SPECIFICATION

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

New House Build

(project name)

20 Moonlight Track – Lot 1

(project address)

Carter Taylor Partnership

(owners name)

Date: May 2025

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1201 PRELIMINARIES AND GENERAL

1. THE PROJECT

1.1 THE WORKS
The works are as described in this specification and as shown on the drawings. It is constructed from an insulated concrete floor, Block work walls, strapped insulated and lined, and timber framed roof with corrugated steel roofing.

1.2 SITE
The site of the works, the site address and the legal description are shown on the drawings. Confine access and work to the area of site indicated on the drawings.

1.3 SITE ACCESS AND LIMITS
Access to the site will be available during daylight hours. Respect all other acitivites occurring on the site and ensure building work does not inhibit access to or use of the site beyond the building platform. Advise the owners when noisy or intrusive work is planned.

1.4 EXISTING SERVICES
Refer to site plan for existing services.

1.5 EXISTING STRUCTURES AND FEATURES
Refer to site plan on 1.01 for existing structures and features. These include the driveway, power, water and telecommunications services..

2. DOCUMENTATION

Contract related issues

2.2 NOMINATED CONTRACTORS
N/A

2.3 PRINCIPAL SUPPLY ITEMS

2.4 MONETARY ALLOWANCES
N/A

2.5 INCONSISTENCIES IN CONTRACT DOCUMENTS
If there area any inconsistencies, errors or omissions in between documents, the contractor must seek direction in resolving it. They will be resolved as follows:

- The drawings take precedence over specifications.
- Figured dimensions on drawings take precedence over scaled dimensions.
- Drawings to a larger scale take precedence over drawings to a smaller scale.
- Drawings showing particular parts of the contract works take precedence over drawings for more general purposes.

Specification structure

2.6 SPECIFICATION STRUCTURE
The designation and numbering of individual specification sections follows the CBI (Co-ordinated Building Information) system for the co-ordination and classification of construction information. Sections are for reference and convenience only and do not profess to define subcontracts.

Read all sections together and read 1201 PRELIMINARIES AND GENERAL with all other sections.

2.7 INTERPRETATIONS

Required: Required by the documents, or by a statutory authority.

Proprietary: Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.

Approval: Approval in writing.

Direction: Direction in writing.

Provide and fix: "Provide" or "fix" or "supply" or "fix" if used separately mean provide and fix unless explicitly stated otherwise.

Notified: Notified in writing

2.8 ABBREVIATIONS

The following abbreviations are used throughout the specification sections:

AS	Australian Standard
AS/NZS	Joint Australian/New Zealand Standard
BRANZ	Building Research Association of New Zealand
BS	British Standard
ECP	Electrical Code of Practice
FTMA	Frame and Truss Manufacturers Association of New Zealand
HERA	Heavy Engineering Research Association
IEC	International Electrotechnical Commission
MPNZA	Master Painters New Zealand Association
Inc NZBC	New Zealand Building Code
	AS Acceptable solution
	VM Verification method
NZHB	New Zealand Hand Book
NZMRM	New Zealand Metal Roofing Manufacturers Inc
NZS	New Zealand Standard
NZS/AS	Joint New Zealand/Australian Standard
OSH	Department of Labour – Occupational Safety and Health
WANZ	Window Association of New Zealand Inc

2.9 DEFINED WORDS

Words defined in the conditions of contract, New Zealand Standards, or other reference documents have the same interpretation and meaning when used in their lower case, title case or upper case form in the specification text.

2.10 PERSONNEL

Owner: D Fuller ,C Gilbert

Contractor: The person contracted by the owner to carry out the

contract. Architect: Fabrico Ferreira

Engineer: GDM Consultants

2.11 PROPOSED SUBSTITUTIONS

A substitution may be proposed where specified products are not available, or if substitute products are brought to the attention of and are considered by the architect to be equivalent or superior to those specified. Except where a specified product is not available, the architect is not bound to accept any substitutions.

2.12 NOTIFICATION OF SUBSTITUTIONS

Notify any proposed substitution of specified products. Notification to include but not be limited to:

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

- Any changes required to the programme including any extension of time required
- Allowance (time and cost) for re-design and documentation (if applicable)
- Allowance (time and cost) for obtaining an amendment to the Building Consent (if applicable)
- An assessment of any change in cost associated with the proposed substitution

2.13 APPROVAL OF SUBSTITUTIONS

Approval of substitutions to be in writing.

2.14 MANUFACTURERS AND SUPPLIERS REQUIREMENTS

Manufacturers and suppliers requirements, instructions, specifications or details means those issued by them for their particular material, product or component and are the latest edition.

2.15 MANUFACTURERS AND SUPPLIERS DOCUMENTS

Refer to individual sections for a detailed list of manufacturers and suppliers documents relating to work on this project. Retain current copies of the documents listed, and other relevant manufacturers' technical literature, on site. Make this information available to all personnel and ensure they are familiar with requirements for handling, storing, preparing for, fixing and finishing products before commencing work. Provide a copy of all manufacturers' literature to the owner.

2.16 REFERENCED DOCUMENTS

Throughout this specification, reference is made to various New Zealand Building Code acceptable solutions (NZBC __/AS_) and verification methods (NZBC __/VM_) for criteria and/or methods used to establish compliance with the Building Act 2004.

Reference is also made to various Standards produced by Standards New Zealand (NZS, AS/NZS, NZS/AS), overseas standards (AS, BS) 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, and to ensure that all those engaged in construction of the works to be similarly informed.

Documents cited both directly and within other cited publications are deemed to form part of this specification.

2.17 PRECEDENCE OF REFERENCED DOCUMENTS

This specification takes precedence in the event of it being at variance with and requiring a higher standard than, the cited documents.

Resolution of any variance must be confirmed in writing and where building consent approval is affected, the change notified to the Building Consent Authority prior to any further work proceeding.

2.18 DOCUMENTS REFERRED TO

Documents referred to in this preliminaries and general section are:

Building Act 2004
Health and Safety in Employment Act 1992
Smoke Free Environments Act 1990

2.19 BUILDING CONSENT COMPLIANCE

It is an offence under the Building Act 2004 to carry out any work not in accordance with the building consent. Refer the resolution of matters concerning compliance to the owner for a direction. Where building consent approval is affected refer any change to the Building Consent Authority.

2.20 STATUTORY OBLIGATIONS

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

2.21 BUILDING CONSENT

Obtain the original or copies of the building consent form and documents from the owner and keep on site. Liaise with the Building Consent Authority and/or the building certifier 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.

2.22 PRODUCER STATEMENTS

When producer statements verifying construction are required, provide copies to both the Building Consent Authority and the owner. Producer statements to be in the form required by the Building Consent Authority. Engineer and precast panel manufacturer to provide producer statements for their work.

2.23 SHOP DRAWINGS

Where specified in the work sections, provide shop drawings for review. Proposed shop drawings to be submitted in due time to ensure conformance with the contract programme. Allow 10 working days for review.

Shop drawing review indicates only that the supplied interpretation of the design concept has been reviewed without the need for further modification, other than the corrections indicated by the reviewer. Review of shop drawings does not relieve the contractor of responsibility for the correctness of the shop drawings, site dimensions, the overall design, or for ensuring the work is performed in compliance with the contract documents. Nor does it remove the need for the contractor to comply with the stated requirements, details and specifications of the manufacturers and suppliers of individual components, materials and finishes. Neither can the review be construed as authorising departures from the contract documents.

2.24 MASTER BUILD SERVICES LTD GUARANTEE

Provide a Master Build New Homes or Alterations & Additions Guarantee including all costs in the contract price and covering loss of deposit, completion, inspection, execution and material defects under the terms of the guarantee offered by Master Build Services Ltd. Execute with all three signatories: owner, registered master builder and Master Build Services Ltd, before commencing the contract works.

or

2.25 REGISTERED CERTIFIED BUILDER GUARANTEE

Provide a Registered Certified Builder 5 year Home Owner Guarantee. Complete the guarantee application. Before commencing the contract works, execute with the signatures of the owner and the registered certified builder and forward to CBA Insurance Services Ltd along with the fee payable.

2.26 WARRANTIES

Provide executed warranties in favour of the owner in respect of, but not limited to, materials, elements, service, application, installation and finishing called for in that specified section of work. The terms and conditions of the warranty in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability under the terms of the warranty called for in that specified section of work.

- Conform to the warranty agreement form included in this specification.
- Commence all warranties from the date of practical completion of the contract works.
- Maintain their effectiveness for the times stated.

- Deliver executed warranties to the owner at practical completion.

2.27 WEATHERTIGHTNESS AND WATERTIGHTNESS WARRANTY
Provide a warranty for a minimum period of 2 years, covering the weathertightness of the complete building envelope and the watertightness of all liquid supply and disposal systems and fittings. This general warranty is in addition to any specific warranties required.

2.28 TRADE WARRANTIES
Where specific trade warranties are offered covering materials and/or execution of proprietary products or complete installations, provide copies of all such warranties to the owner.

2.29 FORM OF WARRANTY
Conform with the form of warranty agreement included in this specification. Commence all warranties from the date of practical completion. Maintain their effectiveness for the times stated.

2.30 LIST OF WARRANTIES

General warranties	Warranty period

2.31 SERVICES PLANS
Prepare services plans setting out the actual positions as constructed of all sewer, stormwater, sanitary plumbing, piped and ducted services, electrical and mechanical services. Except where specified otherwise, as-built plans may be marked up on copies of relevant project drawings. Provide 1 set of services plans to the owner. Provide services plans required by the building consent to the Building Consent Authority.

2.32 OPERATING AND MAINTENANCE MANUALS
Supply to the owners all operating and maintenance instructions provided by the manufacturers, including cleaning instructions where applicable.

3. ESTABLISHMENT

3.1 APPROVALS
Attend on Building Consent Authority officers, statutory and network utility inspectors, as necessary to obtain approvals (in addition to building consent approval) for and the satisfactory completion of the works.

4. TEMPORARY WORKS AND SERVICES

4.1 SITE TELEPHONE AND FACSIMILE
Provide on site telephone for the duration of the works.

4.2 SITE ACCOMMODATION
Provide, erect and maintain scaffolding, toilets, and access to the site. Provide cartage, craneage, plant hire and storage necessary for carrying out the works. Provide temporary works and services necessary for the completion of the works. Pay fees and remove temporary works and services on completion of the works.

4.3 PROTECT
Protect parts of the work liable to damage, including adjoining public or private property, existing buildings, existing roads, footpaths, fences, site services, trees, landscaping and existing retained site features, until completion of the works. Take all precautions necessary to protect the works from damage by unauthorised entry or inclement weather. Brace and support all parts of the works against damage during construction.

Make good damage to existing property and site features arising from construction activities or failure to protect.

4.4 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.

4.5 STORAGE

Provide temporary storage areas and protective covers and screens. Fillet stack and protect all framing and structural members from moisture and contamination. Completely protect finishing materials from the weather and damage and store in accordance with the manufacturer's requirements. Protect fabricated elements from the weather and damage, and store in accordance with suppliers' requirements.

4.6 ANTIQUITIES AND ITEMS OF VALUE AND INTEREST

Report immediately the finding of any fossils, antiquities, or objects of value. Ensure they remain undisturbed until direction is given for their removal.

5. PROJECT MANAGEMENT

5.1 SITE MEETINGS

Hold site meetings when required by the owner. The contractor's representative and site supervisor to attend such meetings. Inform subcontractors and others when their presence is required.

Meetings will normally be held: Weekly

5.2 MEANS OF COMMUNICATION

All directions and approvals to be in writing.

5.3 PROGRAMME

Provide within 2 weeks of award of the contract a programme for the contract works, including the work of separate contractors being carried out concurrent with this contract. Form of programme: A dated bar chart, identifying the contract work's critical path and all key dates for the provision of labour, materials and elements. Review and update the programme monthly. Supply a copy of the programme and all updates to the owner.

5.4 WORKING HOURS

Work on site is not restricted unless owners are in residence. Comply with territorial authority consent conditions and noise and nuisance controls.

5.5 WORKING HOURS RESTRICTIONS

Work on site is restricted to 8.00am until 6.00pm when owners are in residence.
Give owners 24 hours notice if access is required to the main house.

Work outside these hours may be permitted, but 24 hours notice is required to the owner before proceeding. Obtain any necessary permits and permission for such work.

5.6 HEALTH AND SAFETY

http://www.sitesafe.org.nz/

Refer to the requirements of the Health and Safety in Employment Act 1992. Comply with all relevant New Zealand safety legislation.

Take all practical steps to make the site and the contract works safe and to provide and maintain a safe working environment. Ensure that all those working on or visiting the site are aware of the rules governing site safety, are properly supervised and are not unnecessarily exposed to hazards.

Identify any significant hazards.

Maintain proper procedures for dealing with any emergencies that may arise. Immediately investigate accidents, identify their cause and maintain a register of

accidents and serious harm. Provide a copy of any report which the contractor is required to make to a public authority on any accident which is associated with carrying out the contract works and results in serious harm to any person.

5.7 SMOKING

Do not smoke on site except in a designated location in accordance with the Smoke Free Environments Act 1990. Location determined by the contractor, with the approval of the owner.

5.8 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.

6. CONSTRUCTION

6.1 QUALITY ASSURANCE

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

- Concrete quality and finishes (refer to 3101 CONCRETE).
- Dimensional accuracy of structural columns (following completion of foundations).
- All perimeter columns and frames for plumb.
- Levels of all floors relative to the site datum.
- Framing timber moisture content (refer to 3801 CARPENTRY).

Where any material, quality or dimension exceeds specified or required tolerances, obtain written confirmation of remedial action from the owner. When building consent approval is affected, confirm with the Building Consent Authority.

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

6.2 DAMAGE AND NUISANCE

Take all reasonable precautions to prevent damage and nuisance from water, fire, smoke, vehicles, dust, rubbish, noise and all other causes resulting from the contract works. Comply with the requirements of the territorial authority and relevant Acts and Standards.

6.3 SET-OUT AND DATUM

Set out the works to conform with the drawings. Establish a permanent site datum to confirm the proposed building ground floor level and its relationship to all other existing and new building levels.

6.4 SET-OUT BY LICENSED CADASTRAL SURVEYOR

Before commencing construction provide 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 a certificate, prepared by the same licensed cadastral surveyor confirming the set-out of the foundations and grid lines.

6.5 OWNER TO SIGHT SET-OUT

While it remains the contractor’s responsibility to set out the works accurately and correctly and to confirm any changes from the approved location with the Building Consent Authority, obtain the owner's written confirmation that they have sighted the proposed building location, site datum and profiles, before commencing any further work.

6.6 EXECUTION

Conform to the requirements of this specification. Ensure work is level, plumb, and true to line and face. Employ only experienced workers familiar with the materials and techniques specified.

6.7 MATERIALS AND PRODUCTS

Use only new materials and products, unless stated otherwise, of the specified quality and complying with all cited documents.

Substitution of alternative materials, products, plant or equipment from those specified must first be confirmed by the owner in writing. If the building consent approval is affected, obtain the approval of the Building Consent Authority for the substitution.

6.8 COMPATIBILITY

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.

6.9 COMPLETE ALL SERVICES

Ensure building services are operational, with temporary labelling removed, required labelling fixed and service instructions provided. Ensure all services for main house are suitable where these services are extended for the addition.

6.10 CLEAR AWAY

Regularly clear away trade debris, unused materials and elements from the site. On completion of the works leave the building clean and ready for occupancy, with all services operating and mechanical parts in good working order. Remove temporary markings, coverings and protective wrappings. Ensure that any maintenance requirements listed on temporary markings are conveyed to the owner.

6.11 CLEAN

Clean and wash down external surfaces to remove dirt, debris and marking. Clean interior surfaces including cabinetwork, joinery, sanitary and hardware items. Vacuum or polish floor surfaces. Clean and polish glass, both sides.

6.12 SPARES

Collect, protect and store safely spare materials required under the contract. Give the owner an inventory of spares.

