for interior paint systems.

1.2 ABBREVIATIONS

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

APAS	Australian Paint Approval Scheme
MPNZA	Master Painters New Zealand Association Inc.
VOC	Volatile organic compound

Documents

1.3 DOCUMENTS

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

NZBC C/AS2	Protection from fire for buildings other than risk group SH
AS/NZS 2311	Guide to the painting of buildings
AS/NZS 2312.1	Guide to the protection of structural steel against exterior atmospheric corrosion by the use of protective coatings - Paint Coatings
AS/NZS 5131	Structural steelwork - Fabrication and erection
AS/NZS ISO 9001	Quality management systems - requirements
SNZ TS 3404	Durability requirements for steel structures and components
WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry
WorkSafe	Guidelines for the management of lead-based paint
MPNZA	Health and Safety Programme

Health and Safety at Work Act 2015

1.4 MANUFACTURER'S DOCUMENTS

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

Contractor to supply

Copies of the above literature are available from

Web:	Contractor to supply
Email:	Contractor to supply
Telephone:	Contractor to supply

Requirements

1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified manufacturer's system, or associated components and products.

1.6 QUALIFICATIONS

Painters to be a member of MPNZA and experienced competent workers, familiar with the materials and the techniques specified.

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1.7 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety at Work Act 2015 and WorkSafe: Guidelines for the provision of facilities and general safety in the construction industry. If the elimination or isolation of potential hazards is not possible then minimise hazards in this work on site by using the proper equipment and techniques as required in the MPNZA Health and Safety Programme. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put in place procedures for dealing with emergencies.

Refer to WorkSafe: Guidelines for the management of lead-based paint for the required procedures and precautions when:

- treating/removing lead-based paint
- burning off paint
- sanding off paint
- using solvent based paint removers.

1.8 MATERIAL SAFETY DATA SHEET

Obtain from each paint manufacturer the material safety sheet for each product used. Keep sheets on site and comply with the required safety procedures.

Warranties

1.9 WARRANTY

Warrant this work under normal environmental and use conditions against failure.

2 years: Warranty period

Refer to the general section 1237WA WARRANTY AGREEMENT for the required format and details of when completed warranty must be submitted.

Performance

1.10 MANUFACTURER'S INSPECTION

Allow the paint manufacturers to inspect the work in progress and to take samples of their products from site if requested.

1.11 INSPECTION OF WORK

Inspection of the whole of the work at each of the stages scheduled may be made. Agree a programme that will facilitate such inspection, including notification when each part and stage of the work is ready for inspection.

2 PRODUCTS

Materials

2.1 PAINT TYPES

Use the manufacturer's complete system and only the products specified.

2.2 MATERIALS GENERALLY

Use only the Manufacturer's products which are guaranteed for their consistency and performance under AS/NZS ISO 9001 and APAS approval, prepared, mixed and applied as directed in the Manufacturer's specification sheets, specification manuals and product data sheets.

2.3 THINNERS AND ADDITIVES

Only use thinners or additives within the stated limits for the particular situations specified.

Accessories

2.4 FILLERS

For recommendations on; fillers, stopping, paint strippers, cleaning agents, etching solutions, mould inhibitors, rust inhibitors, knotting and other commodities used for the surface preparation, refer to the manufacturer of the specified coating.

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3 EXECUTION

Conditions

3.1 EXECUTION

To conform to manufacturer's requirements and those methods, practices and techniques contained in AS/NZS 2311 and WorkSafe: Guidelines for the provision of facilities and general safety in the construction industry.

3.2 CORROSION PROTECTION SUPERVISION FOR STRUCTURAL STEEL

To AS/NZS 5131, 9.9.20, for corrosion protection of structural steel. Provide an Inspection and Test Plan (ITP) to AS/NZS 5131, 13.9.1, prior to commencement.

Corrosion protection painting to be supervised by a competent person.

3.3 PREPARE

Prepare surfaces to the coating manufacturer's requirements.

3.4 COATED SURFACES

Ensure that substrate surfaces are able to achieve the specified finish.

3.5 PRE-PRIMED SURFACES

Sand down any breakdown or damage of the primer to a sound surface and immediately re-prime.

3.6 BRUSH DOWN

Brush down surfaces immediately before application, to remove dust, dirt and loose material.

3.7 COMPATIBILITY

Check that materials are as required by the paint manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other. Use paint from the same manufacturer for each paint system. If not compatible, obtain instructions before proceeding.

3.8 TREATED SURFACES

Where surfaces have been treated with preservatives or fire retardants, check with the treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance. If they are not compatible, obtain instructions before proceeding.

3.9 BACK PAINTING

Co-ordinate with cladding and/or lining installer as to who will do the work and timing.

Exterior
For exterior cladding and trim that require on site finishing, paint the back and exposed bottom edges at the base of the cladding (generally, bottom plate overhang and horizontal flashings) to the manufacturer's requirements, but at least to 150mm up from base. Coating to match front finish, generally apply 2 coats or 1 coat if pre-primed.
Refer to appropriate exterior paint sections SELECTION clauses for claddings to be back painted.

Interior
For lining and trim that require on site finishing and/or back painting (usually wet areas), paint the back and exposed bottom edges at the base of the lining, to the manufacturer's requirements, but at least to 150mm up from base. Coating to match front finish, generally apply 2 coats or 1 coat if pre-primed, or if no front finish seal to manufacturer's requirements.
Refer to appropriate interior paint sections SELECTION clauses for linings to be back painted.

3.10 ANCILLARY SURFACES

The coatings listed in schedules and elsewhere are of necessity simplified. Coat ancillary exposed surfaces to match similar or adjacent materials or areas, except where a fair-faced natural finish is required or items are completely prefinished. In cases of doubt obtain instructions before proceeding.

3.11 HARDWARE

Do not paint hinges or hardware that cannot be removed. If items can be removed, carefully remove hardware, fixtures and fittings before commencing work. Set aside where they cannot be damaged or misplaced and replace on completion.

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3.12 PROTECTION

Use dropsheets, coverings and masking necessary to protect adjoining fixtures, fittings and spaces from paint drops, spots, spray and damage.

Preparation - unpainted and pre-primed timber and wood based products

3.13 MOISTURE CONTENT

Ensure moisture content at the time of application is near to the equilibrium moisture content pertaining to the particular locality in which the timber is used, without any excessive moisture content gradient between core and surface.

3.14 PREPARING DRESSED TIMBER

Ensure dressed timber is smooth, free from raised or woolly grain, planing burrs or other machining defects. Slightly round or ease sharp edges to ensure they can be properly coated. Sand timber to bring up to a smooth finish along the direction of the grain. Sand timber back to new condition timber that has been weathered.

3.15 PREPARING ROUGH SAWN TIMBER

Thoroughly brush along the direction of the grain to remove dust and dirt.

3.16 PREPARING PRE-PRIMED TIMBER

Check pre-prime coat for damage, powdering, weathering or loss of adhesion. Where primer is sound, thoroughly brush along the direction of the grain to remove dust and dirt. If there is doubt, sand back and re-prime.

3.17 TIMBER SPECIES

Check that the preparation and paint system is suitable for the timber species.

3.18 PREPARING DAMAGE AND DEFECTS

Scrape clean loose or soft material holes, depressions, resin or gum pockets, knot holes, surface splits, checks, or any localised decay. Apply primer and/or sealer specified and fill these areas with linseed oil putty or other appropriate filler.

3.19 FIXINGS

Take timber fixings below the painted or clear finished surface. Leave corrosion resistant timber fixings flush with clear finished surfaces.

3.20 CLEANING

Remove grease and oil by wiping down with solvent or water-based degreasing agent. Remove resin by wiping down with solvent or water-based degreasing agent or heating and scraping. Remove sanding dust. Bad staining may be untreatable and require replacement of timber, discuss with paint manufacturer and main contractor.

Preparation - unpainted masonry

3.21 PREPARING BRICKS

Remove loose dirt, sand, aggregate and mortar by brushing down or blocking-off surface with a flat stone, hose with clean water. Fill holes with mortar/acrylic based filler. Remove efflorescence by dry brushing with a stiff bristle brush. Brickwork that has been acid cleaned shall have the pH tested to ensure it is neutralized before painting.

3.22 PREPARING CONCRETE

Remove grease and formwork oil with solvent or water and household detergent. Wash with clean water and allow to dry. Fill unwanted holes with cement grouting and allow to cure. Remove loose surface material and surface projections with a flat stone. Roughen slightly dense or glazed surfaces with light (30 mesh) sandblasting, rubbing with coarse abrasive stones, or by wetting the surface and treating with 10% commercial hydrochloric acid solution. Allow to react for 5 minutes, scour surface with a stiff bristle brush, wash off with clean water and allow to dry. Remove efflorescence by dry brushing or by wetting the surface and treating with 10% commercial hydrochloric acid solution as above.

