These documents must be retained on site. Inspections may not be carried out if they are not.

BC220505

Moore Design & Draughting Ltd

SPECIFICATION
of work to be done and materials to be used in carrying out the works shown on the accompanying drawings

Block 8/6 Johnston Grove - Specification

Project Specification

6 Johnston Grove, Taita, Lower Hutt, New Zealand
Project Ref: J1004

Printed: 06 May 2022

BUILDING CONSENT

GRANTED
7/06/2022

HUTT CITY COUNCIL

masterspec

Specification built using Masterspec software
Project ID: 250616 - 258721

TABLE OF CONTENTS

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

3 townhouses

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:
~

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: ~
As shown on drawing: ~

1.8 LEGAL DESCRIPTION

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

1.9 EXISTING SERVICES

The following are the network utility services:

Electrical:	c.o.s
Communications:	c.o.s
Water:	c.o.s
Gas:	c.o.s
Stormwater:	c.o.s
Foul water:	c.o.s

The services are also shown on the drawings.

1.10 SITE FEATURES

refer to survey plan for existing services

Site environment - Durability

1.11 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

Site environment - Wind

1.12 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 M (refer to NZS 3604, table 5.4)

Site environment - Seismic

1.13 EARTHQUAKE ZONE - NON SPECIFIC DESIGN

The zone is to NZS 3604, Section 5 Bracing design, 5.3 Earthquake bracing demand.
The earthquake zone is: 3

Archaeological discovery

1.14 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.
Known archaeological information relating to this site includes the following: -
~

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

1234 DOCUMENTATION

1 GENERAL

This general section relates to documentation required by the Territorial Authority / Building Consent Authority for compliance with the New Zealand Building Code. It also includes documentation relating to:

- Substitutions
- Manufacturers' documents
- Branded work sections
- Care of construction documents
- Confidentiality of documents
- Receipt of construction documents

Building Consent Authority documentation

1.1 BUILDING CONSENT

Obtain the original building consent forms and documents from the owner and keep them on site, preserve the condition of consent forms and documents. Liaise with the building consent authority for all notices to be given and all inspections required during construction to ensure compliance. Return the consent form and documents to the owner on completion.

1.2 BUILDING CONSENT COMPLIANCE

It is an offence under the Building Act 2004

- to carry out any work not in accordance with the building consent.
- to carry out Restricted Building Work by anyone other than a Licensed Building Practitioner licensed for that type of work.

The resolution of matters concerning building code compliance to be referred to the contract administrator for a direction and then if required to the BCA for consent.

Where any alteration is requested by the territorial authority or any other authority, do not undertake such alteration until the matter has been referred to the contract administrator for direction.

1.3 PROJECT PERSONNEL

Provide names and contact details of the contractor's key personnel and tradespersons who are involved with the project. Review the list once a month and reissue it if changes have been made.

Licensed Building Practitioner documentation

1.4 LICENSED BUILDING PRACTITIONERS

Provide LBP details. Provide names, LBP numbers, areas of practice and contact information. Provide this information to the BCA before commencing work on the Restricted Building Work in the form required by the BCA. Advise the BCA of any change to an LBP previously advised.

Include the following as applicable

- Site LBP
- Carpenter
- Foundations 1 Concrete foundation walls and concrete slab-on-ground constructor
- Foundations 2 Concrete or timber pile foundations constructor
- Bricklaying and block laying 1 Brick / masonry veneer
- Bricklaying and block laying 2 Structural masonry - Bricklayer / Blocklayer
- Roofing 1 Concrete / clay tile roofer
- Roofing 2 Profiled metal roofer and/or wall cladding installer
- Roofing 3 Metal tile roofer
- Roofing 4 Membrane roofer
- Roofing 5 Torch on membrane roofer
- Roofing 6 Liquid membrane roofer
- Roofing 7 Shingle / slate roofer
- External plastering 1 Solid plasterer
- External plastering 2 Proprietary Plaster Cladding Systems (PPCS) plasterer

Also provide names and contact details of the following

- Registered drainlayer
- Registered plumber
- Registered gasfitter
- Registered electrician

1.5 RECORD OF WORK

Where Restricted Building Work is carried out by a LBP, on completion provide a Record of Work. Provide copies to both the BCA and the Contract Administrator.

Compliance information

1.6 DOCUMENTATION REQUIRED FOR CODE COMPLIANCE

Information may be required either as a condition of the contract documents or as a condition of the building consent. It may include the following:

- Applicators approval certificate from the manufacturer / supplier
- Manufacturer's / supplier's warranty
- Installer / applicator's warranty
- Producer Statement (PS1) - Design
- Producer Statement (PS3) - Construction from the applicator / installer
- Producer Statement (PS4) - Construction review from an acceptable suitably qualified person

Refer to the general sections for the requirements for compliance information to be provided by the contractor.

Refer to the building consent for the requirements for compliance information to be provided by the contractor.

Obtain required documents from the relevant parties for delivery to the contract administrator after the final inspection has been carried out by the BCA.

1.7 PRODUCER STATEMENTS

When producer statements verifying construction are required, provide copies to both the Building Consent Authority and the Contract Administrator. Provide producer statements in the form required by the BCA.

Residential building contract

1.8 CHECKLIST

If requested provide evidence of the prescribed checklist given to the residential client.

1.9 DISCLOSURE STATEMENT

If requested provide evidence of the disclosure statement given to the residential client.

1.10 BUILDING CONTRACT

If requested provide evidence of the written building contract that the residential customer has signed.

1.11 DOCUMENTATION REQUIRED ON COMPLETION

As soon as practicable after completion of the building work, provide in writing the following information and documentation to the client and the relevant territorial authority.

Information and documentation relating to:

- The identity of the building contractor and the subcontractors who carried out the work.
- Maintenance requirements for any products incorporated in the building.

If applicable also provide any guarantee or insurance obtained by the building contractor in relation to the building work.

Substitutions

1.12 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.

1.13 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified products and systems listed in a section unless specified otherwise. If a product is not available then immediately contact the contract administrator for direction.

1.14 PROPOSED SUBSTITUTIONS

Substitution of products or systems contained within branded work sections is not allowed. The contractor may propose substitutions to products within non branded work sections, when the contractor has determined that the proposed substitution is an alternative to the specified product. The Contract administrator is not bound to accept any substitutions. Submit a draft proposal detailing the substitution to the contract administrator before proceeding with full notification.

1.15 NOTIFICATION OF SUBSTITUTIONS

Notify the contract administrator of proposed substitution of specified products. Notification to include but not be limited to:

- Product identification
- Manufacturer's name, address, telephone number, website and email address
- Detailed comparison between the properties and characteristics of the specified product and the proposed substitution
- Statement of NZBC compliance including durability
- Details of manufacturer warranties

Plus an assessment of:

- Any changes required to the programme including any extension of time required
- Any consequential effects of the proposed substitution
- Any effect the substitution may have on Health & Safety requirements
- Allowance for time and cost for re-design and documentation (if applicable)
- Allowance for time and cost for obtaining an amendment to the Building Consent (if applicable)
- Any change in cost associated with the proposed substitution

and if requested:

- All current manufacturer's literature on the product
- Accreditations and appraisals available
- Reference standards
- Product limitations
- Samples
- List of existing installations in the vicinity of the project

1.16 ACCEPTANCE OF SUBSTITUTIONS

Acceptance of any proposed substitutions will be given in writing by the contract administrator.

Amendments to issued Building Consent

1.17 CONTRACTOR AMENDMENTS TO BUILDING CONSENT

Where the contractor has sought acceptance of a substitution or a variation which is for the contractor's own convenience and the substitution or variation requires an amendment to the Building Consent, the contractor must apply for and obtain the required amendment.

The contractor must:

- Obtain approval for substitutions from the contract administrator.
- Prepare and provide to the BCA all documentation required for the amendment.
- Pay all fees and other costs associated with this amendment.
- Where the amendment affects other approved plans, also amend those plans.

1.18 PRINCIPAL AMENDMENTS TO BUILDING CONSENT

Where the principal is proposing a substitution or a variation which requires an amendment to the Building Consent, the contractor must provide to the principal information that the contractor has that is required for the amendment.

The principal will:

- Prepare and provide to the BCA all documentation required for the amendment.
- Pay all fees and other costs associated with this amendment.
- Where the amendment affects other approved plans, also amend those plans.

Manufacturer's documents

1.19 MANUFACTURER'S AND SUPPLIER'S INSTALLATION REQUIREMENTS

Manufacturer's and supplier's requirements, instructions, specifications or details mean those issued by them for their particular product, material or component and are the latest edition.

1.20 CONTRACTOR TO OBTAIN CURRENT DOCUMENTATION

Where manufacturer’s installation, application and execution requirements are referred to in this specification, the Contractor must ensure they are fully aware of this documentation. Whenever necessary obtain and keep on site the relevant latest version of such documentation and make it available to workers carrying out that part of the work.

1.21 DOCUMENTATION PROVIDED FOR BUILDING CONSENT

Documentation including manufacturer’s installation instructions, specification data sheets, producer statements, BRANZ and similar appraisals may be included in the issued Building Consent. These documents have been provided only to demonstrate compliance with the NZBC.

Branded work sections

1.22 BRANDED PRODUCTS / SYSTEMS

Where branded products and systems are specified, all products and components of the system must be as per the specification.

1.23 CROSS REFERENCED WORK SECTIONS

If any related work is cross referenced to a generic work section, but only the equivalent branded section is included in the specification, use that branded section. Confirm with the contract administrator if there is any doubt.

Care of construction documents

1.24 CONSTRUCTION ISSUE

Take receipt of the plans, specifications and other documents issued “for construction”. Keep at least one copy on site available for use by all on site workers. Keep a record of copies provided to others including subcontractors. Protect the documents as appropriate. Obtain replacement copies for documents that have become damaged.

1.25 REVISIONS TO CONSTRUCTION ISSUE

Where revised plans and other documents are issued ensure that superseded documents are deleted from the working sets. Ensure that subcontractors are provided with amended documents. Delete superseded documents by either:

- removing them from the working copy of the construction issue; or
- marking them as superseded

1.26 RETURN DOCUMENTS ISSUED FOR CONSTRUCTION

On completion of the contract works:

- Keep such copies of the plans, specification and other documents as reasonably required for contractor's record purposes.
- Retrieve all other copies no longer required by parties.
- Agree method of disposal of such documents with the Contract Administrator.

The Contract Administrator will advise whether such documents shall be:

- delivered to the Contract Administrator/Owner; or
- disposed of by normal waste disposal methods; or
- disposed of by secure document disposal methods.

Confidentiality of documents

1.27 CONFIDENTIALITY OF DOCUMENTS

Documents shall not be given or copied to others who do not require them for carrying out services required for the construction of the works. Documents are only to be used for the contract. Maintain confidentiality of documents.

2 SELECTIONS

Receipt of construction documents

2.1 INITIAL ISSUE & REVISIONS - HARD COPIES

Initial issue:	1 at full size, 1 at reduced size
Revisions:	1 at full size, 1 at reduced size

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

Site preparation

1.5 SITE ACCESS

Access to the site is limited to: ~

1.6 WORKING AREA

Limited to the following designated working areas on the site.

1.7 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).

1.8 GROUND CONDITIONS

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

Temporary construction

1.9 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.

1.10 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.

1.11 SITE - SAFETY SIGNAGE

Provide hazard board and other safety signage as required.

1.12 SITE - PROJECT SIGN

Obtain approval to, provide and erect a timber framed sign board ~mm x ~mm. 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.

First aid

1.13 FIRST AID EQUIPMENT

Provide first aid equipment.

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 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

1.5 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

1.6 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.

1.7 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.

1.8 EXCAVATION SAFETY

To the Health and Safety at Work Act 2015.
Carry out excavation to WorkSafe, 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.

Scaffolding

1.9 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

1.10 WATER

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

1.11 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.

1.12 TELEPHONE

Provide on-site temporary telephone facilities.

1.13 COMPUTER FACILITIES

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

1.14 PRINTER

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

1.15 IMAGING

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

Care and protection - Site

1.16 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.

1.17 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.

1.18 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.

1.19 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.

1.20 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

1.21 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.

1.22 SPECIAL PROTECTION GENERAL

Refer to individual work sections for any special protection requirements.

1.23 CONSTRUCTION KEYING AND SECURITY

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

1.24 TEMPORARY STORAGE

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

Rubbish removal

1.25 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.

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:

- 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 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.

1.12 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.

1.13 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.

1.14 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.

1.15 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.

1.16 SMOKE FREE REQUIREMENTS

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

1.17 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

1.18 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.

1.19 DATUM

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

1.20 SET-OUT

Set out the work to conform with the drawings.

1.21 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.

1.22 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.

1.23 USE OF SET-OUT INSTRUMENTS

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

1.24 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.

1.25 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

1.26 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.

1.27 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.

1.28 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.

1.29 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.

1.30 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.

1.31 MINIMISE DELAYS DUE TO WEATHER

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

Defective or damaged work

1.32 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

1.33 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.

1.34 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.

1.35 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.

1.36 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.

1.37 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

1.38 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.

1.39 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.

1.40 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.

1.41 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.

1.42 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.

1.43 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.

1.44 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

1.45 NEW PRODUCTS

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

1.46 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.

1.47 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.

1.48 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.

1.49 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.

1.50 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.

1.51 CONDITION OF PRODUCTS

To be in perfect condition when incorporated into the work.

1.52 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

1.53 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.

1.54 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.

1.55 OTHER SAMPLE REQUIREMENTS

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

Prototypes

1.56 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.

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.

1.57 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.

1.58 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

1.59 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

1.60 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.

1.61 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

1.62 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.

Refer to individual work sections for any special removal requirements.

Completion

1.63 SPECIAL REQUIREMENTS

Refer to individual work sections for any special completion requirements.

1.64 LEAVE WORK

Leave work to the standard required for the following procedures.

1.65 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.

1.66 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.

1.67 COMPLETE ALL SERVICES

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

1.68 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.

Commissioning

1.69 SPECIAL REQUIREMENTS

Refer to individual work sections for any special commissioning requirements.

1.70 MOVING PARTS

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

1.71 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.

1.72 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.

1.73 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

1.74 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

1.75 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

1.76 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.

1270S1 SCHEDULE OF SAMPLES & PROTOTYPES

1 GENERAL

This schedule section identifies work sections in the specification that have requirements for:

- The submission of samples
- The submission of prototypes for review
- The provision and testing of prototypes

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- 1270 CONSTRUCTION
- Identified Work Sections

Samples

1.2 SAMPLES

There are no work section requirements.

1.3 SAMPLES - ADDITIONAL ITEMS

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

Prototypes

1.4 PROTOTYPES - REVIEW

There are no work section requirements.

1.5 PROTOTYPES - TESTING

There are no work section requirements.

1.6 PROTOTYPES - ADDITIONAL ITEMS

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

1270S2 SCHEDULE OF SPARES & MAINTENANCE PRODUCTS

1 GENERAL

This schedule section identifies work sections in the specification that have requirements for spares and maintenance products.

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- 1270 CONSTRUCTION
- Identified Work Sections

Spares & maintenance products

1.2 SPARES & MAINTENANCE PRODUCTS

Refer to the following sections:

6411 Vinyl Surfacing

1.3 SPARES & MAINTENANCE PRODUCTS - ADDITIONAL ITEMS

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

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

There are no work section requirements.

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.
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°
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.

3821 TIMBER FRAMING

1 GENERAL

This section relates to the supply and erection of timber framing, as a framed structure, or as part of a partitioning system.

1.1 RELATED WORK

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:
SG Structural grade to NZS 3604, 1.3 **Definitions**

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
AS/NZS 2904	Damp-proof courses and flashings
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 3631	New Zealand timber grading rules
NZS 3640	Chemical preservation of round and sawn timber
WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry.
BRANZ BU 582	Structurally fixed cavity battens

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

1.4 DIMENSIONS

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

2 PRODUCTS

Materials

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 APPEARANCE TIMBERS

Graded to NZS 3631, treated where required by NZBC B2/AS1, NZS 3602, table 1, and treatment to NZS 3640.

2.3 STRAPPING

Treated to NZBC B2/AS1, NZS 3602, table 1 and to NZS 3640, clause 6.3.1.

Species:	Radiata pine
Grade:	SG6
Size:	70mm x 45mm, 45mm x 45mm or 45mm x 19mm

2.4 WALL DWANGS, NOGS AND BLOCKING

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

2.5 EXTERIOR CAVITY WALL BATTENS - TIMBER - NON-STRUCTURAL

H3.1 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.

2.6 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

Components

2.7 NAILS

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

2.8 SCREWS

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

2.9 BOLTS AND COACH SCREWS

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

2.10 THREADED RODS

Use stainless steel threaded rods of the required length, with washers and nuts at both ends, when stainless steel bolts of the required length are not available.

2.11 TIMBER CONNECTORS AND FIXINGS

Supply for each particular joint the connectors and fixings as noted on the drawings. Comply with the requirements of the manufacturer, NZS 3604, section 4, **Durability**, and of the number and form required for each particular junction to NZS 3604, sections 6-10.

2.12 BRACING STRAPS

Nail-on type to the requirements of NZS 3604, section 4, **Durability**, and of the number and form required for each particular application to NZS 3604, sections 6-10.

2.13 POWDER ACTUATED FASTENERS

To type, size and charge required by the powder actuated tool manufacturer for each particular member and the substrate.

2.14 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).

3 EXECUTION

Conditions

3.1 PROTECT TIMBER

Protect all timber against damage and from inclement weather. Ensure that any variation in moisture content is kept to a minimum, before and after erection and before enclosure.

3.2 EXECUTION

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

3.3 SEPARATION

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

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

3.4 FRAMING MOISTURE CONTENT

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

- At erection: 24% EMC maximum
- At enclosure: 20% EMC maximum
- At lining: 16% EMC maximum

3.5 TOLERANCES

Permissible deviations from established lines, grades and dimensions equal to or less than the following. Multiples of given limits are not cumulative.

- Deviation in plan, up to 10 metres, 5mm
- Deviation in plan, over 10 metres, 10mm total

- Deviation from horizontal, up to 10 metres, 5mm
- Deviation from horizontal, over 10 metres, 10mm total

- Deviation from vertical position per 3 metres, 3mm

- Deviation from horizontal and vertical, within openings, 3mm.

Application

3.6 SET-OUT

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

3.7 SET TIMBERS

Set timbers true to required lines and levels with mitres, butt joints, laps and housings cut accurately to provide full and even contact over the whole of the bearing surface.

3.8 TIMBER CUTTING

Select and cut spanning members to minimise allowable defects and avoiding knots and short grain on edges in the middle third, and shakes, splits and checks at mid-span and close to ends.

3.9 TIMBER PLATES AND FURRING

Fix to steelwork with bolts and washers or approved proprietary fastenings at 1 metre maximum spacing and not less than 2 fixings to each member, or to engineering specific design.

3.10 HOLES AND NOTCHES

Limit holes and notches, checks and half-housing for the structure to those allowable in NZS 3604. Neatly form holes and notches for services without lessening the structural integrity of the member.

3.11 CUTTING

Cutting for straightening to comply with NZS 3604, 8.5.3, **Straightening studs**.

3.12 EXPOSED TIMBER CONNECTORS AND FIXINGS

Do not use steel timber connectors and fixings on any structural framing exposed to view unless detailed on the drawings.

3.13 POWDER-ACTUATED FASTENING TOOLS

Comply with the requirements of WorkSafe and the Health and Safety at Work Act 2015. Powder-actuated fastening tool operators to have the appropriate current Certificate and/or Licence and tools to have the appropriate certificate of fitness if necessary.

3.14 ADDITIONAL FRAMING

Position and fix all necessary members for the fixing of all services, fittings, fixtures, edges of linings or claddings, and to provide lateral support to load carrying framing.

3.15 FORM NAILED JOINTS

Fully drive nails in all structural joints with the number and location for each particular joint, to the requirements of the nailing schedules of NZS 3604. Where splitting could occur, pre-drill to 80% of nail diameter.

3.16 FORM BOLTED JOINTS

Drill for and set bolts to ensure full bearing and development of the joint strength, with tension to just set the washers into timber or to engineering specific design.

3.17 FIT CONNECTORS AND FIXINGS

Fit connectors and fixings to obtain full bearing over all contact surfaces and full development of the required loading capacity for that particular joint and in accordance with the manufacturer's requirements or to engineering specific design.

3.18 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. Make allowances for cladding control joints where required. Fit and fix related flashings. Fit and fix cavity closers to base of walls, open horizontal (or raking) junctions and over openings (windows, meters etc).

3.19 FIT BRACING

Fit and fix subfloor, wall and roof bracing elements to the requirements of the manufacturer or to NZS 3604, to develop the full number of bracing units required.

3.20 DPC TO LOSP TREATED TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.21 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section

Completion

3.22 CLEAN UP

Clean up timber framing as the work proceeds so no offcuts, chips, sawdust or any other matter or items remain behind the claddings or linings.

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

4.1 FLOOR FRAMING - RADIATA PINE

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

4.2 EXTERIOR WALL FRAMING - RADIATA PINE

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

4.3 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
Valley boards:	Radiata pine	Merch	H1.2
Sarking:	Radiata pine	Merch	H1.2
Skillion roof framing:	Radiata pine	SG8	H1.2
Enclosed flat roof framing:	Radiata pine	SG8	H1.2

4.4 INTERIOR WALL FRAMING - RADIATA PINE

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

4.5 CEILING FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Ceiling joists:	Radiata pine	SG8	H1.2
Timber ceiling battens:	Radiata pine	SG8	H1.2

4.6 CAVITY BATTENS

Cavity battens	Species	Grade	Treatment
Timber - Structural	Radiata pine	Merch	H3.2
Timber - Non Structural	Radiata pine	Merch	H3.1

4.7 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

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

1 GENERAL

This section relates to the application of **Thermakraft Ltd**, DPC, DPM, Wall & Roof Underlays, Foils, Flashing Tapes, and accessories.

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

NZMRM	New Zealand Metal Roofing Manufacturers Inc.

The following definitions apply specifically to this section:

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

Documents

1.2 DOCUMENTS

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

NZBC C/AS2	Protection from fire
NZBC E2/AS1	External moisture
AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials
NZS 2295	Pliable, permeable building underlays
AS/NZS 2904	Damp-proof courses and flashings
NZS 3604	Timber-framed buildings
NZS 4214	Methods of determining the total thermal resistance of parts of buildings
AS/NZS 4389	Roof safety mesh
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Thermakraft documents relating to work in this section are:
Thermakraft product manual and technical data sheets.
BRANZ Appraisal 329 - Supercourse 500™ Damp-Proof Course and Concealed Flashing
BRANZ Appraisal 611 - James Hardie Rigid Air Barriers
BRANZ Appraisal 651 - Thermakraft Covertek™ 407 Roof and Wall Underlay
BRANZ Appraisal 695 - Watergate Plus™ Wall Underlay
BRANZ Appraisal 743 - Thermakraft Covertek 405™ Roof and Wall Underlay
BRANZ Appraisal 878 - Thermakraft Aluband™ Window Flashing Tape
BRANZ Appraisal 912 - Thermakraft 220™ Synthetic Wall Underlay
BRANZ Appraisal 917 - Thermakraft Covertek 403™ Roof and Wall Underlay
BRANZ Appraisal 942 - OneSeal™ Multi-Fit Pipe and Cable Penetration Seals
BRANZ Appraisal 943 - Thermakraft Covertek 401™ Roof Underlay
BRANZ Appraisal 1000 - Thermakraft Thermabar 397™ Light Diffusing Reflective Underlay
BRANZ Appraisal 1029 - Thermakraft Ausnet™ Hexagonal Wire Mesh
BRANZ Appraisal 1104 – Thermathene Orange™ Concrete Underlay
BRANZ Appraisal 1122 – Thermaflash™ Flashing Tape

Code Mark Certificate 30069 - Thermakraft Covertek 403™ Absorbent Breathable Roof Underlay
Code Mark Certificate 30030 - Thermakraft Covertek 405™ Absorbent Breathable Roof Underlay
Code Mark Certificate 30028 - Thermakraft Covertek 407™ Absorbent Breathable Roof Underlay
Code Mark Certificate 1002 - Thermakraft Watergate Plus™ Wall Underlay

Manufacturer/supplier contact details

Company:	Thermakraft Ltd
Web:	www.thermakraft.co.nz
Email:	info@thermakraft.co.nz
Telephone:	0800 806 595

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal environmental and use conditions against failure of materials and execution. Thermakraft Ltd warrant performance of products if design and installation comply with relevant technical literature, NZBC, and recognised industry Codes of Practice. Copy of Thermakraft ™ Product Warranty available on request.

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

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

Compliance information

1.7 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

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

Performance - general

1.8 SURFACE FIRE PROPERTIES FOR LININGS

Group Number to NZBC C/AS2, Table 4.3. Refer to SELECTIONS.

Quality control and assurance

2 PRODUCTS

Materials

Damp Proof Course

2.1 SUPERCOURSE 500™ DPC

Supercourse 500™, high-impact polyethylene film to AS/NZS 2904 and embossed on both sides. Manufactured in NZ from 100% recycled materials for use as a damp-proof course and concealed flashings around doors and windows and to BRANZ Appraisal 329. Thickness 500 microns minimum. Refer to SELECTIONS for type of joining tape.

Damp Proof Membrane

2.2 THERMATHENE BLACK™ DPM (MEDIUM DUTY)

Thermathene Black™, a minimum of 250 microns polyethylene film. Complies with NZS 3604, 7.5.4, Damp-proof membrane, to NZBC E2/AS1. Refer to SELECTIONS for type of joining tape.