2201 PREPARATION AND GROUNDWORK

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

NZS 3604	Timber framed buildings
OSH	Approved code of practice for safety in excavation and shafts for foundations

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

2. PRODUCTS

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

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

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

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

2.7 FREE-DRAINING AGGREGATE
Scoria or crushed gravel graded 50 to 14 clean.

3. EXECUTION

3.1 EXCAVATION GENERALLY
Carry out excavation to the guidelines set by the OSH publication: Approved code of practice for safety in excavation and shafts for foundations.

3.2 BURNING OF MATERIALS
Burning of materials is not permitted on site.

3.3 PROTECT EXISTING WORK
Protect from damage existing buildings, structures, roads, paving and services

3.4 PROTECT TREES
Protect from damage trees, shrubs, natural site features and existing landscaped areas..

3.5 SURFACE PREPARATION
Comply with NZS 3604, section 3.5, Site preparation. Remove all turf rocks and topsoil, from the area to be built on. Store topsoil where directed for later use. Ensure area of operation is kept to a minimum.

3.6 UNDERGROUND ELEMENTS AND SERVICES
Locate and mark existing services. Report for instructions when any unexpected voids, made-up ground or services are encountered. Connect to existing drains to territorial authority approval. Plumber to supply drawing showing dimensioned location of all services.

3.7 STOCKPILE TOPSOIL

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

3.8 SHORING AND UNDERPINNING

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

3.9 GENERAL EXCAVATION

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

3.10 ROCK EXCAVATION

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

3.11 FOUNDATION EXCAVATION

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

3.12 INADEQUATE BEARING

If bearing is inadequate then excavate further and backfill with material as follows. Confirm any changes with the territorial authority.

Below slabs on grade:	Hardfill
Below footings:	10 MPa concrete
Service trenches:	Hardfill

If excavation exceeds the required depths, backfill and compact to the correct level with material as listed.

3.13 GRANULAR BASE FOR SLABS

To conform with NZS 3604, section 7.5.3, Granular base. Consolidate with a vibrating roller. Blind the surface with coarse sand or sand/cement and roll ready to receive a dampproof membrane.

3.14 GENERAL BACKFILLING

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

3.15 RETAINING WALLS

Backfill behind retaining walls with free draining granular material and compact in 200 mm layers. Ensure any tanking membranes, drain coil and dampproofing are not punctured.

3.16 SURPLUS MATERIAL

Remove surplus and excavated material from the site.

2301 FOUNDATIONS

1. GENERAL

Refer to 3101 CONCRETE for poured concrete footings, foundations, foundation walls and floor slabs. Refer to ENGINEERS SPECIFICATION which takes precedence over this specification

1.1 DOCUMENTS
Documents referred to in this section are:

NZS 3104 Specification for concrete production
NZS 3109 Concrete construction
NZS 3602 Timber and wood-based products for use in building NZS 3604 Timber framed buildings
NZS 3631 New Zealand national timber grading rules

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
To be provided by manufacturer.

2. PRODUCTS

2.4 BOLTS AND SCREWS
Galvanized steel to NZS 3604.

2.6 CONCRETE
Refer engineers specification.

3. EXECUTION

3.1 FOUNDATIONS GENERALLY
Comply with NZS 3602 and NZS 3604 except as varied by this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.2 EXCAVATIONS
Refer to 2201 PREPARATION AND GROUNDWORK.

4. SELECTIONS

4.1 Sheet DPC
Brand/type: 250um polythene, Gib Ultrawide or equivalent

3101 CONCRETE

Refer to ENGINEERS SPECIFICATION which takes precedence over this specification

1. GENERAL

1.1 DOCUMENTS

Documents referred to in this section are:

AS 1366	Rigid cellular plastics for thermal insulation Part 3 Rigid cellular polystyrene – Moulded (RC/PS – M)
NZS 3101	Concrete structures standard Part 1 The design of concrete structures
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber framed buildings
AS/NZS 4671	Steel reinforcing materials

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.

1.2 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are available from the engineer.

2. PRODUCTS

2.1 NORMAL CONCRETE

Normal concrete 20 MPa grade for slabs on grade, maximum aggregate size 19 mm ready-mixed to NZS 3104. Provide delivery dockets listing mix and despatch details.

2.2 PRESCRIBED MIX CONCRETE

Prescribed mix concrete 20 MPa or 25 MPa grade minimum strength as specified by engineer, using either separate batching of sand and builder's mix or coarse aggregate to NZS 3104: table 3.1, Grading recommendations for combined and uncombined coarse aggregates.

2.3 SITE CONCRETE

Special concrete 17.5 MPa with minimum water for workability, all materials and batching to NZS 3104: table 3.1, Prescribed mixes (P).

2.4 REINFORCEMENT

Bars to AS/NZS 4671. Grade 300E deformed, other than for ties, stirrups and spirals, unless shown otherwise on the drawings. Welded reinforcing mesh to AS/NZS 4671.

2.5 TYING WIRE

Mild drawn steel wire not less than 1.2 mm diameter.

2.6 SPACERS AND CHAIRS

Precast concrete or purpose made moulded PVC to approval. Where concrete spacer blocks are used in exposed concrete work use blocks matching surrounding concrete.

2.7 DAMPPROOF MEMBRANE

0.25 mm minimum polyethylene to NZS 3604: clause 7.5.4, Damp-proof membrane.

2.8 CELLULAR POLYSTYRENE INSULATION

Proprietary expaned polystyrene (EPS) foam board to AS 1366 part 3.

3. EXECUTION

3.1 HANDLE AND STORE

Handle and store reinforcing steel and accessories without damage or contamination. Store on timber fillets on hard ground in a secure area clear of any building operation. Lay steel fabric flat.

Ensure reinforcement is clean and remains clean so that at the time of placing concrete it is free of all loose mill scale, loose rust and any other contamination that may reduce bonding capacity.

3.2 FALSEWORK AND FORMWORK

Use falsework and formwork of sufficient strength to retain and support the wet concrete to the required profiles and tolerances. Select formwork finish to produce the specified finished quality. Ensure timber or plywood used for formwork is non-staining to the set concrete.

Securely fix and brace formwork sufficiently to support loads and with joints and linings tight enough to prevent water loss. Do not use tie wires or rods unless approved in writing by the owner. Unless detailed otherwise, provide a 19 mm chamfer or fillet strip at all interior and exterior angles of beam and column forms. Mitre at intersections.

Water blast to clean formwork. Keep formwork wet before concrete is placed.

Unless detailed otherwise, set up soffit boxing for beams and slabs to provide a camber when forms are stripped, of 3 mm rise for every 3 metres of total clear span.

3.3 INSTALL DAMPPROOF MEMBRANE

Apply polythene membrane to prepared basecourse with 150 mm laps between sheets. Tape seal laps and penetrations with 50 mm wide pressure sensitive plastic tape. Refer to drawings for perimeter details.

3.4 INSTALL CELLULAR POLYSTYRENE INSULATION

Install EPS insulation system to manufacturer's requirements.

3.5 CUT AND BEND REINFORCEMENT

Cut and bend bars using proper bending tools to avoid notching and to the requirements of NZS 3109: 3.3 Hooks and bends. Minimum radii of reinforcement bends to NZS 3109: table 3.1, Minimum radii of reinforcement bends. Do not rebend bars. Where rebending is necessary, use a purpose built tool, proper preparation and preheating.

3.6 ADJUSTMENTS

Use a purpose built tool for on site bending and to deal with minor adjustments to steel reinforcement.

3.7 TOLERANCES, BENDING

To NZS 3109: clause 3.9, Tolerances for reinforcement.

3.8 SECURE REINFORCEMENT

Secure reinforcement adequately with tying wire and place, support and secure against displacement when concreting. Bend tying wire back well clear of the formwork. Spacing as dimensioned, or if not shown, to the clear distance minimums laid down in NZS 3109: clause 3.6, Spacing of reinforcement.

3.9 LAPPED SPLICES

Length of laps where not dimensioned on the drawings in accordance with the engineers specification. Increase laps of plain round steel by 100%. Provide laps only where indicated on the drawings. Tie all lapping bars to each other.

3.10 REINFORCEMENT COVER

Minimum cover to all reinforcing bars, stirrups, ties and spirals, as shown on the drawings. Where cover is not shown on drawings provide minimum cover to NZS 3101: table 5.5, Minimum required cover. Fix chairs for top reinforcement in slabs at 1.0 metre

centres or to ensure adequate support. Cover tolerances to NZS 3109: clause 3.9, Tolerances for reinforcement.

3.11 CASTING IN

Build in all grounds, bolts and fixings for wall plates and bracing elements, holding down bolts, pipes, sleeves and fixings as required by all trades and as shown on the drawings, prior to pouring the concrete.

Do not use grounds exceeding 100 mm in length. Location and form of conduits to be approved in writing by the owner. Minimum cover 40 mm. Do not encase aluminium items in concrete. Do not paint steel embedded items more than 25 mm into the concrete encasement. Cut back form ties to specified cover and fill the cavities with mortar.

Form all pockets, chases and flashing grooves as required by all trades and as shown on the drawings.

Wrap all pipes embedded in concrete with tape to break the bond and to accommodate expansion. Do not embed pipes for conveying liquids exceeding a temperature of 50°C in concrete.

3.12 CONSTRUCTION JOINTS

Locate and construct as shown on the drawings or in accordance with NZS 3109: clause 5.6, 5.6.3 Type B.

3.13 PRE-PLACEMENT INSPECTION

Do not place concrete until all excavations, boxing and reinforcing have been inspected and passed by the territorial authority inspector.

3.14 SURFACE FINISHES

To NZS 3114: clause 105, Specification of finishes, as scheduled or as denoted on the drawings.

3.15 EXPOSED CONCRETE

Formwork linings and surface finishes as nominated for both fair face and concealed or exposed surfaces. Unless detailed, obtain written confirmation of the type and pattern of all joints.

3.16 CONCRETE SURFACE TOLERANCES

To NZS 3114: clause 104, Surface tolerances and clause 105, Specification of finishes, with the suggested tolerances becoming the required tolerances.

3.17 PUMPING CONCRETE

Set up and supervise pump operation, placing and compaction of the mix to NZS 3109: clause 7.4, Handling and placing and clause 7.6, Compaction Advise the ready-mix supplier of the type of pump and the slump required, in addition to the concrete grade, strength and quantity.

3.18 COMPACTION

Use power operated vibrators on foundations, vertical constructions and beams.

3.19 RESIDENTIAL FLOOR SLABS

Construct to NZS 3604: clause 7.5, Concrete slab-on-ground floors in timber buildings. Lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish. Tolerance on flatness: maximum 3 mm gradual deviation over a 3 metre straight-edge, to NZS 3109: clause 104, Surface tolerances.
Where slab is coloured and exposed provide a sample of the colour to match existing concrete floors in house. Protect all exposed concrete slabs from damage during construction

3.20 SAW CUTS

Cut slabs where indicated on the drawings and as required to control shrinkage cracking. Carry out cutting as soon as possible, without causing tear-out of aggregate and before shrinkage cracking has occurred, generally within 24 hours of pouring. Where saw cuts

are made, cut out 100 mm of every second wire of the mesh for a length of 50 mm each side of the saw cut position. Saw cuts: $1/_3$ slab depth or 30 mm minimum.

3.21 SURFACE DEFECTS

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

3.22 CURING OF CONCRETE

Keep damp for not less than seven days. Ensure curing of slabs commences as soon as possible after final finishing, by the use of continuous water sprays, or ponding. Alternately, apply a curing membrane. Ensure any membrane used will not affect subsequent applied finishes.

3.23 STRIKE FORMWORK

Strike formwork without damaging or overloading structure. Do not remove formwork before the following minimum periods:

12 hours:	Sides of beams, walls and columns
4 days:	Slabs in beam and slab construction (leave props under slab spans over 2
metres) 10 days:	Props from under slab spans over 2 metres
18 days:	Beams, soffits and slab spans over 5 metres

3.24 CLEAN OUT

Clean out saw cuts. Fill with cement grout where the floor will be covered with carpet or vinyl.

3.25 REMOVE

Remove all unused materials and all concrete and reinforcing debris from the site.

4. SELECTIONS

4.1 DAMPPROOF MEMBRANE

Brand/type: Gib dampguard or equivalent

4.2 CELLULAR POLYSTYRENE INSULATION

Grade: S grade

Thickness: 50 mm

4.3 REINFORCEMENT LAPS

Where reinforcement laps are not shown on the drawings, lap as follows:

Bar diameter	Grade 300E deformed
10 mm	400 mm
12 mm	500 mm
16 mm	650 mm

4.4 CONCRETE

Normal concrete:

17 MPa: or as specified by the engineer

Prescribed concrete:

10 MPa:	Site concrete, bedding concrete and for setting posts
17.5 MPa:	As required by NZS 3604
25 MPa:	As required by NZS 3604 and for exposed concrete in sea spray zone

4.5 SURFACE FINISHES FLOOR SLABS AND PAVEMENTS

Surface finish class to NZS 3114: table 2, Classes of floor, exterior pavement and invert finishes

Finish class	Location
U3	Inside house. Coloured concrete on all terraces and carport, cut and grouted.

- Refer to section 3104

3104 COLOURED CONCRETE

Concrete on terraces and carport to to be coloured and finished to match the existing house.
Concrete for new house to standard finish to be tiled or carpeted over.

1. GENERAL

Related work

1.1 RELATED SECTIONS
Refer to 3101 CONCRETE for concrete placing, finish, curing and for cloured concrete.

1.2 DOCUMENTS REFERRED TO
Documents referred to in this section are:

NZS 3114 Specification for concrete surface finishes

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'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are: Peter Fehl coloured concrete to match colour of concrete in existing house. Samples available through Firth.
Specifications to be provided by manufacturer.

Requirements

1.4 PROVIDE SAMPLE
Provide a sample of specified finish before commencing work. Sample to be of similar mix to the proposed construction. Refer to 4. SELECTIONS. Keep sample on site until concrete placing is completed.

1.5 TECHNIQUE DISCUSSION AND FINISH STANDARD
Before commencing work, arrange a meeting to confirm the method of carrying out the work. Select an area on site and finish the selected area to achieve the agreed finish. When agreement is reached, this then becomes the finish standard for the balance of the work.

2. PRODUCTS

2.1 PENETRATING SEALER
Chemical reactive concrete stabilizer. Provide specification details of sealer before application

2.3 GROUT
Cement base slurry grout.

3. EXECUTION

Conditions

3.1 CONFIRM CONCRETE SURFACE
Confirm concrete surface is of the required standard for the concrete finishing processes. Do not proceed if placed concrete is not capable of delivering the specified finish. Seek written direction as to what action is required.

3.2 PROTECT ADJACENT SURFACES
Cover glass and other surfaces to protect from damage that is caused from cementicious dust.

3.4 PROTECT GROUND SURFACES
Fully cover coloured concrete floors and protect from damage with plastic sheeting. Protect with old carpet or similar over.

3.6 GROUT
Grout the air holes left in the concrete surface. Polish to remove grout within 24 hours of application using a 120 grit diamond.

3.7 GROUTING CONCRETE CUTS
Grout construction cuts and decorative cuts. Polish to remove excess grout within 24 hours of application using a 120 grit diamond.

Application – seal/polish

3.9 APPLYING PENETRATING CONCRETE SEALER
Apply selected penetrating concrete sealer to manufacturer's requirements.

Completion

3.12 LEAVE
Leave work to the standard required by following procedures.

3.13 REMOVE
Remove debris, unused materials and elements from the site.

3.14 PROTECT CONCRETE
Protect floor from damage. Provide protection by laying sheet material for the period between completion of placing and completion of the contract works.

4. SELECTIONS

4.1 REQUIREMENTS
Sample: Required
On site standard: Required

4.2 CONCRETE FINISHES
Location
New house Standard slab to engineers specifications for tiled finish
Carport and entry Coloured concrete : fill cuts, seal & polish to match existing house
Concrete terrace Coloured concrete : fill cuts, seal & polish to match existing house

4.3 PENETRATING CONCRETE SEALER
Location: All concrete floors

3401 STRUCTURAL STEELWORK

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

NZBC F5/AS1 Construction and demolition hazards

AS/NZS 1111 ISO metric hexagon commercial bolts and screws
AS/NZS 1252 High-strength steel bolts with associated nuts and washers for structural engineering
AS/NZS 1554 Structural steel welding, Part.1: Welding of steel structures
AS/NZS 2312 Guide to the protection of iron and steel against atmospheric corrosion NZS 3404 Steel structures Standard, Part 1: Steel structures Standard
AS 3828 Guidelines for the erection of building steelwork
AS/NZS 4680 Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
AS/NZS 4792 Hot-dip galvanized (zinc) coatings on ferrous hollow sections

HERA Report R4-99 “HERA specification for the fabrication, erection and surface treatment of structural steelwork”.