Remove dust and dirt by brushing, air blast, hosing, or scrubbing as may be necessary.

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3.23 PREPARING CEMENT PLASTER

Ensure surface is adequately cured and dry. Treat mould with one part sodium hypochlorite household bleach to three parts clean water solution or a proprietary anti-mould solution, and allow to dry. Remove efflorescence by brushing only.

3.24 PREPARING CONCRETE MASONRY

Remove loose dirt, sand, aggregate and mortar by brushing down or blocking-off the surface with a flat stone or hardwood block. Fill holes with mortar or acrylic based filler. Treat mould with one part sodium hypochlorite household bleach to three parts clean water solution, or a proprietary anti-mould solution, and allow to dry.

Remove efflorescence by dry brushing or by wetting the surface and treating with 10% commercial hydrochloric acid solution. Allow to react for 5 minutes, scour the surface with a stiff bristle brush, wash off with clean water and allow to dry.

Remove dust and dirt by brushing, air blast, hosing or scrubbing.

Preparation - gypsum plaster

3.25 PREPARING GYPSUM PLASTER

Fill and sand small crevices and cracks. Surface moisture content not to exceed 12% at time of coating.

Preparation - unpainted linings

3.26 PREPARING FIBROUS PLASTER

Check for and remove release agents and other contaminants by washing with clean water or solvent and allow to dry. Fill cracks and surface imperfections with patching plaster and lightly sand smooth. Remove dust.

3.27 PREPARING PLASTERBOARD

Check that joints are prepared to a smooth level surface finish. Fill cracks and surface imperfections with the sheet manufacturer's required stopping compound and lightly sand smooth. Remove dust.

Preparation - painted surfaces generally

3.28 SURFACE PREPARATION

Refer to the Manufacturer's specification sheets and product data sheets. Carry out the preparatory work required by them for each of the substrates.

For interior surfaces such as paper faced plasterboard use the Manufacturer's recommended finishing compound as an aid to achieving a Level 5 finish.

3.29 MOULD

Sterilise surface mould by washing or sponging the whole surface with a one part sodium hypochlorite household bleach to three parts clean water solution. Allow bleach to act for 30 minutes and wash off with clean water. Wash cloths and sponges regularly in clean water. Reapplication may be necessary. Treat with anti-mould solution to the treatment manufacturer's requirements.

3.30 GAP FILLING

Fill cracks, holes, indented and damaged surfaces with putty, plaster filler, wood filler, or plastic wood, as appropriate and in accordance with the paint manufacturer's requirements. Allow to dry or set before sanding back level with the surface. Prime coat or seal the timber before using putty. Wet cement or gypsum base plasters before applying filler. Use only Portland cement base types, or water-insoluble organic-based gap fillers in exterior or wet areas.

Preparation - painted surfaces in good condition

3.31 PREPARING SURFACES

Wash down surfaces with either:



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- a chlorine based solution; or
- 5-10 millilitres of ordinary household detergent to 1 litre of warm water; or
- a solution of 30 grams of trisodium phosphate to 1 litre of water

Replace solutions frequently and finally wipe over a second time with a clean absorbent cloth.

For surfaces containing heavy smoke and grease deposits, wash down with either:

- mineral turpentine; or
- a 5% solution of ammonia; or
- a 1:40 solution of sugar soap and water

as necessary to remove the deposits. Wipe over with a clean absorbent cloth.

Prepare coatings which have chalked by sanding, brushing, waterblasting or other methods as appropriate.

Lightly sand glossy surfaces to ensure good adhesion of the coatings.

Application - before applying final coatings

3.32 OFF-SITE WORK

Carry out off-site preparation and coating under cover, in a suitable environment and with adequate lighting. Store items both before and after coating in a clean, dry area, protected from the weather and mechanical damage, properly stacked and spaced to permit air circulation and to prevent sticking of surfaces.

3.33 PRIMING JOINERY

Before priming preservative treated timber ensure that any cut surfaces have been retreated. Liberally coat end grain, allow to soak in and then recoat. Ensure LOSP. treated joinery has dried sufficiently to lose odour.

3.34 CONCEALED JOINERY SURFACES

Apply off-site coatings to all surfaces including those which will be concealed when incorporated into the building.

3.35 CONCEALED METAL SURFACES

Apply primer to suit the coating system to all metal surfaces which will be concealed when incorporated into the building.

3.36 DOORS

Prime or seal and paint all six faces of doors before hanging.

3.37 BEAD GLAZING

Before glazing apply the first two coats, or the primer and one undercoat, to rebates of stained, varnished or painted joinery and beads.

3.38 PUTTY GLAZING

Follow putty manufacturers recommendations for application, drying, and painting. Ensure that the putty is fully protected by the coating system as soon as it is sufficiently hard.

Application - generally

3.39 PAINTING GENERALLY

Comply with the paint manufacturer's requirements and any additional requirements in this specification.

3.40 MIXING

Thoroughly mix paints. Lift any settled pigment and ensure the paint is homogenous.

3.41 ENVIRONMENT

Paint exterior surfaces only in favourable weather conditions:

- warm dry days without frost or heavy dews
- avoid painting in direct sunlight any surfaces that absorb heat excessively
- as far as possible apply paint in the temperature range 15°C to 25°C
- do not paint if temperatures fall outside the range of 10°C and 35°C unless paints with the

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necessary temperature tolerance have been specified
- do not apply solvent borne paint if moisture is present on the surface

3.42 SEQUENCE OF OPERATIONS

Painting work to generally follow the following sequences:

- back painting and pre-installation painting, then post-installation exposed-face painting
- complete surface preparation before commencing painting
- apply paint in the specified sequence using the specified paint
- allow full drying time between coats to the paint manufacturer's requirements
- do not expose primers, undercoats and intermediate coats beyond manufacturers stated instructions before applying the next coat
- finish broad areas before painting trim
- ensure batch numbers of tins are matched for whole areas
- internally, paint ceilings before walls and walls before joinery, trim and other items

3.43 PAINT APPLICATIONS

Select brush, roller, or pad and apply paint to the requirements of the paint manufacturer and to obtain a smooth even coating of correct thickness, uniform gloss and colour.

3.44 DRYING TIME

Before handling or applying the next coat of paint, give each coat the full drying time as required by the paint manufacturer. Ensure that surfaces are dry and that condensation does not occur before the paint reaches surface-dry condition.

3.45 LIGHTLY SAND

Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. Remove dust immediately before applying the next coat.

3.46 DEFECTIVE WORK

Correct defective work immediately and re-coat as required, following precisely the paint system specified.

3.47 EACH COAT

Each coat of paint and the completed paint system to have the following qualities and properties:

- uniform finish, colour, texture, sheen and hiding power
- the specified number of coats applied
- no blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, brush marks, ladder marks and blistering
- proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application

Completion

3.48 CLEAN

Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at completion of the building works. Clean glass inside and out to a shining finish.

3.49 CLEAN EQUIPMENT

Use the Manufacturer's environmental wash system for the cleaning of water-based paint and plasters from brushes, rollers, plastering or spray equipment to separate the solids from the water component for safe disposal.

3.50 LEAVE

Leave the whole of this work uniform in gloss and colour, of correct thickness, free from painting defects, clean and unmarked and to the standard required by following procedures.

3.51 REMOVE

Remove dropsheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.

3.52 REPLACE HARDWARE

Replace hardware without damage to it or the adjoining surface. Leave properly fitted and in working order.

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4 SELECTIONS

4.1 SELECTIONS

Refer to 6711 PAINTING EXTERIOR and 6721 PAINTING INTERIOR for selections.

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7120 HOT & COLD WATER SYSTEM

1 GENERAL

This section relates to piped potable water supply systems from the network utility supply authority water main to designated points and appliances, the installation of hot water heating appliances, distributing piped hot water to other appliances, and the installation of valves.

1.1 RELATED WORK

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures and tapware selections.