Roof underlays

Roof underlays - synthetic, fire-retardant, self-supporting

2.3 COVERTEK 407™ HEAVY DUTY SYNTHETIC ROOF UNDERLAY

Covertek 407™, a fire retardant non-woven self-supporting roof underlay, consisting of two spun-bonded polyolefin fabric layers bonded to a micro porous inner layer, designed for use as a water absorbent, breathable, water resistant roof underlay for sloped roofs. A fire retardant membrane with a flammability index of ≤ 5, when tested to AS 1530.2, to NZBC C/AS2, meets the requirements for suspended fabrics, BRANZ Appraisal 651 and Code Mark Certificate 30028. Can be used in areas exposed to view in occupied spaces. Available in 1250mm and 2550mm roll widths.

Window and joinery flashing tape

2.4 THERMAFLASH™ WINDOW FLASHING TAPE

Thermaflash™ is a self-adhesive synthetic flexible window flashing tape, with superior adhesion. can be used with rigid air barrier or rigid wall underlay products. Suitable for use as a flexible flashing around window and door joinery openings, available in widths of 75mm, 150mm and 200mm. On windows, the use of a Thermakraft Corner Mould™, is optional however butterfly strips must be applied. Use in conjunction with air seals and joinery flashing systems around window and door joinery on timber, steel framed and medium rise buildings. Compatible with a wide range of sealants but check compatibility. Maximum exposure 180 days. Refer to BRANZ Appraisal 1122.

Approved for use with the James Hardie™ RAB™ Board system, refer BRANZ Appraisal 611.

2.5 ALUBAND™ BITUMINOUS FLASHING TAPE

Thermakraft Aluband™ window flashing tape consists of synthetic faced reinforced bituminous window sealing tape, in widths of 75mm, 150mm and 200mm. Used to repair damaged bituminous underlays. Bitumen may react to wet sealants, always check compatibility. Thermakraft Corner Moulds must be used. Maximum exposure 42 days. Install from 5°C. Refer to BRANZ Appraisal 878.

Joining tape

2.6 PREMIUM JOINING TAPE™

Thermakraft Premium Joining Tape™, an acrylic, reinforced tape with superior adhesion and tear resistance used to join laps of wall and roof underlays, plywood rigid underlay, OSB board, fibre cement and insulation panels, DPM and vapour control products such as foil underlays. Maximum exposure 180 days, install from -10oC. Compatibility of the substrate with Premium Joining Tape must be checked by the designer or the installer prior to use.

BRANZ Appraised and approved for use with the James Hardie™ RAB™ Board system, refer t BRANZ Appraisal 611. Not to be used as a flashing tape.

2.7 WHITE GENERAL PURPOSE TAPE™

Thermakraft White General Purpose Tape™ is a medium duty acrylic tape is commonly used on synthetic underlays, damp proof and for sealing edges of vapour control layers. Not to be used as a flashing tape. Suitable for joining and sealing underlays, foils and membranes.

Penetration seal

2.8 ONESEAL™ MULTI-FIT SEALS FOR CABLE AND PIPE PENETRATIONS

Thermakraft OneSeal™, multi-fit pipe seals comprise a UV resistant EPDM material which forms a weathertight air seal for pipes and penetrations with a high strength acrylic adhesive suitable for use on all underlay systems. Available for use with pipes 15-110mm and cables 7-22mm both are pre-punched ensuring a tight accurate fit. No special tools required for installation. Approved for use with the James Hardie™ RAB™ Board system, refer tBRANZ Appraisal 611.

Accessories

Vapour barrier

2.9 VAPOUR SHIELD™ VAPOUR BARRIER LAYER

Thermakraft Vapour Shield™, a woven synthetic sarking and moisture vapour barrier, coated both sides with a vapour impermeable film. One side is coated black and the reverse side white. Refer to SELECTIONS for joining 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. Carry out remedial work identified before laying underlay.

3.4 GENERAL REQUIREMENTS

Design application and installation of Thermakraft Building products to NZBC E2/AS1, BRANZ Appraisals, Thermakraft Technical Literature and Industry Codes of Practice.

Application generally

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Application DPC

3.6 DPC TO LOSP/CCA TREATED TIMBER

Lay Supercourse 500™ DPC under LOSP or CCA treated bottom plate of all timber framed walls on concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier.

3.7 DPC TO TIMBER / STEEL

Lay Supercourse 500™ under the bottom plate of all timber / steel framed walls on concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier.
Refer to SELECTIONS for type.

3.8 DPC TO MASONRY AND BRICK VENEER

Lay Supercourse 500™ along based of cavity and fix top edge to studs with galvanized clouts. Turn DPC out over concrete rebate under bottom course of veneer.

Application - DPM

3.9 DPM TO CONCRETE FLOOR

Lay DPM under concrete floor substrate over sand blinding, in a single layer with 150mm overlaps at joints to provide a waterproof barrier. Refer to SELECTIONS for type. Tape all joints and penetrations with joining tape.

Application - roof underlay

3.10 ROOF UNDERLAY

Lay vertically over purlins on wire netting with a 150mm side lap. Fix securely to purlins with galvanized fixings. Lay underlay to avoid excessive dishing between purlins. When used vertically, limit individual runs to 10 metres for bituminous underlays. Do not lay vertically on roof pitches under 10° without support.

Horizontally lay across the rafter/trusses starting at the gutter line with succeeding sheets in true alignment and lapping 150mm. Scribe around and fit neatly to all penetrations and avoid prolonged exposure by installing the roof immediately.

Application - Vapour barrier

3.11 VAPOUR SHIELD™ VAPOUR BARRIER LAYER

Lay Thermakraft Vapour Shield™ either side up in a continuous manner with 150mm minimum laps fully taped and sealed. Pull taut before fixing. Fix with 8-12mm stainless steel staples or 20mm flat head galvanized clouts at 300mm centres to timber framing. Fix to steel framing to NZMRM CoPrequirements. Where battens are nailed through the membrane, cover pre-nail battens with sealant. Seal projections and penetrations with sealant or Thermakraft joining tape.

Completion

3.12 COMPLETION MATTERS

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

4 SELECTIONS

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

Damp Proof Course

4.1 THERMAKRAFT SUPERCOURSE 500™ DPC

Location:	Refer to plans
Type:	Supercourse 500™
Joining tape:	Thermakraft™ Aluband™ joinery and flashing tape

Damp Proof Membrane

4.2 THERMAKRAFT THERMATHENE BLACK™ DPM

Location:	Refer to plans
Type:	Thermathene Black™
Joining tape:	Thermakraft Premium Joining Tape™

4.3 THERMAKRAFT COVERTEK 407™ ROOF UNDERLAY

Location:	Refer to plans
Type:	Covertek 407™
Joining tape:	Thermakraft White General Purpose Tape™
Flashing tape:	Thermakraft Aluband™ flashing tape
Accessories:	Thermakraft Oneseal™ penetration seal

Window and joinery flashing tape

4.4 THERMAKRAFT THERMAFLASH™ FLASHING TAPE

Location:
Sill/head tape: 150mm Thermakraft Thermaflash™ (for 90mm framing)
200mm Thermakraft Thermaflash™ (for 140mm or 150mm framing)
Sill second layer: 75mm Thermakraft Thermaflash™ (on top of sill over first layer)
Sill corners: Thermakraft Thermaflash™
Head corners: 75mm Thermakraft Thermaflash™ butterfly corners
Accessories:

4.5 THERMAKRAFT ALUBAND™ FLASHING TAPE

Location:
Sill/head tape: 150mm Thermakraft Aluband™ (for 90mm framing)
200mm Thermakraft Aluband™ (for 140mm or 150mm framing)
Sill corners: Thermakraft Corner Mould™
Head corners: 75mm Thermakraft Aluband™ butterfly corners

Joining tape

4.6 THERMAKRAFT PREMIUM JOINING TAPE™

Location: Refer to plans
Joining tape: 75mm Thermakraft Premium Joining Tape™

4.7 THERMAKRAFT WHITE GENERAL PURPOSE TAPE™

Location: Refer to plans
Joining tape: 60mm Thermakraft White General Purpose Tape™

Penetration seals

4.8 THERMAKRAFT ONESEAL™ PENETRATION SEAL

Location: Refer to plans
Type: Thermakraft OneSeal™

Stud straps

Vapour barriers

4.9 THERMAKRAFT VAPOUR SHIELD™ VAPOUR BARRIER

Location: Refer to plans
Type: Thermakraft Vapour Shield™
Joining tape: Thermakraft White General Purpose Tape™

4171BR BGC DURABARRIER RIGID AIR BARRIER

1 GENERAL

This section relates to the supply and fixing of **BGC Fibre Cement (NZ)** rigid sheathing / air barrier, fixed to timber or steel framing.
It includes:

- BGC Durabarrier fibre cement sheet

Documents

1.1 DOCUMENTS

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

NZBC E2/AS1	External moisture
AS/NZS 1170.2:2011	Structural design actions - Wind actions
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

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

BGC Fibre Cement documents relating to this part of the work:

- BGC Durabarrier Brochure
- BGC Durabarrier Architectural Details
- BRANZ Appraisal 721 - BGC Durabarrier Rigid Air Barrier

Manufacturer/supplier contact details

Company:	**BGC Fibre Cement (Australia) Pty Ltd**
Web:	www.bgcinnovadesign.co.nz
Email:	nz@bgc.com.au
Telephone:	09 273 1457, 0800 424 234

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For BGC Durabarrier product (refer to BGC Fibre Cement product warranty)
15 years:	For accessories supplied by BGC (refer to BGC Fibre Cement product warranty) Commence the warranty from the date of purchase

- Provide this warranty on the manufacturer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years	For installation

Provide this warranty on the installer's standard form

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS

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

1.6 NO SUBSTITUTIONS

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

1.7 INFORMATION FOR OPERATION AND MAINTENANCE

Provide relevant BGC Fibre Cement maintenance requirements at completion of the work.

Performance

1.8 PERFORMANCE, WIND

The design wind pressures are to NZS 3604, up to and including Extra High Wind Zone. BGC Fibre Cement Brochure details suitable for these conditions.

2 PRODUCTS

Materials

2.1 BGC DURABARRIER SHEET

BGC Durabarrier, an autoclaved and cellulose fibre reinforced silica/cement sheet for use in exterior applications. Face sealed with a water repellent coating and face and rear printed with Durabarrier. Manufactured to AS/NZS 2908.2. Suitable for residential and commercial buildings outside the scope of NZS 3604. Available in 1200mm wide sheets 4.5mm thick x 2450mm, 2750mm long, and 6mm thick x 2450mm, 3000m long. Refer to SELECTIONS.

Components

2.2 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 20, Material selection, and NZBC E2/AS1, Table 21, 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
Bracing - outside Zone D	Grade 316 Stainless

Check against SED (specific engineering design) requirements for microclimate conditions.

2.3 NAILS - TIMBER FRAMING

Durabarrier nails:

- 40mm x 2.8mm Fibre Cement nails - galvanized
- 40mm x 2.8mm Stainless steel Annular Grooved nails

Coil nails:

- Paslode Pnuematic 32mm x 3.06mm HD Galvanized Ring Coil Nail 3000
- Paslode Pneumatic 32mm x HD Stainless steel Ring Coil Nail 3000

Accessories

2.4 SEALING TAPE - VERTICAL JOINTS

75mm wide Protecto Sill tape, Aluband flashing tape or other BRANZ appraised sealing tape suitable for fibre cement, for vertical joints. Battens must be installed within 24hrs of the sealing tape installation.

2.5 SEALING TAPE - INTERNAL / EXTERNAL CORNERS

75mm wide Protecto Sill tape, Aluband flashing tape or other BRANZ appraised sealing tape suitable for fibre cement, for internal and external joints. Battens must be installed within 24hrs of the sealing tape installation.

2.6 WINDOW FLASHING TAPE

75mm wide Protecto Sill tape, Aluband flashing tape or other BRANZ appraised sealing tape suitable for fibre cement, to run continuously around window jamb and head, in conjunction with a continuous vent strip and PC Aluminium head flashing with 15° fall with stop ends.

2.7 HORIZONTAL FLASHING

Selected uPVC, galvanized or ColorSteel Z flashing.

2.8 COIL NAILER

Paslode Pneumatic CNW45R 3.06mm Coil Nailer.

3 EXECUTION

Conditions

3.1 STORAGE

Take delivery of products dry and undamaged on pallets, and keep on pallet. Protect edges and corners from damage and covered to keep dry until fixed.

3.2 HANDLING

Avoid distortion and contact with potentially damaging surfaces. Do not drag sheets across each other, or across other materials. Protect edges, corner and surface finish from damage.

3.3 SUBSTRATE

Do not commence work until the substrate is of the standard required 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 sheets are fixed.

3.4 FRAMING

Provided in accordance with NZS 3604 or to SED (specific engineering design) requirements. Stud spacing and nog spacing must not exceed 600mm or 1200mm respectively. Minimum 45mm wide stud required where vertical jointing on studs.

Application - particular installations

3.5 FIRE RESISTANCE RATING, FIBRE CEMENT

Install glass fibre insulation fitted tightly in the timber framing cavity. Fix fibre cement cladding and lining sheets, direct or on cavity. Refer to project drawings for FRR system construction details and BGC Fibre Cement product Brochures for further information.

3.6 FIRE RESISTANCE RATING

30 Minute FRR is achieved when 6mm thick BGC Durabarrier is installed either direct fixed or cavity construction, in accordance with details in BGC product Brochures, as follows.

Timber framing	Interior lining	Insulation
Minimum 90mm x 45mm studs at maximum 600mm crs, nogs maximum 800mm crs, to NZS 3604	10mm GIB® Fyreline to GBTL 30 FRR system	R2.2 minimum, 95mm thick nominal fibre glass insulation

3.7 BRACING SYSTEMS

Install braced walls using 6mm BGC Durabarrier in accordance with the bracing requirements and notes covering wall height, cladding, construction, fixing and hold down straps as detailed in BGC Durabarrier Brochure.

Application - generally

3.8 INSTALLATION - GENERALLY

Installation generally to be in accordance with BGC Durabarrier Brochure, Architectural Details and BRANZ Appraisal 721 - BGC Durabarrier Rigid Air Barrier.

3.9 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:

- Openings formed in accordance with BGC Durabarrier Brochure details.
- Materials lapped in a way that water tracks down to the exterior face of the Rigid Air Barrier.
- Underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations

Install Rigid Air Barrier

3.10 SHEET LAYOUT

Refer to BGC Durabarrier Brochure for sheet layouts to suit general installations and where used to achieve structural bracing. For bracing applications all edges must be supported on framing.

3.11 VERTICAL JOINTS

Join sheets to BGC Durabarrier Brochure and Architectural details.

3.12 HORIZONTAL JOINTS

Join sheets to BGC Durabarrier Brochure and Architectural details.

3.13 EXTERNAL AND INTERNAL CORNERS

Form in accordance with BGC Durabarrier Brochure using a 75mm minimum wide sealing tape.

3.14 FIXING SHEETS

Fix in accordance with BGC Durabarrier Brochure for either general or bracing applications. Sheets can either be gun nailed or hand nailed using the nails specified. Gun nailing is recommended to reduce installation time.

3.15 SEALANTS

Application and use of sealants to manufacturer's instructions.

3.16 PENETRATIONS

Form in accordance with BGC Durabarrier Brochure and Architectural details.

3.17 OPENINGS

Form in accordance with BGC Durabarrier Brochure and Architectural details. Exposed timber framing around window, door, meter box and other penetrations must be covered with a 100mm wide minimum flashing tape or sealing tape. Flashing tapes must be lapped over the BGC Durabarrier by 50mm minimum.

3.18 FLASHINGS AND JUNCTIONS

Form in accordance with BGC Durabarrier Brochure and Architectural details. Install flashing tape over any flashings and at all junctions with other materials or building elements.

3.19 AT SOFFITS

Form in accordance with BGC Durabarrier Brochure and Architectural details.

3.20 BASE CLEARANCES

Form in accordance with the BGC Durabarrier Brochure and Architectural details. Lining is required to extend below the bottom plate by 15mm minimum to form a drip edge and must finish a minimum 100mm clear of finished ground. Where base of sheets are cut to suit site requirements seal the bottom edge using primer.

Completion

3.21 REPLACE

Replace all damaged or marked elements.

3.22 LEAVE

Leave work to the standard required for following procedures.

3.23 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

Materials

4.1 BGC DURABARRIER - RIGID AIR BARRIER

Location:	refer to plans
Brand/type:	BGC Durabarrier
Sheet size:	6mm thick x 1200mm wide x 2450mm or 3000mm long
Sealing tape:	Vertical joints:75mm wide Protecto Sill tape, Aluband flashing tape or other BRANZ appraised sealing tape suitable for fibre cement
Window flashing tape:	75mm wide Protecto Sill tape, Aluband flashing tape or other BRANZ appraised sealing tape suitable for fibre cement,with contiinuous vent strip and PC Aluminium head flashing with 15° fall with stop ends
Horizontal flashing:	Selected uPVC
Nails:	Durabarrier nails: 40mm x 2.8mm Stainless steel Annular Grooved nails

4171E ECOPLY® BARRIER RIGID AIR BARRIER SYSTEM

1 GENERAL

This section relates to the use of Carter Holt Harvey Plywood Ltd (CHH PLY) **Ecoply® Barrier** as a rigid wall underlay and air barrier in residential and commercial buildings.

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FSC®	Forest Stewardship Council®
COC	Chain of Custody

Documents

1.2 DOCUMENTS

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

NZBC B1/AS1	Structure
NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
AS/NZS 2269.0	Plywood - structural - specifications
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber Structures Standard
NZS 3604	Timber-framed buildings
BRANZ Technical Paper P21	BRANZ Technical Paper P21 (2010): A wall bracing test and evaluation procedure

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

1.3 MANUFACTURER DOCUMENTS

Carter Holt Harvey Plywood Limited documents relating to work in this section are:
Ecoply® Structural Rigid Air Barrier - Barrier Specification & Installation Guide
CHHPly Product Technical Statement – Ecoply® Barrier: Rigid Air Barrier
Ecoply® Barrier data sheets
CHHPly Safety Data Sheet - Ecoply® Barrier
Ecoply® Barrier CAD drawings
BRANZ Appraisal 827 - Ecoply® Barrier Rigid Air Barrier
Carter Holt Harvey Plywood - Tokoroa Certificate Code: SCS-COC-001316 Trademark License Code: FSC-C012019, Controlled Wood SCS-CW-001316, expires 5 June 2023.

Copies of the current product literature are available from Carter Holt Harvey Plywood Ltd.

Web:	www.ecoplybarrier.co.nz
Telephone:	0800 326 759

Requirements

1.4 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 NO SUBSTITUTIONS

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

Performance

2 PRODUCTS

Materials

2.1 ECOPLY® BARRIER PLYWOOD

Ecoply® Barrier sheet, 7mm thick, 1197mm wide and 2440 and 2745mm long structural plywood. Manufactured from radiata pine to AS/NZS 2269. H3.2 CCA treated to E2/AS1 and AS/NZS 1604.1 requirements. Beige polyester powder coated on front face and four edges. Sheets marked Ecoply® Barrier.

Components

2.2 NAILS

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

Fixing method:	Nail type:	Zone:
Hand driven	50 x 2.8mm (flat head or round head) hot-dip galvanized to AS/NZS 4680	B & C zones
Power driven Paslode Pneumatic Cladding Coil Nailer	Paslode Impulse 50 x 2.8mm hot-dip galvanized ring round head drive B20557	B & C zones
Hand driven	50 x 2.8mm (flat head or round head) annular grooved stainless steel (grade 304 or 316)	D Zone

2.3 PVC HORIZONTAL FLASHING

Ecoply® Horizontal Jointer (E2 Flashing Solutions, product code RDZF7, uPVC jointer).

2.4 SEALING TAPE

Ecoply® Barrier Sealing Tape, 60mm x 30m tape for vertical sheet joints, grey colour. PP fleece carrier paper, siliconized release paper.

2.5 SILL TAPE

Ecoply® Barrier Sill Tape, 150mm x 20m and 200mm x 20m, black colour. Butyl rubber (with PE film) carrier paper, siliconized foil release paper.

2.6 FRAME SEALING TAPE

Ecoply® Barrier Frame Sealing Tape, 150mm x 30m and 200mm x 30m, grey colour. PP fleece carrier paper, siliconized release paper.

2.7 CAVITY BATTENS FOR CAVITY WALL CLADDINGS

Radiata pine battens, minimum 45mm wide x 18mm thick, H3.1 treated. To NZS 3602, Table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance.

2.8 BRUSH ON TREATMENT

Soudal Metalex Ready to Use or Soudal Metalex Concentrated Timber Preservative. Clear colour product.

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 WALL FRAMING

Kiln dried verified structural grade timber, minimum SG8. Framing sizes and set outs to NZS 3604 with studs at 600mm maximum centres, nogs at 1350mm maximum centres and 45mm minimum framing width at sheet joints. Treatment to NZBC B2/AS1 and NZS 3602.

Application

3.4 APPLICATION - GENERAL

Apply products to Carter Holt Harvey Plywood Limited requirements, refer to Ecoply® Structural Rigid Air Barrier - Barrier Specification & Installation Guide.

3.5 SUPPORT EDGES AND JOINTS

Fully support edges and joints with a minimum framing width of 45mm at each Ecoply® Barrier sheet joint.

3.6 TREAT CUTS

Treat cut ends with brush on preservative treatment.

3.7 FIXING ECOPLY® BARRIER SHEETS

Position Ecoply® Barrier sheets with the water-resistant powder coat film facing outwards with the long side of the sheet orientated vertically to framing members. Allow 2-3mm expansion gap between vertical sheet edges. Place any cut sheet ends at the top with the sealed sheet end at the bottom. Cover all other cuts and penetrations with Ecoply® Barrier Sealing tape. Sheets to overhang the bottom plate, joist or bearer by a minimum of 25mm.

3.8 FASTENERS - STANDARD NAILING PATTERN

Nail 7mm minimum from sheet edges at 150mm centres around perimeter of each sheet or part sheet, and 300mm centres within sheet body up to and including Very High wind zone, or 150mm centres within sheet body in Extra High wind zone. Finish fastener heads flush with the panel surface.

3.9 FIXING TO RESIST UPLIFT

For 4.7kN fixing of top plate to studs modify standard nailing pattern, nail sheet edge to top plate at 75mm centres, 20mm from the sheet edge.

3.10 LINTEL CONNECTION FOR UPLIFT

Nail framing and Ecoply® Barrier sheets to Ecoply® Barrier Specification and Installation Guide, lintel connection detail for uplifts not exceeding 7.5kN.

3.11 TAPE- GENERAL

Apply pressure to seal the Ecoply® tapes with minimal wrinkles in accordance with the Ecoply Barrier Specification and Installation Guide.

3.12 VERTICAL ECOPLY® BARRIER SHEET JOINTS - WALL PLANE

Ensure panels are clean, centre Ecoply® Barrier Sealing Tape over vertical joints in accordance with the Ecoply Barrier Specification and Installation Guide.

3.13 VERTICAL ECOPLY® BARRIER SHEET JOINTS - CORNERS

Ensure panels are clean, centre Ecoply® Barrier Sealing Tape over external and internal wall corners in accordance with the Ecoply Barrier Specification and Installation Guide.

3.14 HORIZONTAL SHEET JOINT - JOINTER

Flash horizontal joints with Ecoply® Horizontal Jointer (RDZF7) in accordance with the Ecoply Barrier Specification and Installation Guide. Provide a 15mm expansion gap.

3.15 TAPE SPLICES & JOINTS

Where tape splices occur at a junction, create an overlapping splice of at least 50mm.

3.16 WINDOW & DOOR OPENINGS

Apply Ecoply® Barrier Sill Tape to cover the bottom of the opening and Ecoply® Barrier Frame Sealing Tape to the vertical trimmer stud and lintel, reinforce corners at each end of the lintel with 100m strip of Ecoply® Barrier 150m Frame Sealing Tape. Apply tapes in accordance with the Ecoply Barrier Specification and Installation Guide.

3.17 PENETRATIONS

Apply Ecoply® Barrier Sill Tape to flash to Ecoply® Barrier plywood sheet, provide 100mm minimum cover to sheet. Bandage around pipes with Ecoply® Barrier Frame Sealing Tape with 25mm minimum width of cover to pipe. Apply in accordance with the Ecoply Barrier Specification and Installation Guide.

3.18 FLASHINGS

Apply Ecoply® Barrier Frame Sealing Tape to metal flashings in accordance with the Ecoply Barrier Specification and Installation Guide.

Completion & Commissioning

3.19 COMPLETION MATTERS

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

3.20 COMPLETION - TESTS & CERTIFICATION

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

4 SELECTIONS

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

4.1 ECOPLY® BARRIER PLYWOOD

Location:	Refer to plans.
Manufacturer:	Carter Holt Harvey Plywood Limited
Brand:	Ecoply® Barrier
Width:	1197mm
Length:	2440mm
Thickness:	7mm
Treatment:	H3.2 CCA

4221HV HERMPAC VERTICAL WEATHERBOARD CLADDING SYSTEM

1 GENERAL

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

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

1.1 RELATED WORK

Refer to painting sections for finishes to weatherboard cladding.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FSC®	Forest Stewardship Council®
COC	Chain of Custody
PEFC	Programme for the Endorsement of Forest Certification
CSA	Canadian Standards Association (International Standards)
SFI	Sustainable Forestry Initiative

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Hermpac Construction Drawings
Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System installation specifications
Hermpac Vertical Shiplap Weatherboard Direct Fix System Installation Specifications
Quality Assurance Checklist - Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System
Hermpac Board and Batten Weatherboard Cavity System Installation Specifications
Hermpac Board and Batten Weatherboard Direct Fix System Installation Specifications
Quality Assurance Checklist - Hermpac Board and Batten Weatherboard Cavity System

Hermpac Standard and Custom profiles
Hermpac Profile Portfolio
Hermpac Grade descriptions
Hermpac Nail fixings
Hermpac Legal and / or Sustainable Certification
Hermpac Product Technical Statement
Machinecoat - Flood Coat Inundation versus Spray Application
Maintenance of selected Wood Oil/Oil Based Stain Finishes

BRANZ Appraisal 650 - Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System
BRANZ Appraisal 828 - Hermpac Board and Batten Cavity System
JAS-ANZ CodeMark Certification GM-CM30036 - Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System
Hermpac Limited - FSC Licence No FSC-C102539, Certificate Code SGS-COC-008082, expires 30 Nov 2024
Hermpac Pacific Limited - PEFC Forestry Sustainable Certificate Code SGS-PEFC/CoC NZ10/1212, expires 23 Nov 2026

Manufacturer/supplier contact details:

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

Requirements

Performance

1.5 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.