1.2 MANUFACTURER’S DOCUMENTS
Manufacturer’s and supplier’s documents relating to work in this section are:
To be provided by manufacturer.

1.3 QUALIFICATIONS
Welders to be qualified, experienced competent workers, familiar with the materials and the techniques specified.

1.6 VERIFY DETAILS AND DIMENSIONS
Refer to drawings to ensure all required details and fixings are provided for in the structural steelwork. Verify dimensions against site measurements prior to fabrication.

1.7 TEST WELDING
Non-destructive weld examination with method, extent and standards of acceptance to AS/NZS 1554.1, Section 7 and Table D1 of NZS 3404 part 1.

2. PRODUCTS

2.1 STRUCTURAL STEEL
All steel Grade 300, unless noted otherwise on the drawings. Test and stress relieve for brittle fracture when required by NZS 3404, part 1, section 17.

2.2 WELDING
Electrodes to comply with and be selected for the grade of steel being welded as required by AS/NZS 1554.1. Welding wire as required by the wire manufacturer for the materials to be joined and the welding position. Welding flux: dry and used from sealed containers. Material for arc stud welding to comply with AS/NZS 1554.1.

2.3 BOLTS, NUTS AND WASHERS
To AS/NZS 1111 and AS/NZS 1252. Hot dip galvanise all bolts, nuts and washers forming a permanent part of any structure subject to a protective coating, to AS/NZS 4680.

2.4 PRIMER
Alkyd oil zinc chromate priming paint.

3. EXECUTION

3.1 SURFACE FINISH
Grind off all burrs and sharp arrises.

3.2 TOLERANCES

Discard material showing visual defects affecting its structural integrity. Structural elements to comply with NZS 3404, part 1, section 14.4 (straightness, full contact splices, length and struts not prepared for full contact). Comply with the required tolerances laid down for holding down bolts, columns, beams and other members in HERA Report R4-99, sections 2.5, 4.5 and 5.6.

3.3 CUTTING

To NZS 3404, part 1, clause 14.3.3 and HERA Report R4-99, sections 1.5 and 4.6. Hand cut only where machine cutting is not possible.

3.4 CONSTRUCT

Construct the steel structure as detailed and to NZS 3404, part 1, section 14 (fabrication) and part 1, section 15 (erection).

3.5 WELDING

To NZS 3404, part 1, clause 14.3.4 and AS/NZS 1554.1. Comply with AS/NZS 1554.1 for guidance on welding inspection and quality control.

3.6 WELDING NEAR TOUCHING STEELWORK

Shop weld together touching or near-touching steelwork all round with 5 mm (one pass) continuous fillet welds unless denoted otherwise on the drawings.

3.7 HOLING

To NZS 3404, part 1, clause 14.3.5 for sizes, alignment, finishing and punching of holes.

3.8 BOLTING

Bolting to comply with NZS 3404, clause 14.3.6.

3.9 THREADS EXCLUDED FROM SHEAR PLANE

Select length of bolts such that the threaded portion does not occur within the shear plane between joined parts.

3.10 START ERECTION

Start erection only when the holding down bolts and anchorages have achieved sufficient strength. Carry out the erection of the structural steel to the requirements of AS 3828. Comply with NZBC F5 and NZS 3404, part 1, section 15. Provide temporary bracing as required to achieve stability during erection.

3.13 INSPECTION

Inspect all stages of fabrication and construction of the structure to NZS 3404, part 1, sections 14 (fabrication) and 15 (erection).

3.14 ENCASED STEELWORK

Clean the steelwork to be encased in concrete to remove all loose mill scale, rust, dirt and other matter affecting bond with concrete. Achieve this by wire brushing and the use of suitable solvents.

3.15 BRUSHING AND POWER TOOL CLEANING

Remove oil and grease by the use of solvents. Scrape and power wire brush to a minimum class 2 finish to AS 1627.2. Clean to bright metal, but avoid producing a polished surface. Check that no burrs or sharp arrises remain which may prevent the full coating thickness being attained.

3.16 ABRASIVE BLASTING

Remove oil and grease by the use of solvents. Abrasive blast clean to a class $2\frac{1}{2}$ finish to AS 1627.4. Clean to bright metal, but avoid producing a polished surface. Select grit type and equipment such that the cleaned surface profile between peaks and valleys does not exceed one third of the dry film thickness. Check that no burrs or sharp arrises remain which may prevent the full coating thickness being attained.

3.17 PRIMING GENERALLY

Coat steelwork, unless specifically noted otherwise, with the specified priming paint, including patch priming on site after erection.

3.18 STEELWORK BEING GALVANIZED

Clean sections thoroughly and apply zinc coating by the hot-dip process to the requirements of AS/NZS 4680. Average zinc coating to be not less than the following:

Structural steelwork	Average coating	Minimum coating
≤ 1.5 mm	45 microns	35 microns
> 1.5 mm – ≤ 3 mm	55 microns	45 microns
> 3 mm – ≤ 6 mm	70 microns	55 microns
> 6 mm	85 microns	70 microns

3.20 UNPAINTED SURFACES

Do not paint:

- faying face of high strength friction grip bolted joints
- areas for site welding, keeping 75 mm clear all round
- surfaces being embedded in concrete.

Where steel is only partly encased then extend priming 25 mm maximum into the concrete encasement area.

3.21 PATCH PRIMING

Clean areas of damaged priming and areas left clear for site jointing to a standard comparable with that specified for shop cleaning. Wash off chemical deposits from welding fumes. Apply priming coats to the same standard as shop primers, ensuring thorough coating of bolts, nuts and connection areas. Reprime if more than 4 weeks elapse before the final coating system is applied.

3.22 COATING SYSTEMS

Apply all coatings in accordance with the coating manufacturer's requirements. Apply coatings to steel within 4 hours of cleaning and before condensation or light rusting can occur. Ensure steel is dry and atmospheric conditions warm and dry, with an air temperature of greater than 12°C and relative humidity less than 85%.

3.23 TOUCH UP

Touch up primer. Apply protective coatings as specified.

3801 CARPENTRY

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

AS/NZS 1748 Mechanically stress-graded timber
AS/NZS 1860 Particleboard flooring, 1860.1: Specifications
AS/NZS 2269 Plywood - Structural
AS/NZS 2918 Domestic solid fuel burning appliances - Installation
NZS 3602 Timber and wood-based products for use in building NZS 3603 Timber structures standard
NZS 3604 Timber framed buildings
NZS 3606 Manufacturer of glue-laminated timber
NZS 3631 New Zealand national timber grading rules
BRANZ Bulletin 453: Fasteners selection
BRANZ Bulletin 368: Preventing moisture problems in timber framed skillion roofs

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section include:
CHH Blush ply : www.blushply.co.nz 0800 256 111

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

2. PRODUCTS

2.1 BUILDING WRAPS AND UNDERLAYS
Refer to WALL CLADDING and THERMAL INSULATION for the supply of wall wraps, underlays and sheet insulation products.

2.2 TIMBER FRAMING, TREATED
Species, grade and in service moisture content to NZS 3602 and treatment to NZS 3640. Either mechanically stress graded to AS/NZS 1748, or visual grading to NZS 3631.

2.3 TIMBER FRAMING, CHEMICAL FREE, MECHANICALLY STRESS GRADED
Species, grade and moisture content in service as set out in NZS 3602. Machine stress graded to AS/NZS 1748, with an average moisture content at supply of 16% or less.

2.7 PLYWOOD
Structural plywood to AS/NZS 2269 for bracing, bracketing, sarking and floors.

2.8 DAMPPROOF COURSE
2-ply/3-ply kraft felt strip saturated and coated with bitumen.

2.9 NAILS
Steel, stainless steel and galvanized steel of pattern to suit the location and to BRANZ Bulletin 453 Fasteners selection.

2.10 BOLTS AND SCREWS
Steel, stainless steel and galvanized steel of pattern to suit the location and to BRANZ Bulletin 453 Fasteners selection.

2.11 NAIL PLATES
Stainless steel and/or galvanized steel toothed or nailed plates to the plate manufacturer's design for the particular locations as shown on the drawings.

2.12 CONNECTORS
Galvanized steel connectors and structural brackets to the connector manufacturer's design for particular locations shown on drawings.

3. EXECUTION

3.1 EXECUTION GENERALLY
To NZS 3603 and NZS 3604 except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.2 SEPARATION
Separate all timber framing timbers from concrete, masonry and brick by: -
- a full length bituminous damp proof membrane overlapping timber by at least 6 mm; or
- a 12 mm minimum free draining air space

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

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

Framing at erection:	24% maximum
Framing at enclosure:	20% maximum
Framing at lining:	16% maximum
Timber strip flooring:	10% at time of laying

3.5 SET-OUT
Set out framing in accordance with the requirements of NZS 3604 and as required to support sheet linings and claddings.

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

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

3.8 FRAMING CEILINGS
Frame to required loading and bracing complete with runners and battens set out to support ceiling lining. All fabricated and fastened to NZS 3604, section 13, Ceilings. Trim for openings in ceilings and hatches to NZS 2604 section 13.3, Openings in ceilings. Provide blocking for water tanks located in the ceiling space to NZS 3604, section 13.4, Water tanks in roof space.

3.9 INSTALLING WALL WRAPS, UNDERLAYS AND SHEET INSULATION PRODUCTS
Refer to WALL CLADDING and THERMAL INSULATION for the installation of wall wraps, underlays and sheet insulation.

3.10 INSTALL PROPRIETARY FIREPLACE
Prepare for the installation as detailed and as required by manufacturer of specified fireplace. Install strictly in accordance with AS/NZS 2918 and the manufacturer’s stated and detailed requirements.

4. SELECTIONS

4.1 EXTERIOR WALL FRAMING

Member	Species	Grade	Treatment
Strapping to exterior walls:	Radiata pine	No. 1	H1.2
	Douglas fir	No. 1	H1.2
Where required	Radiata pine	Merchantable	H3.2
	Douglas fir	Merchantable	H3.2

4.2 ROOF FRAMING

Member	Species	Grade	Treatment
Rafters:	Radiata pine		H1.2
Purlins:	Radiata pine	MSG 6	H1.2
	Douglas fir	MSG 6	H1.2
Ceiling joists:	Radiata pine	MSG 6	H1.2
	Douglas fir	MSG 6	H1.2
Skillion roof framing (>10°):	Radiata pine	~	H1.2

4.3 EXTERIOR EXPOSED TIMBERS

Member	Species	Grade	Treatment
Posts:	Macrocarpa	No. 1	H3.2
Joists:	Macrocarpa	No. 1	H3.2
Pergola:	Macrocarpa	No. 1	H3.2

4.4 EXTERIOR FINISHING TIMBERS

Member	Species	Grade	Treatment
Fascia boards	Radiata pine		H3.2
Barge boards	Radiata pine		H3.2

4.5 ENGINEERED WOOD PRODUCTS (EWP)

Member	Brand	Type
None		

4.6 INTERIOR FRAMING

Member	Species	Grade	Treatment
Non structural walls:	Radiata pine	~	H1.2
	Douglas fir	~	H1.2

4.7 PLYWOOD

Member :	Brand/type	Treatment
Plywood bracing:	CHH	H3
Plywood ceiling and wall lin- ings:	CHH 12mm high grade interior ply- wood, blush range, blonde finish	Semi opaque heat fusion finish

4.8 INTERIOR FINISHING TIMBERS

Member	Species	Grade
Architraves:	Macrocarpa	Dressing
Skirtings:	Macrocarpa	Dressing

4.9 UNDERLAY

Brand/type: AHI flamestop or similar

4.10 Building Wrap

Brand/type: Breathable wrap, Gib black building paper or Frameguard II

4301 PROFILED METAL ROOFING

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

NZBC E2/AS1 External moisture
4.0 Flashings
5.0 Roof/wall junctions
6.0 Parapets
8.0 Roof claddings
8.1 General
8.4 Profiled metal

AS 1397 Steel sheet and strip - hot-dipped, zinc-coated, or aluminium/zinc- coated
NZS 3403 Specification for hot-dipped galvanized corrugated steel sheet for building purposes
NZS 3602 Timber and wood-based products for use in building NZS 3604 Timber framed buildings
AS/NZS 4534 Zinc and zinc/aluminium-alloy coatings on steel wire

NZ Metal Roofing Manufacturers Inc: NZ metal roofing & wall cladding code of practice

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
To be provided by manufacturer.

1.3 QUALIFICATIONS
Carry out roofing work using experienced, competent roofers familiar with the materials and techniques specified.

1.4 WIND AND EARTHQUAKE LOADINGS
Use fixings and methods capable of sustaining the loads appropriate to the area as set out in NZS 3604, section 5.

1.5 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.

1.6 PERFORMANCE
Accept responsibility for the weather-tight performance of the completed roofing system, including all penetrations through the roof and junctions with walls and parapets.

2. PRODUCTS

2.1 PROFILED METAL ROOFING
Steel sheet galvanized to NZS 3403, aluminium/zinc coated to AS 1397. Finish as specified. Accessories, cappings, flashings and fixings to match and to the roofing manufacturer's requirements.

2.2 WIRE NETTING
Galvanized hexagonal 75 mm mesh from 1 mm steel wire to AS/NZS 4534.

2.3 UNDERLAY
Breather type, waterproof.

2.4 NAILS, SCREWS AND FASTENINGS
Metal, size and pattern, to roofing manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4: Durability.

3. EXECUTION

3.1 STORAGE

Stack roofing and accessories on clean, level areas of the site and protect from damage and from weather until ready to fix in place. Avoid overloading roof structure when roofing materials are placed on the roof area prior to installation.

3.2 SET-OUT

Set out the planned layout before fixing commences, to ensure true lines and the correct relationship to module, grid and roof features.

3.3 LAY ROOF UNDERLAY

Lay and fix to NZBC E2/AS1: 8.1.5 Underlays, NZS 3604, section 11.2.2 and the roofing manufacturer's requirements.

3.4 LAY ROOFING, GENERALLY

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

3.5 CUT PROFILED METAL ROOFING

Cut profiled metal roofing only with tools recommended by the roofing manufacturer. Fold ends and seal cut edges to the roofing manufacturer's requirements.

3.6 INSTALL PROFILED METAL ROOFING

Install profiled metal roofing and fix complete with all matching accessories, flashed to all roof features and penetrations; and in accordance with the requirements in the NZ Metal Roofing Manufacturers Inc: NZ metal roofing and wall cladding code of practice.

3.7 FIXINGS

Refer to the roofing manufacturer’s literature for fixing details and to NZS 3604 for fixings durability requirements.

3.8 INSTALL COVERS AND FLASHINGS

Install and fix as detailed and to the roofing manufacturer’s details and to comply with NZBC E2/AS1: 4.0 Flashings, 5.0 Roof/wall junctions and 6.0 Parapets.

3.9 PENETRATIONS

Flash and overflash all penetrations through the roof.

3.10 PENETRATIONS AND JUNCTIONS

Check that adjoining walls and parapets are prepared ready for the installation of the roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof. Required work includes the following:

- underlay turned up at wall and parapet lines
- underlay finished and dressed off to all openings, ready for the installation of skylights and other penetrations
- roofing installation neatly finished to all sides of openings and to all wall and parapet junctions
- installation of flashings (those required to be installed prior to installation of penetrating elements and/or wall linings).

3.11 USE OF SEALANTS

Select and use sealants only as recommended by the roofing manufacturer.

3.12 COMPLETE

Ensure the work is complete with all flashings, undercloaks, valleys, ridges and hips properly installed so the finished roof is completely weathertight.