Documents

1.2 DOCUMENTS

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

NZBC G4/AS1	Ventilation of buildings
NZBC G11/AS1	Gas as an energy source
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
AS 1432	Copper tubes for plumbing, gas fittings and drainage applications
AS/NZS 1477	PVC pipes and fittings for pressure applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 2033	Installation of polyethylene pipe systems
AS 2345	Dezincification resistance of copper alloys
AS/NZS 2492	Cross Linked Polyethylene (PE-X) pipe for pressure applications
AS/NZS 2537.1	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) General
AS/NZS 2537.2	Mechanical joining fittings for use with crosslinked Polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations - Crosslinked Polyethylene (PE-X) - Fittings
AS/NZS 2537.3	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) fitness for purpose of system
AS/NZS 2537.4	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) Guidance for the assessment of conformity.
AS/NZS 2642.1	Polybutylene pipe systems - Polybutylene (PB) pipe extrusion compounds
AS/NZS 2642.2	Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications
AS/NZS 2642.3	Polybutylene pipe systems - Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications
AS/NZS 2845.1	Water supply - Backflow prevention devices - Materials, design and performance requirements
AS 2845.3	Water supply - Backflow prevention devices - Field testing and maintenance
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3500.1	Plumbing and drainage - Water services
AS/NZS 3500.4	Plumbing and drainage - Heated water services
NZS 3501	Specification for copper tubes for water, gas and sanitation

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AS 3688	Water supply and gas systems - metallic fittings and end connectors
AS/NZS 3879	Solvent cements and priming fluids for PVC (PVC-U and PVC-M and ABS and ASA pipes and fittings
AS 4032.2	Water supply - Valves for the control of heated water supply temperatures - Tempering valves and end-of-line temperature actuated devices
AS/NZS 4129	Fittings for polyethylene (PE) pipes for pressure applications.
AS/NZS 4130	Polyethylene (PE) pipes for pressure applications
NZS 4305	Energy efficiency domestic type hot water systems
NZS 4602	Low pressure copper thermal storage electric water heaters
NZS 4606.1	Storage water heaters. General requirements
NZS 4606.2	Storage water heaters. Specific requirements for water heaters with single shells
NZS 4606.3	Storage water heaters. Specific requirements for water heaters with composite shells.
NZS 4607	Installation of thermal storage electric water heaters: valve-vented systems
NZS 4617	Tempering (3-port mixing) valves
AS 4809	Copper pipe and fittings. Installation and commissioning
AS 5200 part 053	Plumbing and drainage products, Stainless steel pipes and tubes for pressure applications.
AS/NZS 5601.1	Gas installations - general installations
AS/NZS 60335.2.35	Household and similar electrical appliances. Safety - Pat 2.35 Particular requirements for instantaneous water heaters

Gas (Safety and Measurement) Regulations 2010
Plumbers, Gasfitters and Drainlayers Act 2006
NZ Backflow Testing Standard: NZ Backflow Testing Standard 2019, Field testing of backflow prevention devices and verification of air gaps

1.3 MANUFACTURER DOCUMENTS

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

Contractor to supply

Copies of the above literature are available from

Web:	Contractor to supply
Email:	Contractor to supply
Telephone:	Contractor to supply

Warranties

1.4 WARRANTY

Provide warranty for:

2 years:	For the supply and installation of the plumbing system and fixtures

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

Requirements

1.5 QUALIFICATIONS

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

1.6 INFORMATION FOR OPERATION AND MAINTENANCE

Provide the following general operation and maintenance information as electronic PDF format documents:

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Provide this information prior to practical completion.

1.7 HOT WATER TEMPERATURES

To NZBC G12/AS1, 6.14

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

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

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

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

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

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

This clause excludes boiling units.

Performance

1.8 TESTING - TO NZBC G12/AS1

Test to NZBC G12/AS1, 7.6, Watertightness, for hot and cold water.

- Test to a pressure of1500 kpa for period not less than 15 minutes.

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Slowly fill service pipes with water to exclude air. Test and ensure there is no measurable loss of pressure for the minimum period. Slowly fill distribution pipes with water to exclude air. Ensure that with draw-off taps closed the system must remain water-tight.

1.9 TESTING - TO AS/NZS 3500

Test to AS/NZS 3500.1 as modified by NZBC G12/AS3, Section 17, Testing and commissioning, for cold water.

- Test reticulation system to a pressure of 1500 kpa for period not less than 30 minutes, to AS/NZS 3500.1, 17.3.1 Hydrostatic test. Test storage tanks to AS/NZS 3500.1, 17.3.2 Storage tanks (except rain water tanks).

and

AS/NZS 3500.4 as modified by NZBC G12/AS3, Section 9, Testing and commissioning, for hot water.

- Test reticulation system (excluding tanks, water heaters, and some fixtures, valves etc) to a pressure of 1500 kpa for period not less than 30 minutes, to AS/NZS 3500.4, 9.3 Testing. Test complete system (including valves, pumps, water heaters etc) under normal working conditions for a minimum of 48 hours, then check visually, to AS/NZS 3500.4, 9.3 Testing.

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Slowly fill service pipes with water to exclude air. Test and ensure there is no measurable loss of pressure for the minimum period. Slowly fill distribution pipes with water to exclude air. Ensure that with draw-off taps closed the system must remain water-tight.

2 PRODUCTS

Materials

2.1 COPPER PIPE

To NZBC G12/AS1, 2 Materials. Copper pipe to NZS 3501, AS 1432 (type A, B & C) and AS 3688 for fittings.

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2.2 PVC-U PIPE

To NZBC G12/AS1, 2 Materials. PVC-U pipes and fittings to AS/NZS 1477 and PVC-U solvent cements and primers to AS/NZS 3879. Protect from sunlight. For cold water applications only.

2.3 WATER METER

To the requirements of the network utility operator.

2.4 VALVES

Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief or temperature valve, pressure relief valve and isolating valves to NZBC G12/AS1.

2.5 BACKFLOW PREVENTION DEVICES

Provide backflow prevention devices to AS/NZS 2845.1 where it is possible for water or contaminants to backflow into the potable water supply. Refer to NZBC G12/AS1, 3.4 Backflow protection & 3.5 Containment Backflow protection and NZBC G12/AS1, table 2, Selection of Backflow Protection and table 2A Containment Backflow Protection

2.6 TEMPERING VALVE

Tempering valve to NZS 4617 or AS 4032.2 to NZBC G12/AS1.

2.7 HEADER TANKS

Pre-formed black polyethylene or stainless steel tank, complete with access opening and lid and overflow tray.

Materials - Hot water heating appliances

2.8 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

To NZS 4305 NZS 4606.1, NZS 4606.2 and NZS 4606.3, electric water storage cylinder, insulated and complete with required fittings.

2.9 ELECTRIC HOT WATER CYLINDER, UNDER-SINK, LOW PRESSURE

To NZS 4305 and NZS 4602, copper thermal storage cylinder insulated and complete with required fittings.

Components

2.10 INSULATION

Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements and to NZS 4305 and AS/NZS 3500.4.

2.11 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

Fire stopping accessories

2.12 FIRE STOPPING SYSTEMS

For sealing around pipe penetration through fire walls and floors use a combination of the following:

- Gunnable inorganic or silicone elastomer sealant, packed to maintain the specified fire resistance rating of the floor or wall.
- Two-part silicone foam elastomer sealant, packed to maintain the specified fire resistance rating of the floor or wall.
- Fire wrap containing intumescent material used in conjunction with the selected sealer.
- Fire collar with intumescent packing to maintain the specified fire resistant rating of the floor or wall.

Refer to SELECTIONS for requirements.

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3 EXECUTION

3.1 EXECUTION GENERALLY

Generally carry out the whole of this work and tests to NZBC G12/AS1 or AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3.

3.2 HANDLE AND STORE

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

Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.

3.3 CORE HOLES AND SLEEVES

Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.

3.4 CONCEAL

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

3.5 CORROSION

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

3.6 THERMAL MOVEMENT

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

3.7 PIPE SIZE

Flow rates to each outlet to be no less than those given in AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in NZBC G12/AS1, table 4, Tempering valve and nominal pipe diameters.

3.8 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

3.9 EXCAVATE

Excavate for the water main to a firm, even trench base in straight runs. Allow to backfill.

Application - Jointing

3.10 JOINTING COPPER PIPE

Braze pipe, fit alloy compression fittings, crox type joints and seal ring compression joints to NZBC G12/AS1 and AS 4809.

3.11 JOINTING PVC-U PIPE

Solvent welded joints using spigots and sockets, flanged joints and seal ring compression joints to NZBC G12/AS1 and AS/NZS 2032.

3.12 JOINTING POLYBUTYLENE PIPE

Aluminium clamped, seal ring compression or push fit "O" ring seal jointing to pipe system manufacturer's requirements.

3.13 JOINTING POLYETHYLENE PIPE

Seal ring compression joints and electrofusion to NZBC G12/AS1 and AS/NZS 2033.

Application - Pipework installation

3.14 WATER SUPPLY CONNECTION

Arrange with the network utility operator for a connection to the water main and from there through a water meter and gate valve. Provide back flow prevention to NZBC G12/AS1.