1.6 PERFORMANCE

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

2 PRODUCTS

2.1 WESTERN RED CEDAR

Hermpac Canadian Coastal Western Red Cedar (Thuja plicata) harvested from the sustainable managed forests of British Columbia, Canada. Hermpac Western Red Cedar is supplied from forest sources, certified legal and sustainable under one or more independent third party verified certification systems (PEFC, CSA, SFI or FSC).

2.2 VERTICAL SHIPLAP / VERTICAL BOARD AND BATTEN

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

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

A selection of the above profiles are also available in Western Red Cedar Finger-Joint (CEDARONE) and AshinDura™ pre-primed and undercoated, sanded and/or de-nibbed/buffed between coats.

2.3 COVER BOARDS, SMART CORNERS, MOULDINGS AND SCRIBERS

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

2.4 FASCIA BOARDS

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

2.5 WALL UNDERLAYS

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

2.6 VERTIBAT EXTERIOR CAVITY WALL BATTENS - NON STRUCTURALLY FIXED

Vertibat Radiata Pine H3.1 or H3.2 castellated and double bevelled cavity batten.

2.7 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

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

Components

2.8 NAILS, SILICON BRONZE

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

2.9 NAILS, STAINLESS STEEL

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

2.10 JOLT HEAD NAILS, STAINLESS STEEL

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

2.11 CLINCH NAILS, STAINLESS STEEL

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

2.12 FLASHINGS

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

2.13
FACTORY PRE-FINISHING - MACHINECOAT (NZ) - PENETRATING WOOD OIL / OIL BASED STAIN

Flood Coat Inundation: Factory application of selected oil-based stain finishes by flood inundation and enhanced penetration of timber surface by roller pressure and fibre saturation.
Refer to: www.hermpac.co.nz/our-products/coatings

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

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

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3 EXECUTION

Conditions

3.1 GENERALLY

Execution to NZBC E2/AS1: 3.0 Weathertightness risk factors, and 9.0 Wall claddings, 9.1.8 Drained cavities and 9.4 Timber weatherboards.

3.2 STORAGE

Take delivery of Hermpac timber products, dry, unmarked and undamaged from freight and handling (Grade characteristics excluded). Stack Hermpac weatherboards flat and true, clear of the ground by a minimum of 150mm and supported on dry, clean timber bearers at maximum 900mm centres. Keep weatherboards dry at all times, either by storing within an enclosed building, or when stored externally place an additional secondary cover on the plastic wrapping. Care must be taken to avoid damage to weatherboard edges and surfaces.

3.3 SUBSTRATE

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

Application - preparation

Application - vertical cladding over cavity battens

3.4 VERTIBAT DRAINED CAVITY / NON STRUCTURALLY FIXED

Install 20mm minimum thickness drained cavity to NZBC E2/AS1: 9.0 Wall claddings, where required. The Vertibat battens are temporarily fixed over the wall underlay using galvanized or stainless steel nails and then firmly fixed by the cladding fixings which will penetrate the wall framing studs, nogs/dwangs. Refer Hermpac Installation Specification for detailed fixing.

3.5 CAVITY CLOSER / VERMIN PROOFING

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

3.6 PENETRATIONS

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

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

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

3.7 SET-OUT

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

Application - fixing

3.8 FIXING - OIL / STAIN FINISH

Install level, true to line and face, to NZBC E2/AS1: 9.4 Timber weatherboards. Double coat all cut ends before fixing. Pilot drill all fixings slightly smaller than gauge of fixing to ensure a snug fit and to minimise risk of moisture entry. Finish the heads of Hermpac Crown, Rose and Flat head nails 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 Hermpac Construction Drawings for fixing details and to SELECTIONS for fixing sizes.

3.9 FIXING/FINISH - WIND ZONE

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

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

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

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

3.10 FIXING VERTICAL SHIPLAP WEATHERBOARDS

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

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

Refer to Hermpac Construction Drawings and Installation Specification for external and internal corner construction and fixing details.

3.11 INSTALL FLASHINGS

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

3.12 COMPLETE

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

Completion

3.13 REPLACE

Replace all damaged or marked elements.

3.14 LEAVE

Leave work to the standard required for following procedures.

3.15 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

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

4.1 HERMPAC - VERTICAL SHIPLAP

Location:	Refer to plans
Species:	Western Red Cedar
Grade:	HERMPAC Premium Clears No.1 (PC1)
Profile Number/Series:	HP53
Profile type:	Vertical Shiplap
Cover dimensions:	110mm
Thickness:	18.5mm
Cavity Fixing system:	over drained cavity 20mm
Surface finish:	Band Sawn Face (BSF)
Moisture content:	≤18 % at fixing

4.2 HERMPAC CORNER MOULDS, COVER BOARDS, BOXED CORNERS & SCRIBERS

Grade:	HERMPAC Premium Clears No.1 (PC1)
Internal Corner Mould:	Aluminium Corner Mould
Cover boards:	HP 201 and HP 202
Scriber:	HP11 - HP18
Surface finish:	Band Sawn Face (BSF)
Moisture content:	≤18% at fixing

4.3 WEATHERBOARD FASTENINGS - STAINLESS STEEL NAILS

Nails:	Flat Head.
Type:	Grade 316 stainless steel
Size:	

4.4 VERTIBAT CAVITY BATTENS - NON STRUCTURALLY FIXED

Product:	Vertibat (V1)
Material:	H3.1 or H3.2 Radiata Pine
Size:	Min. 45mm wide x 20mm thick x 2700mm long
Fixings:	Hot dipped galvanized nails
Fixing size:	40mm x 2.0mm

4.5 SIGMA CAVITY CLOSER/VERMIN-PROOFING

Brand/type:	Sigma cavity closure
Material:	Aluminium

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

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

4231BW BGC WEATHERBOARD & PLANK CLADDING SYSTEMS

1 GENERAL

This section relates to the supply and fixing of **BGC Fibre Cement (NZ)** weatherboard and plank cladding systems, fixed directly or with cavity to timber or steel framing.
It includes:

- Innova™ Nuline Plus™ Weatherboard Direct Fixed Cladding Systen
- Innova™ Nuline Plus™ Weatherboard Cavity Cladding Systen
- Innova™ Stratum™ Cladding System (horizontal and vertical installation
- Innova™ Stratum™ Duo Cladding System (horizontal and vertical installation
- Innova™ Stratum™Trio Cladding System (horizontal and vertical installation
- Innova™ Stratum™ Contour Cladding System (horizontal installation only

1.1 RELATED WORK

Refer to painting section/s for the protective coating required to meet the NZBC durability requirements.

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture
NZBC E2/VM1	Weathertightness
AS/NZS 1170.2:2011	Structural design actions - Wind actions
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

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

BGC Fibre Cement documents relating to this part of the work:

- BGC Nuline Plus™ Cavity and Direct Fixed Brochure
- BGC Stratum™, Stratum™ Duo, Stratum™ Trio and Stratum™ Contour Cladding Syst Brochure
- BGC Nuline Plus™ Architectural Details
- BGC Stratum™, Stratum™ Duo, and Stratum™ Trio Architectural Detai
- BGC Stratum™ Contour Architectural Details
- BRANZ Appraisal 640 - Nuline Plus™ Weatherboard Direct Fixed Cladding System
- BRANZ Appraisal 641 - Nuline Plus™ Weatherboard Cavity Cladding
- BRANZ Appraisal 847 - BGC Stratum™ and Stratum™ Duo Cavity Cladding Systen
- BRANZ Appraisal 848 - BGC Stratum™ Contour Cavity Cladding System
- BRANZ Appraisal 1060 - BGC Stratum Vertical Cavity Cladding System
- BRANZ Test Report ST1136 - Face Load Testing for Vertical BGC Stratum™ Duo Cladding
- BRANZ Test Report DA0338/CD01 - E2/VM1 Testing of a BGC Fibre Cement Panel
- BRANZ Test Report DA0338/CD02- E2/VM1 Testing of a BGC Fibre Cement Panel

Manufacturer/supplier contact details

Company:	**BGC Fibre Cement (Australia) Pty Ltd**
Web:	bgcinnovadesign.co.nz
Email:	nz@bgc.com.au
Telephone:	09 273 1457, 0800 424 234

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

25 years:	For Innova™ Nuline Plus™ Weatherboard product (refer to BGC Fibre Cement product warranty)
25 years:	For accessories supplied by BCG (refer to BGC Fibre Cement product warranty) Commence the warranty from the date of purchase

Provide this warranty on the manufacturer's 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 BGC Stratum™, Stratum™ Duo, Stratum™ Trio and Stratum Contour Cladding products (refer to BGC Fibre Cement product warranty)
15 years:	For accessories supplied by BCG (refer to BGC Fibre Cement product warranty) Commence the warranty from the date of purchase

Provide this warranty on the manufacturer's standard form.

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's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS

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

1.8 NO SUBSTITUTIONS

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

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Provide relevant BGC Fibre Cement maintenance requirements at completion of the work.

Performance - wind

1.10 PERFORMANCE, WIND

The design wind pressures are to NZS 3604, up to and including Extra High Wind Zone. BGC Fibre Cement Brochure details are suitable for these conditions.

Performance

1.11 BGC STRATUM™, DUO, TRIO CAVITY CONSTRUCTION - VERTICAL INSTALLATION

BGC Stratum™, Stratum™ Duo, and Stratum™ Trio Cavity Cladding Systems tested t

- BRANZ Test Report ST1136 - Face Load Testing for Vertical BGC Stratum Duo Cladding
- BRANZ Test Report DA0338/CD01 - E2/VM1 Testing of a BGC Fibre Cement Panel
- BRANZ Test Report DAO338/CD02 - E2/VM1 Testing of a BGC Fibre Cement Panel

2 PRODUCTS

Materials

2.1 RIGID AIR BARRIERS

Refer to section 4171BR BGC DURABARRIER RIGID AIR BARRIERS.

2.2 EXTERIOR CAVITY BATTENS - STRATUM™ VERTICAL BATTENS

- Stratum™ Vertical Battens 20mm x 50mm.

2.3 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Perforated uPVC, with upstands.

2.4 BGC STRATUM™ PLANKS

BGC Stratum™ Plank, preprimed, 12mm thick, with a shiplap horizontal or vertical jointing system, manufactured from a medium density cellulose fibre cement formulation and cured by high pressure autoclaving.
Manufactured to AS/NZS 2908.2, tested to NZBC E2/VM1 for weathertightness and complying with the NZBC. Supplied with smooth face and available in 300mm wide plank x 4200mm long. Refer to SELECTIONS for options.

Components - general

2.5 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 20, Material selection, and NZBC E2/AS1, Table 21, 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
Bracing - All zones	Grade 316 Stainless

Check against SED (specific engineering design) requirements for microclimate conditions.

Components - BGC Stratum™, Duo and Trio Cladding Systems, vertical installation

2.6 NAILS

65 x 2.87mm Roundrive ring shank nail fixing (typical).

2.7 ADHESIVE FIXING

Bostik Seal "N" Flex FC or similar applied in a continuous bead to all plank laps.

Accessories - BGC Stratum™, Duo and Trio Cladding Systems

2.8 INTERNAL ALUMINIUM CORNER

BGC Internal Aluminium Corner, 3000mm x 17mm.

2.9 EXTERNAL ALUMINIUM CORNER

BGC External Aluminium Corner, 3000mm x 17mm.

2.10 JAMB FLASHING

BGC 'J' Jamb Flashing - 2400mm

2.11 CAVITY VENT STRIP - STRATUM™

BGC Cavity Vent Strip, 19mm x 2700mm.

2.12 PRECUT SCRIBER

BGC Precut Scriber - 40mm x 18mm 5400mm.

2.13 HORIZONTAL NEGATIVE DETAIL JOINTER

BGC Horizontal Negative Detail Jointer, 3000mm.

2.14 EDGE SEALER

BGC Edge Sealer.

Accessories - supplied by contractor

2.15 SEALANT

Bostik Safetech Safe Seal sealant or BRANZ appraised paintable sealant. Contact BGC Fibre Cement for application requirements.

Finishing

2.16 PAINT FINISHING SYSTEM

Refer to relevant painting section(s) for the painting systems required for the product as recommended by BGC Fibre Cement.

3 EXECUTION

Conditions

3.1 STORAGE

Take delivery of products and stack flat, up off the ground and supported on equally spaced (maximum of 300mm) level gluts. Protect edges and corners from damage and covered to keep dry until fixed.

3.2 HANDLING

Avoid distortion and contact with potentially damaging surfaces. Carry weatherboards in vertical position. Do not drag weatherboards across each other or across other materials. Protect edges, corner and surface finish from damage.

3.3 SUBSTRATE

Do not commence work until the substrate is of the standard required by BGC Fibre Cement 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 sheets are fixed.

Application - particular installations

3.4 FIRE RESISTANCE RATING, FIBRE CEMENT

Install glass fibre insulation fitted tightly in the timber framing cavity. Fix fibre cement cladding and lining sheets, direct or on cavity. Refer to project drawings for FRR system construction details and BGC Fibre Cement product Brochures for further information.

3.5 FIRE RESISTANCE RATING

30 Minute FRR is achieved when BGC weatherboard and plank cladding products are installed either direct fixed or cavity construction, in accordance with details in BGC product Brochures, as follows:

Timber framing	Interior lining	Insulation
Minimum 90mm x 45mm studs at maximum 600mm crs, nogs maximum 800mm crs, to NZS 3604	10mm or 13mm GIB® Fyreline to GBTL 30 FRR system	R2.2 minimum, 95mm thick nominal fibre glass insulation

Application - generally

3.6 INSTALL RIGID AIR BARRIERS

Refer to section 4171BR BGC DURABARRIER RIGID AIR BARRIERS for installation of rigid air barrier.

3.7 INSTALL CAVITY BATTENS - VERTICAL INSTALLATION

Install Stratum™ vertical cavity battens toNZBC E2/AS1: 9.0 **Wall claddings**, where required. Fix horizontal cavity battens to wall framing studs. The battens are fixed by the cladding fixings which will penetrate the wall framing 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). Do not use vertical cavity battens. Use cavity spacers where fixing is required between cavity battens.

3.8 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
- Claddings neatly finished off to all sides of openings
- Installation of flashings (those required to be installed prior to installation of penetrating elements).

3.9 INSTALL FLASHINGS

Install flashings at all wall openings, penetrations, junctions, connections, window sills, heads and jambs to NZBC E2/AS1.

Installation - BGC Stratum™, Duo and Trio Cladding Systems, vertical installation

3.10 INSTALL BGC STRATUM™ PLANKS - CAVITY FIXED, VERTICAL INSTALLATION

Install BGC Stratum™ Planks, strictly in accordance with BGC Fibre Cement requirements and product Brochure BGC Stratum™ and Architectural Details. Ensure installation includes the following:

- Seal all cut edges of planks before fixing
- Provide continuous bead of Bostik Seal "N" Flex FC or similar to all plank laps (typical)

Completion

3.11 REPLACE

Replace all damaged or marked elements.

3.12 LEAVE

Leave work to the standard required for following procedures.

3.13 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

4.1 CAVITY BATTENS - STRATUM™, VERTICAL INSTALLATION

Manufacturer:	BGC Fibre Cement (Australia) Pty Ltd
Type/brand:	Stratum™ vertical batten, 20mm x 50mm

BGC Stratum™ Cladding Systems

4.2 BGC STRATUM™ PLANKS

Location:	Refer to plans.
Manufacturer:	BGC Fibre Cement (Australia) Pty Ltd
Supplier:	BGC Fibre Cement (NZ)
Brand/type:	BGC Stratum™ Plank
Thickness:	12mm
Width:	300mm
Installation:	Vertical - Bostik Seal'n'Flex FC or similar for the vertical lap
Construction:	Cavity fix
Nail pattern:	One concealed fixing and one face fixing
Nail finish:	Stainless steel
Nails:	Vertical installation - 65 x 2.87mm Roundrive ring shank nail fixing
Adhesive fixing:	Bostik Seal'n'Flex FC or similar for the lap on the Vertical install

Finishing

4.3 PAINTING

Refer to painting section(s) for details.

4239JH JAMES HARDIE® SOFFITS

1 GENERAL

This section relates to the supply and fixing of **James Hardie®** products to the underside of exterior soffits, verges and eaves. It includes:

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

1.1 RELATED WORK

Refer to painting section/s for the protective coating required to meet the NZBC durability requirements.

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture
AS/NZS 1170.2:2011	Structural design actions - Wind actions
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
NASH Standard Part 2	May 2019 Light Steel Framed Buildings

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

James Hardie® documents relating to this part of the work:
Eaves and Soffits Installation Manual by James Hardie®
Fire and Acoustic Design Manual by James Hardie®

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 James Hardie®

(refer to James Hardie® product warranty)

15 year:	For accessories supplied by James Hardie® (refer to James Hardie® product warranty)
From:	Date of purchase

- Provide this warranty on the manufacturer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS

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

1.6 NO SUBSTITUTIONS

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

1.7 SAFE WORKING

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

1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Provide relevant James Hardie maintenance requirements at completion of the work.

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 20, Material selection for fixing material, and NZBC E2/AS1, Table 21, 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.

2.5 INSEAL TAPE

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

2.6 POLYPROPYLENE TAPE

Polypropylene tape, 30mm minimum width.

Components - General

2.7 FLEXIBLE JOINT SEALANT

Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 STORAGE

Take delivery of products dry and undamaged. Store on site, lay flat on a smooth level surface clear of the ground. Protect materials, finished surfaces, edges and corners from damage, water and moisture.

3.2 HANDLING

Move/handle goods in accordance with James Hardie® requirements. Avoid distortion and contact with potentially damaging surfaces. Do not drag sheets across each other, or across other materials. Protect edges, corner and surface finish from damage. Reject and replace goods that are damaged or will not provide the required finish. Install materials in a dry state.

3.3 SUBSTRATE - TIMBER FRAMING

Do not commence work until the substrate is of the standard required 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 sheets are fixed.

3.4 COMMENCE WORK

Do not commence work until the roof has been installed.

Application - general

3.5 SHEET LAYOUT

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

3.6 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.

3.7 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.

3.8 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.

3.9 INSTALL HARDIE™ FLEX EAVES LINING

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

3.10 BUTT JOINT

Paint sheet edges prior to installation.

3.11 CONTROL JOINT

Install control joint to James Hardie® installation manual requirements.

3.12 FASTENER - SIZE AND LAYOUT

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

3.13 SEALANTS

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

3.14 PAINTING

Refer to painting section/s for protective coating system.

Completion

3.15 COMPLETE

Ensure the work is complete with all components, accessories, trim, sealant and finishing properly installed so the soffit cladding system is completely weathertight.

3.16 REPLACE

Replace all damaged or marked elements.

3.17 CLEAN

Clean surfaces.

3.18 LEAVE

Leave work to the standard required for following procedures.

3.19 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

Materials

4.1 HARDIE™ FLEX EAVES LINING

Location:	Refer to plans.
Brand/type:	James Hardie® Hardie™ Flex Eaves Lining
Thickness:	4.5mm
Width:	1200mm - 4.5mm thick sheet (1800, 2400, 2700, 3000mm length).
Fixing Method:	Hardie™ Flex nails (usual fixing method).
Fixing type:	Stainless steel Hardie™ Flex Nail, 40 x 2.8mm
Joint detail:	Hardie™ Jointer 5mm for 4.5mm thick sheet.

Painting

4.2 PAINTING

Refer to painting section/s for details.

4261MV MIDLAND BRICK NZ - CLAY BRICK VENEER

1 GENERAL

This section relates to **Midland Brick NZ** clay brickwork as a veneer cladding.
It includes:

- Standard brick veneer cladding
- Two storey brick veneer system
- Stack bonded brick veneer system

1.1 RELATED WORK

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

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

CB&PMA	Clay Brick & Paver Manufacturers Association
NZMTA	New Zealand Masonry Trades Association
BBFNZ	Brick and Blocklayers Federation of New Zealand

The following definitions apply specifically to this section:

Two storey brick veneer system	System for two storey clay brick veneer construction as contained in BRANZ Appraisal 690 - Two Storey Brick Veneer System.
Stack bonded brick veneer system	System for stack bonded clay brick veneer construction as contained in BRANZ Appraisal 1045 - Stack Bonded Brick Veneer System.
Notification Point	Notify Project Administrator - work may be observed or not at their discretion; work may proceed.
Hold Point	Work may not proceed until the work has been inspected.

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture
NZBC B1/AS3	Structure
NZS 1170.2:2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions
AS/NZS 2699.1	Built-in components for masonry construction - Wall ties
AS/NZS 2699.3	Built-in components for masonry construction - Lintels and shelf angles (durability requirements)
AS/NZS 2918:2001	Domestic solid fuel burning appliances - Installation
NZS 3103	Sands for mortars and plasters
NZS 3604	Timber-framed buildings
NZS 4210	Masonry construction: materials and workmanship
SNZ HB 4236	Masonry veneer wall cladding
AS/NZS 4455.1	Masonry units, pavers, flags and segmental retaining wall units - Masonry units
BRANZ Appraisal 690	Two Storey Brick Veneer System
BRANZ Appraisal 1045	Stack Bonded Brick Veneer System
ASTM D6134	ASTM D6134 / D6134M-07(2019)e1, Standard Specification for Vulcanized Rubber Sheets Used in Waterproofing Systems
CB&PMA TB1	Design Note TB1 Two Storey Clay Brick Veneer Construction - Made Easy
CB&PMA TB2	Design Note TB2 Specification For The Stack Bond Brick Veneer System

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Midland Brick NZ Technical Resources	Brochures, data sheets, cad files
BRANZ Appraisal 690	Two Storey Brick Veneer System
BRANZ Appraisal 1045	Stack Bonded Brick Veneer System
Clay Brick & Paver Manufacturer's Association	www.bricksnz.co.nz

Manufacturer/supplier contact details

Company:	**Midland Brick NZ Ltd**
Web:	www.midlandbrick.co.nz
Email:	info@midlandbrick.co.nz
Telephone:	0800 MIDLAND (643 5263)
09 414 1075	

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

25 years	For **Midland Brick NZ** bricks

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS

Bricklayers to be experienced, competent and familiar with the **Midland Brick NZ** materials and the techniques specified.
All work to be installed or supervised by a Registered Master Mason or licensed building practitioner (LBP): Licensed for Bricklaying and Block laying 1: Brick/masonry Veneer. RBW must be supervised by an LBP.

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 **Midland Brick NZ** specified materials, components and associated products listed in this section.

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Producer Statement - Construction from the installer of proprietary brick veneer systems.
- Other information required by the BCA in the Building Consent Approval documents.

Performance - design parameters

1.10 DESIGN PARAMETERS - NON-SPECIFIC DESIGN - WIND

Design the installation to the wind parameters of NZS 3604, table 5.4)
Refer to SELECTIONS for details.

1.11 DESIGN PARAMETERS - NON SPECIFIC DESIGN - EARTHQUAKE

Design the installation to the seismic parameters of NZS 4210 **Masonry construction: materials and workmanship.**
Refer to SELECTIONS for details.

Performance - compliance

1.12 COMPLIANCE - STANDARD BRICK VENEER

Brickwork to comply with SNZ HB 4236 **Masonry veneer wall cladding**.

Quality control and assurance

2 PRODUCTS

Materials

2.1 CLAY BRICKS

Midland Brick NZ bricks manufactured to AS/NZS 4455.1 **Masonry units, pavers, flags and segmental retaining wall units - Masonry units.**
Refer to SELECTIONS for size, type and colour range/s.

2.2 VERMIN PROOFING

Either:

- Proprietary plastic weephole vents built into open perpends.
- Galvanized hexagon 10 mm mesh of 1 mm diameter steel wire 100 mm wide, complete with galvanized steel staples. Fix across base of cavity if gaps in veneer exceed 13 mm.

2.3 FLASHING - HEAD & SILL

To NZBC E2/AS1 either:

- 2 ply asphaltic pliable waterproofing membrane to AS/NZS 2904.
- 1.5 mm butyl rubber to ASTM D6134.
- 0.5 mm pliable polyethylene to AS/NZS 2904.
- Proprietary self-adhesive flexible flashing tape to AS/NZS 2904.

2.4 FLASHING - JAMB

To NZBC E2/AS1 either:

- 2 ply asphaltic pliable waterproofing membrane to AS/NZS 2904.
- 0.5 mm pliable polyethylene to AS/NZS 2904.
- Proprietary self-adhesive flexible flashing tape to AS/NZS 2904.

2.5 DAMP-PROOF COURSE (DPC)

To NZBC E2/AS1 either:

- 2 coats bitumen-based paint to AS/NZS 2904.
- 1.0 mm min. bituminous sheet or heavy kraft strip laminate (saturated and coated with bitumen) to AS/NZS 2904.
- 1.0 mm min. butyl rubber to ASTM D6134.

2.6 DAMP-PROOF MEMBRANE (DPM)

0.25 mm min. polythene or polyethylene sheet to AS/NZS 2904.

Components - general

2.7 SILLS

Refer to SELECTIONS for type.