3.13 REMOVE FILINGS

Remove metal filings from roofing surfaces at least daily.

3.14 CLEAR

Clear trade rubbish and unused materials from the roof and surrounds regularly during the work and at completion. Sweep down the completed roof and flush out spoutings, gutters and rainwater pipes, ensuring that metal filings, metal scraps and loose fixings are removed.

3.15 REPLACE

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

4. SELECTIONS

Materials

4.1 UNDERLAY

Brand/type: AHI flamestop or similar

4.2 PROFILED METAL ROOFING

BMT: .55 mm

4.3 FLASHINGS

Metal/coating: As specified

4502 ALUMINIUM WINDOWS AND DOORS

1. GENERAL

Window and door sections to match existing house windows in general appearance and finish colour. Frames to be APL 'Thermal Heart' thermally broken frames with double glazed units. Refer to Manufacturers specifications which should be read in conjunction withthis specification.

1.1 RELATED SECTIONS

Refer to 4601 GLAZING for glazing.

1.2 DOCUMENTS

Documents referred to in this section are:

NZS 3604	Timber framed buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
WANZ	Aluminium Window Handbook
WANZ	Specification for powder coatings on architectural aluminium
products WANZ	Installation code for aluminium joinery products
WANZ	Window installation system: An Alternative Solution for the installation of Windows and doors

BRANZ Bulletin 349: Finishes for aluminium

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
To be provided by manufacturer.

1.4 SUBMIT SAMPLE SECTIONS

Submit full size section samples, with the selected finish of all profiles offered.

1.5 SHOP DRAWINGS

Shop drawings to show, but not be limited to:
- Fully dimensioned elevations of all elements (minimum scale 1:20)
- Dimensions of all typical elements and of any special sizes and shapes
- Glazing specification and details

Provide a copy of shop drawings revised to include required modifications, before proceeding with any fabrication or erection.

1.6 CERTIFICATION

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

1.7 QUALIFICATIONS

Fabrication by a member of WANZ.

1.8 PERFORMANCE

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

2. PRODUCTS

2.1 WINDOW AND DOOR SECTIONS

Form all aluminium members from extruded sections. Folded sections are restricted to flashings and concealed members only.

2.2 FLASHINGS GENERALLY
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 direct fix systems

2.3 SILL PAN FLASHING
Flashing for direct fix claddings to collect and drain water that may penetrate through the window or door unit. Size to extend from the inner most point of the aluminium frame out over the external face of the cladding.

Components

2.7 WINDOW HARDWARE
Fasteners, stays, locks, vents and other hardware as scheduled. Refer to 4. SELECTIONS. Where hardware is not scheduled, use hardware from window manufacturer's standard range. Key alike all lockable window hardware able to be keyed alike.

2.8 DOOR HARDWARE
Locks, bolts, door rollers, restrictors, hinges and other hardware as scheduled. Refer to 4. SELECTIONS. Where hardware is not scheduled, use hardware from door manufacturer's standard range. Key alike all door locks able to be keyed alike.

2.9 SAFETY STAYS
Stainless steel non releasable restrictors to limit window opening to NZBC F4/AS1, Table 2, Acceptable opening sizes for barriers.

2.10 FABRICATION SEALANT
To the window manufacturer's requirements.

2.11 GLAZING TAPE AND GASKETS
To the window manufacturer's requirements.

2.12 FIXINGS
Ensure all fixings and bracketing are compatible with aluminium. Do not use electroplated zinc fasteners or brass fastenings.

Finishes

2.13 ORGANIC POWDER COATING FINISH
To AS 3715 and WANZ Specification for powder coatings on architectural aluminium products. All finished surfaces to show uniformity of gloss and colour (to match approved sample) free of all coating defects.

3. EXECUTION

3.1 CONFIRM
Confirm all framing openings on site for dimension, plumb and straightness prior to fabrication or ordering of aluminium joinery.

3.2 EXECUTION GENERALLY
Execute all fabrication and installation work in accordance with the requirements of NZS 4211, WANZ Aluminium window handbook and WANZ Installation code for aluminium joinery products.

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

3.4 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.

3.5 HANDLING

Avoid distortion of elements during transit, handling and storage. 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.

3.6 CORROSION PROTECTION

Seal or suitably coat cut ends and holes drilled in aluminium before the frames are installed. Before fixing, apply bituminous coatings, slips or underlays between dissimilar metals in contact, or aluminium in contact with concrete.

3.7 CONFIRM PREPARATION OF WALL OPENINGS

Confirm that 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:

- interior linings neatly trimmed ready for installation of jamb liners and completion of air seals to all sides of openings
- installation of flashings (those which are required to be installed prior to frames). www.wanz.org.nz/

3.8 FIX FRAMES

Fix frames rigidly in place without distortion, to the window manufacturer's and WANZ Aluminium window handbook requirements, plumb, true to line and face, weathertight and with all openings operating freely.

3.9 DRAINAGE

Provide anti-condensation channels to all sills. Sills to sashes and fixed lights to incorporate positive drainage to the exterior.

3.10 INSTALLATION GENERALLY

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

3.11 INSTALLATION DIRECT FIX

Install to window manufacturers details and drawings including sill pans to window and door units.

3.12 INSTALLATION CAVITY CONSTRUCTION

Install to WANZ Installation System details and drawings including WANZ cavity closers, support bars and support angles

Flashings and air seals

3.13 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 jamb facings by 15 mm at each end.

3.14 COMPLETE AIR SEAL
Form an air-tight seal by means of proprietary expanding foam, compressible foam strips, or sealants used with backing rods, applied deep within the reveal to completely fill the gap between joinery and structural framing. Ensure that in combination with the internal linings a complete air seal is created.

Completion items

3.15 SEAL FRAMES ON SITE
Seal frames to each other and to adjoining structure and finishes, all as required by the window manufacturer and to make the installation weathertight. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.

3.16 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. Remove protection on completion.

3.17 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.

Roof windows

3.18 INSTALL ROOF WINDOWS
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. Install and fix the roof window units strictly in accordance with the roof window manufacturer's requirements and installation instructions. Install flashings and overflashings as detailed and as required to make the installation completely weatherproof.

3.19 ROOF WINDOW ACCESSORIES AND OPERATING SYSTEMS
Install selected accessories and hardware and complete all operating systems.

3.20 CLEAN FRAMES
On completion clean down both sides of window and door frames using the methods required by the window and door manufacturer.

3.21 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

4.1 WIND ZONE
Building wind zone: High (as determined from table 5.1 of NZS 3604)

Materials

4.2 WINDOWS AND DOORS TYPE
Manufacturer: Architectural Profiles Ltd
Type/model: thermal heart residential profile
Bifold doors to have 180 degree fold back

4.3 WINDOW AND DOOR JAMB LINERS, WOOD
Surface finish: finger jointed pine, paint finish

4.4 ORGANIC POWDER COATING FINISH
Thickness: 40 microns minimum
Colour: To match existing house

4.6 FLASHINGS
Material/type: As specified by manufacturer – finish to match aluminium Pattern: Formed to suit details provided

Components

4.12 FINISH, POWDER COATING
Film integrity warranty: 10 years
Colour integrity warranty: 7 years
Gloss level: 60%
Thickness: 50 to 90 microns with a minimum of 50 microns

Hardware

4.13 WINDOW HARDWARE
Casement stay: Interlock 300 4BC series with maximum opening of 77 degrees
Awning stay: Interlock A series friction stay
Window fastener: Miro wedgeless window fastener

Item	Location
Passive ventilators:	W5 W6 W8 W9
Sash locks:	

4.14 DOOR HARDWARE
Hinged door lever lock: Miro
Bifold door hardware Miro handles, 180 degree fold back hinges D02 D03

Item	Location
Hold back devices:	D02 D02
Twin bolt bifold lock	D02 D03 Miro handles

4.15 HARDWARE FINISH
Finish: Powder coat
Colour: to match window frames

4601 GLAZING

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

NZBC B1/AS1	Structure, 7.0 Glazing
NZBC F2/AS1	Hazardous building materials, 1.0 Glazing
NZBC F4/AS1	Safety from falling, 1.0 Barriers in buildings
NZS 3604	Timber framed buildings
NZS 4223	Glazing in buildings Part 1: The selection and installation of glass in buildings Part 3: Human impact safety requirements Part 4: Dead, wind and snow loading
AS/NZS 2208	Safety glazing materials in building
AS/NZS 4666	Insulating glass units
AS/NZS 4667	Quality requirements for cut-to-size and processed glass

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
As specified by manufacturer

2. PRODUCTS

2.1 GLASS
Processed glass to AS/NZS 4667, thickness to NZS 4223 parts 1, 3 and 4 unless otherwise specified:
Clear float glass: Clear annealed transparent float glass
Toughened glass: Grade A safety glazing material to AS/NZS 2208.

Special glass, thickness to NZS 4223 parts 1, 3 and 4 unless otherwise specified:
Insulating glass units (IGU's): To AS/NZS 4666 and IGU Manufacturer's Association (IGUMA) requirements.

2.2 TEMPORARY PROTECTION FILM
Factory applied UV resistant film to protect the glass from construction damage.

2.3 MIRROR GLASS
Float mirror glass to NZS 4223, part 1, clause 101.2.2.2: (b) Silvering quality (selection S), with silver and copper plating and 2 coats of protective paint.

2.4 SAFETY MIRROR GLASS
Float mirror glass with silver plating and vinyl backing, safety glazing material to AS/NZS 2208.

2.5 GLASS SCREENS
Proprietary shower/bath screens, 10mm glass, formed to shape before toughening, complete with matching hardware.

Components, aluminium glazing

2.10 GLAZING TAPE AND GASKETS
Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes selected to suit the glazing detail to window manufacturers' requirements.

2.11 SETTING BLOCKS
Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes.

Components, mirrors

2.12 MIRROR ADHESIVE
Adhesive mirror-mastic and double-sided adhesive tape.

3. EXECUTION

3.1 GLAZING GENERALLY
To NZS 4223, part 1, and for human impact safety glazing to NZS 4223, part 3.
To AS/NZS 4666 for IGU's.

Application mirrors

3.8 MIRRORS, CHANNEL MOUNTED
Fix with proprietary mounting channels, to the channel manufacturer's requirements.

Finishing

3.11 SAFETY
After glazing indicate the presence of transparent glasses, with whiting, tape or signs compatible with the glass type.

3.13 TRADE CLEAN
Clean off or remove safety indicators and any temporary protection film at completion of the building.

4. SELECTIONS

4.1 WIND ZONE
Building wind zone: Very High (as determined from table 5.1 of NZS 3604)

Glass by type

4.2 TOUGHENED INSULATING GLASS UNITS
Location / size: Door units – 6/12/6

4.3 INSULATING GLASS UNITS
Location / size: Window units – 3/6/3

Mirrors

4.4 MIRROR, SELECTIONS
Location: bathrooms
Dimensions: wall mount 600x900 (G.05) / frameless fixed with doublesided tape to suit size of mirror

4701 THERMAL INSULATION

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

NZBC H1/AS1 Energy efficiency, 2.0 Building thermal envelope

NZS 4218 Energy efficiency – Small building envelope
AS/NZS 4534 Zinc and zinc/aluminium-alloy coatings on steel wire

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
As

2. PRODUCTS

2.1 BUILDING WRAPS AND UNDERLAYS
Breather type, waterproof.

2.2 POLYTHENE FILM
Single layer polyethylene film complete with adhesive pressure-sensitive tape required by the polythene film manufacturer.

2.3 GLASS FIBRE THERMAL INSULATING PADS
Glass fibres bonded with a thermosetting resin to form a rectangular insulating pad.

2.5 CELLULAR PLASTIC RIGID BOARD (EPS)
Expanded polystyrene foam board manufactured from fire retardant grade resin.

2.6 NAILS, NETTING AND PAPER
Galvanized steel clouts, 25 mm gauge.

2.7 NAILS, SUB-SHEATHING
Galvanized 30 mm x 2.5 mm flat head nails to the board manufacturer's requirements.

2.8 TAPES
Proprietary plastic tape, stapled across framing to retain insulation in unlined wall and ceiling locations.

2.9 ADHESIVE TAPE
Pressure sensitive adhesive tape.

3. EXECUTION

3.1 STORAGE
Accept materials undamaged and dry and store in a location that protects them from the weather and damage. Avoid distortion, stretching, puncturing and damage to edges of sheet materials. Do not use damaged sheets.

3.2 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.

3.3 INSPECTION
Before starting installation of blankets and pads, check that the location and framing are free from moisture, that the cavities are not interconnected and that mesh, building papers and vapour barriers are in place.

3.4 INSTALL INSULATION
Lay, install, fit and fix to NZBC H1/AS1: 2.0 and to the insulation manufacturer's requirements. Install in housing to NZS 4218.

3.5 LAY ROOF UNDERLAY
Pre-cut underlay to required lengths. Lay horizontally starting at the gutter line with succeeding sheets in true alignment and lapping 150 mm. Carefully scribe around and fit neatly to all penetrations. Keep dry and clean until covered in.

3.6 INSTALL WALL WRAP
Fix horizontally to outside face of substrate for timber framed, steel clad walls in true alignment, with succeeding sheets overlapping 150 mm. Fix to the building paper manufacturer's requirements. Scribe neatly around penetrations and openings to leave no gaps. Keep clean, undamaged and without visible weather deterioration until closed in.

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3.7 FIX POLYTHENE FILM VAPOUR BARRIER
Fit and fix between insulation and lining with joints lapped and sealed with pressure-sensitive tape.

3.8 FIT GLASS FIBRE THERMAL INSULATING PADS
Friction fit insulating pads in place to completely fill the whole of the cavities. Carefully scribe cut insulating pads slightly oversize to maintain friction fit to each other, to smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating pads over the whole of the installation. Do not cover vents and leave a 150 mm gap around recessed light fittings and metal flues.

3.10 FIT CELLULAR PLASTIC RIGID BOARD (EPS)
Friction fit EPS board after roof and wall claddings have been installed. Cut oversize lengthways for a tight compression fit between framing. Leave no gaps between, and maintain full thickness of the insulating segments over the whole of the installation. Do not cover vents. Leave a 150 mm clear gap around recessed light fittings and metal flues. In windy locations secure floor insulation with proprietary support brackets.

3.11 CLEAN UP
Clean up as the work proceeds, so no spare offcuts or any other matter or item remain behind claddings or linings.

3.12 CHECK FOILS
Ensure foils are dry, clean, bright, undamaged and free of debris before being covered.

3.13 CHECK WRAPS AND UNDERLAYS
Ensure these are dry, clean, undamaged and free of debris before being covered.

3.14 CHECK VAPOUR BARRIERS
Ensure these form one homogeneous sheet vapour barrier and remain as such throughout the ensuing construction process.

3.15 LEAVE
Leave work to the standard required by following procedures.

3.16 REMOVE
Remove debris, unused materials and elements from the site.

4. SELECTIONS

4.1 WRAPS AND UNDERLAYS
Manufacturer/type: Breathable wrap, Gib black building paper or Frameguard II

4.4 GLASS FIBRE INSULATION

Location	Type / R Value
Party wall	R1.8 fiberglass batts or equivalent woolbatt insulation

4.7 CELLULAR PLASTIC RIGID BOARD (EPS)

Location	Thickness
None	

5101G GIB® PLASTERBOARD LININGS

www.gib.co.nz

1. GENERAL

Related work

1.1 RELATED SECTIONS
Refer to GIB ULTRALINE® PLUS LINING SYSTEM for GIB Ultraline® PLUS plasterboard linings.

Documents

1.2 DOCUMENTS REFERRED TO
Documents referred to in this section are:

AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
AS/NZS 2753	Adhesives-Mastic - For bonding gypsum plaster linings to wood or metal framing members
NZS 3604	Timber framed buildings

BRANZ technical paper P21: 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 ABBREVIATIONS
The following abbreviations are used throughout this part of the specification:

FRR	Fire resistance rating
IIC	Impact insulation class
NRC	Noise reduction co-efficient
STC	Sound transmission class

1.4 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents which refer to work in this section are:

General:	GIB® Site Guide (May 2006)
Wet areas:	GIB Aqualine® Wet Area Systems (October 2002
v2) Bracing:	GIB® Bracing Systems (March 2006)
Accessories:	
	GIB® UltraFlex high impact corner mould

Copies of the above literature are available

at Web:	www.gib.co.nz
Telephone:	0800 100 442

Requirements

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
- Contractor membership of the Association of Wall and Ceiling Industries New Zealand (AWCINZ)

1.6 NO SUBSTITUTIONS
Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

Performance

1.7 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.