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3.15 POTABLE WATER SUPPLY PIPEWORK INSTALLATION

From connection point, run pipes complete with all fittings, support and fixing, joins and install to manufacturers specifications. Size the pipes and branches in straight runs to deliver the acceptable flow rate to AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures and size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Pipework support spacing to be firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with machine made 3 diameter bends, complete with necessary valves and fittings. Conceal pipework and pressure test before the wall linings are fixed.

3.16 HOT WATER PIPEWORK

Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 9 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, and preformed 3 diameter bends, complete with all necessary valves and fittings

Lag all pipes with rigid insulation to the manufacturer's requirements and AS/NZS 3500.4 as modified by NZBC G12/AS3 or G12/AS1.

3.17 EQUIPOTENTIAL BONDING METALLIC WATER SUPPLY PIPES

Before enclosing, co-ordinate with electrician to provide for equipotential bonding to metallic water pipes and metallic sanitary fixtures as required by NZBC G12/AS1, 9.0 Equipotential bonding and/or AS/NZS 3000, 5.6 Equipotential bonding.

3.18 IN-LINE FILTER

Install an in-line filter immediately adjacent to the main isolating valve at the point of entry to the building, in an accessible position to allow for easy cleaning.

Application - Hot water systems

3.19 HOT WATER CYLINDER INSTALLATION GENERALLY

Install hot water cylinders complete to the manufacturer's requirements and to NZBC G12/AS1, 6. 11, Water heater installation or NZS 4607 for Valve-vented systems.

3.20 SEISMIC RESTRAINTS - NON-GAS WATER HEATING APPLIANCES

Non-gas (electric, wet-back, solar etc) water heating appliances (storage water heaters) to be restrained to manufacturer's requirements and NZBC G12/AS1, 6.11, Water Heater Installation or AS/NZS 3500.4, 5.5.4 Seismic restraints.

3.21 INSTALLING HOT WATER PIPE INSULATION

Insulate all hot water pipes to NZS 4305 , AS/NZS 3500.4, section 8.2 Thermal insulation, and to the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of steel studs.

3.22 INSTALL ELECTRIC HOT WATER CYLINDERS AND BOILING CYLINDERS

Install where shown complete with all the necessary fittings to the cylinder manufacturer's requirements and in accordance with NZBC G12/AS1: 6.11 or NZS 4607 for Valve-vented systems.

3.23 INSTALL LOW PRESSURE UNDER-SINK HOT WATER CYLINDER

Install hot water cylinders complete to the manufacturer's requirements and to NZBC G12/AS1, 6.11 Water heater installation. Connect to sink tap.

3.24 INSTALL WALL-MOUNTED BOILING CYLINDER

Install to the cylinder manufacturer's stated requirements. Locate where shown.

3.25 INSTALL STORAGE HOT WATER CYLINDER OVERFLOW TRAY

Install drained overflow tray to storage hot water cylinder to NZBC G12/AS1.

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3.26 INSTALL TEMPERING VALVE

Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install copper pipework for 1 metre minimum downstream of tempering valve prior to connection of non-metallic pipework.

3.27 PENETRATIONS

Provide and fit collars and escutcheon plates to match the pipework at all penetrations through constructions.

Application - Fire stopping work

3.28 FIRE STOPPING WORK

Make and prepare pipe penetration to suit fire stopping and install fire stopping system around pipes to manufacturer's installation instructions.

Installation - Valves

3.29 INSTALLING BELOW GROUND ISOLATING VALVE

Install all below ground items such as main isolating valves and water meters in preformed concrete pits or approved equivalent.

3.30 INSTALLING APPLIANCE ISOLATING VALVES - CONCEALED

Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.

3.31 INSTALLING BACKFLOW PREVENTION DEVICE

Provide and install backflow prevention device as near as practicable to the potential source of contamination, and in an accessible position for maintenance and testing to AS 2845.3 or NZ Backflow Testing Standard.

Completion

3.32 LABEL

Label all pipework with permanent adhesive markers at 3 metre minimum intervals.

3.33 CLEAN IN-LINE FILTER

Clean all in-line filters on completion of works.

3.34 REPLACE

Replace damaged or marked elements.

3.35 LEAVE

Leave work to the standard required by following procedures.

3.36 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

Water main

4.1 POLYETHYLENE WATER MAIN

Size:	25mm outside diameter (i.e. DN 25 in AS/NZS 4130)

Pipework

4.2 COPPER PIPE

Manufacturer/Brand:	Plumbing contractor to select
Nominal bore:	20mm
Wall thickness:	90mm

4.3 PVC-U PIPE

Manufacturer/Brand:	Plumbing contractor to select

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Hot water systems

4.4 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

Brand:	Main contractor to confirm
Model size:	300L, Refer to Architectural drawings: Plumbing/Drainage plan.

4.5 ELECTRIC HOT WATER CYLINDER, UNDER-SINK, LOW PRESSURE

Brand:	Main contractor to confirm
Model size:	40L, Refer to Architectural drawings: Plumbing/Drainage plan.

Valves and accessories

4.6 MAIN ISOLATING VALVE

Location:	Cupboard, by HWC
Brand/type:	Plumbing contractor to select

4.7 APPLIANCE ISOLATING VALVES - EXPOSED

Appliance:	Washing machine
Brand/type:	Refer to tapware selections

4.8 TEMPERING VALVE

Location:	Cupboard, by HWC
Brand/type:	Plumbing contractor to select

4.9 BACKFLOW PREVENTION DEVICE

Location:	Boundary / Water meter box
Brand/type:	Plumbing contractor to select

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7411D DIMOND RAINWATER SPOUTING SYSTEMS

1 GENERAL

This section relates to Dimond rainwater disposal systems including spouting and downpipes, in metal.

1.1 RELATED WORK

Refer to Architectural Plans

1.2 ABBREVIATIONS AND DEFINITIONS

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc

Documents

1.3 DOCUMENTS

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

NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Dimond, Roofing and Cladding Systems Design Manual, (web based Manual with dated update pages)

Manufacturer/supplier contact details

Company:	Fletcher Steel Ltd
Trading as:	Dimond Roofing
Web:	www.dimond.co.nz
Email:	roofspec@dimond.co.nz
Telephone:	0800 346 663 (0800 DIMOND)

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

~ years:	For perforation
~ years:	For coatings

- Provide the warranty in accordance with published supplier's guidance on materials, environments and building types.
- Commence the warranty from the date of installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

3 years:	For workmanship

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of installation.

Include a copy of the maintenance requirements with the warranty.
Refer to the general section 1237 WARRANTIES - INSTALLER/APPLICATOR for additional requirements.

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Requirements

1.7 NO SUBSTITUTIONS

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

1.8 QUALIFICATIONS

Installers to be experienced competent gutter installers, familiar with the **Dimond** materials and the techniques specified.

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Provide one copy of all relevant **Dimond** maintenance information on completion of the roofing work.

Performance

1.10 TEST

Test the completed rainwater disposal system with water to ensure spoutings are laid to correct falls, that both spouting and downpipes are unobstructed and that no ponding occurs in spoutings.

2 PRODUCTS

Materials

2.1 SPOUTING

Complete with matching brackets to suit the spouting and screws. Refer to SELECTIONS for type.

2.2 DOWNPIPES

Complete with stand-off brackets, galvanized screw fixed. Refer to SELECTIONS for type.

Components

2.3 DROPPERS

Steel or plastic droppers, sized to fit inside the downpipe.

3 EXECUTION

Conditions

3.1 HANDLE AND STORE

Handle and store downpipes, spouting and accessories to avoid damage. Store on site under cover, on a clean level area, stacked to eliminate movement and away from work in progress. Avoid exposure to sunlight if strippable film is still on the product.

3.2 SUBSTRATE

Check that fascia, barges or cladding are level and true to line and face and will allow work of the required standard without distortion to the product alignment. Do not proceed until they are suitable to fix to standard.

3.3 THERMAL MOVEMENT

Make adequate provision in the fixing and jointing of the spouting for thermal movement in the length of the spouting. Provide an expansion joint in spouting over 12 metres in length for steel gutter.

3.4 CORROSION

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

Check compatibility of metals used for rainwater goods, against the materials being used for roofing and flashings.

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Application - metal

3.5 INSTALL METAL SPOUTING

Establish minimum falls necessary (minimum 1:500) to outlets to prevent ponding and screw fix brackets true-to-line at 900mm centres maximum or 600mm centres maximum when using profile option Box 300. In areas where snow fall is possible and or high wind areas, the centres should be reduced to 450mm. Lap spouting joints in direction of flow, a minimum of 40mm to seal between and over the top of joint and seal with silicone sealant and fix with rivets. Ensure the joint is fixed over its full girth. Cut out neatly for and fit the pre-formed downpipe dropper and rivet and seal around the joint. All installation to **Dimond** details and NZMRM CoP recommendations.