Components - standard brick veneer

2.8 LINTELS

Steel lintel angles over openings to AS/NZS 2699.3.

2.9 WALL TIES

To AS/NZS 2699.1 **Built-in components for masonry construction - Wall ties.** Metal ties screw fixed to framing.

2.10 REINFORCEMENT

Galvanized wire or stainless steel joint reinforcement. Refer to SELECTIONS for type.

Accessories

2.11 SAND FOR MORTAR

To NZS 3103 **Sands for mortars and plasters**. Chloride levels not to exceed 0.04% by dry weight of sand.

2.12 MORTAR

Composed of Portland cement, sand and water with an admixture to the provisions of NZS 4210: **Masonry construction: materials and workmanship,** 2.2 Mortar. Obtain written approval of admixture being used and/or if intending to use hydrated lime in the mortar.

2.13 MORTAR COLOUR

Add mineral oxide pigment conforming to requirements of NZS 4210**: Masonry construction: materials and workmanship,** clause 2.2.2.2(f).

2.14 ADMIXTURES

To NZS 4210**: Masonry construction: materials and workmanship**

2.15 WATER

Clean, fresh and free from excess alkali, salt, silt and organic materials.

2.16 CELLULAR POLYSTYRENE INSULATION

Proprietary polystyrene foam board to AS 1366.3 **Rigid cellular plastics sheets for thermal insulation.** Refer to SELECTIONS.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE AND HANDLING

To NZS 4210 **Masonry construction: materials and workmanship** for aggregates, cement, bricks and reinforcement.
Take delivery of materials and goods and store on site and protect from damage.
Protect finished surfaces, edges and corners from damage.
Move/handle goods in accordance with manufacturer's requirements and Brick & Block Layers Federation, New Zealand 'Best Practice Guide'.
Reject and replace goods that are damaged or will not provide the required finish.

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 temporary 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: 20% maximum.

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.
To NZS 4210 **Masonry construction: materials and workmanship,** table 2.2 Maximum tolerances.

3.5 PRE-INSTALLATION REQUIREMENTS - CONCRETE BASE

Check vertical and horizontal alignment. Any discrepancies exceeding the permitted tolerances shall be corrected before units are laid.

3.6 TIMBER FRAMING - STANDARD BRICK VENEER

Check timber framing stud spacing is in accordance with NZS 3604.

3.7 TIMBER FRAMING - TWO STOREY BRICK VENEER SYSTEM

Check timber framing is minimum 90 mm x 45 mm at 400 mm centres.
For Two Storey Brick Veneer System gable end trusses are not to be used.

3.8 TIMBER FRAMING - STACK BONDED BRICK VENEER SYSTEM

Check timber framing is minimum 90 mm x 45 mm at 400 mm centres.

3.9 PENETRATIONS

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

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

3.10 MEASURE MATERIALS

Measure materials for mortar accurately by weight or volume using suitably calibrated equipment.

3.11 WET WEATHER

Keep bricks dry at all times prior to laying. Protect the top row of uncompleted brick walls. Protect freshly laid brickwork during interruption through rain and at completion of each day's work. Protect brickwork for a minimum of 6 hours.

3.12 COLD WEATHER CONSTRUCTION

When air temperature is below 5°C take the precautions required by NZS 4210: **Masonry construction: materials and workmanship,** 2.18 Cold weather construction.

3.13 HOT WEATHER CONSTRUCTION

When air temperature is above 25°C or there is a drying wind, or lower temperatures, take the precautions required by NZS 4210: **Masonry construction: materials and workmanship,** 2.19 Hot weather construction.

3.14 KEEP FACE WORK CLEAN

Keep clean during erection and until completion of the contract works. Turn back scaffold boards at night and during heavy rain. Do not rub face work to remove stains.

Installation - general

3.15 COLOUR MIXING - BRICKS

Check all **Midland Brick NZ** bricks delivered to site for colour variation, prior to commencing work; product laid is deemed to be accepted. Ensure bricks are thoroughly blended from several pallets to ensure an even colour spread throughout the work.

3.16 COLOUR MIXING - MORTAR

Add mineral oxide pigment to mortar mix to requirements of NZS 4210**Masonry construction: materials and workmanship**, clause 2.2.2.2 (f).

3.17 UNIFORMITY

Carry up work with no portion more than 1500 mm above another at any time, raking back between levels.

3.18 BONDING

Lay bricks to the required bonding in the various locations. Refer to SELECTIONS/drawings.

3.19 PROVIDE WEEP HOLES

Provide weep holes at the bottom of cavities and cells to SNZ HB 4236 and NZBC E2/AS1, 9.2.6, **Cavities**, and as necessary to drain moisture to the outside air. Provide vent gap at the top of the veneer.

3.20 INSTALL VERMIN PROOFING

Fold and staple one edge of the mesh to the substrate with the mesh sloping down towards the veneer. Set the other edge into the mortar joint by half the thickness of the veneer or 50 mm, whichever is less.

3.21 CAVITY VENTILATION

Ventilate to outside air with top and bottom openings to the requirements of SNZ HB 4236 and NZBC E2/AS1, 9.2.6, **Cavities**. Seal cavity off from roof space.

3.22 CAVITY BRICKWORK BELOW GROUND

Fill all cavities below finished grade with concrete. Place a continuous damp-proof course within the first three mortar joints above ground. Seal the face of all brickwork below ground.

3.23 FORM OPENINGS

Unless detailed otherwise form openings to typical details from BRANZ 'Masonry veneer - Good practice guide'.

3.24 SEPARATION JOINTS

Provide for wall movements of veneer with control joints to NZS 4210: **Masonry construction: materials and workmanship,** 2.10 Methods of controlling wall movements. Weatherproof as necessary.

3.25 FORM REVEALS

Form lintels, jambs and sills as detailed complete with flashings and all ready for following work.

3.26 HEAD FLASHINGS

Provide a flexible flashing extending 200 mm beyond ends of the opening and sloping to weep holes over all openings in cavity walls, in accordance with E2/AS1, 9.2.4, **Flashings**.

3.27 JAMB FLASHINGS

Provide a flexible flashing to jambs of openings in cavity walls, fully lapped with horizontal damp-proof courses at head and sill, in accordance with E2/AS1, 9.2.4, **Flashings**.

3.28 SILL FLASHINGS

Provide a flexible flashing under jointed sills, turned up at back and ends, in accordance with E2/AS1, 9.2.4, **Flashings**.

3.29 REBATE DAMP PROOFING

Provide damp-proof course to stepped rebates supporting brick veneer in accordance with E2/AS1, 9.2.5, **Foundation support and damp-proofing**.

Installation - standard brick veneer

3.30 INSTALL LINTELS

Fit lintel angles to openings, sized to NZBC E2/AS1, 9.2.9, **Openings in masonry veneer** Table 18E and placed to NZBC E2/AS1, 9.2.9, **Openings in masonry veneer**.

3.31 CAVITY WIDTH

No cavity width to be less than 40 mm or more than 75 mm.

3.32 PLACE WALL TIES

Place ties to: -

- NZS 4210: 2.9.5 Tie anchorage, cover and fixing; and
- NZS 4210: 2.9.6 Placing of ties
- NZS 4210: 2.9.7 Tie classification and spacing
- NZBC E2/AS1, 9.2.7, **Wall ties,** for requirements, spacing, embedment, placement and materials

At unsupported edges and at all openings through veneered walls or non-grouted cavity walls, wall ties to be provided:
At the top and bottom of the opening:

- Not more than 300 mm or 2 courses, whichever is the smaller

At the sides of the opening or at an unsupported edge:

- Not more than 300 mm
- Where the veneer wall continues above or is interrupted by a damp-proof course or waterproof membrane, wall ties shall be provided in each of the first two courses above the membrane.

Installation - ancillary work

3.33 BUILD-IN FIXINGS

Build-in necessary fixing bricks or blocks for trims.

3.34 BUILD-IN ELEMENTS

Build-in sills, copings, lintels, steps and other elements using mortar similar to that in adjacent walls.

3.35 BUILD-IN DOORS AND WINDOWS

Build -in door and window frames as the work proceeds and bed in mortar similar to that in adjacent work.

3.36 POLYSTYRENE INSULATION

Install polystyrene insulation system to AS 1366.3 **Rigid cellular plastics sheets for thermal insulation** to manufacturer's requirements.

Completion

3.37 ROUTINE CLEANING

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

3.38 EFFLORESCENCE, WATER CLEANING

To remove deposits, brush with a stiff-bristle broom and take away brushings from the locality. Remove remaining deposit with a damp sponge. Wash wall thoroughly with a plentiful supply of clean water. Repeat this process every 4 weeks from appearance of efflorescence through to the completion of the contract works.

3.39 DEFECTIVE OR DAMAGED WORK

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

4 SELECTIONS

Substitutions are not permitted to the following **Midland BrickNZ** product, unless stated otherwise. For further details on selections go to www.midlandbrick.co.nz.

Performance - seismic

4.1 DESIGN PARAMETERS - NON SPECIFIC DESIGN - EARTHQUAKE

Building seismic zone: 3 (refer to NZS 4210 **Masonry construction: materials and workmanship**)

Performance - wind

4.2 DESIGN PARAMETERS - NON SPECIFIC DESIGN - WIND

Building wind zone: M (refer to NZS 3604 **Timber frame buildings**)

Materials - general

4.3 VERMIN PROOFING

Location:	
Brand / type:	proprietary plastic weephole vent
Size:	
Finish:	Galvanized

Materials - standard brick veneer

4.4 MIDLAND CLAY BRICKS FOR STANDARD BRICK VENEER

Brand:	**Midland Brick NZ**
Collection/range:	Euro Modus
Brick colour:	Refer to Midland Brick NZ website for ranges and related colour options
Brick size:	Refer to Midland Brick NZ website for sizes of bricks.
Laying pattern:	Stretcher bond
Pointing:	Raked

Components - general

4.5 SILLS

Brand / type:	cant brick
Colour:	client to select

4.6 COLOURING PIGMENTS

Manufacturer/supplier:	client to select
Colour:	client to select

Components - standard brick veneer

4.7 STEEL LINTELS

Material / type:	Galvanized mild steel / angle
Size:	60 mm x 60 mm

4.8 WALL TIES

Brand / type:	
Material:	Stainless steel
Exposure zone:	C

4.9 REINFORCEMENT

Brand / type:	
Material:	Stainless steel

4311M METALCRAFT PROFILED ROOFING

1 GENERAL

This section relates to the supply and fixing of **Metalcraft Roofing** profiled roofing complete with accessories.
It includes:

- Trough section roofing profiles
- Asymmetrical rib roofing profiles
- Corrugated roofing profile
- Translucent roofing

1.1 RELATED WORK

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

1.2 ABBREVIATIONS AND DEFINITIONS

The following abbreviations apply specifically to this section:

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

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture
NZBC G12/AS1	Water supplies
AS/NZS 1170.2:2011	Structural design actions - Wind actions
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
NZS 3604	Timber-framed buildings
ISO 9223	Corrosion of metals and alloys - Corrosivity of atmosphere - Classification determination and estimation
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Metalcraft Roofing Metdek400 product literature
Metalcraft Roofing Metdek500 product literature
Metalcraft Roofing Metdek855 product literature
Metalcraft Roofing Metrib750 product literature
Metalcraft Roofing Metrib760 product literature
Metalcraft Roofing MC700 product literature
Metalcraft Roofing MC770 product literature
Metalcraft Roofing MC760 product literature
Metalcraft Roofing T-Rib product literature
Metalcraft Roofing MC1000 product literature
Metalcraft Roofing Metcom7 product literature
Metalcraft Roofing Metcom930 product literature
Metalcraft Roofing Metcom965 product literature
Metalcraft Roofing Kahu® product literature
Metalcraft Roofing Corrugate product literature
Metalcraft Roofing Alsynite Topglass® product literature

Manufacturer/supplier contact details

Company:	**Metalcraft Roofing**
Web:	www.metalcraftgroup.co.nz
Email:	frances.charles@unitedindustries.co.nz
Telephone:	09 274 0408

Warranties

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:
5years for workmanship

- Provide this warranty on the material manufacturers standard warranty form.
- Commence the warranty from the date of practical completion of the contract works.

Include a copy of the Metalcraft Roofing maintenance requirements with the warranty.
Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 NO SUBSTITUTIONS

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

1.7 QUALIFICATIONS

Roof Installers shall be experienced, competent roofers familiar with Metalcraft products. And for Restricted Building Work shall also be, an LBP or supervised by an LBP.
Carry out work with experienced, competent installers familiar with the products being used and preferably with appropriate qualifications such as the National Certificate in Metal Roofing and Cladding.

Performance - wind

1.8 WIND - NON SPECIFIC DESIGN

Building wind zone:
M/0.85kPakPa ULS (refer to NZS 3604, table 5.4)
Refer to Metacraft for "Wind Load Span Design Graphs" for load parameters.

1.9 FIXINGS, WIND

Design and use the fixings/fixing pattern appropriate for the wind design parameters and NZMRM CoP NZ. Refer to Metalcraft profiled roofing product literature for profile details. Allow for specific loadings at corners and the periphery of the roof, where localised pressure factors apply. Fixing pattern to also take into account fixing method and purlin spacings.

Performance - General

1.10 PERFORMANCE

Install roofing materials in accordance with the NZMRM CoP, and Metalcraft profiled roofing product literature, to form a weather-tight performance for the completed roofing system, including all penetrations through the roof and junctions with walls and parapets.

1.11 SPREAD OF FIRE

To NZBC C/AS1, 5.4 **External surface finishes**, NZBC C/AS2, 5.8 **External cladding systems** or NZBC C/VM2.

1.12 DRINKING WATER

Roofing for collecting potable water to NZBC G12/AS1.

1.13 CO-ORDINATE

Co-ordinate to ensure substrate and preparatory work is complete and other work programmed in the order required for access and completion of the roof. Ensure that all necessary members are positioned so that flashings can be fastened at both edges through the roof profile or cladding to the primary structure.

2 PRODUCTS

Materials

2.1 PRE-FINISHED HOT-DIPPED ALUMINIUM/ZINC COATED STEEL

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 E2/AS1 and/or the NZMRM CoP and Metalcraft profiled roofing product literature.
For fixing patterns refer to Metalcraft product literature for roofing profile.

2.3 FIXING SCREWS

To AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by Metalcraft and with a Class 4 or 5 durability and not less than the material being fixed. Screws into timber to penetrate by minimum 30mm. Screw fasteners to be head stamped identifying the manufacturer and class. Refer to SELECTIONS.

2.4 RIVETS

Sealed aluminium, minimum diameter 4.0mm. Refer to Metalcraft for requirements..

2.5 FLASHINGS GENERALLY

To NZBC E2/AS1, 4.0, **Flashings**.
Formable grade 0.55 BMT for galvanized, aluminium/zinc, aluminium/zinc/magnesium - coated and pre-painted steel and 0.90 BMT 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.

Components

2.6 FLASHINGS TO VERGE, RIDGE AND HIP

To NZBC E2/AS1, 4.0, Flashings.
Supplied by the roofing manufacturer to match or to suit the roofing.

2.7 BOOT FLASHINGS

Generally to E2/AS1, 8.4.17 **Roof penetrations** (note; E2/AS1, Figure.54 **Soaker flashing for pipe penetration**, has an error, use as guide only).
EPDM proprietary pipe flashing laid on 45º 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.

Accessories

2.8 WIRE NETTING AND SAFETY MESH

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.9 UNDERLAY AND REFLECTIVE FOIL

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.10 SEALANT

Neutral curing silicone or polymer sealant as required by Metalcraft and used as directed.

2.11 CLOSURE STRIPS

Polyurethane profiled closed cell foam strips to fit the sheet profile.

Brand:	Ecofoam
Profile:	To suit selected cladding profile

3 EXECUTION

Conditions

3.1 INSPECTION

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.

3.2 FRAMING TIMBER MOISTURE

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

3.3 STORAGE

Upon delivery visually inspect sheets for damage and accept packs of undamaged roofing. Reject all damaged material. Store on a level firm base clear of the ground, with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets. If sheet packs become wet, fillet or cross stack to allow air circulation and drying between sheets.

3.4 HANDLING

Do not drag sheets across each other or other materials. Avoid distortion and contact with damaging substances, including cement. Long lengths of roofing should be lifted onto the roof using an approved load spreading beam. Protect edges and surface finishes from damage, keep under cover and remove as the product is being installed. Use soft, flat sole shoes when fixing and for all other work on the roof. Walk along the purlin line whenever possible.

3.5 SEPARATION

Isolate dissimilar materials (metals and non-metals) in close proximity as necessary by painting the surfaces or fitting separator strips of compatible materials. Place isolators between metals and treated timber and cement based materials. Do not use lead sheet or copper in contact with or allow water run-off onto galvanized or aluminium/zinc coated steel.

Application

3.6 FIX INSULATION

Refer to thermal insulation sections.

3.7 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.

3.8 END LAPS

End laps are not recommended, except where specifically detailed.

3.9 THERMAL MOVEMENT

Fix for Thermal Movement to Metalcraft requirements for thermal movement.

3.10 FIXING GENERALLY

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

3.11 MARKING AND CUTTING

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

3.12 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.

3.13 INSTALL FLASHINGS

Flash roof to parapets, walls and penetrations to detail. Flashings to be installed on timber framing with moisture content of less than 20%. Where no detail is provided flash to NZMRM CoP recommendations and Metalcraft and NZBC E2/AS1 requirements. Cut accurately and fix using sealant and rivets to detail and to Metalcraft requirements to form a weatherproof cover. For visible flashings, plan joints/junction to take account of the aesthetic requirements.

3.14 USE OF SEALANTS

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

3.15 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

3.16 REPLACE

Replace damaged or marked elements. Do not attempt to repair coatings by applying colour match paint to pre-finished surfaces.

3.17 LEAVE

Leave this work complete with all necessary flashings, undercloaks, valleys, ridges and hips all properly installed as the work proceeds so the finished roof is completely weathertight.

3.18 REMOVE

Remove all trade rubbish, swarf and unused materials from the roof and surrounds daily during the work. Sweep down at the end of each day, and clean out spouting, gutters and rainwater pipes on completion of the roof. Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

Coating system

4.1 COATING SYSTEM - EXPOSURE ZONE B-C (CAT 1-3)

Project Exposure Zone B-C to NZS 3604, C 1-3 to ISO 9223.

Profile/location:	refer to plans
Base material:	Zincalume® on steel
Coating system:	Colorsteel Endura
Paint colour:	Client to select

Roofing - asymmetrical rib profile

4.2 METALCRAFT - MC760 ASYMMETRICAL RIB PROFILE ROOFING

Location:	refer to plans
Manufacturer:	Metalcraft Roofing
Profile:	MC760
Dimensions:	Sheet width 810mm, cover 760mm, rib height 29mm, and roll formed to any length
Roof pitch:	3, 5 and 10 degrees
BMT/material:	0.40mm Steel
Purlin material:	Timber
Fixings:	Class 4 12G x 65mm or 14G x 75mm with load spreading washer

Accessories

4.3 FLASHINGS - GENERALLY

Profile:	refer to plans
BMT/material:	0.55mm Steel
Coating system:	To match roofing
Paint colour:	To match roofing

4521AR APL RESIDENTIAL ALUMINIUM WINDOWS & DOORS

1 GENERAL

This section relates to the fabrication, supply and installation of **APL Window Solutions** residential window and door systems manufactured by either **Altherm**, **First** or **Vantage**.
It includes:

- APL Residential aluminium windows and doors
- APL Metro Series aluminium windows and doors
- APL Architectural Series aluminium windows and doors
- APL Metro Thermal Heart aluminium windows and doors
- APL Smartwood composite aluminium / timber windows and doors
- APL Roof windows and overhead glazing
- APL Ventient trickle ventilators
- APL Balustrading
- Hardware and furniture
- Flashings and sealants

1.1 ABBREVIATIONS AND TERMS

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

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture
NZBC F4/AS1	Safety from falling
NZBC G4/AS1	Ventilation
NZBC H1/VM1	Energy efficiency
NZBC H1/AS1	Energy efficiency
AS/NZS 1170.2:2011	Structural design actions - Wind actions
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 sheet, coiled sheet and plate
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
NZS 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4303	Ventilation for acceptable indoor air quality
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
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 2604.05	Performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels
AAMA 2605	Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminium extrusions and panels
BS 3900	Methods of tests for paints, Part C5: Determination of film thickness
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 Amendment 7
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)

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Altherm Specifier's Guide
First Specifier's Guide
Vantage Specifier's Guide
Vantage Guide to Fluoroset FP - Selling, Fabricating, Handling, Care and Maintenance
APL Guide to specifying powders and issuing/applying for warranties
APL Window Energy Efficiency Rating System (WEERS) Report Series

Manufacturer/supplier contact details

Company:	**APL Window Solutions**
Web:	www.altherm.co.nz www.firstwindows.co.nz www.vantage.co.nz www.aplnz.co.nz
Email:	specifiersguide@aplnz.co.nz
Telephone::	07 849 2113

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years:	For fabrication
2 years:	For hardware

- 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:

5 years:	For installation

- 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 NO SUBSTITUTIONS

Substitutions are not permitted to any specified APL aluminium system, or associated components and products.

1.7 QUALIFICATIONS

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

1.8 COMPLIANCE

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

1.9 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

1.10 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.

1.11 STRUCTURAL/WEATHER-TIGHTNESS

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

Performance - Wind (design by contractor)

1.12 DESIGN PARAMETERS - NON SPECIFIC DESIGN

Design the installation to the wind zone parameters of NZS 3604, table 5.1.
Refer to SELECTIONS for wind zone.

Finishes

1.13 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/NZ 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

2.1 WINDOWS

Refer to SELECTIONS for type and finish.

2.2 DOORS

Refer to SELECTIONS for type and finish.

Materials

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.

Reveals

2.7 REVEALS - TIMBER PAINTED

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

Flashings

2.8 FLASHINGS GENERALLY

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

Components for installation - cavity systems

2.9 STANDARD CAVITY CLOSER

A 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, and support bar location bracket, 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.

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**.

2.14 FIXING BRACKETS

Designed by manufacturer to specific design.

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.

Accessories

Finishes

2.16 DURALLOY POWDER COATED ALUMINIUM

Polyester powder organic coating in accordance with WGANZ PQAS 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

Store windows and doors on site in a clean and dry environment in such a manner as to prevent damage to prefinished surfaces. Stack the units in a vertical position resting on their sills, with layers interleaved between to prevent rubbing. Keep paper and cardboard wrappings dry.

3.5 PROPRIETARY ELEMENTS

Fix in accordance with the window manufacturer's requirements.

3.6 PROTECTIVE COVERINGS

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

3.7 ADDITIONAL PROTECTION

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

Conditions - fixings and fastenings

3.8 SUPPLY OF FIXINGS

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

3.9 INSTALLATION FIXING

To NZBC E2/AS1, 9.1.10.8, **Attachments for windows and doors**. Fix windows/doors through reveal to frame with a pair of 75 x 3.15mm minimum galvanised jolt head nails or a pair of 8 gauge x 65mm minimum stainless steel screws. Fix at a maximum of 450 centres along all reveals and a maximum of 150mm from reveal ends. Ensure fixings do not penetrate metal flashings. Install packers between reveals and framing at fixing points, except at the head.

Assembly

3.10 FABRICATION

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

3.11 TIMBER / PVC REVEALS

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

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 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.

3.15 EXPOSED FIXINGS AND FASTENINGS

Ensure fixings and fastenings exposed to the weather are of aluminium, or Type 304 stainless steel.

3.16 PROTECTED FIXINGS AND FASTENINGS

Fixings and fastenings not exposed to the weather may be hot-dip galvanized steel with a coating weight of 610 g/m² complying with AS/NZS 4680.

3.17 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.

3.18 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 cladding underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames to NZBC E2/AS1:9.1.5 **Wall underlays to wall openings.**
- Full height 20mm jamb battens to NZBC E2/AS1 figure 72A (direct fix only)
- claddings neatly finished off to all sides of openings
- installation of flashings (those which are required to be installed prior to frames).
- application of waterproof sealer to all door and window sills in concrete floor or concrete sill situations. To door sills only, apply a suitable membrane over the sealer
- all in accordance with the shop drawings, where applicable.

3.19 INSTALLATION

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

3.20 INSTALLATION CAVITY CONSTRUCTION

Install to WGANZ Window Installation Guide details and drawings including WGANZ sill support bars.
For thresholds with support bars fixed through membranes, pre-fill support bar screw holes with silicone sealant to NZBC E2/AS1, figure 62(d).

3.21 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 plus any jamb scriber width at each end.

3.22 COMPLETE AIR SEAL

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

3.23 FIX HARDWARE

Fix all sash and door hardware and furniture as scheduled.

Application - jointing and sealing

3.24 SEAL FRAMES ON SITE

Seal frames to each other and to adjoining structure and finishes, all as required by the window and sealant 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.

3.25 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.

3.26 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.

3.27 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.

Cleaning

3.28 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.

3.29 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

3.30 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.
Anodised finishes should be protected from cement products and require immediate clean-up of cement splashes. Only use tapes that have passed WGANZ testing on powder coated products. Remove protection on completion.

3.31 REPLACE

Replace damaged, cracked or marked elements.

3.32 PROTECTION

Protect finishes against damage from adjacent and following work.

3.33 IN-SITU TOUCH-UP TO POWDER COATED ALUMINIUM

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

3.34 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.

4 SELECTIONS

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

4.1 SUPPLY AND INSTALLATION

Supply and installation of the specified APL aluminium joinery.