1.10 BRACING REQUIREMENTS
Provide braced wall systems using bracing rated plasterboard sheet to meet the requirements of NZS 3604 when tested to BRANZ technical Paper P21: A wall bracing test and evaluation procedure. Refer to engineers drawings for location and type.

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 Ultraline® high quality surface plasterboard

GIB Braceline® wall bracing plasterboard
GIB Aqualine® wet area plasterboard

Components

2.3 CEILING BATTENS
GIB® Rondo® metal ceiling battens, batten joiners and perimeter channel.

2.4 SCREWS
GIB® Grabber® drywall screws.

2.5 NAILS
GIB® Nails (gold passivated).
Size: 30 mm, 40 mm

2.6 METAL ANGLE TRIMS
GIB® galvanised steel slim angle trims.

2.7 CONTROL JOINTS
GIB® Rondo® P35 control joints.

2.8 TAPE ON TRIMS AND EDGES
GIB® Goldline™ tape-on paper tape and galvanised steel trims and edges or GIB® UltraFlex high impact corner mould.

Accessories

2.9 ADHESIVE

Timber frame:	GIBFix® Wood Bond wallboard adhesive.
Timber frame LOSP treated:	GIBFix® All-Bond wallboard adhesive.
Steel frame:	GIBFix® All-Bond wallboard adhesive.

2.10 JOINTING COMPOUND

Bedding compound:	GIB Tradeset®, GIB Lite Blue®, GIB Promix® All Purpose, GIB® AquaMix, GIB Plus 4®
Finishing compound:	GIB ProMix® All Purpose GIB ProMix® Lite, GIB® All Purpose and GIB Plus 4®, GIB® Topcoat
Cove:	GIB-Cove® Bond

2.11 JOINTING TAPE

GIB® paper jointing tape.

Finishes

3. EXECUTION

Conditions

3.1 STORAGE

Store GIB® plasterboard sheets and accessories in dry conditions stored indoors out of direct sunlight in neat flat stacks on either an impervious plastic sheet or clear of the floor with no sagging and avoiding damage to ends, edges and surfaces. Reject damaged material. Refer to GIB® Site Guide (May 2006).

3.2 LEVELS OF PLASTERBOARD FINISH

Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in AS/NZS 2589. Refer to GIB® Site Guide (May 2006).

3.3 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE

Before commencing work, agree in writing upon the surface finish assessment procedure necessary to ensure that the levels of finish specified, along with the effect of the type and/or angle of illumination on them, are obtained and are acceptable.

Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the required 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 GIB® Site Guide (May 2006).

3.4 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 (May 2006).

3.5 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 GIB® Site Guide (May 2006).

3.6 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 (May 2006).

Application

3.7 INSTALL CEILING BATTENS

Install to GIB® Rondo™ Ceiling Batten Systems.

3.8 LINING WALLS AND CEILINGS GENERALLY

Form to GIB® Site Guide (May 2006). Ensure bulk insulation thickness shall not exceed that of the wall framing.

3.9 FORM WET AREA SYSTEMS

Form to GIB Aqualine® Wet Area Systems (October 2002 v2).

3.10 FORM CONTROL JOINTS
Form control joints to GIB Ultraline® PLUS Lining System book (February 2006) and GIB® Site Guide (May 2006)

Finishing

3.13 FINISHING GENERALLY
To GIB® Site Guide (May 2006) and AS/NZS 2589.

Completion

3.14 REPLACE
Replace damaged sheets or elements.

3.15 CLEAN DOWN
Clean down completed surfaces to remove irregularities and finally sand down with fine paper to the sheet manufacturer's requirements, to leave completely smooth and clean.

3.16 REMOVE
Remove debris, unused materials and elements from the site.

3.17 LEAVE
Leave work to the standard required by following procedures.

4. SELECTIONS

Plasterboard

4.1 STANDARD SYSTEMS WALLS

Location	Plasterboard type / Lining requirements	Thickness	Finish level
All Ceilings	GIB® Standard plasterboard	10 mm	

4.2 STANDARD SYSTEMS CEILINGS

Location	Plasterboard type / Lining requirements	Thickness	Finish level
Bedrooms, wardrobe	GIB® Standard plasterboard	10 mm	4
Bathrooms and laundry	GIB Aqualine® plasterboard	13 mm	4

5102 LININGS

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

AS/NZS 1859 Reconstituted wood-based panels
1859.2: Dry processed fibreboard
1859.4 Hardboard
1859.5 Fibre insulating board (insulation board) AS/NZS 1860 Particleboard flooring, 1860.1: Specifications AS/NZS 2269 Plywood – Structural
AS/NZS 2908 Cellulose-cement products, 2908.2 Flat sheets
NZS 3602 Timber and wood-based products for use in building NZS 3604 Timber framed buildings
NZS 3610 Profiles of mouldings and joinery
BRANZ Bulletin 453: Fasteners selection

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
As specified by manufacturer

2. PRODUCTS

Sundry linings and finishings

2.1 STRUCTURAL PLYWOOD
To AS/NZS 2269 for bracing use.

2.2 PARTICLE BOARD DECORATIVE PRE FINISHED BOARD
Medium density resin bonded to AS/NZS 1860.1. Grooved , prefinished boards 230mm wide (WP3)

2.5 OIL TEMPERED HARDBOARD, FACTORY APPLIED WATERPROOF FINISH
Oil Tempered board with melamine-impregnated decorative sheet (Seratone) for bathroom and laundry linings

2.6 SCREWS
Zinc-plated steel, stainless steel and galvanized steel of pattern to suit location and to BRANZ Bulletin 453 Fasteners selection.

2.7 TIMBER INTERIOR FINISHING TRIM
Selection to NZS 3602. Profile as detailed, or if not shown, to NZS 3610.

2.8 METAL JOINTERS
Profiles to suit location and sheet thickness.

3. EXECUTION

Conditions

3.1 HANDLE AND STORE
Handle and store sheets and accessories in dry conditions stored indoors out of direct sunlight in neat flat stacks clear of the floor with no sagging and avoiding damage to ends, edges and surfaces. Reject damaged material.

3.2 SUBSTRATE
To NZS 3604, sections 8, 10, 12, 13 and the standard required by the lining manufacturer's requirements. Ensure moisture content of timber framing is at or below

specified levels. Starting work implies acceptance the substrate will allow work of the required standard.

3.3 MOISTURE CONTENT
Maximum allowable moisture content in accordance with NZS 3602
for: Framing at lining: 20% for timber-based linings
Framing at lining: 16% for fibrous plaster linings

3.4 PROTECT
Protect surfaces, cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage.

3.5 TIMING OF WORK
Ensure building is weatherproof before lining work commences.

3.6 CONFIRM LEVELS OF FINISH
Before commencing work, confirm the surface finish assessment procedures necessary to ensure the specified levels of finish will be obtained.

Sundry linings and finishings

3.7 TIMBER BOARDING
Selected profile timber boarding, secret nailed. Mix and match board grain before installation.

3.8 MANUFACTURED BOARD AND PANELLING
Fix to timber framing to detail and to the board/panel manufacturer's requirements.

Sundry items

3.9 TRIM
Scribe and fit reveal linings to exterior timber joinery, architraves to interior joinery, skirtings to walls and timber bead cornices as detailed and shown.

3.10 CLEAN
Clean adjoining surfaces and fittings of spots, marks, dust and droppings.

4. SELECTIONS

Sundry linings and finishings

4.1 CEILING PLYWOOD
Brand/type: CHH blush prefinished grooved plywood
Thickness: 12mm

4.2 GROOVED PREFINISHED WALL
Brand/type: Customwood T&G panels 2300mm wide long lengths
Thickness: 12 mm
Finish: Trim finished to match. Stagger joints between panels.

4.4 OIL TEMPERED HARDBOARD
None

4.5 TIMBER INTERIOR FINISHING TRIM
Species and grade: ~
Treatment: Resene –paint or white stain to match plywood as appropriate
– provide sample
Profile: Similar to existing house, confirm on site

4.6 LINING SCHEDULE

Refer drawings for details of location of wall linings

Location	Type	Thickness
All Rooms	Gib board level 5	10mm

Accessories

4.21 METAL JOINTERS

Colour: Sand to match seratone : use appropriate jointers from seratone manufacturer.

5201 INTERIOR TIMBER DOORS AND WINDOWS

1. GENERAL

1.1 RELATED SECTIONS
Refer to 4601 GLAZING for glazing

1.2 DOCUMENTS
Documents referred to in this section are:

NZS 3602 Timber and wood-based products for use in building NZS 3604 Timber framed buildings
NZS 3610 Profiles of mouldings and joinery

1.3 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
As specified by manufacturer

2. PRODUCTS

2.1 TIMBER
To NZS 3602.

2.2 PROFILES, FACINGS, SCRIBERS AND ARCHITRAVES
Traditional profiles to NZS 3610. Proprietary profiles and special profiles as detailed. Pencil radius corners of profiled schedules for paint finish. Refer drawings for location.

2.3 INTERIOR DOORS, PAINT FINISH
Solid core doors as scheduled complete with matching 6 mm clashing strip to both sides and to the exposed edge of cavity slider doors.

2.6 DOOR HINGES
Size and gauge to carry door. 3 hinges per door.

2.8 INTERIOR SLIDING-FOLDING DOOR GEAR
Bi-fold pattern to suit size and weight of doors and as shown (ID07)

3. EXECUTION

3.1 SITE MEASURE
Confirm framed openings on site for dimension, plumb and straightness prior to fabrication or ordering of timber joinery. Confirm lintel head and sill deflection for sliding or bi-fold door systems is within the manufacturer's specified tolerances. Provide not less than 10 mm unless otherwise required.

3.2 EXECUTION GENERALLY
Manufacture to the methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.3 FACTORY FIT HARDWARE
Factory fit the following where specified: -
- Hinges

3.4 FACTORY FINISHING
Before delivery to site: -
- Brace square and provide protection to assemblies during delivery to site. Where factory glazed, indicate the presence of transparent glasses with whiting, tape or signs compatible with the glass type.

Internal doors

3.5 INTERNAL DOOR FRAMES, SOLID REBATED

Fabricate as detailed. Hang doors to operate freely on hinges, sliding, or bi-fold gear and to the door manufacturer's requirements. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish. Fit hardware.

3.7 INTERNAL DOOR LINERS, EXTENDED

Heads and jambs finished 30 mm, rebated for wall linings and extended a minimum of 10 mm. 10 mm planted door stops. Hang doors on hinges, sliding and bi-fold gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.

Completion

3.9 CHECK

Check and adjust operation of all sashes, doors, hardware and furniture.

3.10 TEMPORARY PROTECTION

On completion remove any temporary protection and leave ready for following work.

4. SELECTIONS

4.1 INTERIOR SOLID CORE DOORS

Finish: paint finish

Hardware: miro or similar lever handles SCP finish

5503 BATHROOM AND TOILET FIXTURES

1. GENERAL

1.1 RELATED SECTIONS
Refer to 4601 GLAZING for mirrors and frameless shower and bath screens.

1.2 DOCUMENTS REFERRED TO
Documents referred to in this section are:

NZS 4121 Design for access and use of buildings and facilities by disabled persons

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'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
As specified by manufacturer

2. PRODUCTS

Refer to 4. SELECTIONS/drawings.

3. EXECUTION

3.1 RETAIN
Retain fixtures, fittings and hardware in the manufacturer's original packaging and ensure that units are complete with associated fixings and installation instructions.

3.2 INSPECTION
Before starting the installation of proprietary items, check relevant spaces and wall and floor finishes for any condition that would not allow the proper installation of any unit. Do not proceed until such conditions have been remedied.

3.3 LOCATE
Locate units at heights and/or locations shown on the drawings, or as required to comply with relevant Codes and Standards. For any dimension not shown or known, request direction before proceeding.

3.4 CUTTING AND FITTING
Where cutting and fitting of the substrate is necessary for installing any unit, carry out this work before the painting or finishing of that surface. Remove any hardware when required for painting.

3.5 INSTALLING UNITS
Install each unit in accordance with the proprietary fixture manufacturer's requirements, using the templates and tools supplied or recommended by them. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating. Do not make any modifications to supplied units.

3.6 ADJUST
Adjust and check each operating unit for correct and smooth functioning. Replace those units that cannot be adjusted if they do not function correctly. Clean units and adjoining surfaces upon completing their installation.

3.7 REPLACE
Replace damaged or marked elements.

3.8 LEAVE

Leave work with parts fully and freely working and to the standard required by following procedures.

3.9 REMOVE

Remove debris, unused materials and elements from the site.

3.10 PROTECT

Protect units from damage or marking.

3.11 FINAL ADJUSTMENT

Where units are installed more than a month prior to project completion, return and make a final check and adjustment of units just prior to hand over, to ensure that they are operating correctly, fitted properly and are undamaged.

4. SELECTIONS

4.1 PROPRIETARY FIXTURES AND FITTINGS

Complete with matching screws.

Fixture	Location	Make, model and finish
Toilet roll holders		
Coat hooks		
Soap dishes		
Vanity shelf		
WC		Villeroy & Bosch
Wash hand basins:ensuite		Michel Cesar 900
Wash hand basins:bathroom		Caroma – Michel Cesar
Shower traps:		Easi clean traps
Baths:		
Tub:		Mercer parola duo w/ over-flow
Faucets		Caroma – Liano Series

4.2 ELECTRIC POWERED APPLIANCES

Complete with matching screws.

Fixture	Location	Make, model and finish
Heated towel rails	Bathrooms	Heirloom 600mm wide

6201 TILING

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

AS 2358 Adhesives - For fixing ceramic tiles
AS 3740 Waterproofing of wet areas within residential buildings
AS 3958 Ceramic tiles, 3958.1: Guide to the installation of ceramic tiles BS 6431 Ceramic floor and wall tiles

BRANZ Good practice guide: Tiling

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
Available from the architect

~.

1.3 QUALIFICATIONS
Carry out tiling work using competent tilers, experienced with the materials and techniques specified.

1.4 ADHESIVES COMPATIBILITY
Adhesives selected for use on proprietary substrates or waterproof membranes to have documented compatibility approval from the respective manufacturers.

1.5 SAMPLES
Submit samples of the tiles specified, sufficient to show the pattern and the range of colour finish.

2. PRODUCTS

2.1 TILES
To BS 6431, parts 1 to 23 inclusive. Refer to 4. SELECTIONS.

2.3 SHEET WATERPROOFING MEMBRANE
Proprietary sheet waterproofing system.

2.4 LIQUID WATERPROOFING MEMBRANE
To AS 3740.

2.5 UNDERTILE HEATING
Proprietary electric undertile heating system complete with thermostat/controller.

2.6 CEMENT BASED SCREED
Mix of 3:1 Portland cement, wash-mix sand, gauged with liquid polymer additive to the tile manufacturer's requirements.

2.7 TILE ADHESIVE
To AS 2358.

2.8 GROUT
Cement based, compressible and to suit the particular location and use.

2.9 MOVEMENT CONTROL JOINT SEALANT
To BRANZ Good practice guide: Tiling, section 5.0.

3. EXECUTION

3.1 HANDLING AND STORAGE

Take delivery of packets of tiles undamaged and dry. Handle tiles with care to avoid chipping, soiling and damage. Store on hard level standings in non-traffic, non work areas that are enclosed, clean and dry.

3.2 CHECK TILES

Check tiles to ensure that they are as specified, from the same batch, of a consistent colour and pattern and sufficient to complete the work. Reject tiles that vary widely in colour or pattern. Reject tiles that are damaged.

3.3 CONFIRM LAYOUT

Before commencing work confirm the proposed layout of tiles and expansion joints and other visual considerations of the finished work.

