

Prime Designs Wellington Ltd



SPECIFICATION

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

Fox - Kelson Heights Subdivision

Project Specification

Lot 12 Kelson Heights Stage 1, Kelson, Lower Hutt, New Zealand

Project Ref: D1-G

Printed: 27 July 2020



masterspec

Specification built using Masterspec software
Project ID: 175269 - 177482

BUILDING CONSENT

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Verified spec ID: **181309-177482**

This specification has been produced using Masterspec software and completed on 27/07/2020.
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1210 PROJECT.

1 GENERAL

1.1 PROJECT

Street address:	(D1-G) Fox - Stage 1, Kelson Heights
Legal description:	Lot 12 Stage 1 Kelson Heights
Project type:	New building
Intended use:	Single residential Dwelling
Intended life:	Indefinite but not less than 50 years

1.2 PROJECT DESCRIPTION

New timber framed 4 bedroom house with attached double garage. Linea weatherboards and Shadowclad plywood wall cladding over cavity with corrugated Colorsteel roofing. SED foundations, trusses by truss manufacturer. Concrete RibRaft slab foundations and trusses by truss manufacturer.

1.3 LBP REQUIREMENT

Any site license LBP's shall have a minimum:
Site license in area of practice 1

Carpentry

Foundations 1: Concrete foundation and concrete slab-on-ground

Roofing 2: Profiled metal roof and/or wall cladding

1.4 DESIGNER

Name:	Prime Designs
Mailing address:	PO Box 40432, Upper Hutt
Telephone:	04 528 8405
Email:	admin@primedesigns.co.nz

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1212 COMPLIANCE

1 GENERAL

1.1 SITE DATA

Exposure zone:	Zone C (to NZS 3604 , 4.2 Exposure zones or E2/AS1 Zone E severe marine)
Wind zone:	H (to NZS 3604 , table 5.4 Determination of Wind Zone)
Earthquake zone:	Zone 3 (to NZS 3604 , figure 5.4 Earthquake zones)

1.2 PRODUCER STATEMENTS

Provide Producer Statements for the following

- Truss design
- Aluminium joinery
- Glazing

Provide Producer Statements in the required form. Where no form is specified provide in the industry/trade standard form. Provide all Producer Statements before the Building Consent Authority carries out the final inspection.

1.3 RECORDS OF WORK

Provide Records of Work for Restricted Building Work:

- Carpentry
- Roofing
- Foundations

Refer to the Building Consent for specific requirements. Provide Records of Work in the required form. Provide all Records of Work before the Building Consent Authority carries out the final inspection.

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1213 SELECTIONS

1 GENERAL

The following selections are to be read in conjunction with the related work sections, where they are available, and the general sections.

2 SITE

2.1 NO SITE RELATED SELECTIONS

There are no site selections for this project.

3 STRUCTURE

<< 3110 CONCRETE WORK >>

3.1 DAMP-PROOF MEMBRANE - UNDER SLAB

Type/thickness: Thermakraft Black 250 micron

3.2 CONCRETE REINFORCEMENT

Type: Refer to Firth RibRaft installation manual

3.3 CONCRETE

Location: Refer to architect's plans

Strength: 20 MPa

<< 3800 TIMBER FRAMING >>

3.4 FLOOR TIMBER FRAMING

Type/treatment: Radiata pine, Grade SG8, Treated H1.2

3.5 EXTERIOR WALL TIMBER FRAMING

Type/treatment: Radiata pine, Grade SG8, Treated H1.2

Cavity battens: Radiata pine, Treated H3.1 (non-structural)

3.6 ROOF TIMBER FRAMING

Type/treatment: Radiata pine, Grade SG8, Treated H1.2

3.7 ROOF TRUSSES

Type/treatment: Radiata pine, Grade SG8, Treated H1.2

3.8 INTERIOR WALL TIMBER FRAMING

Type/treatment: Radiata pine, Grade SG8, Treated H1.2

4 ENCLOSURE

<< 4160 DAMP-PROOFING, UNDERLAYS AND RIGID AIR BARRIERS >>

There is no work section specification relating to the following selections

4.1 DAMP-PROOF COURSE

Brand/Type: Thermakraft Supercourse 500

4.2 WALL UNDERLAY/ROOF UNDERLAY

Brand/Type: Thermakraft Watergate Plus wall underlay
Thermakraft 215 roof underlay

4.3 WINDOW FLASHING TAPE

Brand/Type: Thermakraft Aluband

<< 4220 WALL CLADDING >>

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4.4 CLADDING

Brand/Type: James Hardie Linea weatherboards
 Fixings: Refer manufacturer's info
 Joints: Refer manufacturer's info
 Finish: Owner to confirm

4.5 CLADDING

Brand/Type: Shadowclad Plywood cladding
 Fixings: Refer manufacturer's info
 Joints: Refer manufacturer's info
 Finish: Owner to confirm