3.6 INSTALL METAL DOWNPIPES

Form downpipes complete with cast zinc 115 degree angle bends as needed with all joints lapped and silicone sealed and fixed with 2-4mm diameter aluminium blind rivets. Galvanize screw fix with galvanized steel pipe clips to rigidly stand 40mm off the wall plumb and discharging into stormwater gully or inlet pipe. All installation to **Dimond** details and NZMRM CoP recommendations.

Completion

3.7 REPLACE

Replace damaged or marked elements.

3.8 LEAVE

Leave the whole of this work discharging completely and freely into the stormwater system and free of all debris. Leave work to the standard required by following procedures.

3.9 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

4.1 DIMOND SPOUTING

Profile:	Box 125
Size:	7500mm² (with 15mm free board) effective cross sectional area
Base material/BMT:	Steel/0.55mm
Coating system:	Contractor to confirm
Dimond colour:	Contractor to confirm

4.2 DIMOND DOWNPIPES

Profile:	Round 80mm diameter
Base material:	Steel
BMT:	0.55mm
Coating system:	Contractor to confirm
Dimond colour:	Contractor to confirm

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7420 SANITARY SYSTEMS

1 GENERAL

This section relates to above ground gravity flow sanitary systems;

- for foul water
- from sanitary fixtures to first underground drain connection
- including system wastes, floor wastes, floor waste gullies, traps, vents and valves
- with associated components and accessories to make the system work

1.1 RELATED SECTIONS

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures tapware and accessories.

Refer to 7430 DRAINAGE for underground drains.

1.2 DOCUMENTS

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

NZBC G1/AS1	Personal hygiene
NZBC G13/AS1	Foul water - Sanitary plumbing
NZBC G13/AS3	Foul water - Sanitary plumbing and drainage
AS 2887	Plastic waste fittings
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage

Plumbers, Gasfitters and Drainlayers Act 2006

1.3 MANUFACTURER DOCUMENTS

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

Contractor to supply

Copies of the above literature are available by phoning.

1.4 QUALIFICATIONS

Carry out all work under the direct supervision of a certifying plumber under the Plumbers, Gasfitters and Drainlayers Act 2006.

2 PRODUCTS

2.1 PVC-U WASTE, DISCHARGE AND VENT PIPES

PVC-U pipe to AS/NZS 1260 complete with fittings brand-matched to the pipe manufacturer's requirements.

2.2 EXPOSED PIPES AND TRAPS

Chrome plate on copper pipes and associated copper and brass fittings.

Stainless steel pipe and associated fittings
PVC,PE polyethylene or polypropylene pipe including all associated fittings.

2.3 FIRE STOPPING SYSTEMS

For sealing around pipe penetration through fire walls and floors use singularly or combinations of the following:

- Gunnable inorganic or silicone elastomer sealant, packed to maintain the specified fire resistance rating of the floor or wall.
- Two-part silicone foam elastomer sealant, packed to maintain the specified fire resistance rating of the floor or wall.
- Fire wrap containing intumescent material used in conjunction with the selected sealer.
- Fire collar with intumescent packing to maintain the specified fire resistant rating of the floor or wall.

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Refer to SELECTIONS for requirements.

3 EXECUTION

3.1 EXECUTION GENERALLY - NZBC G13/AS1

Carry out this work to NZBC G13/AS1 and NZBC G1/AS1 and complete all tests to G13/AS1, 7.1 Test Methods.

3.2 EXECUTION GENERALLY - AS/NZS 3500.2

Carry out this work to AS/NZS 3500.2, as modified by NZBC G13/AS3, and complete all tests to AS/NZS 3500.2, section15 Testing of Sanitary Plumbing and Sanitary Drainage Installations.

3.3 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

3.4 EQUIPOTENTIAL BONDING METALLIC WASTE PIPES

Before enclosing, co-ordinate with electrician to provide for equipotential bonding to ensure metallic waste pipes connected to metallic drains and attached metallic sanitary fixtures using an earth bonding conductor to requirements of AS/NZS 3000, 5.6 Equipotential bonding.

3.5 INSTALL TRAPS, WASTE AND VENT PIPES - NZBC G13/AS1

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to NZBC G13/AS1 and jointing for PVC-U pipes to AS/NZS 2032. Discharge wastes into the drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to all roof vents and vermin proof mesh to all untrapped waste pipes.

3.6 INSTALL TRAPS, WASTE AND VENT PIPES - AS/NZS 3500.2

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to AS/NZS 3500.2, as modified by NZBC G13/AS3, and jointing to PVC-U pipes to AS/NZS 2032. Discharge wastes into the drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to all roof vents and vermin proof mesh to all untrapped waste pipes.

3.7 INSTALL ELECTRIC PAN VENTS

Install electric pan vents to manufacturers' requirements. Leave ready for electrical connection by electrician.

3.8 PENETRATIONS

At penetrations through constructions provide and fit collars and escutcheon plates to match pipework.

3.9 FIRE STOPPING WORK

Make and prepare pipe penetration to suit fire stopping and install fire stopping system around pipes to manufacturer's installation instructions.

3.10 TEST

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC G13/AS1, 7.1 Test Methods or AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations,as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

3.11 CLEAN UP

Remove labels and clean fittings. Remove unused materials from the site.

4 SELECTIONS

4.1 PVC-U WASTE, DISCHARGE AND VENT PIPES

Brand/type: Plumbing contractor to select

4.2 EXPOSED PIPES AND TRAPS

Brand/type: Plumbing contractor to select

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4.3 FLOOR WASTES

Manufacturer: Plumbing contractor to select
Brand/type: Plumbing contractor to select
Grate/finish: Plumbing contractor to select

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7430 DRAINAGE

1 GENERAL

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

1.1 DOCUMENTS

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

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

Plumbers, Gasfitters and Drainlayers Act 2006

1.2 MANUFACTURER'S DOCUMENTS

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

Contractor to supply

Copies of the above literature are available from

Web:	Contractor to supply
Email:	Contractor to supply
Telephone:	Contractor to supply

1.3 AS BUILT DOCUMENTS

Supply a 1:100 scale as-built drawing of drains and fittings to the territorial authority and to the owner on completion.

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1.4 QUALIFICATIONS

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

2 PRODUCTS

2.1 CONCRETE

17.5 MPa prescribed mix to NZS 3104.

2.2 REINFORCEMENT

Plain round and/or deformed steel bars, Grade 300 to AS/NZS 4671.

Components

2.3 PVC-U PIPES

PVC-U pipes bends, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260.

Underground PVC-U pipe to be classified as follows:

Classification:	Use:
SN4 - SN6	Domestic & light load areas
SN8 - SN10	Commercial & Industrial medium load areas
SN16	Public roads & high load areas

2.4 POLYETHYLENE PIPES

Polyethylene pipes and fittings to AS/NZS 5065.

2.5 PERFORATED PIPE - SUBSOIL DRAINAGE

Perforated corrugated coil high density polyethylene subsoil drainage pipe to AS 2439.1 with polypropylene filter sock over, for groundwater drainage.

2.6 GULLY TRAPS - NZBC G13/AS2

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

2.7 GULLY TRAPS - AS/NZS 3500.2

Gully traps complete with grating to AS/NZS 3500.2, 4.6 Gullies, as modified by NZBC G13/AS3.

2.8 SURFACE WATER SUMP GRATINGS

Cast iron frame with lift-up grating.

2.9 STRIP DRAIN CHANNEL

Proprietary, modular, variable invert, plastic, steel (various types), or polymer concrete drainage channel sections and drainage sump, embedded in site concrete and fitted with selected metal gratings.

2.10 INSPECTION COVERS

Cast iron frame with screw-down cover.

Foul water

2.11 TRENCH BACKFILLING MATERIAL, FOUL WATER - NZBC G13/AS2

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

2.12 TRENCH BACKFILLING MATERIAL, FOUL WATER - AS/NZS 3500.2

Bedding and backfilling material to AS/NZS 3500.2, 5.4, Bedding of drains, and for concrete, if required, AS/NZS 3500.2, 5.3 Concrete Support.

Surface water

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

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

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2.14 TRENCH BACKFILLING MATERIAL, SURFACE WATER - AS/NZS 3500.3

Bedding and backfilling material to AS/NZS 3500.3, section 6.2.10, 6.2.11 and 6.3.5, as modified by NZBC E1/AS2.