3.4 SETTING OUT

Before commencing the setting out confirm the number and location of cut tiles. Minimise in number with no cut tiles less than half size and only at the perimeter of the work.

3.5 SUBSTRATE

Ensure that all services and accessories are in place and located to suit the tile layout, with the substrate required for tiling work. Commencement of the work means the substrate and environment are accepted by the tile layer as satisfactory.

3.6 TEMPERATURE

Do not carry out tiling where the ambient temperature is below 5°C, or onto a substrate with a temperature higher than 40°C.

3.7 TILING GENERALLY

Prepare surfaces and carry out the tiling work in accordance with AS 3958, part 1, as modified by BRANZ Good practice guide: Tiling.

3.8 NEW CONCRETE AND MASONRY WALLS PREPARATION

Air dry concrete walls for 4 weeks before applying mortar or adhesive. Remove all contaminants affecting bonding or adhesion by steam cleaning. Surface to finish clean and dry, with a texture giving a complete key.

3.10 EXISTING SHEET WALL LININGS PREPARATION

Remove all contaminants that may affect bonding or adhesion. Surface to finish clean and dry with a texture providing a complete key, to the sheet manufacturer's requirements and with a maximum variation in the background plane of ± 4 mm in 2 metres.

Remove all paint and other finishes from existing sheet linings. Surface to finish clean and dry with a texture providing a complete key.

3.11 CONCRETE FLOORS PREPARATION

Remove from the surfaces all contaminants such as paints, oils, release and curing compounds. Remove all projections, unevenness and loose material to leave a clean, dust and dirt-free surface.

Remove all existing finishes down to the concrete. If the exposed concrete finish is not suitable then scabble the surface to expose the coarse aggregate.

3.13 LAYING SHEET WATERPROOFING MEMBRANE

Install to manufacturers requirements and to BRANZ Good tiling practice, 7.0 Waterproofing interior wet areas.

3.14 APPLYING LIQUID WATERPROOFING MEMBRANE

Apply the selected liquid waterproof membrane system to the membrane manufacturer's requirements and in accordance with AS 3740 and to BRANZ Good tiling practice, 7.0 Waterproofing interior wet areas.

3.15 INSTALL WATERPROOFING MEMBRANE

Install waterproofing membrane between the tile adhesive and the substrate. Reinforce all junctions of the waterproofing membrane to BRANZ Good tiling practice; 7.0 Waterproofing interior wet areas. Unless otherwise specified or shown on the drawings, install waterproof membranes as follows: -

Unenclosed shower cubicle

To 1800 mm above floor and 300 mm above shower rose.
To at least 1500 mm from shower rose.
To the floor within 1500mm of the shower rose.

Splashback to a vanity

To 300 mm minimum up wall behind the vanity.
To the floor level at least twice the width of the vanity and 500 mm min beyond it at each end.

3.16 INSTALL UNDERTILE HEATING

Clean thoroughly and prepare as for tiling. Remove any paint overspray and plaster spills. Ensure that waterproofing has been completed. Install electric undertile heating system to manufacturers requirements with the element connected to a continuity tester during installation. Leave ready for tiling and connection to the electrical system.

3.17 LAYING CEMENT SCREED

Apply a proprietary cement slurry bond coat over the whole of the floor to the tile manufacturer's requirements. Mix and place a 40 mm thick mortar bed over the bond coat and firmly tamp, screed and compact to the required level. Form screeds with a deviation from plane of not more than 5 mm over 3 metres.

In waterproofed areas where the cement screed has been laid over the waterproofing membrane, prepare the screed surface by applying a further waterproof coating before laying tiles.

3.18 FALLS

Form screeds in areas where water is used in significant amounts with a deviation from plane of not more than 5 mm over 3 metres. Unless otherwise specified form screeds with the following falls:

1 : 40 minimum	For tiled decks which also act as a roof
1 : 40 minimum	For paving over ground
1 : 40 minimum	For shower bases
1 : 40	For shower bases for people with disabilities
1 : 50 minimum	For commercial kitchens

3.19 TILE FIXING GENERALLY

Apply adhesive, prepare and fix tiles by the method required by the adhesive manufacturer and tap them firmly into place.

3.20 TILE FIXING, CONCRETE, CEMENT-BASED ADHESIVE, THICK BED

Apply and float thick bed cement-based adhesive to a maximum 6 mm bed thickness to the tile manufacturer's requirements. Rib surface with a notched trowel, press tiles and beat it into place with 3 mm joints, and to obtain required coverage of adhesive on the back of each tile.

3.21 TILE FIXING, CONCRETE, CEMENT-BASED ADHESIVE, THIN BED

Apply and float thin bed cement-based adhesive to a minimum 3 mm bed thickness to the tile manufacturer's requirements. Rib surface with a notched trowel, press tiles and beat it into place with 3 mm joints, and to obtain required coverage of adhesive on the back of each tile.

3.22 TILE FIXING, RIGID SHEET LININGS

Refer to 3801 CARPENTRY for the installation of rigid sheet linings.

Prime the surface after the curing of any waterproof membrane. Spread adhesive to a uniform minimum thickness of 3 mm and rib it with a notched trowel to the tile manufacturer's requirements. Press tiles and beat it into place to obtain the required coverage by adhesive on the back of each tile.

3.24 GROUTING
Remove spacers. Prepare joints, mix and apply proprietary grout and finish off to the grout manufacturer's requirements. Grout to finish uniform in colour, smooth and without voids, pinholes or low spots.

3.25 MOVEMENT CONTROL JOINTS
Minimum width of 6 mm, carried through tile and bedding. Where substantial movement is anticipated, carry through the rigid sheet to the structure. Install joints over expansion joints in structure, at junctions between different backgrounds, where abutting other materials, at storey heights horizontally and 3.0 metres vertically, at internal corners and at junctions with floors and columns.

Ensure joints are clean, formed, filled, and the sealant inserted to the sealant manufacturer's requirements.

3.26 CLEAN
Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave clean and free of blemish. Finally polish tiles with a clean dry cloth.

3.27 REMOVE
Remove unused materials from the site.

3.28 PROTECTION
~

4. SELECTIONS

4.1 TILES

Location	Brand	Pattern/code number
Living room Floor	Designar Tiles: Origine verde	300 F3030 OROV
Laundry floor	Origine verde	300 F3030 OROV
Bathroom floor	Origine verde	300 F3030 OROV
Bathroom walls	To be selected	

4.2 LIQUID WATERPROOFING MEMBRANE
Brand/type: to be selected and guaranteed by tiler

4.3 SHEET WATERPROOFING MEMBRANE
Brand/type: to be selected and guaranteed by tiler

4.4 PRIMER
Brand/type: to be selected and guaranteed by tiler

4.5 UNDERTILE HEATING
Brand: omniwarm
Thermostat/controller: by omniwarm: programmable
Wattage: 65 watts/m^2

4.6 TILE ADHESIVE
Brand/type: selected and guaranteed by tiler to be compatible with selected tile and underfloor heating system
Trade name/number: ~

4.7 GROUT
Brand/type: to suit tiles and application

4.8 MOVEMENT CONTROL JOINTS

Brand: selected and guaranteed by tiler

Type: ~

Backing strip: ~

Bond breaker: ~

4.9 MOVEMENT CONTROL JOINT SEALANT

Brand: selected and guaranteed by tiler

Type: ~

6501 CARPETING

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

AS/NZS 2455.1 Textile floor coverings - Installation practice, Part 1: General

The New Zealand Carpet Manufacturers' Association Conditions of Warranty and installation guide

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are to be supplied by the carpet installer

1.3 QUALIFICATIONS
Carpet layers to be experienced competent workers, familiar with the materials and the techniques specified and with AS/NZS 2455.1.

2. PRODUCTS

2.1 UNDERLAY
Refer to 4. SELECTIONS.

2.2 CARPET
Refer to 4. SELECTIONS.

2.3 EDGE GRIPPER, TAPES, FIXING
BARS To AS/NZS 2455.1.

2.4 BINDER BARS
Anodised aluminium section with a fluted face.

3. EXECUTION

3.1 COMPLY
Comply with the requirements of the carpet manufacturer including preparation of and procedures over the various substrates.

3.2 SUBSTRATE
Before starting work inspect the substrate to ensure it will allow work of the required standard and that all fittings and fixtures around which the carpet is to be scribed, are in place.

3.3 PROTECTION
Protect adjoining work surfaces and finishes during installation and make good any damage to same.

3.4 TAPE
Tape for binding and seaming to be the type and width required by AS/NZS 2455.1 to suit the specified carpet and the standard of performance required.

3.5 LAYOUT
Plan the carpet layout so that: -
- seams run lengthways
- traffic runs along the seam
- light from windows is not across the seam
- pile faces away from the main natural light source.

3.6 TEMPERATURE
Acclimatise carpet to a room temperature above 15°C through the whole of the installation.

3.7 STORAGE
Keep carpet dry and protected from damage, sharp bending or folding.

3.8 PREPARE FLOOR SURFACE
Prepare floors for laying to AS/NZS 2455.1 requirements.

3.9 INSTALLATION, UNDERLAY
Installation to AS/NZS 2455.1. Lay at right angles to the carpet direction.

3.10 INSTALLATION, TAPED JOINTS
Tape carpet joints, fix grippers to floor, install underlay and carpet, to AS/NZS 2455.1.

3.15 FIX TRIMS
Fix binder bars, carpet to carpet bars, and trims to all junctions with other materials and to carpet edges, to AS/NZS 2455.1. Ensure that all junctions with other materials are neatly formed, with bars and trims securely fastened to the substrate, 20 mm from each end and at maximum 100 mm centres.

3.16 TAKE AWAY
Take away from the site all plant and all materials not used, leaving finished floor clean and without blemish.

3.17 CLEAN
On completion thoroughly vacuum the finished carpet.

4. SELECTIONS

4.1 UNDERLAY
Brand: as recommended by carpet supplier for use under the specified
carpet Type: waffle rubber medium duty
Thickness/weight:

4.2 CARPET
Location: bedrooms and wardrobe area
Brand/type/weight/code: Feltex Venezia 026 CAN ALA
Installation method: ~

4.3 BINDER BARS
Brand/type: bar between carpet and tiles to be a simple stainless steel flat Sample to be approved by the architect

:

6701 PAINTING AND PAPERHANGING

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

OSH Guidelines for the management and removal of

asbestos Health and Safety in Employment Act 1992

BRANZ Bulletin 314: Removing paint coatings from houses
Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
As specified by manufacturer

1.3 MANUFACTURER'S MANUALS
Refer to the paint manufacturer's manuals and follow their preparation, sequence and application requirements applying to each system. Ensure all paint coats in any system are supplied by the same manufacturer.

1.4 QUALIFICATIONS
Carry out work using competent and experienced painters and paperhangers.

1.5 HEALTH AND SAFETY
Refer to the requirements of the Health and Safety in Employment Act 1992 and if elimination or isolation is not possible, then minimise the hazards in this work.

Refer to BRANZ Bulletin 314 Removing paint coatings from houses for the required procedures and precautions when:
- Treating or removing lead based paint.
- Burning off paint.
- Sanding off paint.
- Using solvent based paint removers.

1.6 CONTROL SAMPLES
Prepare samples of the finished work as scheduled, including preparation and colour as specified. Obtain approval of the appearance before proceeding. Refer to 4. SELECTIONS.

2. PRODUCTS

2.1 PAINT
To the paint manufacturer's standards for exterior and/or interior primers, undercoats, sealers, stains, clear coatings, solvent-borne and water-borne paints.

2.2 GAP FILLERS
Linseed oil, putty, plastic wood, wood filler or plastic filler, to suit and to match the surface being prepared.

3. EXECUTION

3.1 INSPECT
Inspect surfaces for painting and report to the owner any that will not, after the preparatory work laid down by the paint manufacturer, allow work of the required standard. Confirm that all areas have adequate lighting and are sufficiently free of other construction activities to enable painting and/or paperhanging work to proceed.

3.2 PROTECT
Cover up adjoining surfaces and areas liable to damage or over-painting.

3.3 REMOVE HARDWARE
Remove hardware and door/window furniture and replace on completion. Do not paint over permanently attached hinges, or any hardware items which cannot be removed. Refer to 4. SELECTIONS.

3.4 PRIMING AND SEALING
Ensure that priming and sealing work needed before or during construction is carried out when required.

3.5 ENVIRONMENTAL CONDITIONS
Carry out work within acceptable temperature and humidity limits, with timber dry, all to the requirements of the paint manufacturer.

3.6 SELECTIONS
Confirm all selections, colours and finishes for both paint and wallpaper with the owner, before commencing work.

3.9 SHARP EDGES, CRACKS AND HOLES
Repair as required by the paint manufacturer.

3.10 PREPARE SURFACES
Prepare surfaces to be coated as required by the paint manufacturer. Make good all damage and defects.

3.11 PAINT APPLICATION
Apply paint by brush and/or roller to suit the location of the coating and to the paint manufacturer's requirements. Do not spray on site without express permission.

3.12 DEFECTIVE WORK
Correct defective work immediately. Recoating to follow the selected paint system's requirements.

3.13 SCUFF BETWEEN COATS
Scuff between all coats to remove any dust pick-up, protruding fibres and coarse particles.

3.14 FINISHED PAINT SURFACES
Finished paint surfaces to show uniformity of gloss and colour, with the correct thickness for each coat, and freedom from painting defects. Ensure finished work is clean and free of any disfigurement.

3.15 CONFIRM WALLPAPER
Confirm that all rolls of each pattern are from the same batch.

3.16 WALLPAPER INSTALLATION
Seal or size walls. Use only full length drops, completely glued, pattern matched and hung vertically without bubbles or visible butt joints. Scribe cut paper onto surrounding trim.

3.17 CLEAN
Clean adjoining surfaces, glass and fittings of any paint contamination.

3.18 REPLACE
Replace hardware without damage to the hardware or the adjoining surfaces.

3.19 TAKE AWAY
Take away from the site unused painting materials and equipment.

SELECTIONS

4.3 PAINT SYSTEMS, EXTERIOR

To the **Resene** One-Line specifications as listed for the different substrates. Refer to the **Resene** manual for the first and second coats of each system to suit the particular substrate and condition.

Substrate	Resene Number	System topcoat	Finish
Precast panels		Clear penetrating sealer	Low gloss
Cementitious	1e 1.2	Sonyx 101 D30	Semi-Gloss
Timbers	2e 1.2	Sonyx 101 D30	
Timbers - Staining	2e 3.5	Waterborne Woodsman D57a	Flat Stain
Joinery	3e 1.1	Enamacryl D309	Gloss
Galvanised Steel	5e 1.1	Hi-Glo D31	Gloss
Cedar	8e 1.3	Waterborne Woodsman D57a	stain

4.4 PAINT SYSTEMS, INTERIOR

To the **Resene** One-Line specifications as listed for the different substrates. Refer to the **Resene** manual for the first and second coats of each system to suit the particular substrate and condition.

Substrate	Resene Number	System topcoat	Finish
Cementitious	1i 1.2	Lustacryl D310	Semi-Gloss
Timbers	2i 1.1	Lustacryl D310	Semi-Gloss
Timbers – Clear	2i 4.3	Poly-Satin D52	Semi-Gloss
Joinery	3i 1.2	Lustacryl D310	Semi-Gloss
Ferrous Metals	6i 1.1	Enamacryl D309	Gloss
Non-Ferrous Metals	7i 1.1	Enamacryl D309	Gloss
Plasterboard walls:	15i 1.4	Resene Spacecote 311	Low sheen
Plasterboard ceilings:	15i 1.5	Resene Spacecoat flat 314	Flat
Cabinetwork:	3i 1.2	Lustacryl D310	Semi-Gloss

4.5 WALLPAPER

Room name	Space number	Wallpaper type	Reference number
Guest bedroom /study		To be selected	

7101 HOT AND COLD WATER SYSTEM

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

NZBC G12/AS1 Water supplies
NZBC H12/AS1 Energy Efficiency

AS/NZS 2642 Polybutylene pipe fittings
2642.2: Polybutylene (PB) pipe for hot and cold water applications
2642.3: Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications

NZS 4617 Tempering (3-port mixing)
valves DIN 8077 Polypropylene (PP) Pipe dimensions
DIN 8078 Polypropylene (PP) Pipes Types 1, 2 & 3, General Quality Requirements and Testing.