Supply:	By fabricator
Installation:	By main contractor

Performance

4.2 THERMAL PERFORMANCE

R-value:	R0.31 (as determined from NZBC H1/VM1 or H1/AS1)

Performance - Wind (design by contractor)

4.3 DESIGN PARAMETERS - NON SPECIFIC DESIGN

Building wind zone	M (refer to NZS 3604, table 5.1)

Finishes - Powder Coating

4.4 DURALLOY - POWDER COATING FINISH

Type:	Polyester organic powder coating
System integrity:	Minimum 10 years film integrity, 10 years colour integrity
Colour:	refer to window manufacturer's literature
Finish:	check available finishes with manufacturer.

Glazing

4.5 GLASS

Type/thickness:	Refer to glazing section/s for type and thickness.

Hardware

4.6 HARDWARE FINISH

Finish:	Powder coat
Colour:	Black

Flashings and Sealant

4.7 FLASHINGS

Material/type:	
Pattern:	Formed to suit details provided

4.8 WEATHERING SEALANT

Type:	1-part polyurethane moisture curing, elastic joint sealant
Colour:	

Reveals

4.9 TIMBER JAMB REVEALS

Timber species:	Radiata pine
Grade/treatment:	H3.1
Thickness:	
Reveals:	
Finish:	

Window and door system - METRO SERIES

4.10 APL METRO SERIES AWNING WINDOW

Brand:	Metro Series
Window No.:	refer to plans.
Fasteners:	Urbo Helix

4.11 APL METRO SERIES CASEMENT WINDOW

Brand:	Metro Series
Window No.:	refer to plans.
Fasteners:	Urbo Helix

4.12 APL METRO SERIES SLIDING DOOR

Brand:	Metro Series
Door No.:	refer to plans.

4.13 APL METRO SERIES AWNING HINGED DOOR

Brand:	Metro Series
Door No.:	refer to plans.

4554VS VELUX OPENING & FIXED SKYLIGHTS

1 GENERAL

This section relates to the manufacture, supply, and installation of VELUX opening and fixed skylights and roof windows:
It includes;

- operating systems
- accessories
- proprietary flashings

Documents

1.1 DOCUMENTS

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

NZBC E2/AS1	External moisture
AS/NZS 2208	Safety glazing materials in buildings
NZS 3604	Timber-framed buildings
NZS 4223.4	Code of practice for glazing in buildings - Wind, dead, snow and live actions

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Current Sales Brochure and product datasheets
Installation instructions for GGU Roof Window and Flashing
Installation instructions for VS/VSE/VSS Skylight
Installation instructions for FS Skylight
Installation instructions for VCM curb mounted Skylight
Installation instructions for VCS curb mounted Skylight
Installation instructions for FCM curb mounted Skylight
Installation instructions for EDW flashing
Installation instructions for EDL flashing
Installation instructions for EKW flashing
Custom flashing guide (over 15º pitch)
BRANZ Appraisal 968 - Velux Skylights
BRANZ Appraisal 969 - Velux Roof Windows
BRANZ CodeMark Certificate CM 1008 - Velux Skylights and flashings Revision Date: 15 May 2023
BRANZ CodeMark Certificate CM 1009 - Velux Roof Windows and flashings Revision Date: 15 May 2023

Manufacturer/supplier contact details

Company:	**VELUX New Zealand Limited**
Web:	www.velux.co.nz
Email:	info@velux.co.nz
Telephone:	0800 650 445

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years:	For VELUX Skylights, Roof Windows, insulated glazing units and flashings
1 year:	For VELUX accessories (motorised units, controls, rods, blinds, insect screens)

- 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.

1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:
For installation of VELUX Skylights

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 QUALIFICATIONS

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

1.6 NO SUBSTITUTIONS

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

Performance

1.7 PERFORMANCE, WIND, DEAD, SNOW, AND LIVE ACTIONS

The design wind pressures and snow loads to NZS 3604. Live loads and glazing design, for glass or equivalent plastics, to NZS 4223.4.

2 PRODUCTS

Skylights

2.1 LOW PITCH SKYLIGHTS

VELUX Low Pitch Skylights; to BRANZ CodeMark CM 1008, either top hinged with INTEGRA motorised control solar opening VCS, or manual opening VCM, or fixed FCM skylight.
For roof pitches between 0° to 15º (and can be installed in roofs up to 60° pitch).
Manufactured from white uPVC internal frame and sash with extruded gaskets. External cappings manufactured from aluminium profile with PVDF coating in grey finish. Refer to SELECTIONS for type, finish and accessories.

Components

2.2 FIXINGS

VELUX proprietary fixings and brackets compatible with the skylight/roof window.

2.3 GLAZING - ALL SKYLIGHTS

VELUX proprietary insulated double-glazing unit, factory fitted. Unit comprises an inner pane of laminated glass, and outer pane of toughened safety glass with NEAT™ photo-catalytic coating to exterior face. Inside face of outer pane coated with Low-E³ coating. Cavity filled with Argon gas.

2.4 GLAZING - ROOF WINDOWS

VELUX proprietary insulated double-glazing unit, factory fitted. Unit comprises an inner pane of laminated glass, and outer pane of toughened safety glass with NEAT™ photo-catalytic coating to exterior face. Inside face of outer pane coated with Low-E³ coating. Cavity filled with Argon gas.

2.5 HARDWARE

Fasteners, stays, locks, vents and other hardware as supplied with the unit.

2.6 FLASHINGS FOR MODELS FCM/VCM/VCS

For flat / low roof pitches between 0º to 15º (and up to 60º).
Custom flashings are required in accordance with NZBC E2/AS1. Refer to section 4821 FLASHINGS for details.

2.7 FLASHINGS FOR MEMBRANE AND METAL TROUGH SECTION ROOFS

Custom flashings in accordance with NZBC E2/AS1 are required when skylights or roof windows are installed in membrane or concealed fixed metal roofing, Refer to section 4821 FLASHINGS for details.

Finishes

2.8 FINISH

VELUX proprietary finishes.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE AND HANDLING

Avoid distortion of elements during transit, handling and storage. Deliver in original containers, dry, undamaged with seals and labels intact. Prevent pre-finished surfaces from rubbing together. Prevent contact with mud, plaster and cement. Do not deliver to site any elements which cannot be immediately unloaded into suitable conditions of storage.

3.2 PRE-INSTALLATION REQUIREMENTS

Site measure during roof framing stage to ensure the VELUX proprietary Skylight / Roof Window and flashings can be installed correctly and in accordance with the installation instructions. Where a unit is installed adjacent to another unit confirm the set out distance between units in accordance with the installation instructions.

Refer to VELUX at www.velux.co.nz for installation details.

3.3 EXECUTION GENERALLY

Check that the preparation of the opening is to NZBC E2/AS1, 8.4.17, Roof penetrations.

3.4 HARDWARE GENERALLY

Factory fit all required and scheduled hardware.

3.5 RETAIN PROTECTIVE COVERINGS

Retain protective coverings and coatings in place during fixing wherever possible. Provide additional protection to prevent marking of surfaces visible in the completed work. Remove protection on completion.

Installation

3.6 GENERALLY

Check that the trimmed openings are formed and constructed to suit the required units. Do not proceed until roof and structural openings are properly formed.

3.7 INSTALL UNITS

Install and fix the Skylight or Roof Window strictly in accordance with the manufacturer's installation instructions, CodeMark BRANZ CM 1008 and Technical Manual - Velux Skylights and CodeMark BRANZ CM 1009 and Technical Manual - Velux Roof Windows.

Repack any thermal insulation around rough openings where disturbed by the installation to maintain continuity of thermal barriers.
When using VELUX flashings (EDW, EDL, EKW) with VELUX Skylights and Roof Windows, install as detailed by VELUX to make the installation completely weatherproof. Refer to VELUX at www.velux.co.nz for installation instructions.
If using custom flashings, ensure curb/upstand height and flashing meet NZBC E2/AS1 upstand height and flashing requirements. Contact VELUX for additional information.

3.8 ACCESSORIES AND OPERATING SYSTEMS

Install selected VELUX accessories and hardware and complete all operating systems.

Completion

3.9 CLEAN FRAMES AND GLAZING

On completion clean down both sides of unit frames, using the methods required by the manufacturer. Remove any manufacturer's stickers and clean glass. Ensure all installed units are adequately protected from damage and adverse weather during construction.

3.10 CONFIRM

Confirm the proper operation of hardware and operating systems on completion of the installation and again at completion of the contract works.

4 SELECTIONS

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

Low pitch skylights

4.1 VELUX FCM LOW PITCH SKYLIGHT - FIXED

Location:	Refer plans
Brand:	VELUX
Model:	FCM Low Pitch Fixed
Type/size:	Refer plans
Glazing:	VELUX proprietary insulated double-glazing unit, pre-installed. Comprises an inner pane of laminated glass, and an outer pane of toughened safety glass which has a self-cleaning NEAT™ coating to the exterior face, and a Low-E³ coating to the interior face. Cavity filled with Argon gas.
Colour:	client to select
Roof type/pitch:	Refer plans
Flashing:	Custom flashing
Accessories:	
R-value:	R0.44

Components

4.2 CUSTOM FLASHINGS

Type:	Custom flashings to meet the requirements of NZBC E2/AS1. Refer to Section 4821 FLASHINGS for details. Contact VELUX for additional trim-out information.

4711P PINK® BATTS® & BIB INSULATION

1 GENERAL

This section relates to Tasman Insulation **Pink® Batts®** insulation materials installed, laid, hung or fitted as thermal insulation:
It includes:

- **Pink® Batts® Wall Insulation** (**Pink® Batts® Classic** and **Pink® Batts® Ultra®)**
- **Pink® Batts® Ceiling Insulation** (**Pink® Batts® Classic** and **Pink® Batts® Ultra®)**
- **Pink® Batts® SnugFloor® Underfloor Insulation**
- **Pink® Batts® Masonry Wall Insulation**
- **Pink® Batts® 140mm Wall Insulation**
- **Pink® Batts® Steel Wall Insulation**
- **Pink® Batts® Narrow Wall Insulation**
- **Pink® Batts® Skillion Roof Insulation**
- **Pink® Batts® Building Insulation Blanket** (BIB)

1.1 RELATED WORK

Refer to 4721P PINK® BATTS® SILENCER® ACOUSTIC INSULATION for acoustic insulation.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BIB	Building Insulation Blanket

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-AS2	Protection from fire
NZBC H1/AS1	Energy efficiency, 2.0 Building thermal envelope
NZS/AS 1530.1	Methods for fire tests on building materials, components and structures - Combustibility test for materials
AS/NZS 3000	Electrical installations (Known as the Australian/New Zealand Wiring Rules)
NZS 4218	Thermal insulation - Housing and small buildings
NZS 4220	Code of practice for energy conservation in non-residential buildings
NZS 4243.1	Energy efficiency - Large buildings - Building thermal envelope
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:
Tasman Insulation New Zealand: Product Data Sheets and installation Instructions
BRANZ Appraisal 238 - Pink® Batts® Insulation
BRANZ Appraisal 632 - Pink® Batts® SnugFloor® Underfloor Insulation
BRANZ Appraisal 767 - Pink® Batts® Skillion Roof Insulation

Manufacturer/supplier contact details

Company:	**Tasman Insulation New Zealand**
Web:	www.pinkbatts.co.nz
Telephone:	0800 746 522

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

Lifetime Warranty	For **Pink® Batts®** insulation products

- Provide this Warranty on the **Pink® Batts® Lifetime Warranty Certificate** 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 GENERAL

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.
Installers to be **PinkFit® - Preferred Pink® Batts® installers**. A list of approved installers can be obtained from the web, by telephone or from the local building supplies merchant.
Web: www.pinkbatts.co.nz
Telephone: Freephone 0800 746 534

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Tasman Insulation **Pink® Batts®** insulation or associated products, components or accessories.

Performance - combustibility

1.8 FIRE PREVENTION

Pink® Batts® insulation materials are considered a non-combustible material to NZS/AS 1530.1 and need not be separated from heat sources such as fire places, heating appliances, flues and chimneys to NZBC C/AS1 to C/AS2, except if used in conjunction with or attached to other heat sensitive materials.

2 PRODUCTS

Materials

2.1 PINK® BATTS® CEILING INSULATION

Pink® Batts® Ceiling Insulation (**Pink® Batts® Classic** and **Pink® Batts® Ultra®**) is a light weight flexible bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular slabs. Refer to SELECTIONS for R-values and thickness options.
NOTE: When insulation abutting or covering recessed downlights is intended to be in contact with IC, CA 80, CA 135 luminaires the insulation must withstand a 30s Needle Flame test to AS/NZS 60695.11.5. Pink® Batts® insulation meets this requirement.

2.2 PINK® BATTS® WALL INSULATION

Pink® Batts® Wall Insulation (**Pink® Batts® Classic** and **Pink® Batts® Ultra®**) is a light weight flexible bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular slabs. Refer to SELECTIONS for R-values and thickness options.

2.3 PINK® BATTS® SKILLION ROOF INSULATION

Pink® Batts® Skillion Roof Insulation is bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular slabs. Refer to SELECTIONS for R-values and thickness options.
NOTE: When insulation abutting or covering recessed downlights is intended to be in contact with IC, CA 80, CA 135 luminaires the insulation must withstand a 30s Needle Flame test to AS/NZS 60695.11.5. Pink® Batts® insulation meets this requirement.

Components

2.4 FASTENERS

Insulation anchors complete with retaining washer.

2.5 WIRE NETTING

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

2.6 PLASTIC STRAPPING TAPES

Proprietary plastic strapping tape, stapled over framing to retain insulation in unlined wall, ceiling and underfloor locations.
For drained cavities where stud spaces are greater than 450mm and only flexible underlay is used, strapping required to NZBC E2/AS1 9.1.8.5 **Wall framing behind cavities**.

2.7 ADHESIVE TAPE

Pressure sensitive adhesive 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 HANDLING

Wear protective clothing as necessary and when handling, avoid delamination or distortion of the rectangular form. Maintain full thickness unless compression is an installation system requirement.

3.4 INSPECTION

Before starting installation of **Pink® Batts® Insulation** blankets and slabs, check that the location and framing are free from moisture, that the cavities are not interconnected and that mesh, wall underlays and vapour barriers are in place.

Application

3.5 INSTALL INSULATION - GENERAL

Lay, install, fit and fix to NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope, and to manufacturer's requirements. Install in housing to NZS 4218 and NZS 4246. Install in large buildings to NZS 4243.1 and NZS 4220. Allow insulation to re-loft/relax prior to installation. Do not cover vents. Confirm with fireplace manufacturer for clearances; **Pink® Batts®** insulation need not be separated except if used in conjunction with, or attached to other heat sensitive materials. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath.

3.6 RECESSED LIGHT FITTINGS - RESIDENTIAL

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

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

Refer to clause INSULATION CLEARANCES GENERALLY for clearances.

3.7 INSULATION CLEARANCES GENERALLY

Insulation may need to have a gap to some mechanical and electrical services and equipment, including ducts and chimneys.
The gaps should be to the NZS 4246 based tables below or to the equipment manufacturers requirements if they require larger gaps.

Smaller gaps to manufacturers requirements can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings).
Installed gap not to be more than 50mm bigger than the required gap.

The following tables are subject to:

- The requirements of NZS 4246.
- The insulation is exposed to the source of heat or equipment etc.
- Insulation, has passed the needle flame test to AS/NZS 60695.11.5 and/or is non-combustible.
- Gaps to hot surfaces may have to be increased with non-compliant insulation and plastic/
- Loose fill insulation will require fixed barriers to NZS 4246 to maintain gaps.

(secure loose pieces).

- "Secure insulation" if required means, glue, mechanical fix, or provide fixed barriers at gap edge of insulation to hold in place. Rigid or semi rigid insulation may only need a firm friction fit

equipment manufacturer.

- Gaps to hot surfaces may be able to be reduced with non-combustible insulation, check with polymeric type insulation (EPS, XPS, PIR, etc), check with insulation manufacturer.

LIGHT FITTINGS

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

3.8 CHECK FOILS

Ensure foils are dry, clean, bright, undamaged and free of debris before installing insulation.

3.9 CHECK WALL AND ROOF UNDERLAYS

Ensure foils are dry, clean, bright, undamaged and free of debris before installing insulation.

3.10 CHECK VAPOUR BARRIERS

Ensure vapour barriers form a homogeneous sheet vapour barrier before installing insulation.

3.11 INSTALL PINK® BATTS® CEILING INSULATION

Ensure that the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5-10mm to ensure a friction fit. Insulate around vents (not over them) to allow unhindered ventilation.

Fit **Pink® Batts® Ceiling Insulation** beneath electrical wiring and plumbing. Install to the outer edge of the top plate. Maintain a 25mm gap clearance between the **Pink® Batts®** insulation and roof underlay. Refer to NZS 4246 for installation guidelines and Pink® Batts® installation instructions for detailed information.

3.12 INSTALL PINK® BATTS® WALL INSULATION

Ensure the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5-10mm to ensure a friction fit. Fill gaps around windows and doors with off-cuts. Insulate around vents (not over them) to allow unhindered ventilation.

Fit **Pink® Batts® Wall Insulation** behind electrical wiring and plumbing. Ensure there are no gaps, folds or undesirable compression at edges.

Refer to NZS 4246 for installation guidelines and **Pink® Batts®** installation instructions for detailed information.

3.13 FIT PINK® BATTS® SKILLION ROOF INSULATION

Ensure that the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5mm-10mm to ensure a friction fit.

3.14 LAY WIRE NETTING - UNDER JOISTS / PURLINS

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

3.15 LAY WIRE NETTING - OVER PURLINS

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

3.16 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.

Completion

3.17 COMPLETION MATTERS

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

4 SELECTIONS

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

Thermal insulation

4.1 PINK® BATTS® CLASSIC CEILING INSULATION

Location:	refer to plans
Brand:	**Pink® Batts® Classic Ceiling**
R value:	R1.8
Thickness:	95mm

4.2 PINK® BATTS® ULTRA® WALL INSULATION

Location:	refer to plans
Brand:	**Pink® Batts® Ultra® Wall**
R value:	R2.8
Thickness:	90mm

4.3 PINK® BATTS® SKILLION ROOF INSULATION

Location:	refer to plans
Brand:	**Pink® Batts® Skillion Roof**
R-value:	R3.2
Thickness:	115mm

4721P PINK® BATTS® SILENCER® ACOUSTIC INSULATION

1 GENERAL

This section relates to Tasman Insulation **Pink® Batts®** insulation materials installed, laid, hung or fitted as acoustic insulation.
It includes:

- **Pink® Batts® Silencer®**
- **Pink® Batts® Silencer® Midfloor**
- **Pink® Batts® Noise Control Blanket**

1.1 RELATED WORK

Refer to 4711P PINK® BATTS® AND BIB INSULATION for thermal insulation.

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:

STC	Sound Transmission Class
NRC	Noise Reduction Coefficient
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 C/AS1-AS2	Protection from fire
NZBC G6/VM1	Airborne and impact sound
NZS/AS 1530.1	Methods for fire tests on building materials, components and structures - Combustibility test for materials
AS/NZS 3000	Electrical installations (Known as the Australian/New Zealand Wiring Rules)
NZS 4218	Thermal insulation - Housing and small buildings
NZS 4220	Code of practice for energy conservation in non-residential buildings
NZS 4243.1	Energy efficiency - Large buildings - Building thermal envelope
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance

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

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:
Tasman Insulation New Zealand: Product Data Sheets

Manufacturer/supplier contact details

Company:	**Tasman Insulation New Zealand**
Web:	www.pinkbatts.co.nz
Telephone:	0800 746 522

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

Lifetime Warranty	For **Pink® Batts®** insulation products

- Provide this Warranty on the **Pink® Batts® Lifetime Warranty Certificate** 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 GENERAL

Installers to be **PinkFit® - Preferred Pink® Batts® installers**. A list of approved installers can be obtained from the web, by telephone or from the local building supplies merchant.

Web: www.pinkbatts.co.nz
Telephone: Freephone 0800 746 534

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Tasman Insulation **Pink® Batts® Silencer®** acoustic insulation or associated products, components or accessories.

Performance

1.8 SOUND RATING REQUIREMENTS

Provide sound rated wall, floor and ceiling systems as scheduled.

1.9 CERTIFICATES, SOUND CONTROL

Provide certificates and other evidence that the sound rated wall system offered will comply with the standards of performance specified.

Performance - combustibility

1.10 FIRE PREVENTION

Pink® Batts® insulation materials are considered a non-combustible material to NZS/AS 1530.1 and need not be separated from heat sources such as fire places, heating appliances, flues and chimneys to NZBC C/AS1 to C/AS2, except if used in conjunction with, or attached to other heat sensitive materials.

2 PRODUCTS

Materials

2.1 PINK® BATTS® SILENCER® MIDFLOOR

Pink® Batts® Silencer® Midfloor bio-soluble glass wool manufactured from up to 80% recycled glass and coloured grey for identification.
NOTE: When insulation abutting or covering recessed downlights is intended to be in contact with IC, CA 80, CA 135 luminaires the insulation must withstand a 30s Needle Flame test to AS/NZS 60695.11.5. Pink® Batts® ceiling insulation meets this requirement.

Components

2.2 FASTENERS

Insul anchors complete with retaining washer.

2.3 WIRE NETTING

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

2.4 PLASTIC STRAPPING TAPES

Proprietary plastic strapping tape, stapled over framing to retain insulation in unlined wall, ceiling and underfloor locations.
For drained cavities where stud spaces are greater than 450mm and only flexible underlay is used, strapping required to NZBC E2/AS1 9.1.8.5 **Wall framing behind cavities**.

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 HANDLING

Wear protective clothing as necessary and when handling, avoid delamination or distortion of the rectangular form. Maintain full thickness unless compression is an installation system requirement.

3.4 INSPECTION

Before starting installation of panels, check that the location and framing are free from moisture, that the cavities are not interconnected and that any required mesh, films or papers are in place.

Application

3.5 INSTALL INSULATION - GENERAL

Lay, install, fit and fix to NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope, and to manufacturer's requirements. Install in housing to NZS 4218 and NZS 4246. Install in large buildings to NZS 4243.1 and NZS 4220. Allow insulation to re-loft/relax prior to installation. Do not cover vents. Confirm with fireplace manufacturer for clearances;**Pink® Batts®** insulation need not be separated except if used in conjunction with, or attached to other heat sensitive materials. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath.

3.6 RECESSED LIGHT FITTINGS - RESIDENTIAL

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

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

Refer to clause INSULATION CLEARANCES GENERALLY for clearances.

3.7 INSULATION CLEARANCES GENERALLY

Insulation may need to have a gap to some mechanical and electrical services and equipment, including ducts and chimneys.
The gaps should be to the NZS 4246 based tables below or to the equipment manufacturers requirements if they require larger gaps. Smaller gaps to manufacturers requirements can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings).
Installed gap not to be more than 50mm bigger than the required gap.

The following tables are subject to:

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

LIGHT FITTINGS

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

3.8 INSTALL PINK® BATTS® SILENCER® MIDFLOOR

Ensure that the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5-10mm to ensure a friction fit to completely fill the whole of the cavities. Fit **Pink® Batts®** insulation beneath electrical wiring and plumbing. Adhere to the clearances as per product datasheet for recessed light fittings. Refer to NZS 4246 for installation guidelines and **Pink® Batts®**installation instructions for detailed information.

Components - installation

3.9 LAY WIRE NETTING - UNDER JOISTS / PURLINS

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

3.10 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.

Completion

3.11 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.

4.1 PINK® BATTS® SILENCER® MIDFLOOR

Location:	Midfloor R3.6
Brand/type:	**Pink® Batts® Silencer® MidFloor**
System IIC:	32 50mm joist at 450mm, 20mm particle board, 10mm GIB® standard plasterboard , battens at 400 mm
Thickness:	150mm

5113G GIB® PLASTERBOARD LININGS

1 GENERAL

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

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

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

AWCINZ	Association of Wall and Ceiling Industries New Zealand

Documents

1.2 DOCUMENTS

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

NZBC C/AS2	Protection from fire
NZBC E2/AS1	External moisture
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
NZS 3604	Timber-framed buildings
AS/NZS 4600:2005	Cold-formed steel structures
ISO 5660.1	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 1: Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 2: Smoke production rate (dynamic measurement)
BRANZ Technical Paper P21	BRANZ Technical Paper P21: A wall bracing test and evaluation procedure (2010)
NASH	Residential and Low-Rise Steel Framing Part 1 2010 Design Criteria

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents which refer to work in this section:
GIB® Site Guide (September 2018)
GIB® Noise Control Systems (September 2017)
GIB® Fire Rated Systems (October 2018)
GIB® Wet Area Systems (April 2021)
GIB Toughline® Aqua (July 2018)
GIB Ezybrace® Systems (August 2016)
GIB Ezybrace® Bracing Design Software
GIB Ezybrace® Bracing Supplement Document (December 2016)
GIB Ezybrace® for Light Steel Frame Systems (March 2017)
GIBFix® Framing System (August 2016)
GIB Rondo® Metal Batten System (August 2012)
GIB-Cove®
GIB RocTape®
GIB® Goldline™ Platinum Tape-on Trims
GIB® UltraFlex high impact corner mould
GIB® Tough Systems (November 2014)
BRANZ Appraisal 289 GIB® Fire Rated Systems
BRANZ Appraisal 394 GIB® Noise Control Systems
BRANZ Appraisal 427 GIB® Wet Area Systems
BRANZ Appraisal 928 GIB EzyBrace® Systems
BRANZ Appraisal 940 GIB® Intertenancy Barrier Systems for Terrace Homes

GreenTag Certification WWL:G102:2021:GR - GreenTag™ GreenRate Level A for:
GIB® Standard (10mm & 13mm)
GIB Fyreline® (10mm, 13mm, 16mm & 19mm)
GIB Braceline® (10mm & 13mm)
GIB Noiseline® (10mm & 13mm)
GIB Toughline® (13mm)
GIB Wideline® (10mm & 13mm)

GreenTag Certification WWL:G103:2021:GR - GreenTag™ GreenRate Level C for:
GIB Ultraline® (10mm & 13mm)

Manufacturer/supplier contact details

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

Requirements

1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

1.5 INSTALLER WORK SKILLS AND QUALIFICATIONS

GIB® plasterboard fixers and plasterers to be experienced competent workers, familiar with GIB® plasterboard lining systems installation and finishing techniques. Submit evidence of experience on request. For example:

- National Certificate of Interior Systems; or
- Certified Business member of AWCINZ.