<< 4239 SOFFIT LINING >>**4.6 SOFFIT**

Brand/Type/thickness: James Hardie / HardieFlex 4.5mm
 Fixings: Refer manufacturer's info
 Joints: Refer manufacturer's info
 Finish: Owner to confirm

<< 4310 ROOFING >>**4.7 ROOFING**

Brand/Type: Corrugated Colorsteel Endura
 Flashings: Owner to select
 Colour: Owner to select

<< 4520 ALUMINIUM WINDOWS AND DOORS >>**4.8 ALUMINIUM WINDOWS AND DOORS**

Brand/Type: Owner to select
 Finish/colour: Owner to select
 Jamb liners: Owner to select
 Flashings: Owner to select
 Hardware: Owner to select

<< 4555 GARAGE DOORS >>

There is no work section specification relating to the following selections

4.9 GARAGE DOOR

Brand/Type: Owner to select
 Face panel: Owner to select
 Finish: Owner to select

4.10 GARAGE DOOR CONTROLLER

Brand/Type: Owner to select
 Remotes quantity: Owner to select

<< 4610 GLAZING >>**4.11 GLAZING - SAFETY**

Location: Refer architect's plans
 Type: Owner to select

4.12 GLAZING - DOUBLE

Location: Refer architect's plans
 Type: Owner to select

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4.13 GLAZING - SHOWER SCREENS

Brand/Type: Owner to select
 Hardware: Owner to select

4.14 GLAZING - MIRRORS

Location: Owner to confirm
 Type: Owner to select

<< 4710 THERMAL INSULATION >>**4.15 WALL INSULATION**

Brand/Type: Earthwool
 R value/Thickness: R 2.2 / 90mm

4.16 CEILING/ROOF INSULATION

Brand/Type: Earthwool
 R value/Thickness: R 3.2 / 170mm

<< 4820 FLASHINGS >>

There is no work section specification relating to the following selections

4.17 FLASHINGS - GENERALLY

Type: Owner to select

4.18 FLASHINGS - CONCEALED

Type: Owner to select

5 INTERIOR**<< 5110 INTERIOR LININGS AND TRIM >>****5.1 WALL LININGS**

Location: Refer architect's plans
 Brand/Type/thickness: GIB / standard, Aqualine to wet areas / 10mm
 Finish: Level 4

5.2 CEILING LININGS

Location: Refer architect's plans
 Brand/Type/thickness: GIB / standard, Aqualine to wet areas / 13mm
 Finish: Level 4

5.3 INTERIOR TRIM

Skirtings: Owner to select
 Architraves: Owner to select
 Scotia: Owner to select

<< 5230 INTERIOR DOORS & FRAMES >>**5.4 INTERIOR DOORS**

Location: Refer architect's plans
 Leaf type/finish: Owner to select
 Frame type/finish: Owner to select
 Hardware: Owner to select

<< 5410 FLOORS >>**5.5 FLOOR**

Location: Refer architect's plans
 Brand/Type/thickness: Plywood, H3.1 to wet areas 20mm
 Fixing method: Nail

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<< 5510 JOINERY FIXTURES AND FITTINGS >>

5.6 FABRICATED JOINERY ITEMS

Location/item: Owner to select
 Carcass/finish: Owner to select
 Bench top: Owner to select

5.7 PROPRIETARY JOINERY ITEMS

Location/item: Owner to select
 Assemble/install: Owner to select

5.8 FABRICATED TIMBER STAIRS

Stair: Owner to select
 Balustrade/handrail: Owner to select
 Finish: Owner to select

<< 5520 HARDWARE >>

There is no work section specification relating to the following selections

5.9 HARDWARE BRAND TYPE

Owner to select

6 FINISH

<< 6300 FLOOR COVERING >>

6.1 RESILIENT FLOORING (VINYL, LINOLEUM OR RUBBER)

Location: Refer architect's plans
 Brand/Type: Owner to select
 Jointing method: Owner to select
 Skirting or coving: Owner to select
 Trim or edging: Owner to select

6.2 CARPET

Location: Refer architect's plans
 Brand/Type: Owner to select
 Underlay: Owner to select
 Trim: Owner to select
 Laying method: Edge gripper

<< 6700 PAINTING >>

6.3 EXTERIOR PAINTING

Roof: Owner to select
 Walls: Owner to select

6.4 INTERIOR PAINTING

Walls: Owner to select
 Ceiling: Owner to select
 Doors: Owner to select
 Cabinetry: Owner to select
 Trim: Owner to select

7 SERVICES

<< 7120 WATER SYSTEM >>

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7.1 WATER SYSTEM

Water heater type: Electric Hot water cylinder
 Water heater brand/model: Owner to select

<< 7150 SANITARYWARE, TAPWARE & ACCESSORIES >>**7.2 SANITARYWARE**

Location: Item/brand/reference:
 Refer architect's plans Owner to select

7.3 TAPWARE

Location: Item/brand/reference:
 Refer architect's plans Owner to select

7.4 SANITARY ACCESSORIES

Location: Item/brand/reference:
 Owner to select Owner to select

<< 7410 RAINWATER SPOUTING SYSTEM >>**7.5 SPOUTING**

Brand/type/size: Colorsteel

7.6 DOWNPIPES

Brand/type/size: Colorsteel 80mm dia.