Plumbers, Gasfitters and Drainlayers Act 1976

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
To be provided by manufacturer.

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 plumber registered under the Plumbers, Gasfitters and Drainlayers Act 1976.

2. PRODUCTS

2.3 POLYBUTYLENE WATER PIPE
Polybutylene tubing to AS/NZS 2642.2 and AS/NZS 2642.3 complete with fittings and accessories brand-matched.

2.4 POLYPROPYLENE WATER PIPE
Polypropylene pipes to DIN 8077 and DIN 8078 complete with fusion welded fittings and accessories brand-matched.

2.5 WATER METER
To the requirements of the network utility operator.

2.6 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.

2.7 TEMPERING VALVE
Tempering valve to NZS 4617 to NZBC G12/AS1: Water supplies.

Components

2.15 INSULATION
Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements.

2.16 PROTECTIVE TAPE
Plasticised PVC tape system with primer, mastic fixing and outer coating.

3. EXECUTION

3.1 HANDLE AND STORE
Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress.

Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.

3.2 EXECUTION GENERALLY
Generally carry out the whole of this work and tests to NZBC G12/AS1.

3.3 CORE HOLES AND SLEEVES
Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.

3.4 CONCEAL
Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

3.5 CORROSION
Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

3.6 THERMAL MOVEMENT
Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

3.7 PIPE SIZE
Flow rates to each outlet to be no less than those given in NZBC G12/AS1: Water supplies, table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in table 4, Tempering valve and nominal pipe diameters.

3.8 ELECTROLYTIC ACTION
Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

3.9 EXCAVATE
Excavate for the water main to a firm, even trench base in straight runs. Allow to backfill.

Application – pipework installation
Connect to existing water supply services

3.12 POLYBUTYLENE/POLYETHYLENE WATER SUPPLY
Size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Run pipes complete with all fittings, support and fixing, and jointed to the pipe manufacturer's specifications, all to NZBC G12/AS1. Conceal pipework and pressure test before the wall linings are fixed.

3.13 POLYPROPYLENE WATER SUPPLY
Size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Run pipes complete with all fittings, support and fixing, fusion weld joins and install to manufacturers specifications, all to NZBC G12/AS1. Conceal pipework and pressure test before the wall linings are fixed.

3.14 OUTLET LOCATIONS
Ensure wall outlets for exposed pipes are level and centred on the fixture to ensure the neat installation of exposed pipework.

3.20 PENETRATIONS
Provide and fit collars and escutcheon plates to match the pipework at all penetrations through constructions.

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 INSTALL TAPWARE
Install taps and faucets to the manufacturer's requirements. Flush out on completion. Check that washers or ceramic discs are operating correctly.

3.24 LEAVE
Leave water services in proper working order. Pressure test to ensure no leakage and leave in proper working order.

3.25 CLEAN
Clean tapware and fittings. Remove unused materials from the site.

4. SELECTIONS

4.1 INSTANTANEOUS GAS HOT WATER SYSTEM
Brand:Rheem or Rinnai Model size: externally mounted, LPG supply, 24 model(to be confirmed by plumber)

Valves and accessories

4.13 TAPS AND FAUCETS
Confirm selections with the owner – refer to section 5503

7401 RAINWATER SYSTEMS

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are: -

AS 1397 Steel sheet and strip - hot-dipped, zinc-coated or aluminium/zinc- coated

BRANZ Bulletin 304: Flashing design.
BRANZ Bulletin 465: Domestic flashing installation.

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
To be provided by manufacturer.

1.3 QUALIFICATIONS
Workers to be either competent craftsman plumbers, or registered plumbers working under the direction of a craftsman plumber, or roofers, familiar with the materials and techniques specified.

2. PRODUCTS

Aluminium/zinc alloy coated pre-painted steel

2.3 ALUMINIUM/ZINC ALLOY COATED PRE-PAINTED STEEL DOWNPIPES
Seam jointed and complete with stand-off brackets and galvanized screws.

Materials - fascia/barge system

2.5 EXTERNAL FASCIA/BARGE SPOUTING SYSTEM
Fascia/barge type complete with jointing, brackets, fittings and accessories, brand matched and complete to the manufacturer's requirements.

General

2.6 RAINWATER HEADS, DROPPERS, OVERFLOWS
Fabricate and install as detailed.

2.7 FLASHINGS GENERALLY
0.55 mm sheet steel galvanized to AS 1397, aluminium/zinc coated to AS 1397, 1.8 mm (20 kg/m^2) copperised pure lead, 0.5 mm half hard copper sheet, or proprietary rubberised perforated aluminium strip, all to location, compatibility and design requirements of BRANZ Bulletin 304 Flashing design.

2.8 DOMES
Wire mesh in round form with legs to clip inside the outlet opening to the downpipe.

3. EXECUTION

3.1 ELECTROLYTIC ACTION
Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

Check compatibility of metals used for rainwater goods, against the materials used for roofing and flashings. Notify any incompatibility to the owner and obtain written approval for amendments to selections.

3.2 LIAISON
Ensure liaison with associated installations to confirm material selections are compatible and required flashing work is completed.

3.3 INSTALLATION GENERALLY
Install and fix spouting and downpipes to the manufacturers requirements. Install system to properly drain water from the roof area and so that water will not enter the building under overflow conditions.

Aluminium/zinc alloy coated steel pre-painted

3.4 FIT ALUMINIUM/ZINC ALLOY COATED STEEL PRE-PAINTED SPOUTING
Fit brackets at maximum 800 mm centres and fix with galvanized screws. Set to fall to outlets. Make joints with silicone sealed and pop-riveted to the spouting manufacturer's requirements.

3.5 FIT ALUMINIUM/ZINC ALLOY COATED STEEL PRE-PAINTED DOWNPIPES
Fit stand-off brackets at maximum 1200 mm centres and fix with galvanized screws. Set pipes plumb and clear of the wall. Silicone seal joints. Discharge into stormwater drain.

3.7 INSTALL RAINWATER HEADS
Colorstel or colorcaort to match roof

3.8 INSTALL OVERFLOWS
Colorsteel or colorcoteel to match roof

General

3.9 FLASHINGS
Scribe fit, fold, lap, seam, or run solder as required by the metal, to flash all roof penetrations, roofing and exterior joinery to prevent weather penetration. Except at expansion joints, provide 2 rows of rivets to overlapping sheet joints. Install and fix flashings and flashing joints to the criteria stated in BRANZ Bulletins 304 Flashing design and 465 Domestic flashing installation.

3.10 INSTALL SPOUTING MESH
Install mesh into spoutings, strictly in accordance with the mesh manufacturer’s requirements.

3.11 FLASH ROOF LIGHTS
Flash to roofing to the manufacturer's specifications.

3.12 LEAVE
Leave rainwater services in proper working order and all flashing work completed to keep the building weathertight.

3.13 CLEAN UP
Wash out gutter daily and on completion to remove swarf. Take away from the site unused materials and elements.

4. SELECTIONS

Aluminium/zinc alloy coated pre-painted steel

4.1 ALUMINIUM/ZINC ALLOY COATED PRE-PAINTED STEEL SPOUTING

Shape/size:	150mm ½ round
BMT/Gauge:	to the manufacturer's specifications
Brand/type:	Colorstel or colorcaort to match roof

4.2 ALUMINIUM/ZINC ALLOY COATED PRE-PAINTED STEEL DOWNPIPES

Shape/size: 100mm dia.

Brand/ type: Colorstel or colorcaort to match roof

4.3 SEALANTS

Brand/type: compatible with adjacent materials

7402 SANITARY PLUMBING

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

NZBC G1/AS1 Personal hygiene
2.0 Fixture construction and installation
3.0 Location of sanitary fixtures
NZBC G13/AS1 Foul water - sanitary plumbing

AS/NZS 1260 PVC pipes and fittings for drain, waste and vent applications AS/NZS 3500 Plumbing and drainage
Part 2: Sanitary plumbing and drainage
NZS 7641 Unplasticised PVC waste and ventilating pipe, fittings and accessories, 32 mm, 40 mm and 50 mm

Plumbers, Gasfitters and Drainlayers Act 1976

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
To be provided by manufacturer.

1.3 QUALIFICATIONS
Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 1976.

2. PRODUCTS

2.1 uPVC WASTE, SOIL AND VENT PIPES
uPVC pipe to NZS 7641 and AS/NZS 1260 complete with fittings brand-matched to the pipe manufacturer's requirements.

2.2 EXPOSED PIPES AND TRAPS
Chrome plate on copper pipes and associated copper and brass fittings.
White polybutylene or PVC, including all associated fittings.

2.3 SEALANT, SANITARY FIXTURES
For between sanitary fixtures and accessories and adjacent floor or wall surfaces. 1-part, silicone, containing mildew resistant agents.
Colour: White

3. EXECUTION

3.1 EXECUTION GENERALLY
Carry out this work and complete all tests to AS/NZS 3500 Part 2
Carry out this work and complete all tests to NZBC G1/AS1: 2.0, 3.0 and G13/AS1.

3.2 ELECTROLYTIC ACTION
Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

3.3 INSTALL SANITARY FIXTURES
Fit and install sanitary fixtures and associated screens, elements and hardware, plumb, true to line and rigid, to the fixture manufacturer's requirements. Supply standard chrome plated brass wastes and plastic plugs on chrome plated chains with all basins, tubs and baths.

3.4 INSTALL TRAPS, WASTE AND VENT PIPES
Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to AS/NZS 3500 Part 2/NZBC G13/AS1. Discharge wastes into the drainage

system stack, soil pipe, or gully trap as shown. Bird proof mesh to all roof vents and vermin proof mesh to all untrapped waste pipes.

3.6 PENETRATIONS
At penetrations through constructions provide and fit collars and escutcheon plates to match pipework.

3.7 INSTALL SANITARY ACCESSORIES
Install sanitary accessories as selected.

3.8 TEST
Test soil and waste disposal systems to ensure no leakage exists and leave in proper working order.

3.9 CLEAN UP
Remove labels and clean fittings. Remove unused materials from the site.

4. SELECTIONS

4.1 Connect to existing system for main house

4.1 uPVC WASTE, SOIL AND VENT PIPES
Brand/type: ~

4.2 SANITARY FIXTURES
Refer to 4601 GLAZING for frameless shower and bath screens.
Refer to 5503 BATHROOM AND TOILET FIXTURES for bathroom and toilet accessories.

7403 DRAINAGE

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

NZBC B1/AS1 Structure – general, 6.0 Drains
NZBC E1/AS1 Surface water
3.0 Drainage system materials and construction
NZBC G13/AS2 Foul Water – drainage

AS/NZS 1254 PVC pipes and fittings for storm and surface water applications AS/NZS 1260 PVC pipes and fittings for drain, waste and vent applications AS/NZS 1546.1 Septic tanks
AS/NZS 1547 On site domestic wastewater management
AS/NZS 4130 Polyethylene pressure pipes (PE)
AS/NZS 4671 Steel reinforcing materials
NZS 3107 Precast concrete drainage and pressure pipes
NZS 3104 Specification for concrete production
AS/NZS 3500 Plumbing and drainage
Part 2: Sanitary plumbing and drainage
Part 3: Stormwater drainage
NZS 7643 Installation of unplasticised PVC pipe systems

Plumbers, Gasfitters and Drainlayers Act 1976

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
To be provided by manufacturer.

1.3 AS-BUILT DRAWINGS
Supply a 1:100 scale as-built drawing of drains and fittings to the territorial authority and to the owner on completion.

1.4 QUALIFICATIONS
Drainlayers to hold a current licence within the terms of the Plumbers Gasfitters & Drainlayers Act 1976 and be experienced, competent and familiar with the materials and techniques specified.

2. PRODUCTS

2.1 CONCRETE
17.5 MPa prescribed mix to NZS 3104.

2.2 REINFORCEMENT
Plain round and/or deformed steel bars, Grade 300 to AS/NZS 4671

2.3 uPVC PIPES
uPVC Pipes bends, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260.

2.4 FIELD DRAINS
Plastic piping for field drains perforated (straight sections or coiled) with filter fabric to prevent silting of the pipe.

2.5 GULLY TRAPS
To NZBC G13/AS2: 3.3, complete with grating.

2.6 SURFACE WATER SUMP GRATINGS
Cast iron frame with lift-up grating.

2.7 STRIP DRAIN CHANNEL

Proprietary, modular, variable invert, PVC or precast concrete drainage channel sections and drainage sump, embedded in site concrete and fitted with selected metal gratings.

2.8 INSPECTION COVERS

Cast iron frame with screw-down cover.

2.9 DRAINAGE AND FILLING MATERIALS

Granular: Clean gravel or crushed stone or a blend of these. Particle size from minimum 7 mm to maximum 20 mm.

Selected: Fine grain soil or granular material suitable for bedding; excluding topsoil.

Ordinary: Top soil or other excavated materials.

3. EXECUTION

3.1 EXCAVATE

Excavate for drains to a firm even base with correct gradients set in straight runs.

3.2 MANUFACTURER'S REQUIREMENTS

All drainage installations to the pipe and fitting manufacturer's requirements.

3.3 DRAINAGE GENERALLY

Carry out drainage work and tests to AS/NZS 3500 Part 2 (sanitary drainage) AS/NZS 3500 Part 3 (stormwater drainage) as modified by NZBC B1/AS1: 6.0. Lay uPVC pipe systems to relevant sections of NZS 7643.

3.4 LAY FOUL WATER DRAINS

Lay drains in straight runs to correct gradients, to discharge into the existing pipe work connecting house to network utility operator's sewer. Set inspection fittings on a concrete base.

3.5 INSTALL GULLY TRAPS

Set on concrete 50 mm above the surrounding ground or paving and brought up to protect the top of the fitting. Trowel off.

3.6 LAY STORMWATER DRAINS

Confirm the required location of downpipes and finished ground levels before commencing pipework. Set downpipe bends in concrete with the concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the network utility operator's stormwater system.

3.7 LAY SUBSOIL DRAINS

Lay perforated piping firmly in a granular bed in straight runs to correct gradients, discharging into a cesspit. Carry the granular bed up over the pipes without disturbing them to a total depth of 300 mm and cover with geotextile fabric to the pipe manufacturer's requirements. Carry the high end of all lines up to the surface to allow for flushing out and finish with a protected removable cap.

3.9 INSTALL STRIP DRAIN CHANNEL

Excavate trench and form site concrete base to fall. Set interlocking channel sections, sumps and accessories in place, all in accordance with the channel manufacturer's requirements. Check falls and install gratings and covers.

3.10 INSTALL SURFACE WATER SUMP

To NZBC E1/AS1, complete with ceramic half-siphon pipe and cast iron frame with a lift out grating.

3.12 INSTALL FOUL WATER INSPECTION CHAMBERS

To NZBC G13/AS2, with ceramic channels to form a 75 mm fall across the chamber. Channel top should be 100 mm above the pipe soffit. Bench from channels 1V on 10H. Benching should be made of 17.5 MPa concrete vibrated to smooth finish. Plastering is not allowed. Fit a cast iron cover and frame.

3.13 SOAKHOLES OR TRENCHES

Dispose of stormwater on site as shown on the drawings, by soakage, to suit local geology and soil structure; all as directed by the territorial authority.

3.14 CONCRETE ENCASEMENT

Concrete encase shallow drains and drains under driveways, on a 100 mm deep 17.5 MPa concrete bed reinforced with three 10 mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100 mm 17.5 MPa concrete.

3.15 FIELD TEST

Field test drains for watertightness (UPVC to NZS 7643 section 11) to the satisfaction of the territorial authority inspector.

3.16 BACKFILL

Backfill drain lines in 150 mm layers, well tamped but without disturbing the drains. Finish off with 150 mm of topsoil, slightly mounded above the finished ground line.