Subsoil

2.15 DRAINAGE MATERIAL - SUBSOIL DRAINAGE

Free draining crushed stone, 7 mm to 20 mm in size.

Accessories

2.16 FILTER FABRIC

Polymeric fabric formed from a plastic yarn or a long chain synthetic polymer composed of at least 85% by weight of propylene, ethylene, amide, ester or vinylidene chloride. Fibres to be rot proof, chemically stable and have low water absorbency. The filter network, (woven or non-woven) must be dimensionally stable and resistant to delamination.

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3 EXECUTION

3.1 EXCAVATE

Excavate for drains to a firm even base with correct gradients set in straight runs.
Trenches running parallel, below and close to foundations of buildings to NZS 3604 or NZS 4229 to be separated to:

- NZBC E1/AS1, 3.9.7, Proximity of Trench to Building, for stormwater and subsoil drains.
- AS/NZS 3500.3, 6.2.8, Installation near and under buildings, as modified by NZBC E1/AS2.
- NZBC G13/AS2, 5.6, Proximity of Trench to Building, for foul water drains.

3.2 MANUFACTURER'S REQUIREMENTS

All drainage installations to the pipe and fitting manufacturer's requirements.

3.3 FOUL WATER DRAINAGE GENERALLY - NZBC G13/AS2

Carry out foul water drainage work to NZBC G13/AS2 and NZBC G1/AS1 and complete all tests to NZBC G13/AS1, 7.1 Test Methods.
Lay uPVC pipe systems to relevant sections of AS/NZS 2032. Lay polyethylene pipes and fittings to relevant sections of AS/NZS 2033.

3.4 FOUL WATER DRAINAGE GENERALLY - AS/NZS 3500.2

Carry out this work to AS/NZS 3500.2 and complete all tests to AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations.
Lay uPVC pipe systems to relevant sections of AS/NZS 2032. Lay polyethylene pipes and fittings to relevant sections of AS/NZS 2033.

3.5 SURFACE WATER DRAINAGE GENERALLY - E1/AS1

Carry out stormwater drainage work to NZBC E1/AS1, and complete all tests to NZBC E1/VM1, 8.0 Drain Leakage Tests.
Lay uPVC pipe systems to relevant sections of AS/NZS 2032, AS/NZS 2566.1 and AS/NZS 2566.2. Lay polyethylene pipes and fittings to relevant sections of AS/NZS 2033 and AS/NZS 2566.1.

3.6 SURFACE WATER DRAINAGE GENERALLY - AS/NZS 3500.3

Carry out stormwater drainage work to AS/NZS 3500.3, and complete all tests to AS/NZS 3500.3, section 9, as modified by NZBC E1/AS2.
Lay uPVC pipe systems to relevant sections of AS/NZS 2032, AS/NZS 2566.1 and AS/NZS 2566.2. Lay polyethylene pipes and fittings to relevant sections of AS/NZS 2033 and AS/NZS 2566.1.

3.7 LAY FOUL WATER DRAINS

Lay drains in straight runs to correct gradients, to discharge into the network utility operator's sewer. Set inspection fittings on a concrete base.

3.8 CONSTRUCT GULLY TRAPS - NZBC G13/AS2

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

3.9 CONSTRUCT GULLY TRAPS - AS/NZS 3500.2

Set in a minimum 100mm thick concrete with top surround 25mm above paving and 75mm above other surfaces, to AS/NZS 3500.2, section 4.6, Gullies.

3.10 LAY STORMWATER DRAINS

Confirm the required location of downpipes and finished ground levels before commencing pipework. Set downpipe bends in concrete with the concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the network utility operator's stormwater system.

3.11 INSTALL STRIP DRAIN CHANNEL

Excavate trench and form site concrete base to fall. Set interlocking channel sections, sumps and accessories in place, all in accordance with the channel manufacturer's requirements. Check falls and install gratings and covers.

3.12 INSTALL SURFACE WATER SUMP

To NZBC E1/AS1 or to AS/NZS 3500.3 section 7 as modified by NZBC E1/AS2, complete with ceramic half-siphon pipe and cast iron frame with a lift out grating.

3.13 INSTALL STORMWATER INSPECTION CHAMBERS

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Construct as detailed on a poured concrete footing to NZBC E1/AS1, 3.7, Access for maintenance, or to AS/NZS 3500.3, section 7 as modified by NZBC E1/AS2. Provide all necessary haunching to channels. Fit a cast iron cover and frame.

3.14 INSTALL FOUL WATER INSPECTION CHAMBERS - NZBC G13/AS2

Construct as detailed on a poured concrete footing to NZBC G13/AS2, 5.7 Access points. Provide all necessary haunching to channels. Fit a cast iron cover and frame.

3.15 INSTALL FOUL WATER INSPECTION CHAMBERS - AS/NZS 3500.2

Construct as detailed on a poured concrete footing to AS/NZS 3500.2, 4.7 Inspection openings and 4.8 Inspection chambers, as modified by NZBC G13/AS3. Provide all necessary haunching to channels. Fit a cast iron cover and frame.

3.16 SOAKHOLES OR TRENCHES

Dispose of stormwater on site as shown on the drawings, by soakage, to suit local geology and soil structure; all as directed by the territorial authority.

3.17 TESTING - FOUL WATER

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC G13/AS1, 7.1 Test Methods or AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations, as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

3.18 TESTING - SURFACE WATER

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC E1/VM1, 8.0 Drain Leakage Tests or AS/NZS 3500.3, section 9, as modified by NZBC E1/AS2 as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

Backfilling and encasement - Foul water and surface water

3.19 CONCRETE ENCASEMENT

Concrete encase shallow drains and drains under driveways, on a 100mm deep 17.5 MPa concrete bed reinforced with three 10mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100mm 17.5 MPa concrete.

3.20 TRENCH BACKFILLING GENERALLY - FOUL WATER

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

Up to 300mm above the pipe, compaction shall be by tamping by hand using a rod with a pad foot (having an area of 75 ± 25 mm by 75 ± 25 mm) over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing the drains.

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

3.21 TRENCH BACKFILLING GENERALLY - SURFACE WATER - NZBC E1/AS1

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

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

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3.22 TRENCH BACKFILLING GENERALLY - SURFACE WATER - AS/NZS 3500.3

Trench fill to be placed in loose layers not more than 200 mm thick and compacted to not less than 90% or 95% under pavements of the standard maximum dry density specified in AS 1289.5.4.1 or AS 1289.5.6.1, in such a way that the pipes are neither dislodged nor damaged.

The finished surface (top of trench fill) and the trench surround shall be restored, as near as practicable, to the level and condition of the existing surface before commencement of the excavation.

3.23 FOUL WATER TRENCH BACKFILLING - NZBC G13/AS2

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

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

3.24 FOUL WATER TRENCH BACKFILLING - AS/NZS 3500.2

Carry out foul water trench backfilling to AS/NZS 3500.2, 5.1, 5.2 and 5.5 as modified by NZBC G13/AS3.

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

3.25 SURFACE WATER TRENCH BACKFILLING - NZBC E1/AS1

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

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

3.26 SURFACE WATER TRENCH BACKFILLING - AS/NZS 3500.3

Carry out surface water trench backfilling to AS/NZS 3500.3, 6.3.5.2.

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

Subsoil ground water drainage

3.27 FILTER FABRIC TO DRAINAGE MATERIAL - SUBSOIL DRAINAGE

Where details require drainage material to be encapsulated in filter fabric to prevent fines from blocking the aggregate. Place fabric and carefully hold in place by pinning and/or by controlled use of aggregate as ballast. After drain installation and required backfilling, complete encapsulation with fabric. Ensure filter fabric is correctly placed, sufficiently overlapped and pinned and/or secured.

3.28 LAY PERFORATED PIPING - SUBSOIL DRAINAGE

Lay perforated groundwater drainage piping with filter sock, firmly on a bed of drainage material screeded to the required gradient. Lay in straight runs to discharge into surface water drainage system. The pipe must not excessively elongate during installation. Carry drainage material up and over the pipes without disturbing them. Extend the high end of all lines up to the surface in capped, solid pipe to provide for flushing out.

3.29 LAY PERFORATED PIPING TO BASEMENT WALLS - SUBSOIL DRAINAGE

Ensure any required waterproofing and protection sheets are in place before starting work.

Lay perforated groundwater drainage piping with filter sock, firmly on a bed of drainage material screeded to the required gradient. The pipe must not excessively elongate during installation. Lay in straight runs to 1:150 gradients with invert of the highest horizontal point 50 mm minimum below floor slab level, discharging into surface water drainage system. Carry drainage material up and over the pipes without disturbing them. Fill with drainage material to full height of wall. Carry the high end of all lines up to the surface in capped, solid pipe to provide for flushing out.