Performance

1.6 INSPECTIONS AND ACCEPTANCE

Allow for inspection of the finished plasterboard surface:

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

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

1.7 FIRE RATING REQUIREMENTS

Provide the GIB® fire resistant rated garage boundary wall systems. Refer to SELECTIONS for system/FRR.

2 PRODUCTS

Materials

2.1 GIB® PLASTERBOARD

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

Components

2.2 SCREWS

GIB® Grabber® drywall type screws as follows:

Grabber® type	Used for fixing:
High Thread	GIB Ezybrace® or Standard systems to timber
Self Tapping	Standard systems to light gauge steel or timber
Dual Thread Screws	GIBFix®, GIB Ezybrace®, or Standard systems, to light gauge steel or timber
Wafer Head Needle Tip	Light gauge metal to timber not directly under plasterboard
Pancake Head Drill Tip	Light gauge metal to light gauge metal directly under plasterboard

Refer to GIB® requirements for appropriate details.

2.3 TAPE ON TRIMS AND EDGES

GIB® Goldline™ tape-on trims
GIB® UltraFlex® high impact corner mould
GIB® Levelline® Tape on Trim

2.4 METAL ANGLE TRIMS

GIB® galvanized steel slim angle trims.

2.5 CONTROL JOINTS

GIB® Rondo® P35 control joints.
GIB® Goldline™ tape-on trims
GIB® plastic W-profile control joints.

Accessories

2.6 ADHESIVE

Timber frame and/or steel frame:
GIBFix® One ultra low VOC water based wallboard adhesive
GIBFix® All-Bond solvent based wallboard adhesive

2.7 JOINTING COMPOUND

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

2.8 JOINTING TAPE

GIB® jointing tape.

2.9 FIRE/ACOUSTIC SEALANT

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

2.10 GAP FILLER

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

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.2 ROUTINE MATTERS

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

3.3 LEVELS OF PLASTERBOARD FINISH

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

3.4 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE

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

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

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

3.5 SUBSTRATE

Do not commence work until the substrate is plumb, level and to the standard required by the sheet manufacturer's requirements. Refer to GIB® Site Guide (September 2018).

3.6 TIMBER FRAME MOISTURE CONTENT

Maximum allowable moisture content to AS/NZS 2589 for timber framing at lining: 18% or less for plasterboard linings. Refer to NZBC E2/AS1 and GIB® Site Guide (Sept 2018).

3.7 PROTECTION

Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB® Site Guide (Sept 2018).

Application

3.8 LINING WALLS AND CEILINGS GENERALLY

Form to GIB® Site Guide (September 2018). Ensure bulk insulation thickness shall not exceed that of the wall framing.

3.9 BOARD ORIENTATION

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

3.10 FORM WET AREA SYSTEMS

Form to GIB Aqualine® Wet Area Systems requirements.

3.11 FORM CONTROL JOINTS

Form control joints to GIB® Site Guide (September 2018) requirements.

3.12 INSTALL TAPE-ON TRIMS

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

Finishing

3.13 FINISHING GENERALLY

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

Completion & Commissioning

3.14 COMPLETION MATTERS

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

4 SELECTIONS

Plasterboard

4.1 GIB® STANDARD SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to plans.	GIB® Standard plasterboard	10mm	5

4.2 GIB® WATER RESISTANT SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to plans.	GIB Aqualine® plasterboard	10mm	5

4.3 GIB® STANDARD SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to plans.	GIB® Standard plasterboard	13mm	5

4.4 GIB® WATER RESISTANT SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Refer to plans.	GIB Aqualine® plasterboard	13mm	5

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 plans.	13mm GIB Fyreline	Refer to plans.	5

Accessories

4.6 GIB® TAPE ON EDGE OR CORNER TRIMS

Brand/type:

4.7 GIB® EDGE PROFILES

Brand/type:

5171KI KOROK® INTER-TENANCY WALL SYSTEMS

1 GENERAL

This section relates to the supply and fixing of **KOROK®** steel clad, lightweight aerated concrete (AC) fire and acoustically rated panels, as a non-load bearing inter-tenancy wall system. The system is a proprietary high-performance wall that provides horizontal fire and acoustic separation between adjacent tenancies in the same building. The **KOROK**® Inter-tenancy System is suitable for use in medium and high-density housing, i.e. terraced housing and commercial multi-tenancy units.

1.1 RELATED WORK

Refer to 4259KE KOROK® EXTERIOR WALL SYSTEMS section for exterior wall cladding.
Refer to 5216S KOROK® COMMERCIAL INTERIOR WALL SYSTEMS section for interior walls other than inter-tenancy walls.
Refer to 3421 LIGHT STEEL FRAMED BUILDINGS section for light weight steel support structure.
Refer to 5113G GIB® PLASTERBOARD LININGS section for finishing and stopping of plasterboard linings.
Refer to 5113UB USG BORAL PLASTERBOARD LININGS section for plasterboard linings

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:

KOROK®	KOROK® Building Systems NZ Ltd.
BMT	Base metal thickness
AC	Lightweight aerated concrete
MSDS	Material safety data sheets
FRR	Fire Resistance Rating
STC	Sound transmission class
IIC	Impact insulation class
Rw	Sound Reduction Index
FSTC	Field Sound Transmission Class
SG	Stress Grade

The following definitions apply specifically to this section:

Hold point	Work may not proceed until the work in question has been inspected
Notification point	Notify Contract Administrator, work may be observed or not, at their discretion, work may proceed with Contract Administrator's permission.
NCS	Noise control system - KOROK® panels in an acoustic wall
FS	Fire rated system - KOROK® panels in a fire rated wall

Documents

1.3 DOCUMENTS

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

AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 1530.4	Methods for fire tests on building materials, components and structures - Fire-resistance test of elements of construction
AS 1538	Cold formed steel structures code
AS/NZS 3566	Self-drilling screws for the building and construction industries
AS/NZS 1170	Structural design actions
AS/NZS 2589	Gypsum linings - Application and finishing

Health and Safety at Work Act 2015

MPNZA	Health and Safety Programme
NZBC B2/AS1	Durability
NZBC C/AS1-C/AS2	Protection from fire
NZBC G6	Airborne and impact sound
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
NZS 3101.1	Concrete structures standard
NZS 3404.1	Steel Structures Standard
NZS 3604	Timber-framed buildings
WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

- BRANZ Appraisal 559 **KOROK®** FS & NCS Systems
- BRANZ Appraisal 1059 **KOROK®** 51mm Wall Systems
- **KOROK®** Technical and Installation Manual
- **KOROK®** Intertenancy Apartments Systems Manual
- **KOROK®** Intertenancy Terraced Housing Manual

Materials and execution to **KOROK®** specification except where varied by this specification and supported by architectural detailing.

Manufacturer's and supplier's documents for associated product related to this section are:
Autex® Insulation Data Sheets
GIB® Site Guide
GIB® Fire Rated Systems
Penetrations and closures in GIB® Fire Rated Systems
GIB® Noise Control Systems
Hilti® New Zealand Technical Manual
Pink Batts® Data Sheets
Powers Fasteners Specification & Design Manual
Rondo® Steel Stud & Tracks Installation Manual
USG® Boral Plasterboard Installation Manual

Manufacturer/supplier contact details

Company:	**KOROK®** Building Systems NZ Ltd.
Web:	www.korok.com
Email:	info@korok.com
Phone:	0800 773 777

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:
10 years: For **KOROK®** materials

Refer to **KOROK®** Building Systems NZ Ltd. for details of Materials Warranty.

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

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:
2 years: For workmanship

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.7 QUALIFICATIONS

Refer to the general section 1270 CONSTRUCTION for requirements relating to qualifications. **KOROK®** installers and builders to be experienced, competent workers familiar with **KOROK®** installation techniques.

1.8 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

In some cases **KOROK®** systems require the use of accessories from other manufacturers to meet specific performance requirements.
These include:

- Winstone Wallboards: GIB® Plasterboard lining and fixings - **KOROK®** fire and noise control systems
- Tasman Insulation New Zealand: Pink Batts® Insulation - **KOROK®** noise control systems
- Autex Industries Limited: GreenStuf® Insulation - **KOROK®** noise control systems
- Autex Industries Limited: GreenStuf® Masonry Wall Blanket Insulation - **KOROK®** systems
- Bradford Insulation: acoustigard™ -**KOROK®** noise control systems
- Hilti® (New Zealand) Ltd - **KOROK®** all systems
- Powers Fasteners - **KOROK®** all systems
- Rondo® Steel Stud and Track - **KOROK®** noise control systems
- USG Boral® Drywall Steel Stud and Track Systems - **KOROK®** noise control systems
- USG Boral® Plasterboard - **KOROK®** noise control systems

Where a product or material supplier is named in SELECTIONS, the product/material must be provided by the named supplier. Where there is more than one named supplier, any one of the named suppliers will be acceptable. Refer to other manufacturer's details for specific information on their product.

1.9 NO SUBSTITUTIONS

The **KOROK®** Inter-tenancy System is a proprietary system that has been carefully designed to New Zealand conditions and has been independently tested and assessed to ensure it meets the performance criteria as outlined in the NZ Building Code. It is imperative to use only **KOROK®** proprietary product where specified and that the design and construction of the Inter-tenancy System is followed so that the specified levels of fire rating, structural and acoustic performance have been achieved on site.

1.10 SHOP DRAWINGS

Provide shop drawings to show, but not limited to:

- fully dimensioned elevations of all elements (minimum scale 1:50)
- complete details of construction, connections and all support systems (min. scale 1:10)
- dimensions of all typical elements and of any special sizes and shapes
- provision for the exclusion and/or drainage of moisture
- jointing details and method of fixing between individual elements and between this installation and adjacent work
- sealant types and full size sections of all sealants
- provision for thermal movement
- provision for seismic movement and movement under prevailing wind loads
- sequence of installation
- co-ordination requirements with other work
- full schedule of materials, finishes, componentry, hardware and fittings.

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

1.11 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 and risks is not possible then minimise hazards and risks 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 as necessary. Inform employees and others on site of the hazards and risks and put into place procedures for dealing with emergencies. Obtain from **KOROK®** the material safety data sheets (MSDS) for each product. Keep these sheets on site and comply with the required safety procedures.

Performance

1.12 DESIGN REQUIREMENTS

Structural design to be supported by a Producer Statement prepared by a Chartered Professional Engineer. Refer to the **KOROK®** Technical and Installation Manual for information relating to panel spans. Loading parameters to comply with the methods described in NZS 3404.1, 3.3 and 3.4. Refer to SELECTIONS for design requirements.

1.13 FIXINGS - EARTHQUAKE

Use fixings and methods capable of sustaining the loads appropriate to the earthquake zone as required by NZS 1170.5 **Structural design actions - Earthquake actions**

1.14 SOUND RATING

The **KOROK**® Inter-tenancy System literature quotes a baseline STC performance of 56. Refer to SELECTIONS for system details and STC ratings. Penetrations through the linings are permitted within limitations. Refer to **KOROK®** Inter-tenancy System literature for correct forming and treating of penetrations to ensure the specified acoustic performance is met. Ensure absence of adjoining flanking paths.

1.15 NOISE CONTROL TESTS

KOROK® noise control testing and results were found to be satisfactory by BRANZ for NZBC G6/AS1 as noted in BRANZ Appraisal 559 - **KOROK®** FS & NCS Systems and BRANZ Appraisal 1059 - **KOROK**® 51mm Wall Systems.

1.16 FIRE RATING - GENERAL

The **KOROK**® Inter-tenancy System literature quotes a maximum FRR of ~/120/120 depending on the system specified. Fire rated panel systems to comply with AS 1530.4. Refer to SELECTIONS for system details.

1.17 SURFACE FIRE PROPERTIES FOR LININGS

Group Number to NZBC C/AS2, Table 4.3. Refer to SELECTIONS.

Compliance Information

1.18 INSPECTIONS

Allow to inspect the whole of the work at each stage. Determine a programme for inspections including notification when each part and stage of the work is ready for inspection prior to the work commencing. Permit representatives of **KOROK®** to inspect the work in progress and to take samples of their product from site if requested. Refer to **KOROK®** Technical and Installation Manual.

1.19 INFORMATION FOR OPERATION AND MAINTENANCE

Where **KOROK**® panels are exposed an inspection should be carried out at least annually to ensure that no undue degradation is occurring. Where corrosion is identified, the cause must be determined and repairs made to restore the integrity of the system.
Where **KOROK**® panels are not exposed, no maintenance should be required. Damage to linings or claddings should be repaired immediately.

1.20 DURABILITY

The panels to comply with NZBC B2/AS1 when maintained to recommendations in the **KOROK®** Technical and Installation Manual.

Compliance information

1.21 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

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

2 PRODUCTS

Terraced Housing Inter-tenancy Systems

2.1 KOROK® KIT01 INTER-TENANCY SYSTEM

KOROK® 51mm panels (600Kg/m³), 1x layer 10mm GIB® Standard each side, 90mm timber frame each side or steel frame each side as specified by engineer, 86mm overall cavity. Framing not to touch **KOROK**® panels. **KOROK**® metal fire flashing is installed to the top C-track. **KOROK®** metal KIT flashing is installed to horizontal joints.

STC:	64
FRR:	60/60/60
O/A Thickness:	288mm
Frame:	90mm timber frame each side or steel frame each side as specified by engineer
Cavity:	86mm overall. Framing not to touch **KOROK**® panels or fire flashing.

Refer to SELECTIONS.

Materials - general

2.2 KOROK® PANELS

Tongue-&-groove jointed cold roll formed steel shells to AS 1538 and galvanized to AS 1397, filled with proprietary aerated concrete infill. Paint coated steel coil can also be used on one or both sides.

Panel size nominal:	250mm wide, 51mm or 78mm thick
Panel length:	up to 8m.
Panel density:	400kg/m³, 600kg/m³, 800kg/m³ or 1000kg/m³
Metal thickness:	0.4mm BMT

2.3 KOROK® TRACKS

KOROK® 'C-track' and **KOROK®** Angle, cold roll formed steel to AS 1538 and galvanized to AS 1397, form the edges and perimeters of the panels. May be powder coated.

C-track:	60mm x 80mm web
Angle:	60mm x 60mm
Metal thickness:	1.15mm BMT
Track length:	up to 3.6m.

2.4 KOROK® FIRE FLASHING

KOROK® Fire Flashing, cold roll formed steel to AS 1538 and galvanized to AS 1397, used as part of the head detail for the **KOROK®** fire rated systems.

Fire Flashing:	110mm
Metal thickness:	0.55mm BMT
Track length:	up to 3.6m.

2.5 KOROK® KIT FLASHING

KOROK® KIT Flashing, cold roll formed steel to AS 1538 and galvanized to AS 1397, used as part of the horizontal joint detail for the **KOROK**® fire rated systems.

KIT Flashing:	160mm
Metal thickness:	0.55mm BMT
Track length:	up to 3.6m.

Components

2.6 SCREW FIXINGS

Self-drilling, self-tapping to suit the member, connection method and location. Refer to **KOROK®** Technical and Installation Manual, and the fixing manufacturer's printed data.

Location	Type
C-track to concrete	6.5x32 Rawl Mushroom spikes
C-track to steel	Hilti® X DN1 16MX nail
Track to panel	10x16 and 10x30 galvanized Steeltite™ wafer head screws
Panel to panel	10x16 and 10x30 galvanized Steeltite™ wafer head screws

2.7 POWDER ACTUATED FASTENERS

To type, size and charge required by the powder actuated tool manufacturer, to suit the member, connection method and location. Refer to **KOROK®** Technical and Installation Manual, and the fixing manufacturer's printed data.

2.8 FIRE SEALANT

KOROK® Fire Rated Sealant - Sikaflex® 400, Hilti® CP606 or PROMASEAL-A®

Accessories

2.9 LIGHT STEEL FRAMING

Cold roll formed steel sections to AS 1538 and galvanized to AS 1397, coating class ZM100

2.10 KIT SYSTEMS - GIB® BOARD LINING

GIB® plasterboard sheets to suit **KOROK®** fire rated and noise reduction systems;

KOROK® system	**GIB® lining product**
KIT01	10mm GIB® Standard each side
KIT01A	10mm GIB® Standard each side
KIT02	10mm GIB® Standard one side + 10mm GIB Noiseline® the other side
KIT03	10mm GIB Noiseline® each side
KIT04	13mm GIB Noiseline® each side
KIT05	13mm GIB® Standard each side
KIT06	10mm GIB® Standard each side
KIT06A	10mm GIB® Standard each side
KIT07	10mm GIB® Standard one side + 10mm GIB Noiseline® the other side
KIT08	10mm GIB Noiseline® one side + 10mm GIB Aqualine® (wet) or 10mm GIB Noiseline® (dry) the other side
KIT09	13mm GIB Noiseline® one side + 13mm GIB Aqualine® (wet) or 13mm GIB Noiseline® (dry) the other side
KIT10	13mm GIB® Standard each side

2.11 KIT SYSTEMS - PINK BATTS INSULATION

Acoustic insulation to be 90mm Pink Batts® R 2.2 each side

3 EXECUTION

Conditions

3.1 DELIVERY

Refer to the general section 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of product. Keep product dry in transit. Take delivery of product dry and undamaged. Reject all damaged materials.

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.

3.3 STORAGE

Deliver all materials in original unopened packaging with labels intact. Provide dry storage on site, stack carefully, protect from mechanical damage.

3.4 SUBSTRATE

Carry out all necessary inspections and preparatory work to the supporting elements of the **KOROK®** Inter-tenancy System prior to installation. Do not commence work until the framing is plumb, level and to the standard required by AS/NZS 2589 and **KOROK®** Inter-tenancy System requirements.

3.5 TIMBER FRAME MOISTURE CONTENT

Maximum allowable moisture content to AS/NZS 2589 **Gypsum linings - Application and finishing** for timber framing at lining: 18% or less for plasterboard linings.

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Installation: central barrier

3.7 PANEL APPLICATION CONDITIONS

Carry out panel fixing to **KOROK®** specification under conditions which will not adversely affect the finished work. Refer to **KOROK®** Inter-tenancy System specification.

3.8 ALIGNMENT OF FRAMING

To the standard required by **KOROK®**, plumb, level and in true alignment.

3.9 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 **KOROK®** Inter-tenancy System literature according to the fire resistance rating (FRR) and other relevant product manufacturers' recommendations.

3.10 SERVICES

Piped and cabled services within **KOROK®** Inter-tenancy System framing cavities to be securely fastened to the framing, and must not be in contact with, or pass through, the central barrier. Minimum 10mm clearance must be provided between any plumbing or electrical services and the central barrier.

3.11 ACOUSTIC REQUIREMENTS

To maintain acoustic integrity of the areas noted as 'sound rated' on the drawings, comply with all relevant aspects of the **KOROK®** Inter-tenancy System literature according to the specified sound transmission class (STC) rating and other relevant product manufacturers' recommendations.

3.12 PENETRATIONS

Under no circumstances should any services penetrate the **KOROK®** Inter-tenancy System panels unless approved by a Fire Engineer. Services may however be concealed within the framed section of the wall system, subject to the following constraints:

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

3.13 PRIMING STEEL

Use either **Resene Galvo-Prime** or Zinc rich spray primer to ensure that all exposed steel has been spot primed.

Finishing: general

3.14 METAL FINISHES

All metal finishes to be applied by applicators currently approved in writing by the coating manufacturer.

3.15 TOUCH-UP

In-situ touch up of factory-applied finishes is not permitted unless a trial repair is subsequently approved in writing. Replace all damaged items which are beyond acceptable repair.

3.16 FINISHING AND STOPPING

Refer to and AS/NZS 2589 **Gypsum linings** and 5113G GIB® PLASTERBOARD LININGS section and 5113 USG BORAL PLASTERBOARD LININGS section for finishing and stopping of plasterboard linings.

Completion & Commissioning

3.17 REPLACE

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

3.18 REMOVE

Remove debris, packaging, unused materials and elements from the site.

3.19 LEAVE

Leave work to the standard required by follow-on procedures and in accordance with the manufacturer's warranty requirements.

3.20 COMPLETION - TESTS & CERTIFICATION

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

4 SELECTIONS

For further details on selections go to www.korok.com.

Substitutions are not permitted to the following **KOROK®** materials or components, unless stated otherwise.

KOROK® KIT Terraced Housing Inter-tenancy Systems

4.1 KOROK® KIT01 INTER-TENANCY SYSTEM

Location:	between units
Wall thickness:	288mm
Panel:	51mm
Density:	600Kg/m³
STC:	64
FRR:	60/60/60
Cavity:	Min 86mm overall
Lining side #1:	1x layer 10mm GIB® Standard plasterboard (or equivalent)
Lining side #2:	1x layer 10mm GIB® Standard plasterboard (or equivalent)
Frame side #1:	90mm timber frame or steel frame as specified by engineer
Frame side #2:	90mm timber frame or steel frame as specified by engineer
Acoustic insulation side #1:	Autex GreenStuf® SW90 or 90mm Pink Batts® R2.2
Acoustic insulation side #2:	Autex GreenStuf® SW90 or 90mm Pink Batts® R2.2

Materials - accessories

4.2 ACOUSTIC INSULATION

Location:	refer to plans
Manufacturer/supplier:	Pink Batts
Type:	Pink Batts® R2.2
Thickness:	90mm

4.3 LINING

Location:	refer to plans
Manufacturer/supplier:	GIB
Type:	GIB® Standard
Thickness:	10mm

5433E ECOPLY® FLOORS

1 GENERAL

This section relates to the use of Carter Holt Harvey Plywood Ltd (CHH PLY) plywood sheets for floors.

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FSC®	Forest Stewardship Council®
COC	Chain of Custody

Documents

1.2 DOCUMENTS

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

NZBC C/AS2	Protection from fire
NZBC C/VM2	Protection from fire
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
AS/NZS 2269.0	Plywood - structural - specifications
NZS 3604	Timber-framed buildings

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

1.3 MANUFACTURER DOCUMENTS

Carter Holt Harvey Plywood Ltd documents relating to work in this section are:
Ecoply® Specification and installation guide September 2015
Product Technical Statement July 2015 Ecoply® Plywood Products: Flooring
Carter Holt Harvey Plywood - Tokoroa Certificate Code: SCS-COC-001316 Trademark License Code: FSC-C012019, Controlled Wood SCS-CW-001316, expires 5 June 2023.

Copies of the above literature are available from Carter Holt Harvey Plywood Ltd

Web:	www.ecoply.co.nz
Telephone:	0800 326 759

1.4 NO SUBSTITUTIONS

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

Requirements

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Performance

2 PRODUCTS

Materials

2.1 ECOPLY® STRUCTURAL SQUARE EDGE

Radiata pine veneer ply to AS/NZS 2269.0. F8 stress grade. CD surface grade, face sanded veneer and square sheet edges. Veneers bonded together with synthetic phenolic (PF) resin forming a Type A bond. H3.2 CCA treated to AS/NZS 1604.1, when used as a wet area substrate.

Components

2.2 NAILS - HOT DIPPED GALVANIZED

Hot dipped galvanized flat head, ring shank or annular grooved nails to Carter Holt Harvey Plywood Ltd requirements for size and use.

15 - 21mm plywood:	60mm x 2.8mm
25mm plywood:	75mm x 3.15mm

2.3 NAILS - STAINLESS STEEL

Stainless steel flat head, annular grooved nails to Carter Holt Harvey Plywood Ltd requirements for size and use.

15 - 21 mm plywood:	60mm x 2.8mm
25mm plywood:	75mm x 3.15mm

2.4 SCREWS IN TIMBER

Stainless steel, counter-sunk to Carter Holt Harvey Plywood Ltd requirements for size and use.

15mm plywood:	8g x 40mm
17 - 21 mm plywood:	10g x 50mm
25mm plywood:	10g x 50mm

2.5 ADHESIVE

Refer to SELECTIONS.

2.6 BRUSH ON TREATMENT

Soudal Metalex Ready to Use or Soudal Metalex Concentrated Timber Preservative. Clear colour product.

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:	18% maximum for framing

3.4 SUPPORT FRAMING

Ensure support framing is completed to Carter Holt Harvey Plywood Ltd stated requirements for laying plywood sheets.

Application

3.5 TREAT

Treat cuts and holes in sheets with a brush on treatment.

3.6 SUPPORT SQUARE EDGES AND JOINTS

Fully support edges and joints of square edged sheets.

3.7 SHEET LAYOUT

Lay sheets to Carter Holt Harvey Plywood Ltd requirements. Lay sheets in a staggered layout, face-grain of sheet at right-angles to support and with sheets in square, true alignment and plane. Provide a 2 to 3mm expansion gap between square edges of sheets and a 5mm expansion gap at the perimeter of the floor. Lay sheets continuous over at least two spans. Refer to SELECTIONS for fixing requirements.

3.8 ADHESIVE FIXING

Apply a bead or daubs of adhesive to adhesive manufacturers and Carter Holt Harvey Plywood Ltd requirements and fastener pattern, work from the middle of the sheet outwards to develop glueline pressure.

3.9 MECHANICAL FIXINGS

Fixings at least 3 fastener diameters or 7 mm from square edges and 15mm from tongue and groove edges. Fasten edges and ends of sheets at 150 mm centres, and within the panel at no more than 300 mm centres.