4. SELECTIONS

4.1 PIPES

Type/size: Polyproylene – refer to engineer drawings

7501 HEATING: LOW TEMPERATURE HOT WATER HEATING SYSTEMS AND OPEN FIRES

1. GENERAL

Related work

1.1 RELATED SECTIONS
Refer to 7101 HOT AND COLD WATER SYSTEM for pipe systems
Refer to 7202 GAS SYSTEM for gas supply

Documents

1.2 DOCUMENTS REFERRED TO
Documents referred to in this section are:

NZBC G10/AS1 Piped services (Gas)

NZS 5261 Installation of gas burning appliances and

equipment Electricity Regulations 1997
Gas Regulations 1993
Plumbers, Gasfitters and Drainlayers Act 1976

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.

Solid fuel Appliance Resource handbook Guide to selection, Installation and Operation of Solid Fuel Appliances

1.3 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are to be provide by the tenderer, along with relevant performance specifications, design details and guarantees

Warmington Industries Ltd www. Warmington.co.nz
Jetmaster

Requirements

1.4 COMPLY
Comply with the Gas Regulations, Electricity Regulations and the network utility operator's requirements. Give notices for inspections and carry out tests as required.

1.5 QUALIFICATIONS
Gasfitters to be experienced competent workers, familiar with the materials and the techniques specified and registered under the Plumbers, Gasfitters and Drainlayers Act.
Electricians to be experienced and qualified.

1.6 INFORMATION FOR MAINTENANCE MANUAL
Supply maintenance manual information to the requirements set out in PRELIMINARIES AND GENERAL.

Warranties

1.7 WARRANTY
Warrant this work under normal environmental and use conditions against failure of materials and execution.
Warranty period: two/three year warranty (dependent on appliance)
www.rinnai.co.nz

Performance

1.8 FINAL INSPECTION AND TEST
Submit the work for inspection and test and prove to the satisfaction of the network utility operator that the installation complies with all Acts and Regulations and has been tested for leakage and proved to be sound.

Testing should be at the time of completion. Confirm this timing before carrying out any tests. Test and demonstrate the system according to manufacturer's specification and to NZS 5261.

1.9 CERTIFICATE OF COMPLIANCE
Provide a Gasfitting Certificate of Compliance as required by Regulation 24 of the Gas Regulations 1993 within 7 days of completion.

2. PRODUCTS

2.1 SPECIFICATION FOR LOW TEMPERATURE IN FLOOR HEATING SYSTEM
Full specifications are to be provided for heating system proposed and for associated products, components or accessories.

Materials - hot water heating units
2.4 HOT WATER STORAGE SYSTEM
Check that existing hot water storage cylinder suitably sized for the heating load before extending to additional zones for new house.
Co-ordinate with plumbing installation and domestic hot water supply boiler to ensure a co-ordinated system .

2.5 DIGITAL CONTROLLER(S)
Digital controllers for flow of hot water. Allow for separate control for the separate zones identified on the plans. Provide meter to measure load for new house and load for existing house.

Materials – space heating
Supply complete specification information and installation instructions for proposed system.

Materials – Flame fires

2.12 IN-BUILT FIRES
Warmington open fire 1100 firebox with gas fire starter with electronic control and convectional flue system.
Or **Jetmaster** equivalent 1050 model

2.14 FLUES
Matching flue system for specified heater
www.rinnai.co.nz

3. EXECUTION

Conditions

3.1 GENERALLY
Carry out the whole of this work to the requirements of NZBC G10/AS1 and NZS 5261.

Application

3.2 INSTALL GAS APPLIANCES
Fit and connect gas appliances to NZS 5261, complete with flues as required to the appliance manufacturer's requirements, including stove top, instantaneous hot water heating system and gas

3.3 HANDLE AND STORE
Handle and store units, cylinders, pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress. Store according to manufacture's instructions.

3.4 CONCEAL
Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

3.5 CORROSION
Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

3.6 THERMAL MOVEMENT
Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

3.7 PIPE SIZE
Gas fitter to check and confirm adequate pipe size, incoming mains and meter on site as a part of the installation. Pipe sizing calculation to NZS 5261.

Application - hot water systems

3.8 INSTALL LOW TEMPERATURE IN FLOOR HOT WATER HEATING SYSTEM
Install hot water heating unit (gas boiler or heat pump) complete with the necessary fittings to manufacturers requirements and to NZBC G12/AS1: Water supplies, 6.10, Water heater installation and to NZS 5261. Install flue (if applicable) to manufacturers details and requirements and digital controllers in location specified.

3.10 INSTALL HOT WATER PIPING SYSTEM SYSTEM
Install In floor hot water heating System complete with the necessary fittings,to manufacturers and suppliers instructions. Ensure layout of pipe work maximises the efficiency of the system and allows for an even heat over the floor area.
Ensure all pipework is tied to reinforcing to prevent movement of pipes during concrete pouring and ensure that sufficient concrete cover is maintained, allowing for grinding and sealing of concrete where specified.

Application – flame fires

3.17 INSTALL IN–BUILT FIRE
Install **Warmington or jetmaster** fires complete with the necessary fittings to **Warmington or jetmaster** requirements and to NZS 5261. Install flue to selected location and **Warmington or jetmaster** details and requirements.

Completion

3.18 TEST
Test the in floor heating system to ensure water flow, thermostat operation and heating capacity are all to standard specified. Allow to fine tune the system during the first winter of operation.

3.19 REPLACE
Replace damaged or marked elements.

3.20 LEAVE
Leave work to the standard required by following procedures.

3.21 REMOVE

Remove debris, unused materials and elements from the site.

7701 ELECTRICAL

1. GENERAL

1.1 DOCUMENTS
Documents referred to in this section are:

NZBC F6/AS1 Lighting for emergency
NZBC F7/AS1 Warning systems, 3.1 Domestic smoke alarms NZBC F8/AS1 Signs

AS/NZS 2293 Emergency evacuation lighting for buildings
AS/NZS 3000 Electrical regulations - Buildings, structures and premises
AS/NZS 3008 Electrical installations - Selection of cables
3008.1.2: Typical New Zealand installation conditions
AS/NZS 3086 Telecommunications installations – Integrated telecommunications cabling systems for small office/home office premises.
AS 3786 Smoke alarms
NZS 6401 PVC-insulated cables for electric power and lighting

Electricity Regulations 1997
New Zealand electrical codes of practice (ECP)

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
To be provided by manufacturer.

1.3 COMPLY
Comply with the Electricity Regulations 1997, AS/NZS 3000, AS/NZS 3008.1.2 and the New Zealand electrical codes of practice 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.

1.4 QUALIFICATIONS
Carry out work by or under the direct supervision of a holder of a practising licence under the Electricity Regulations 1997.

1.5 CERTIFICATE OF COMPLIANCE
Supply a certificate of compliance to the owner, as required by the Electricity Regulations 1997, and in particular, clauses 16, 34 and 35. Allow the network utility operator to view before the meter installation, listed work inspection, polarity check and livening of supply.

2. PRODUCTS

2.1 MAINS SUPPLY, SINGLE PHASE
Connect to existing supply with separate meter.Check that supply is appropriate.

2.2 CABLES
Tough plastic sheathed copper conductors to NZS 6401, stranded above 1.0 mm^2, and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the connected load, or produce an excessive voltage drop.

Lighting circuits: Domestic: 1.0 mm^2 on 10 amp MCBs
Lighting circuits: Commercial:1.5 mm^2 on 16 amp MCBs
Power circuits: 1.5 mm^2 on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
2.5 mm^2 on 16 amp MCBs for domestic insulated construction, or filled cavity
2.5 mm^2 on 20 amp MCBs for unenclosed or unfilled cavity construction

2.5 mm^2 on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Range circuits: Single phase: 6 mm^2 on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions may be above 35°C.

2.3 DATA WIRING
To AS/NZS 3086. CAT 5 cabling to outlet in living room and outlet in Guest Room/Study

2.4 METER BOX
Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof if mounted outdoors, and complete with meter mounting, main switch and fuse. Provide separate metre for new house from main supply to existing house.

2.5 DISTRIBUTION BOARD
Proprietary manufactured, zinc plated powder coated, or heavy duty plastic, fire resistant enclosed construction, complete with neutral and earth busbars, MCBs, 30 mA RCDs and 60 amp main switch, complete with 20% spare capacity to AS/NZS 3000. Include 2 spare MCBs labelled as “spare”. All protective devices: 6kA MCBs of the appropriate rating.

2.6 MINIATURE CIRCUIT BREAKERS
Miniature moulded case circuit breakers

2.7 WALL BOXES
Standard size in plastic, with 2 or more gang size in metal, all screw fixed.

2.8 SWITCH UNITS
Sixteen amp minimum rated, 230 volt polycarbonate flushplate units. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units, locator units and 2 way units

2.9 HOT WATER SYSTEM SWITCH
One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

2.10 SWITCHED SOCKET UNITS
Ten amp, 230 volt polycarbonate flushplate 3 pin flat NZS combination switch units, single or multi gang as detailed.

2.11 SMOKE ALARMS
To AS 3786. A wired 230 volt ionised smoke detector type.

2.12 CEILING ROSES
White plastic mounting base with screwed cover. Terminal type. Cylindrical section TPS for suspended fittings.

2.13 BATTEN HOLDERS
Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.

2.14 DOOR BELL SYSTEM
Complete with transformer for mounting on distribution board.

2.15 TV AERIAL
Antenna, co-axial cable and outlets, suitable for both VHF and UHF reception of all local free-to-air broadcast channels. Provide two outlets.

2.17 LIGHT FITTINGS
Fluorescent and High Intensity Discharge fittings with low loss control gear and power factor corrected to 0.90 minimum. Control gear suitable for dimming if this is required. All fittings complete with lamps; Incandescent GLS lamps pearl, coiled-coil 240v rated,

bayonet cap; Fluorescent triphosphor 2700K; halogen ELV 12v dichroic reflector with cover glass unless detailed otherwise.

3. EXECUTION

3.2 METER BOX

Fit to meter box manufacturer's and network utility operator's requirements where detailed. Recess into external wall and flash to weatherproof. Arrange for meter installation and connection.

3.3 DISTRIBUTION BOARD

Fit to board manufacturer's requirements where detailed. Recess into wall and ensure fire containment properties of the enclosure is maintained.

3.4 CIRCUIT PROTECTION

Install MCBs to protect each final sub circuit sized for circuit maximum loading.

3.5 EARTH LEAKAGE PROTECTION

RCD protection to AS/NZS 3000

Domestic

Install RCD protection at the switchboard of final sub circuits controlling socket outlets except for:

- Fixed cooking equipment
- Lighting

Do not install RCDs for:

- Socket outlets positioned over 2300 mm above floor level
- Appliances rated at less than 150 watts

3.6 SET-OUT

Unless specifically detailed, the position of outlets and equipment shown on drawings is indicative of requirements. Study documents and site conditions to ensure no conflict with other services or features will arise. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

3.7 CABLING

Install with a maximum of 10 light outlet units or 6 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. 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.

3.8 WALL BOXES

Flush mounted in cavity construction. Fix vertically mounted wall boxes to studs. Fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

3.9 SWITCH AND SOCKET UNITS

Fit all single and double switch units and socket at the following heights (to the centre of the unit) unless shown otherwise on the drawings.

Switch Units: 1000 mm
Socket Units: 150 mm above work benches
400 mm elsewhere

Mount light switches and switch socket outlets vertically and socket units horizontally. Label all switch units that control electrical equipment or special lighting circuits by colour filled engraving on the switch.

3.10 ISOLATING SWITCHES

Locate isolating switches in agreed positions when not specifically shown on the drawings.

3.11 LIGHT FITTINGS

Install light fittings in locations and at heights detailed, and in accordance with the fitting manufacturer's requirements.

3.12 EXTRA LOW VOLTAGE LIGHTING

Where remote transformers are used for ELV lamps, connect from transformer to lamp with minimum 2.5 mm^2 conductor, to ensure voltage drop in transformer and conductor does not exceed 0.8 volts. Connect lamps 50 watt or greater matched to no more than one per transformer, located as close as practicable to the lamp. Ensure transformers and rear of light fittings are adequately ventilated and clear of any thermal insulation.

3.15 EARTH BONDS

Bond together and to earth all plumbing fittings not adequately isolated, to AS/NZS 3000; the Electricity Regulations 1997 and the fitting manufacturer's requirements.

3.16 TELEPHONE WIRING

Install telephone cable to telephone outlet positions shown on the drawings. Install in conduit for outlets on masonry surface. Fix and connect BT jack point outlets to NZ Telecom requirements and terminate wiring at incoming terminal block.

3.17 TELEPHONE DRAW WIRES

Supply draw wires from accessible positions for the telephone outlets shown on the drawings. Install in conduit for outlets on masonry surface.

3.18 DATA WIRING

Install data wiring to 2 outlet positions shown on the drawings. Install in conduit for outlets on masonry surface.

3.19 TV AERIAL

Fit antenna, run cabling concealed below the roof and fit outlets where shown on the electrical drawings. Ensure the system is suitable for high quality reception of all VHF and UHF channels - Sky TV installation practices minimum.

3.25 SMOKE ALARMS

Install smoke alarms to NZBC F7/AS1 and to the alarm manufacturer’s requirements, fitted neatly and without damage to the surrounding finish.

3.26 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire fittings and equipment to individual fittings and equipment manufacturer's requirements. Refer to the drawings for required layouts and locations for equipment. Refer to 4 SELECTIONS for schedules of fittings.

3.27 BATHROOM ELECTRICAL FIXTURES

Install electrical fixtures specified in other parts of this specification. Connect the following bathroom and toilet electrical items: -

- Heated towel rails: Install to manufacturers requirements.
- Mirror demisters: Locate centrally above the wash hand basin(s). Connect wiring to room lighting unless specified otherwise.
- Extract fans: Install to manufacturers requirements.

3.28 EXTERIOR SERVICES

Provide circuits and connections for exterior installations, including ELV 12 volt path lighting and electronic irrigation systems. Refer to drawings for connection points. Where underground, connect mains voltage outlets with cable enclosed in conduit, or with 2 core neutral screen cable with heavy duty grade 3.2 mm PVC sheath, with the neutral screen conductors terminated in a soldered or compression cable lug, PVC sleeved, and connected as the earth continuity conductor.

Connect to all ELV outlets with 230v rated cable with minimum 2.5 mm^2 conductor, and to ensure voltage drop to lamp does not exceed 0.8 volts. Connect lamps 50 watt or greater matched to no more than one per transformer, located as close as practicable to the lamp. Ensure transformers and light fittings are adequately cooled and watertight if liable to immersion.

3.29 MAIN EARTH

Provide a plastic toby box or UPVC tube to contain and protect the earth pin. Fix the connecting earth wiring closely and securely against wall surfaces.

3.30 LABELLING

Complete all labelling in clear machine printed permanent manner. Include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit.

3.31 COMPLETION

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

4. SELECTIONS

Materials

4.1 SELECTIONS

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

Power supply to hot water heater

4.3 HARDWARE

Item	Brand/model number	Colour
Switch units:	PDL 600 series	~
Socket outlets:	PDL 600 Series	~

4.4 INTERNAL LIGHT FITTINGS

Fitting	Brand and code	Number off
Pendant lights:	To be selected by owner	Refer to drawings
Ceiling lights:	To be selected by owner	Refer to drawings
Wall lights:	To be selected by owner	Refer to drawings
Fluorescent lights:	To be selected by owner	Refer to drawings

4.5 EXTERNAL LIGHT FITTINGS

Fitting	Brand and code	Number off
Wall lights:	To be selected by owner	Refer to drawings

4.6 MISCELLANEOUS ITEMS

Item	Brand/model number
Bell system:	~
TV aerial:	~
Wall heaters:	~
Smoke alarms:	PDL
Data wiring:	~

4.7 HEATED TOWEL RAILS

Location	Brand and code
G05,G12	Heirloom – 600mm wide

4.8 BATHROOM FANS

Location	Brand and code
G05,G12,G13	~

4.9 ELECTRIC-POWERED APPLIANCES

Item	Location	Brand and code
Range:		
Waste disposal unit: Range hood:		
Dishwasher		
Washing Machine		
Dryer		
Microwave		
Refigerator / Freezer		