3.30 LAY PERFORATED PIPING TO RETAINING WALLS - SUBSOIL DRAINAGE

Lay perforated groundwater drainage piping with filter sock, firmly on a bed of drainage metal comprising of filter material to the NZTA F2 specification. Pipe bedding not less than 75mm deep. Backfill not less than 300mm deep. The pipe must not excessively elongate during installation. Lay in straight runs to correct gradients , discharging into surface water drainage system. Carry drainage material up and over the pipes without disturbing them. Place granular fill in layers not exceeding 150 mm thick loose depth, to full height of wall, with an allowance for the thickness of the surface finish. Compact to provide support of not less than that of the adjacent material. Where geocomposite drain is used, the backfill shall follow the manufacturer's recommendations. Carry the high end of all lines up to the surface in capped, solid pipe to provide for flushing out.

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3.31 CLEAN OUT SUBSOIL DRAIN INSTALLATION

Clean and flush out the whole subsoil drain installation and remove silt and debris before handing over.

4 SELECTIONS

4.1 PVC-U PIPES

Brand/type: Contractor to confirm

4.2 POLYETHYLENE PIPES

Brand/type: Contractor to confirm



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7701 ELECTRICAL BASIC

1 GENERAL

This section relates to the wiring for domestic and small scale commercial installations, including:

- power
- lighting
- electrical automation
- security system
- complete with componentry
- electrically-powered fittings
- fire rated sealers, liners and accessories

1.1 RELATED WORK

Refer to Architectural Plans

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

AFDD	Arc Fault Detection Device
COC	Certificate of Compliance
ELV	Extra Low Voltage
IP	international (ingress) protection classification
MCB	Miniature circuit breakers
NUO	Network Utility Operator
PCB	printed circuit board
RCCB	Residual Current-operated Circuit Breaker
RCD	Residual Current Device
SIA	security integration architecture
TCF	Telecommunications Carriers' Forum

Documents

1.3 DOCUMENTS

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

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

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AS/NZS 3112:2017	Approval and test specification - Plugs and socket-outlets
AS/NZS 3113	Approval and test specification - Ceiling roses
NZS 3604	Timber framed buildings
NZS 4246	Energy Efficiency - Installing bulking thermal insulation in residential buildings
AS/NZS 5000.2	Electric cables - Polymeric insulated - for working voltages up to and including 450/750v
AS/NZS 60898	Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations - Series
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance.
AS/NZS 61439.3	Low-voltage switchgear and controlgear assemblies - Part 3: Distribution boards intended to be operated by ordinary persons (DBO).
IEC 61008.1	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - Part 1: General rules
IEC 61009.1	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules
IEC 61643	Components for low voltage surge protection devices
IEC 62423	Type F and type B residual current operated circuit-breakers with and without integral overcurrent protection for household and similar uses
IEC 62606	General requirements for arc fault detection devices

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

Contractor to supply

Manufacturer/supplier contact details:

Company:	Contractor to confirm
Web:	Contractor to supply
Email:	Contractor to supply
Telephone:	Contractor to supply

Warranties

1.5 WARRANTY

Warrant the complete electrical installation under normal environmental and use conditions against failure of materials and execution.

1 year:	Warranty period

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

Requirements

1.6 COMPLY

Comply with the Electricity (Safety) Regulations 2010, AS/NZS 3000, AS/NZS 3008.1.2, and TCF Premises Wiring Guidelines for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

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1.7 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

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

Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 QUALIFICATIONS WORKERS - LICENSED UNDER STATUTE - SECURITY TECHNICIAN

Security technician holding a licence under the Private Security Personnel and Private Investigators Act 2010. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.9 NO SUBSTITUTIONS

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

1.10 CONFIRM SELECTIONS

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

Requirements - Compliance

1.11 ELECTRICAL CERTIFICATE OF COMPLIANCE

At the completion of electrical work provide a Certificate of Compliance (CoC) to Electricity (Safety) Regulations 2010, regulation 65-67. Provide a copy to the Contract Administrator and NUO prior to connection and when required to the BCA for Code Compliance.

- Arrange for the NUO to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.
- Arrange for an inspector to inspect high risk electrical work as required by Electricity (Safety) Regulations 2010, regulation 70 High-risk prescribed electrical work to be inspected.

1.12 ELECTRICAL SAFETY CERTIFICATE

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

1.13 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

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

1.14 INSPECTIONS

Type:	~
Requirement:	~
Location:	~
Notify:	Contract administrator
	~
Notification:	2 working days prior to work/item being carried out.

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2 PRODUCTS

2.1 MAINS SUPPLY

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

2.2 CABLES

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

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

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

2.3 METER BOX

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

2.4 DISTRIBUTION BOARD

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

2.5 CIRCUIT PROTECTION

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

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

Miniature Circuit Breakers (MCB) to AS/NZS 60898 series or AS/NZS 3111, 4.5kA domestic or 6kA for commercial.

2.6 SURGE PROTECTION

Provide surge protection device(s) to AS/NZS 3000, Appendix F Surge Protection Devices. Protection for the home's appliances with IEC 61643 Class II surge protection devices fitted to the switchboard. For variable electronic equipment fit IEC 61643 Class III surge protection to switched socket outlets.

2.7 WALL BOXES

Standard grid size or equivalent to be manufactured from plastic or metal, with 2 or more gang size to be metal with steel inserts for accessory securing screws. Screw fixed.

2.8 SWITCH UNITS

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Single pole switches to be 10 amp minimum rated, double pole or intermediate to be 16 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units.
Label all switch units that control electrical equipment or special lighting circuits by proprietary engraved switch mechanisms where applicable.
Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units and 2 way units.
Refer to SELECTIONS.

2.9 SWITCHED SOCKET UNITS

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

2.10 HOT WATER SYSTEM ISOLATION SWITCH

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

2.11 DEGREES OF PROTECTION - DAMP CONDITIONS

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

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

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

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

2.12 BATTEN HOLDERS

Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.

2.13 LIGHT FITTINGS

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

2.14 RECESSED LIGHT FITTINGS - RESIDENTIAL

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

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

Refer to SELECTIONS.

2.15 SPACE HEATERS

Fixed wired room heaters radiant or convector, and compliant with Electrical (Safety) Regulations 2010, Schedule 4, 1 Household & similar appliances. Flush or surface mount, fitted with safety cut-outs. Refer to SELECTIONS

2.16 EXHAUST FANS

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

2.17 HEATED TOWEL RAILS

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

2.18 EXTERIOR SWITCHES AND SWITCHED SOCKET UNITS

Exterior grade, weather protected, switches and sockets to IP56 minimum. Sockets fitted with safety shutters behind socket pins, and all products able to be padlocked off or on. Refer to SELECTIONS.

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2.19 EXTERIOR LIGHT FITTINGS

Using materials with superior UV protection, impact strength, and addition chemical resistance.

Weather protection minimums:

- IP54 for protected areas under eaves or verandahs etc.
- IP55 for exposed areas not subject to pressurised water (hoses).
- IP66 for areas subject to pressurised water or major splashing.
- IP67 for inground lights
- IP68 for submerged pool fittings

Refer to SELECTIONS.

Fire / Acoustic rated accessories

2.20 FIRE RATED / ACOUSTIC SEALERS AND LINERS

Sealants, collars, wraps, expanding foam, mortars and liners, used to seal around pipe, conduit and sleeve penetrations through fire and acoustic walls and floors. Refer to SELECTIONS.

2.21 WALL BOXES AND SWITCH UNITS - FIRE RATED

Proprietary intumescent pad for plastic electrical sockets installed in plasterboard lined fire rated partitions providing an acoustic barrier and fire protection. Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

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

3.3 PRE-INSTALLATION REQUIREMENTS

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

Installation

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION GENERALLY

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

3.6 MAIN SUPPLY

Lay underground mains to the NUO and AS/NZS 3000, 3.11 Underground Wiring Systems requirements. Excavate trench, ensure minimum depth of cover to AS/NZS 3000 Table 3.6 Under-Ground Wiring Systems - Minimum Depth of Cover, install cable and marker tape complying with AS/NZS 2648.1 and backfill. If required, provide permanent cable marker signs to indicate the point where a cable enters or leaves a structure.

3.7 METER BOX

Fit to meter box manufacturer and Electricity Retailer requirements. Recess into external wall in sheltered area and flash to weatherproof to NZBC E2/AS1, Figure 9.1.8.3B: General meterbox and similar penetrations. Arrange for meter installation and connection.