3.10 WET AREAS

Ensure plywood is structural grade treated to H3 or H3.2 (CCA treated), to AS/NZS 1604.1.
Plywood substrates must have moisture content not more than 18% before installing membrane.
With primed/sealed face and edges.

NOTE: Treated plywood must be allowed to breath for a minimum of 7 days before installation of membrane. Fixing must be to manufacturer specifications.
LOSP treated plywood must not be used.

Requirements if used for:
Flooring: Stress grade F8, minimum thickness 18mm with framing at minimum 400mm centres both ways, or min 21mm with framing at 600mm centres both ways. Fixing, glue and stainless steel screws.
Floor Overlay: Stress grade 8, minimum thickness 12mm.

Completion & Commissioning

3.11 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 ECOPLY® STRUCTURAL SQUARE EDGE FLOORING

Location:	First Floor
Manufacturer:	Carter Holt Harvey Plywood Ltd
Brand/grade:	Ecoply® Structural Square Edge / CD
Stress grade:	F8
Thickness:	19mm
Sheet width:	1200mm
Sheet length:	2400mm
Treatment:	H3.2 CCA
Fixing:	

Components

4.2 ADHESIVE

Type:

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

Documents

1.1 DOCUMENTS

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

NZBC C/AS2	Protection from fire
NZBC D1/AS1	Access routes
NZS/AS 1884	Floor coverings - Resilient sheet and tiles - Installation practices

Warranties

1.2 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

1.3 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.4 NO SUBSTITUTIONS

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

2 PRODUCTS

Materials

2.1 VINYL SHEET

High vinyl content homogeneous monolayer flexible PVC sheet flooring.

Accessories

2.2 ADHESIVE

Standard acrylic adhesive to suit the material and substrate and to the vinyl manufacturer's requirements.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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.

Application - laying

3.12 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.

3.13 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.

Cleaning

3.14 CLEAN VINYL

Leave vinyl flooring surfaces free of adhesive, dirt and debris. Clean and finish vinyl to manufacturer's requirements.

Completion

3.15 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 SHEET FLOORING

Location:	refer to plans
Manufacturer/brand:	client to select.
Colour/number:	
Gauge:	

Accessories

Spares & maintenance products

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

Documents

1.1 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
AS/NZS 2270	Plywood and blockboard for interior use
AS/NZS 2455.1	Textile floor coverings - Installation practice - General

Warranties

1.2 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.

1.3 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

1.4 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 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.

1.6 NO SUBSTITUTIONS

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

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 TAPE

To carpet manufacturer's requirements.

3 EXECUTION

Conditions

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

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.

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 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

3.16 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 UNDERLAY

Location	Brand	Type/thickness/weight
Refer to plans.	Client to select.	

4.2 CARPET

Location	Brand/type/weight/code	Installation method
Refer to plans.	Client to select.	

4.3 STAIR CARPET TO AS/NZS 2455.1

Location	Brand/type/weight/code	Installation method
Refer to plans.	Client to select.	

Accessories

4.4 STAIR NOSING

Brand/code:	Client to select.
Material:	Client to select.
Colour/insert:	Client to select.

4.5 BINDER BARS

Brand:	Client to select.
Colour:	Client to select.

4.6 DIVIDER STRIPS

Brand/material:	Client to select.
Dimension:	
Finish:	

6700D DULUX PAINTING GENERAL

1 GENERAL

This section relates to the general matters related to painting work using **Dulux** paint.

1.1 RELATED WORK

Refer to 6711D DULUX PAINTING EXTERIOR for exterior paint systems.
Refer to 6721D DULUX PAINTING INTERIOR for interior paint systems.
Refer to 6711DE DULUX ENVIRONMENTAL PAINTING EXTERIOR for environmental exterior paint systems.
Refer to 6721DE DULUX ENVIRONMENTAL PAINTING INTERIOR for environmental interior paint systems.
Refer to 6744D DULUX PROTECTIVE COATINGS for protective coating 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:

AS/NZS 2311	Guide to the painting of buildings
AS/NZS 5131	Structural steelwork - Fabrication and erection
AS/NZS ISO 9001	Quality management systems - Requirements
WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry
WorkSafe	Guidelines for the management of lead-based paint
MPNZA	Specification manual
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:

Dulux DuSpec specification sheets and product data sheets

Copies of relevant literature are available from **Dulux**

Web:	www.dulux.co.nz/specifier or www.duspec.co.nz
Email:	specifier@dulux.co.nz
Telephone:	0800 800 424
Facsimile:	0800 801 424

Warranties

1.5 WARRANTY

Warrant this work under normal environmental and use conditions against failure of materials and execution.

Product warranty: Products must be applied in accordance with application and preparation procedures according to **DuluxDuSpec** Specifications and Product Data Sheets. Contact a **Dulux** Trade Representative for project specific warranties.

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

Requirements

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Dulux** system, or associated components and products.

If in the applicator's own expertise and judgement an amendment to this specification is required, or where a substrate preparation or required painting system is not covered in this specification, this shall be brought to the attention of the contract administrator and any amendment agreed before work proceeds any further.

1.7 QUALIFICATIONS

Painters to be experienced competent workers, familiar with Dulux products and the required application techniques specified and may be a member of the Master Painters New Zealand Association Inc. or hold a recognised painter/decorator qualification.

The applicator is to have the necessary skill, experience and equipment to undertake the work. The applicator remains responsible for ensuring proper completion of the work.

Painters to be selected from the Dulux Accredited Painter programme, which recognises painters in the industry who demonstrate high levels of workmanship and pride themselves on their professionalism, customer service and reliability.
Refer to https://www.dulux.co.nz/services/find-a-painter-nz for a list of Dulux Accredited Painters in the local area.

1.8 HEALTH AND SAFETY

Refer to 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.

1.9 PRIOR TO WORK COMMENCING

Before any work commences painters should verify with architect or specifying authority, that their paint matches a previously supplied standard card or panel. Differently coloured paints will vary in price, opacity and durability. **Dulux** normally only specify two coats of colour but with certain colours such as bold, brights and some corporate colours, three coats may be needed.

1.10 SAFETY DATA SHEETS

Refer to **Dulux** for the safety data sheets for every applicable product and comply with the safety procedures listed. Keep sheets on the site. Refer to www.dulux.co.nz/specifier.

Performance

1.11 DULUX INSPECTION

Permit representatives of **Dulux** to inspect the work in progress and take samples of their products from site if requested.

1.12 INSPECTION OF THE WORK

Inspection of the whole of the work at each of the stages set out in SELECTIONS 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 product specified.

2.2 MATERIALS GENERALLY

Use only **Dulux** product which are guaranteed for their consistency and performance under AS/NZS ISO 9001 and APAS approval, prepared, mixed and applied as directed in the **Dulux** DuSpec specification sheets, specification manuals and product data sheets.

2.3 THINNERS/ADDITIVES

Use only if and when expressly directed by **Dulux** for their particular product in a particular application.

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 preparation system.

2.5 GYPSUM FILLER - INTERIOR

Finishing compound to match the plasterboard stopping system and finishing grade gypsum plaster to match the fibrous plaster system. For interior surfaces such as paper faced plasterboard use **Dulux** Professional Ultra 5 Surface Prep & Finish as an aid to achieving a Level 5 finish.

3 EXECUTION

Conditions

3.1 EXECUTION

To conform to manufacturer's requirements and those methods, practices and techniques contained in AS/NZS 2311, the MPNZA Specification manual, and WorkSafe: Guidelines for the provision of facilities and general safety in the construction industry.

3.2 PREPARE

Prepare surfaces to **Dulux** requirements.

3.3 COATED SURFACES

Ensure that substrate surfaces are able to achieve the specified finish.

3.4 PRE-PRIMED SURFACES

Sand down any breakdown or damage of the primer to a sound surface and immediately re-prime.

3.5 BRUSH DOWN

Brush down surfaces immediately before application, to remove dust, dirt and loose material.

3.6 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.

3.7 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.

3.8 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 2x coats or 1x 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 2x coats or 1x 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.

3.9 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.

3.10 LEAD-BASED PAINT, ASBESTOS

Handle cautiously lead-based paint and asbestos, if present, as required in the MPNZA Health and Safety Programme and WorkSafe: Guidelines for the management of lead-based paint.

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.

3.12 PROTECTION

Use dropsheets, coverings and masking necessary to protect adjoining fixtures, fittings and spaces from paint drops, spots, spray and damage.

Preparation

3.13 PREPARATION

Refer to the **DuSpec** specification sheets for detailed substrate preparation notes relating to SELECTIONS contained in:

- 6711D DULUX PAINTING EXTERIOR,
- 6721D DULUX PAINTING INTERIOR,
- 6711DE DULUX ENVIRONMENTAL PAINTING EXTERIOR,
- 6721DE DULUX ENVIRONMENTAL PAINTING INTERIOR, and
- www.duspec.co.nz.

Application - before applying final coatings

3.14 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.

3.15 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.

3.16 CONCEALED JOINERY SURFACES

Apply off-site coatings to all surfaces including those which will be concealed when incorporated into the building.

3.17 CONCEALED METAL SURFACES

Apply primer to suit the coating system to all metal surfaces which will be concealed when incorporated into the building.

3.18 DOORS

Prime or seal and paint all six faces of doors before hanging.

3.19 PUTTY FRONTING

According to the putty manufacturer's instructions allow putty to set, then prime with an appropriate Dulux primer, either **Dulux** 1 Step Acrylic Primer Sealer & Undercoat, or **Dulux** 1 Step Oil Based Primer, Sealer & Undercoat. Fully protect the putty by completing the **Dulux** coating system as soon as it is sufficiently firm.

Application - generally

3.20 PAINTING GENERALLY

Comply with the **Dulux** DuSpec specification sheets, product data sheets and the additional requirements of this work section.

3.21 MIXING

Thoroughly mix paints. Lift any settled pigment and ensure the paint is homogenous.

3.22 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 necessary temperature tolerance have been specified
- do not apply solvent borne paint if moisture is present on the surface

3.23 SEQUENCE OF OPERATIONS

Painting work to generally the following sequence:

- Back-painting and pre-installation painting, then post-installation exposed-face painting
- Complete surface preparation before commencing painting
- Apply primers, sealers, stains, undercoats, paints and clear coatings in the sequences laid down by **Dulux**
- Allow the full drying times between coats laid down by **Dulux**
- Do not expose primers, sealers and undercoats beyond a few days 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.

3.24 PAINT APPLICATIONS

Select brush, roller, or pad and apply paint to the requirements of **Dulux** and to obtain a smooth even coating of correct thickness, uniform gloss and colour.

3.25 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.

3.26 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.

3.27 DEFECTIVE WORK

Correct defective work immediately and re-coat as required, following precisely the **Dulux** paint system specified.

3.28 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

Note that some colours may require more than two top coats and/or the use of a tinted undercoat. This is particularly relevant when using bright or high chromatic coloured paints (e.g. colours derived off True Red, Bold Yellow, Orange, and Extra Bright base) or when painting over existing dark colours.

Completion

3.29 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.

3.30 CLEAN EQUIPMENT

Use **DuluxEnviroWash** 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. Phone 0800 800 424 for information regarding this system.

3.31 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.

3.32 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.

3.33 REPLACE HARDWARE

Replace hardware without damage to it or the adjoining surface. Leave properly fitted and in working order.

4 SELECTIONS

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

4.1 SELECTIONS

Refer to 6711D DULUX PAINTING EXTERIOR and 6721D DULUX PAINTING INTERIOR for selections.
Refer to 6711DE DULUX ENVIRONMENTAL PAINTING EXTERIOR and 6721DE DULUX ENVIRONMENTAL PAINTING INTERIOR for selections.

6711D DULUX PAINTING EXTERIOR

1 GENERAL

This section relates to the surface preparation and painting of new and existing exterior substrates using **Dulux** exterior paint systems.

1.1 RELATED WORK

Refer to 6700D DULUX PAINTING GENERAL for general matters related to painting work.

2 PRODUCTS

2.1 PRODUCTS

Refer to 6700D DULUX PAINTING GENERAL for product clauses.

3 EXECUTION

3.1 EXECUTION

Refer to 6700D DULUX PAINTING GENERAL for execution clauses.

4 SELECTIONS

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

Refer to DULUX DuSpec for up to date VOC levels as these are subject to change.

4.1 BACK PAINTING SCHEDULE

Paint 2 coats (including any pre-prime) to match exposed face coating.

Cladding type	**Extent of back painting**
Fibre Cement Boards	To cladding manufacturer's requirements

Fibre cement sheet substrates - new cladding

4.2 EXTERIOR FIBRE CEMENT SHEET NEW - CLADDING - PAINT

Gloss level:	Semi Gloss
Coating type:	Water based
System:	DuSpec NZ_SD09169
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer Undercoat @ 14 m²/L
2nd coat:	DULUX Weathershield X10 @ 16 m²/L
3rd coat:	DULUX Weathershield X10 @ 16 m²/L

Timber substrates - new trim, doors, frames, etc

4.3 EXTERIOR TIMBER NEW - TRIM, DOORS AND FRAMES - WATER BASED ENAMEL

Gloss level:	Semi Gloss
Coating type:	Water based enamel
System:	DuSpec NZ_SD09147
1st coat::	DULUX 1 Step Prep Acrylic Primer Sealer Undercoat @ 14 m²/L
2nd coat:	DULUX Aquanamel @ 16 m²/L
3rd coat:	DULUX Aquanamel @ 16 m²/L

Timber substrates - new fences, pergolas, etc

4.4 EXTERIOR TIMBER NEW - FENCES AND PERGOLAS - PAINT

Gloss level:	Low Sheen
Coating type:	Water based
System:	DuSpec NZ_SD09236
Preparation:	CABOT'S Deck Clean @ 12-16 m²/L
1st coat:	DULUX Timbacryl @ 16.4 m²/L
2nd coat:	DULUX Timbacryl @ 16.4 m²/L
3rd coat:	DULUX Timbacryl @ 16.4 m²/L

6721D DULUX PAINTING INTERIOR

1 GENERAL

This section relates to the surface preparation and painting of new and existing interior substrates using **Dulux** interior paint systems.

1.1 RELATED WORK

Refer to 6700D DULUX PAINTING GENERAL for general matters related to painting work.

2 PRODUCTS

2.1 PRODUCTS

Refer to 6700D DULUX PAINTING GENERAL for product clauses.

3 EXECUTION

3.1 EXECUTION

Refer to 6700 PAINTING GENERAL for execution clauses.

4 SELECTIONS

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

Refer to DULUX DuSpec for up to date VOC levels as these are subject to change.

4.1 BACK PAINTING SCHEDULE

Paint 2 coats (including any pre-prime) usually to match exposed face coating. If there is no coating use water resistant clear finish sealer.

Lining type	**Extent of back painting**
GIB Plasterboard	To lining manufacturer's requirements

Fibrous plaster substrates - new ceilings

4.2 INTERIOR FIBROUS PLASTER NEW - CEILINGS - PAINT

Gloss level:	Flat
Coating type:	Solvent based primer + water based top coat
System:	DuSpec NZ_SD08994
Fire rating:	Group Number 1-S, Report Number 5054, NZBC C/VM2 A1.5
1st coat:	DULUX 1 Step Oil Based Primer Sealer & Undercoat @ 16 m²/L
2nd coat:	DULUX Professional Ceiling Flat @ 12.8 m²/L
3rd coat:	DULUX Professional Ceiling Flat @ 12.8 m²/L

Fibrous plaster substrates - new walls

4.3 INTERIOR FIBROUS PLASTER NEW - WALLS - PAINT

Gloss level:	Low Sheen
Coating type:	Solvent based primer + water based top coat
System:	DuSpec NZ_SD08998
Fire rating:	Group Number 1-S, Report Number 5054, NZBC C/VM2 A1.5
1st coat:	DULUX 1 Step Oil Based Primer Sealer & Undercoat @ 16 m²/L
2nd coat:	DULUX Wash & Wear 101 @ 16 m²/L
3rd coat:	DULUX Wash & Wear 101 @ 16 m²/L

Timber substrates - new trim, doors, frames, etc - paint

4.4 INTERIOR TIMBER NEW TRIM, DOORS AND FRAMES - WATER BASED PAINT

Gloss level:	Semi Gloss
Coating type:	Water based enamel
System:	DuSpec NZ_SD08884
Fire rating:	Group Number 3, Report Number 5095, NZBC C/VM2 A1.5
1st coat:	DULUX 1 Step Prep Acrylic Primer Sealer & Undercoat @ 14 m²/L
2nd coat:	DULUX Aquanamel @ 16 m²/L
3rd coat:	DULUX Aquanamel @ 16 m²/L

7123B BUTELINE HOT & COLD WATER SYSTEM

1 GENERAL

This section relates to the **New Zealand manufactured Buteline** Hot and Cold Water System, from the network utility supply authority water main to designated points and appliances, the installation of hot water heating appliances, distributing piped hot water and the installation of isolating valves.

- **Buteline** Lilac tubing distribution of reclaimed / recycled non portable water supply.
- **Buteline** Green tubing distribution of rainwater supply

1.1 RELATED WORK

Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for tapware supply.

Documents

1.2 DOCUMENTS

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

NZBC B2/AS1	Durability
NZBC C/AS1-AS2	Protection from fire
NZBC G4/AS1	Ventilation
NZBC G12/AS1	Water supplies
AS/NZS 2642.1	Polybutylene pipe fittings - Polybutylene (PB) pipe extrusion compounds
AS/NZS 2642.2	Polybutylene pipe fittings - Polybutylene (PB) pipe for hot and cold water applications
AS/NZS 2642.3	Polybutylene pipe fittings - 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/NZS 3500.1.2018	Plumbing and Drainage - Water services
AS/NZS 3500.4	Plumbing and Drainage - Heated water services
NZS 4602	Low pressure copper thermal storage electric water heaters
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/NZS 5601.1	Gas installations - general installations
NZS 7602	Polyethylene pipe (Type 5) for cold water services

Gas (Safety and Measurement) Regulations 2010
Plumbers, Gasfitters and Drainlayers Act 2006

1.3 MANUFACTURER DOCUMENTS

Manufacturer and supplier documents relating to work in this section are:
MBIE (DBH) Certificate of Accreditation 94/005B **Buteline** Polybutylene Pipe System
Buteline Plumbers technical and installation manual

Copies of the above literature are available from **Buteline**

Web:	www.buteline.com
Email:	paul.carrington@buteline.com
Telephone:	0-9-273 5800
Facsimile:	0-9-273 5808

Warranties

1.4 WARRANTY

Warrant this work under normal environmental and use conditions against failure of materials and execution.

Warranty period: 2 years

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

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a **Buteline** materials warranty in the suppliers standard form.
Warranty period: 25 years

Requirements

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Buteline** product or component, or associated **Buteline** products, components or accessories.

1.7 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.
Registered 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.

1.8 PIPEWORK LAYOUTS

Refer to plans

1.9 INFORMATION FOR OPERATION AND MAINTENANCE

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

1.10 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.
- 55ºC - 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

1.11 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 to either NZBC G12/AS1, 7.5.1a, 1500 kpa for period not less than 15 minutes or to AS/NZS 3500.1.2018, section 18.3.1 **Hydrostatic test**, 1500 kpa for period not less than 30 minutes. Ensure there is no measurable loss of pressure. 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 POLYBUTENE-1 PIPE

Buteline Polybutene-1 tubing to AS/NZS 2642.1, AS/NZS 2642.2 and AS/NZS 2642.3 complete with fittings and accessories brand-matched with 50 year durability to NZBC B2/AS1, table 1 and NZBC G12/AS1, table1, with **MBIE (DBH) Certificate of Accreditation 94/005B** for both residential and commercial applications.

2.2 POLYBUTENE-1 GREEN PIPE

Buteline Polybutene-1 green tubing to AS/NZS 2642.2 for use in rainwater systems.

2.3 WATER METER

To the requirements of the network utility operator.

2.4 ADJUSTABLE WALL ELBOW

Buteline Bute-1 adjustable wall elbow with 4 way fixing clamp.

2.5 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: Water supplies.

2.6 INSULATION

Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements.

2.7 TEMPERING VALVE

Tempering valve to NZS 4617 to NZBC G12/AS1.

2.8 HOT WATER SAFETY SYSTEM

Buteline AquaFuse hot water safety monitor to NZS 4617 to NZBC G12/AS1 and manufacturer requirements.

2.9 BACKFLOW PREVENTION DEVICES

Provide backflow prevention devices to AS/NZS 2845.1 where it is possible for water or contaminants to backflow into potable water supply. Refer to NZBC G12 /AS1, 3.4 Backflow protection, and NZBC G12 /AS1, table 2, Selection of Backflow Prevention.

Materials - hot water heating appliances

2.10 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

A grade to NZS 4606.3, ceramic-coated steel thermal storage cylinder, insulated and complete with required fittings.

Components

2.11 JOINTING COMPONENTS

Buteline manufactured jointing components made from either premium grade custom thermo polymer or DR Brass designed for use with **Buteline** Polybutene-1 pipe.

2.12 PROTECTIVE TAPE

Plasticised PVC tape or similar for protection of jointing components for underground installations.

Accessories

2.13 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.

Refer to SELECTIONS for requirements.

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 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 THERMAL MOVEMENT

Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs. Sleeve through concrete or steel penetrations.

3.6 PIPE SIZE

Flow rates to each outlet to be no less than those given in NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures, with pipe size as determined in NZBC G12/AS1, table 4, Tempering valve and nominal pipe diameters.

3.7 EQUIPOTENTIAL BONDING METALLIC WATER SUPPLY PIPES

If it is an electrical requirement, before enclosing, ensure metallic water supply pipes and metallic sanitary fixtures are equipotential bonded (or at least conductor cable attached) to NZBC G12/AS1.

Application - jointing

3.8 JOINTING POLYBUTENE-1 PIPE

Aluminium clamped fitting to NZBC G12/AS1 and AS/NZS 2642, part 3.

Application - distribution systems

3.9 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.

3.10 COLD WATER INSTALLATION

From connection point, size the runs and branches to deliver the acceptable flow rate to NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures. Lay out pipes in straight runs with support spacing to NZBC G12/AS1, table 7, Water supply pipework support spacing firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, complete with necessary valves, fittings and insulation to hot water line where required.

Application isolating valves

3.11 BUILDING ISOLATING VALVE

Install an isolating valve in an accessible position at the point of entry to the building.

3.12 INSTALL ADDITIONAL ISOLATING VALVES - CONCEALED

Install additional isolating valves in an accessible and visually discrete position adjacent to or near by the specific fixture to allow for easy connection and operation. When the building is divided into zones, ensure an isolating valve is installed in each zone.

3.13 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

3.14 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. Valve-vented systems to NZS 4607.

3.15 SEISMIC RESTRAINTS - NON-GAS WATER HEATING APPLIANCES

Non-gas (electric, wet-back, solar etc) water heating appliances to be restrained to manufacturer's requirements and NZBC G12/AS1, 6.11, Water Heater Installation.

3.16 HOT WATER PIPEWORK

Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to NZBC G12/AS1, table 7 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, and preformed bends, complete with all necessary valves and fittings.
Lag all pipes with rigid insulation to the manufacturer's requirements.

3.17 INSTALL STORAGE HOT WATER CYLINDER OVERFLOW TRAY

Install drained overflow tray to storage hot water cylinder to NZBC G12/AS1.

3.18 INSTALL TEMPERING VALVE

Install tempering valve with 1 metre minimum length of copper pipe from outlet of hot water cylinder and to manufacturer's instructions.

3.19 INSTALL TEMPERING VALVE WITH AQUAFUSE

Install tempering valve 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install preformed copper pipe 'T' supplied with AquaFuse kit from outlet of hot water cylinder to **Buteline** AquaFuse fitting connected to the Polybutene-1 piping. Install to **Buteline's** instructions.

Application - fire stopping penetrations

3.20 FIRE STOPPING WORK

Make and prepare the penetration to suit fire stopping, and install fire stopping system around pipe to manufacturer's installation instructions.

Installation - tapware

3.21 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.

3.22 INSTALLING TAPWARE

Install tapware supplied under 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES. Install in accordance with the manufacturer's requirements.

Completion

3.23 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.

Water main

4.1 BUTELINE WATER MAIN

Size:	PB 22 (18mm nominal internal bore)

4.2 POLYETHYLENE WATER MAIN

Size:	25mm outside diameter

Pipework

4.3 BUTELINE POLYBUTENE-1 PIPE WORK

Branch off take:	PB 18 (13mm nominal internal bore)
Branch main:	PB 22 (18mm nominal internal bore)
Main:	PB 28 (23mm nominal internal bore)
Insulation:	for hot water line

Hot water systems

4.4 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

Branch off take:	PB 18 (13mm nominal internal bore)
Branch main:	PB 22 (18mm nominal internal bore)

Valves and accessories

4.5 TEMPERING VALVE

Location:	T.B.C.
Brand/type:	T.B.C.
AquaFuse:	Required

4.6 MAIN ISOLATING VALVE

Location:	T.B.C.
Brand/type:	T.B.C.

4.7 IN LINE FILTER

Location:	Near isolating valve
Brand/type:	T.B.C.

4.8 APPLIANCE ISOLATING VALVES - CONCEALED

Appliance:	Dishwasher & washing machine.
Brand/type:	Ball cock or concealed valves to suit application

4.9 APPLIANCE ISOLATING VALVES - EXPOSED

Appliance:	Washing machine
Brand/type:	Refer to tapware selections

Fire stopping

4.10 FIRE STOPPING

Location:	Where required
Manufacturer/brand:	T.B.C.
Type/product:	Sealant, foam, wraps, collars
Fire rating:	30 FRR

7411M METALCRAFT ROOFING RAINWATER SPOUTING SYSTEMS

1 GENERAL

This section relates to **Metalcraft Roofing** rainwater disposal systems including gutters fascias and downpipes.