3.8 DISTRIBUTION BOARD

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

3.9 CIRCUIT BREAKERS

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

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3.10 EARTHING CONDUCTIVE STRUCTURE & MATERIALS

Earth all at risk structural metalwork and conductive building materials to AS/NZS 3000, 5.4.6, and the Electricity (Safety) Regulations 2010.

If they form part of the building, this includes:

- Structural steel frames or members
- Light steel framing
- Exposed conductive materials, like metal sink/tub or vanity benches etc, with attached electrical units or equipment

3.11 EQUIPOTENTIAL BONDING

Equipotential Bond extraneous conductive parts together and to the electrical installation earthing system to AS/NZS 3000, 5.6, and the Electricity (Safety) Regulations 2010 and the fitting manufacturer requirements.

If they form part of the building, this includes:

- Conductive water piping (including tap etc) and exposed related connected conductive surfaces (like metal sink benches or metal cladding etc). Not required where isolated by non-conductors (plastic pipe etc) from the mass of earth.
- Other conductive piping (not earthed by other means) and exposed related connected conductive surfaces.
- Concrete reinforcing - for floor or wall forming part of a room with a shower or bath, or the shell and surround of a swimming/spa pool
- Built-in Swimming pool and spa pool - exposed conductive parts of electrical equipment, as well as exposed conductive, fixtures, fittings and pool structures within 1.25m of pool edge

3.12 MAIN EARTH

Install main earthing conductor to AS/NZS 3000, 5.5.1 Main Earthing conductor. Provide a plastic toby box to contain and protect the earth electrode. Fix the connecting earth wiring closely and securely against wall surfaces.

3.13 ARC FAULT DETECTION DEVICE (AFDD)

To AS/NZS 3000 clause 2.9, AFDD on all final sub-circuits not exceeding 20A. Install to AS/NZS 3000, Appendix O, Installation of Arc Fault Detection Devices (AFDD'S)

3.14 SURGE PROTECTION

Install surge protection devices to manufacturer requirements and in accordance with AS/NZS 3000, Appendix F, F1.2.2 Installation.

3.15 RCD - RESIDENTIAL INSTALLATIONS

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

3.16 RCD - DAMP SITUATIONS

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

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

3.17 SET-OUT - OUTLETS & EQUIPMENT

The position of outlets and equipment shown on drawings is indicative of requirements. Confirm documents and site conditions are not in conflict with other services or features. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

3.18 CABLING

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

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

3.19 CABLING CIRCUITS

Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.

3.20 PROTECTION OF CABLING NEAR BUILDING SURFACES

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

3.21 WALL BOXES

Mount flush in cavity construction size to fit products selected. Fix vertically mounted wall boxes to studs. Screw fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

3.22 SWITCHES AND SWITCHED SOCKET UNITS

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

3.23 ISOLATING SWITCHES

Locate isolating switches in positions as confirmed by the Contract Administrator, when not specifically shown on the drawings.

3.24 LIGHT FITTINGS

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

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

3.25 EXTRA LOW VOLTAGE LIGHTING

Install extra-low voltage lighting to AS/NZS 3000, 7.5 Extra-Low Voltage Electrical Installations and fitting manufacturer's requirements.

Use electronic, transformers (halogen) or drivers (LED) for ELV lamps, one transformer/driver per lamp. Locate to manufacturer requirements and as close as practicable to the lamp. Ensure transformers/drivers and rear of light fittings are adequately ventilated and appropriately clear of any building elements, to AS/NZS 3000.

3.26 INSULATION CLEARANCES

Refer to relevant INSULATION section.

3.27 EMERGENCY LIGHTING

Emergency escape lighting and exit signs for buildings to AS 2293.1 and NZBC F6/AS1. Fit emergency light fittings to manufacturer specifications. Refer to plans for position of fittings.

3.28 ELECTRIC HOT WATER SYSTEM

Install to manufacturer's requirements and to AS/NZS 3000, 4.8.2 Water heaters. Wire as a separate circuit through a wall-mounted, lockable, isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end. Hot water cylinders, thermostats and 3000 watt element supplied and fitted under the hot and cold water system section.

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3.29 SPACE HEATERS

Install to the heater manufacturer requirements, and to AS/NZS 3000, 4.9 Room Heaters. Fit neatly and without damage to surrounding finishes. Ensure control switches and thermostats are fitted to appliance or otherwise connect to a control switch located adjacent to the heater and a remote thermostat. Isolation switch shall be provided adjacent to entrance of room or area the heating system is located or installed in switchboard.

3.30 ELECTRICAL HEATING CABLES

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

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

3.31 AIR CONDITIONING & HEAT PUMP SYSTEMS

Connect to electricity supply to manufacturer's requirements and to AS/NZS 3000, 4.19 Air Conditioning & Heat Pump Systems. Any system incorporating a compressor shall be provided with a lockable isolating switch installed adjacent to the unit.

3.32 COOKING APPLIANCES

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

3.33 GAS APPLIANCES

Connect gas appliances to electricity supply to manufacturer's requirements and to AS/NZS 3000, 4.18 Gas Appliances and Equipment as modified by Electricity (Safety) Regulations 2010. Refer to 7221 GAS APPLIANCE.

3.34 EV CHARGING STATIONS

Connect EV charging station to electricity supply to manufacturer's requirements and to AS/NZS 3000, 7.9 Supplied for Electric Vehicles. Install a 30mA RCD Type B for Mode 3 EV car charger circuits for domestic applications and for all EV car charging circuits in other electrical installations. Refer to relevant 7765 ELECTRIC VEHICLE (EV) CHARGING STATIONS.

3.35 ELECTRICAL FIXTURES

Install all electrical fixtures and wire to AS/NZS 3000, 4.3 Connection of Electrical Equipment, and manufacturers requirements. Refer to SELECTIONS. If required, provide operating or isolating switches.

3.36 ELECTRICAL AUTOMATION SYSTEM

Fit distribution cabinet in wall, cut-out to finish flush with the wall surface, or surface mounted. Configure installation to manufacturer instructions. Provide adequate user training and operating manual to the owner.

Security system

3.37 SECURITY SYSTEM

Install to the system manufacturer requirements, control panel, detectors and associated equipment fitted neatly and without damage to surrounding finishes. Installation of security equipment to AS/NZS 2201.1 Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance. All 230v mains power connections to the security panel are to be in accordance with AS/NZS 3000. The 230V power is to be switched using a dedicated single gang Isolator switch or similar.

3.38 OUTDOOR/EXTERIOR SERVICES

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

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

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

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

3.39 LABELLING

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

Fire rated applications

3.40 SEAL ALL PENETRATIONS

Seal all penetrations, including in and around conduits and sleeves, in accordance with manufacturer instructions. For fire and/or acoustic rated elements, maintain the rating with the seal systems.

3.41 PROVIDE CABLE SLEEVES

Provide PVC sleeves formed from pipe sections, unless fire and/or acoustic systems require sleeves for other building elements and/or different material for the sleeve.

3.42 INSTALL WALL BOXES AND SWITCH UNITS - FIRE RATED

Install proprietary fire rated wall boxes and switch units in accordance with manufacturer instructions.

Completion & Commissioning

3.43 COMPLETION MATTERS

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

4 SELECTIONS

Materials

4.1 METER BOX

Location:	Refer to Architectural Plans, Electrical Plan
Brand / type:	Contractor to confirm

4.2 DISTRIBUTION BOARD

Location:	Refer to Architectural Plans, Electrical Plan
Brand / type:	Contractor to confirm

Outlets - fittings

4.3 EXTERIOR / INTERIOR SWITCHES AND SWITCHED SOCKET UNITS

Refer to Electrical / Lighting Plans

4.4 EXTERIOR / INTERIOR LIGHT FITTINGS

Refer to Electrical / Lighting Plans

4.5 FIRE & SMOKE ALARM SYSTEM

Refer to appropriate fire and smoke alarm section:

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4.6 SPACE HEATERS

Location:	Refer to Architectural Plans, Electrical Plan
Brand / type:	Contractor to confirm

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4.7 HEATED TOWEL RAILS

Location	Brand / type
Refer to Architectural Plans, Electrical Plan	Contractor to confirm

4.8 BATHROOM FANS AND HEATERS

Location	Brand / type
Bathroom / ensuite-Heating:	Contractor to confirm
Bathroom / ensuite-Extract:	Contractor to confirm

4.9 ELECTRICAL APPLIANCES

Item	Brand / type
Range:	Contractor to confirm
Wall oven:	Contractor to confirm
Cooker top/hob:	Contractor to confirm
Range hood:	Contractor to confirm

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