1.1 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
Gutter	In this section includes spouting

Documents

1.2 DOCUMENTS

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

NZBC E1/AS1	Surface water
NZBC E1/AS2	Surface water
AS 1273	Unplasticised PVC (uPVC) downpipe and fittings for rainwater
AS/NZS 3500.3: 2018	Plumbing and drainage - Stormwater drainage
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
Are available on the website or by contacting Metalcraft Roofing.

For technical assistance contact **Metalcraft Roofing**
Web: www.metalcraftroofing.co.nz

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal environmental and use conditions against:

10 years:	Failure of coating adhesion (manufacturer's standard warranty)
10 years:	Weatherproofing failure caused by material penetration as a result of corrosion (manufacturer's standard warranty)
3 years:	Weatherproofing failure caused by substandard workmanship
From:	Date of completion of installation

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.5 NO SUBSTITUTIONS

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

1.6 QUALIFICATIONS

Installers to be experienced competent gutter installers, familiar with the **MetalcraftRoofing** materials and the techniques specified.

1.7 INFORMATION FOR OPERATION AND MAINTENANCE

Provide one copy of all relevant **Metalcraft Roofing** maintenance information on completion of the roofing work.

Performance

1.8 TEST - NZBC E1/AS1

Test the completed rainwater disposal system with water to ensure gutters are laid to correct falls, that both spouting and downpipes are unobstructed and that no ponding occurs in gutters. Comply with NZBC E1/AS1.

1.9 TEST - AS/NZS 3500.3: 2018 & NZBC E1/AS2

Test the completed rainwater disposal system with water to ensure gutters are laid to correct falls, that both spouting and downpipes are unobstructed and that no ponding occurs in gutters. Comply with AS/NZS 3500.3: 2018 as modified by NZBC E1/AS2.

2 PRODUCTS

Materials

2.1 GUTTERS

Complete with matching brackets with fixing screws to suit the gutter / fascia. Refer to SELECTIONS for type.

Components

2.2 DROPPERS

Steel or plastic droppers, sized to fit inside the downpipe.

2.3 DOMES

Wire mesh in round form with legs to clip inside the outlet opening to the downpipe.

2.4 GUTTER MESH

Flexible plastic mesh fitted into the gutter to the mesh manufacturer's requirements.

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 up 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.

Application - metal

3.5 INSTALL METAL GUTTER AND FASCIA

Establish minimum falls necessary (minimum 1:500) to outlets to prevent ponding and screw fix brackets true-to-line at 900mm centres maximum. In areas where snow fall is possible and or high wind areas, the centres should be reduced to 600mm. 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 **Metalcraft Roofing** details and NZMRM CoP recommendations.

3.6 INSTALL OVERFLOWS

Install as close as practical to downpipe locations, at a height allowing water to discharge to the outside and not into the building.

3.7 INSTALL PROTECTION

Fit wire mesh domes to downpipe outlets and plastic mesh to spouting to the spouting manufacturer's requirements.

Completion

3.8 REPLACE

Replace damaged or marked elements.

3.9 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.

3.10 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

4.1 METALCRAFT ROOFING GUTTER SYSTEMS

Profile:	Box Gutter 125mm
Base material:	steel
BMT:	0.55mm
Coating system:	Colorsteel Endura
Colour:	Client to select

4.2 METALCRAFT COLOURSTEEL DOWNPIPES

Profile:	Round
Size:	80mm
Coating system:	Colorsteel Endura
Colour:	Client to select

4.3 DOMES

Metal:

7421 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 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures.
Refer to 7123 HOT AND COLD WATER SYSTEM for potable water systems.
Refer to 7431 DRAINAGE COMMON REQUIREMENTS for underground drains.
Refer to 7142 GREYWATER SYSTEMS for greywater systems.

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC G1/AS1	Personal hygiene
NZBC G12/AS1	Water supplies
NZBC G13/AS1	Foul water - Sanitary plumbing
NZBC G13/AS3	Foul water - Sanitary plumbing and drainage
AS 1589	Copper and copper alloy waste fittings
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 3500.2: 2018 Plumbing and drainage - Sanitary plumbing and drainage
Plumbers, Gasfitters and Drainlayers Act 2006

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

Requirements

1.3 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.

1.4 PIPEWORK LAYOUTS

refer to plans.

1.5 OPERATION AND MAINTENANCE MANUALS

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

Performance

1.6 TESTING

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC G13/AS1 or AS/NZS 3500.2: 2018, 15 as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

2 PRODUCTS

Materials

2.1 PVC-U WASTE PIPES AND TRAPS

To AS/NZS 1260, complete with fittings and accessories to the pipe manufacturer's requirements, all brand matched.

2.2 PVC-U VENT PIPE

To AS/NZS 1260, complete with fittings and accessories to the pipe manufacturer's requirements and all brand matched.

Components

2.3 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

Accessories

2.4 FIRE RESISTANT COLLARS

Corrosion resistant collar or canister with intumescent packing to maintain the specified fire resistant rating of the floor or wall.

3 EXECUTION

Conditions

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 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

3.3 EQUIPOTENTIAL BONDING METALLIC WASTE PIPES

If it is an electrical requirement, before enclosing, ensure metallic waste pipes connected to metallic drains and attached metallic sanitary fixtures are equipotential bonded (or at least conductor cable attached) similar to NZBC G12/AS1, 9.0.

3.4 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.

3.5 SETTING OUT

Set out location of all stacks, discharge pipes, fittings and vent pipes and the completeness of their discharge into the drainage system.

3.6 CORE HOLES AND SLEEVES

Fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Sleeve diameter to be 25mm larger than outside diameter of pipe accommodated. Strip core holes and make good after installation of pipework.

3.7 PIPE ACCESS

Fit and fix stacks, wastes and pipes in ducts independent of all other services so they are easily replaceable for their full length. Wrap or tape pipes buried in concrete.

3.8 FITTINGS ACCESS

Fit and fix traps and wastes to enable access for cleaning and for maintaining the total system.

3.9 CONFIRM LOCATIONS

Unless the location and height are clearly delineated on the drawings, confirm installation height and plan locations of sanitary fittings before commencing the piping installation.

3.10 TRAPS AND WASTES

Conceal traps and wastes in the fabric of the building unless detailed otherwise. Fit and fix satin chrome plated exposed pipes, traps and wastes unless detailed otherwise.
Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for locations and types of traps.

3.11 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.

Application - jointing

3.12 JOINTING PVC-U PIPE

Prime and solvent weld joints using spigots and sockets, flanged joints and seal ring compression joints to AS/NZS 2032.

Application - fixing

3.13 THERMAL MOVEMENT

Accommodate longitudinal movement in pipes resulting from temperature changes. Incorporate expansion joints in copper and PVC-U pipes. Install PVC pipes to AS/NZS 2032. Take particular care to allow for movement at horizontal take-off locations from stacks.

3.14 TRAPS AND FIXTURE DISCHARGE PIPES - NZBC G13/AS1

Size traps and pipes as required for each fixture or appliance. Establish the developed length of waste pipes. Vent and allow access for cleaning as required. Follow the most direct line with the least number of bends to NZBC G13/AS1: Foul water sanitary plumbing, table 4, Discharge unit loading for stacks and graded discharge pipes and NZBC G13/AS1, table 7, Distance between supports.

3.15 DISCHARGE STACKS AND VENTS - NZBC G13/AS1

Size stacks and vents to NZBC G13/AS1, table 2, Fixture discharge pipe sizes and discharge units and NZBC G13/AS1, table 6, Vent pipe sizes. Extend up past the highest branch to form a discharge stack vent terminating to NZBC G13/AS1, figure 12 and finishing at the base with a 45 degree bend. Support system to NZBC G13/AS1, table 7, Distances between supports.

3.16 FLASH ROOF PENETRATIONS

Flash or arrange for roofer to flash all penetrations to NZBC E2/AS1.
For profiled metal roofs, fit proprietary EPDM pipe collar flashings to NZBC E2/AS1, 8.4.17 Roof Penetrations, and manufacturer's requirements.

Application - fire resistant penetrations

3.17 FIRE RESISTANT COLLARS

Insert circular type collars into holes provided in the concrete. Supply canister type collars. Locate and fix to the boxing before concrete is placed. Comply with the collar manufacturer's requirements for use of these elements, complete with accessories, tapes and sealants required for each particular situation.

Completion

3.18 REPLACE

Replace damaged or marked elements.

3.19 LEAVE

Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following procedures.

3.20 REMOVE

Remove debris, unused materials and elements from site.

4 SELECTIONS

4.1 SANITARY SYSTEMS - PVC-U WASTE PIPES AND TRAPS

Location:	refer to plans.
Manufacturer/Brand:	client to select

4.2 SANITARY SYSTEMS - PVC-U VENT PIPE

Manufacturer: client to select
Brand: client to select

4.3 SANITARY SYSTEMS - PROTECTIVE TAPE

Brand: client to select
Width:

Fire stopping

4.4 FIRE RESISTANT COLLARS

Manufacturer: client to select
Type/number: client to select

7612 RESIDENTIAL EXTRACT SYSTEMS

1 GENERAL

This section relates to the supply and installation of extract systems for residential applications. It includes:

- Kitchen extract systems
- Bathroom and laundry extract systems

1.1 RELATED WORK

Refer to the electrical section(s) for general electrical requirements.

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture
NZBC E3/AS1	Internal moisture
NZBC G4/AS1	Ventilation
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 60335.1	Household and similar electrical appliances - Safety - General requirements

Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).

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

Requirements

1.3 CO-ORDINATE WORK

Co-ordinate all items with the main contractor, in particular cutting of penetrations and waterproofing. Exterior penetrations to NZBC E2/AS1 as consistent with the project requirements.

1.4 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.5 ELECTRICAL QUALIFICATION

Registered electrician to carry out work to Electricity (Safety) Regulations 2010.

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 manufacturers documentation

Provide this information prior to practical completion.

1.8 EXTRACT FLOW RATES

To NZBC G4/AS1.
Extract fans (including associated ducts) to have a minimum flow rate of:

- 25 L/s for showers and baths
- 50 L/s for cooktops

Compliance information

1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer, importers or distributors warranty
- Installer warranty
- Other information required by the BCA in the Building Consent Approval documents.

Quality control and assurance

2 PRODUCTS

Kitchen extract systems

2.1 KITCHEN RANGEHOOD EXTRACT - TO EXTERIOR WALL / SOFFIT

Mechanical rangehood extract system comprised of rangehood canopy, extract fan, filters, lighting, controls, metal ducting, solid duct wall sleeve, exterior grille and weatherproof cowl.
Refer to SELECTIONS for options.

2.2 KITCHEN DOWNDRAFT EXTRACT SYSTEM - DUCTED TO EXTERIOR WALL

Mechanical extract system installed in benchtop or backsplash wall area comprised of downdraft componentry, extract fan, filter, controls, metal ducting, solid duct wall sleeve, exterior grille and weatherproof cowl.
Refer to SELECTIONS for options.

Bathroom and laundry extract systems

2.3 CEILING MOUNTED FAN, DUCTED TO EXTERIOR WALL / SOFFIT

Mechanical fan ducted system comprised of ceiling fan, filters, controls, aluminium foil flexi ducting joined to a solid duct sleeve sloped to remove condensation, exterior weatherproof grille and flashing.
Refer to SELECTIONS for options.

Component

2.4 ELECTRICAL FAN SWITCH

Independent switch connected to socket outlet located near fan / unit.
Refer to SELECTIONS for run on timer requirements.

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.

Installation - mechanical ventilation

3.3 INSTALL KITCHEN RANGEHOOD

Install rangehood to AS/NZS 3000, AS/NZS 60335.1 and manufacturer installation instructions. Connect unit with ducting to exit either through roof or exterior wall / soffit. Plug into electrical socket.

3.4 INSULATION CLEARANCE

Provide 50mm clearance between insulation and motor unit / electrical enclosure. Insulation can abut ducts.

3.5 ELECTRICAL INSTALLATION

Install switch and socket outlets to AS/NZS 3000 and AS/NZS 60335.1. Refer to electrical section(s) for requirements.

Completion & commissioning

3.6 COMPLETION MATTERS

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

3.7 COMPLETION - TESTS & CERTIFICATION

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

3.8 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

4 SELECTIONS

Kitchen extract systems

4.1 KITCHEN RANGEHOOD EXTRACT - TO EXTERIOR WALL / SOFFIT

Location:	refer to plans.
Manufacturer:	client to select
Product/model:	client to select
Duct type/size:	client to select
Cladding:	client to select
Wall grille type/size:	To suit cladding type and profile
Cowl type:	To suit cladding type and profile

Bathroom and laundry extract systems

4.2 CEILING MOUNTED FAN, DUCTED TO EXTERIOR WALL / SOFFIT

Location:	refer to plans.
Manufacturer:	Manrose
Product/model:	Manrose Pro Series
Fan type/size:	150mm
Diffuser type:	client to select
Switch type:	client to select
Duct type/size:	client to select
Grille type/size:	To suit cladding type and profile
Cowl type:	To suit cladding type and profile

4.3 WALL MOUNTED FAN, DUCTED TO EXTERIOR WALL / SOFFIT

Location:	refer to plans.
Manufacturer:	Manrose
Product/model:	Manrose Pro Series
Fan type/size:	150mm
Switch type:	With run on timer
Duct type/size:	client to select
Grille type/size:	To suit cladding type and profile
Cowl type:	To suit cladding type and profile

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 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.
The following abbreviations apply specifically to this section:

AFDD	Arc Fault Detection Device
ELV	Extra Low Voltage
GLS	general lighting service
IP	international (ingress) protection classification
NUO	Network Utility Operator
PCB	printed circuit board
PIR	passive infrared
SIA	security integration architecture
TPS	tough plastic sheathed
TCF	Telecommunications Carriers' Forum

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture
NZBC F6/AS1	Visibility in escape routes
NZBC F7/AS1	Warning systems
NZBC G4/AS1	Ventilation
NZBC G9/AS1	Electricity
AS/NZS 1125	Conductors in insulated electric cables and flexible cord
AS/NZS 1768	Lightning protection
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 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3008.1.2	Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions
AS/NZS 3100	Approval and test specification-general requirements for electrical equipment
AS/NZS 3112	Approval and test specification - Plugs and socket-outlets
AS/NZS 3113	Approval and test specification - Ceiling roses
AS/NZS 3190	Approval and test specification - Residual current devices (current-operated earth-leakage devices)
AS/NZS 3439.3	Low-voltage switchgear and controlgear assemblies - Particular requirements for low-voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards
AS 3786	Smoke alarms using scattered light, transmitted light or ionization
NZS 4514:2009	Interconnected smoke alarms for houses
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 60335.1	Household and similar electrical appliances - Safety - General requirements
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance.
AS/NZS 61439.3	Low-voltage switchgear and controlgear assemblies - Part 3: Distribution boards intended to be operated by ordinary persons (DBO).
IEC 61643	Components for low voltage surge protection devices

Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).
TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services

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

Warranties

1.3 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

1.4 COMPLY

Comply with the Electricity (Safety) Regulations 2010, AS/NZS 3000, AS/NZS 3008.1.2, and TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

Workers and supervisors to be appropriately qualified to applicable legislative requirements. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.7 ELECTRICAL CERTIFICATE OF COMPLIANCE

Supply a certificate of compliance (CoC) to the owner, and if required the NUO, as required by the Electricity (Safety) Regulations 2010, prior to connection.

- Arrange for the NUO to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.
- Arrange for an inspector to inspect high risk electrical work as required by regulation 70.

1.8 ELECTRICAL SAFETY CERTIFICATE

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

Quality control and assurance

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 3439.3, or AS/NZS 61439.3, and installed in accordance with AS/NZS 3000. Manufactured from engineering grade resin with a glow wire rating of 850°C, 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. Residual current protection 30mA, ensure RCCBs' meet Type A and comply with AS/NZS 3190. MCBs to 4.5kA or 6kA rated.

2.6 SURGE PROTECTION

Protection for the homes appliances with IEC 61643 Class ll surge protection devices fitted to the switchboard. For variable electronic equipment fit IEC 61643 Class lll 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

Single pole switches to be 16 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

10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters and manufactured to AS/NZS 3100, AS/NZS 3112 and AS/NZS 3113, single or multi gang as detailed.

2.10 CEILING ROSES

White plastic mounting base with screwed cover, manufactured to AS/NZS 3113. Terminal type. Suspended fittings to have sheathed round flexible cord to AS/NZS 3008.1.2. Refer to SELECTIONS.

2.11 HOT WATER SYSTEM SWITCH

One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

2.12 BATTEN HOLDERS

Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.

2.13 SMOKE ALARMS

Type 1 domestic smoke alarm to NZBC F7/AS1. 1.2 **Descriptions of alarm systems**. Alarm to AS 3786. A wired 230 volt ionised smoke detector type.

2.14 DOOR BELL SYSTEM

Complete with transformer for mounting on distribution board.

2.15 LIGHT FITTINGS

Fluorescent and High Intensity Discharge fittings with low loss control gear and power factor corrected to 0.95 minimum. Control gear suitable for dimming if this is required. All fittings complete with lamps; Incandescent GLS lamps pearl, coiled-coil 230v rated, bayonet cap; Fluorescent triphosphor 2700K; CFL; halogen ELV 12v dichroic reflector with cover glass unless detailed otherwise; integral/non-integral LEDs, reflectors, lenses, heatsinks and drivers - 3,000K to 4,000K, CRI >80, L70.

2.16 RECESSED LIGHT FITTINGS - RESIDENTIAL

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

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

Refer to clause INSULATION & GENERAL CLEARANCES for clearances from insulation and other elements.

2.17 EXHAUST FANS

Ceiling, wall or duct mounted exhaust fans for ventilation to NZBC G4/AS1, and compliant with AS/NZS 60335.1.

2.18 HEATED TOWEL RAILS

Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with AS/NZS 60335.1, scratch resistant powdercoated or chrome finish.

Fire rated sealers and liners

2.19 FIRE RATED 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 for type.

Fire rated accessories

2.20 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 for type.

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.

Installation

3.3 MAIN SUPPLY

Lay underground mains to the NUO requirements. Excavate trench, install cable and marker tape and backfill.

3.4 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 fig 69. Arrange for meter installation and connection.

3.5 DISTRIBUTION BOARD

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

3.6 CIRCUIT PROTECTION

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

3.7 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

3.8 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

3.9 MAIN EARTH

Provide a plastic toby box to contain and protect the earth electrode. Fix the connecting earth wiring closely and securely against wall surfaces.

3.10 ARC FAULT DETECTION DEVICE (AFDD)

To AS/NZS 3000 clause 2.9, AFDD on all final sub-circuits not exceeding 20A.

3.11 EARTH LEAKAGE PROTECTION

Install RCD protection to AS/NZS 3000.

3.12 SURGE PROTECTION

Install surge protection devices to manufacturer requirements and in accordance with AS/NZS 3000 and AS/NZS 1768. When fitting IEC 61643 Class ll protection at the switchboard, protect the device by a dedicated MCB.

3.13 RCD - RESIDENTIAL INSTALLATIONS

Install 30mA RCD protection at the switchboard for all final sub circuits to control outlets and lighting except for fixed or stationary cooking equipment, to AS/NZS 3000.

3.14 RCD-AFDD COMBINED - RESIDENTIAL INSTALLATIONS

Install a 30mARCD - AFDD combined device (RCD Type II) at the switchboard for all final sub circuits not exceeding 20A, to control and protect outlets and lighting to AS/NZS 3000, (2018, 2.6 & 2.9). Protect over 20A to 32A final sub circuits with separate RCD and to AS/NZS 3000.

3.15 RCD - SPECIFIC INSTALLATIONS

Install fixed wired RCD protected outlets (SRCD) in the following higher risk areas:

- Wet areas: bathrooms, laundries, kitchens.
- Near pools and water features.
- Where intended for use with cleaning equipment.
- Hand-held tools subject to movement in use, i.e. work-shops, garages.

3.16 SET-OUT

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.

3.17 CABLING

Install wiring systems to AS/NZS 3000. All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.

3.18 CABLING CIRCUITS

Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.

3.19 WALL BOXES

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.

3.20 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.

3.21 LIGHT FITTINGS

Install light fittings in locations and at heights specified and confirmed by the owner, in accordance with the fitting manufacturer requirements.

3.22 EXTRA LOW VOLTAGE LIGHTING

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.

3.23 INSULATION & GENERAL CLEARANCES

Some electrical and mechanical services, and equipment may need to have a gap to insulation and some building elements. The gaps should be to the NZS 4246 based tables below or to the equipment manufacturers requirements if they require larger gaps. Smaller gaps to manufacturers requirements can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings).

Installed gap not to be more than 50mm bigger than the required gap.
The following tables are subject to:

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

3.24 LIGHT FITTINGS TO INSULATION

Type of fitting	Minimum insulation clearance	Comments
Recessed, marked NON-IC, or unmarked	100mm (increase if over 100W)	To NZS 4246. NON-IC fittings and new or old unmarked & unknown fittings, and/or insulation. Insulation to be secured.
Recessed, CA 80, CA 90, or CA 135.	Abut fittings	To NZS 4246. Do not cover the fittings.
Recessed, IC, IC-F, or IC-4.	Abut & cover fittings.	To NZS 4246. Ensure insulation complies.
Recessed, marked Do-Not-Cover	Manufacturer clearances	To NZS 4246. Do not cover the fittings.
Independent control gear	Place on top of insulation & 50mm from fittings	To NZS 4246. If not on top allow 50mm clearance to insulation, do not cover. Includes, transformers, ballasts & drivers etc.
Surface fittings not exposed to insulation	Nil	To NZS 4246. Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings.
Surface fittings & exposed insulation	200mm	To NZS 4246. This is exposed insulation to any part of the exposed fitting & bulb/tube (e.g. exposed light in an unlined basement). Insulation to be secured.

3.25 RECESSED LIGHT FITTINGS TO COMBUSTIBLE BUILDING ELEMENTS

Type of recessed fitting	Minimum building element clearance **	Comments
Marked NON-IC, or unmarked, ≤100W	100mm, vertical & horizontal	To AS/NZS 3000:2018
Marked NON-IC, or unmarked, >100W	200mm, vertical & horizontal	To AS/NZS 3000:2007
CA 80, CA 90 or CA 135	100mm, vertical & horizontal	To AS/NZS 3000:2018
IC, IC-F or IC-4	100mm, horizontal NA, vertical	To AS/NZS 3000:2018 To be NA vertical, fitting must be covered by insulation. If not covered use 100mm clearance.
Marked Do-Not-Cover	100mm, vertical & horizontal	To AS/NZS 3000:2018. Manufacturer clearances if greater than 100mm

****** Combustible building elements exclude metal elements, but include timber framing or other timber based elements, and normal linings etc. Highly flammable materials & those likely to melt will need more clearance.

3.26 INBUILT RECESSED HOT APPLIANCES TO INSULATION

Appliance	Minimum insulation clearance	Comments
Electrical heaters	Manufacturer clearances	To NZS 4246.
Electrical heaters	100mm	Manufacturer clearances not known. To NZS 4246. Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.
Heat producing appliances & equipment	Manufacturer clearances	To NZS 4246.
Heat producing appliances & equipment	50mm	Manufacturer clearances not known. To NZS 4246. Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.

Note - Appliances and equipment excludes cables, junction boxes, light switches & power sockets etc

3.27 EXTRACTS, VENTS & ROOF UNDERLAY TO INSULATION

Appliance	Minimum insulation clearance	Comments
Ducted fan motors	50mm	To NZS 4246. Includes ducted rangehoods, extractors etc. Applies to the motor unit and electrical enclosures (not the ducts).
Ducted fan ducts	Abut	To NZS 4246. Excludes motor unit and electrical enclosures.
Unducted fan motors usually discharging to ceiling space	200mm	To NZS 4246. Includes unducted, rangehoods, extractors etc, discharging into roof space. To prevent debris falling into motor. Clearance may be able to be reduced, by providing a fixed barrier around the vent.
Roofing material/underlay	25mm	To NZS 4246. Maintain clearance from underside of roofing or flexible roofing underlay, to prevent wicking.

3.28 ELECTRIC HOT WATER SYSTEM

For storage heaters, wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end. Hot water cylinders, thermostats and 3000 watt element supplied and fitted under the hot and cold water system section.

3.29 SMOKE ALARMS

Install Type 1 domestic smoke alarm system to NZBC F7/AS1 3.0 **Domestic smoke alarms**, NZS 4514 and to the alarm manufacturer requirements. Fit neatly and without damage to the surrounding finish.

3.30 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire fittings and equipment to individual fittings and equipment manufacturer requirements. Refer to the drawings for required layouts and locations for equipment. Refer to SELECTIONS for schedules of fittings.

3.31 BATHROOM ELECTRICAL FIXTURES

Install all electrical fixtures. Connect the following bathroom and toilet electrical items:

- Heated towel rails: Install to manufacturers requirements and installed in accordance with AS/NZS 3000
- Mirror demisters: Locate centrally above the wash hand basin(s). Connect wiring to room lighting unless specified otherwise.
- Exhaust fans: Install exhaust fans to manufacturer requirements. Installed in accordance with AS/NZS 3000 and NZBC G4/AS1.

3.32 LABELLING

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 sealers and liners

3.33 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.

3.34 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.

Fire rated accessories

3.35 INSTALL WALL BOXES AND SWITCH UNITS - FIRE RATED

Install proprietary fire rated wall boxes and switch units in accordance with manufacturer instructions.

Completion & Commissioning

3.36 COMPLETION MATTERS

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

3.37 COMPLETION - TESTS & CERTIFICATION

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

3.38 COMMISSIONING - TESTS & CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements for commissioning.

4 SELECTIONS

Materials

4.1 SELECTIONS - FITTINGS AND HARDWARE

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