<< 7420 SANITARY WASTE SYSTEM >>**7.7 FINISHES - EXPOSED SANITARY WASTE ITEMS**

Floor waste grates: Owner to select

<< 7550 HEATING >>

There is no work section specification relating to the following selections

7.8 SPACE HEATING

Brand/type/reference: Owner to select

<< 7700 ELECTRICAL >>**7.9 ELECTRICAL OUTLETS AND SWITCHES**

Brand/type/reference: Owner to select

7.10 LIGHT FITTINGS

Brand/type/reference: Owner to select

7.11 SMOKE ALARMS

Brand/type/reference: Owner to select

7.12 ELECTRICAL APPLIANCES AND EQUIPMENT

Brand/type/reference: Owner to select

8 EXTERNAL**<< 8000 LANDSCAPE >>**

There is no work section specification relating to the following selections

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- 8.1 DRIVEWAY
Type/finish: Owner to select
- 8.2 PATHS
Type/finish: Owner to select
- 8.3 FENCES & GATES
Type/finish: Owner to select

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1220 GENERAL REQUIREMENTS

1 GENERAL

1.1 THE WORKS

The works are as described in this specification and shown on the drawings.

1.2 PERSONNEL

Owner: The person defined as "owner" in the New Zealand Building Code.

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

1.3 THE SITE

The site of the works, the site address and the legal description are listed under the sections 1210 PROJECT. Confine access and work to the area of site indicated on the drawings.

1.4 SPECIFICATION SECTIONS

Sections are for reference and convenience only and do not constitute individual trade sections or work elements. Read all sections together and read this section with all other sections.

1.5 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.
Notified:	Notified in writing.

1.6 ABBREVIATIONS

The following abbreviations are commonly used throughout the specification:

AS	Australian Standard
AS/NZS	Joint Australian/New Zealand Standard
BCA	Building Consent Authority
BRANZ	Building Research Association of New Zealand
LBP	Licensed Building Practitioner
NZBC	New Zealand Building Code
NZS	New Zealand Standard
NZS/AS	Joint New Zealand/Australian Standard
NUO	Network Utility Operator
OSH	Occupational Safety and Health
RBW	Restricted Building Work
TA	Territorial Authority

1.7 INCONSISTENCIES

If there are any inconsistencies, errors or omissions in or between documents, the contractor must seek direction in resolving it. Figured dimensions take precedence over scaled dimensions; drawings to a larger scale take precedence over drawings to a smaller scale and drawings take precedence over specification.

1.8 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 owner as equivalent or superior to those specified. Except where a specified product is not available, the owner is not bound to accept any substitutions.

Notify proposed substitution of specified products. Include sufficient information to allow the owner to confirm that the substitution is equivalent or superior to that specified. Advise the owner whether an amendment will or may be required to the Building Consent and the expected costs of such amendment.

1.9 THE WORDS "PROVIDE" OR "FIX"

The words "provide" (or "supply") or "fix" if used separately mean "provide and fix" unless explicitly stated otherwise.

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1.10 MANUFACTURERS AND SUPPLIERS

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

1.11 REFERENCED DOCUMENTS

Reference is made to various New Zealand Building Code (NZBC) acceptable solutions (AS) and verification methods (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) 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. Documents cited both directly and within other cited publications are part of this specification.

1.12 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 is affected, the change notified to the BCA for advice as to whether an amendment is required to the Building Consent Authority.

1.13 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 is affected refer any change to the BCA for advice as to whether an amendment is required to the Building Consent.

1.14 STATUTORY OBLIGATIONS

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

1.15 BUILDING CONSENT

Obtain the original or copies of the Building Consent form and documents from the owner and keep on site. Liaise with the BCA and/or the building certifier for all required notices and all inspections required during construction to ensure compliance. Return the consent form and documents to the owner on completion.

1.16 INSPECTIONS

Do not proceed with work noted on the Building Consent for inspection until it has been inspected and passed by the BCA inspector.

1.17 KEY PERSONNEL

Provide names and contact detail of LBP's/ key personnel. Prior to Restricted Building Work being carried out, provide names, registrations numbers (where appropriate) and contact detail of LBP's that are required for RBW by the Building Consent Authority as part of the Building Consent.

Include the following as applicable:

- Person with the appropriate site license
- Carpenter
- Registered drainlayer
- Registered plumber
- Registered gasfitter
- Registered electrician
- Roofer
- Block layer
- Bricklayer
- External plasterer
- External window manufacturer
- Waterproof membrane applicator

1.18 PRODUCER STATEMENTS AND LBP DOCUMENTATION

When Records of Work or producer statements verifying construction are required, for the application for the Code Compliance Certificate, provide copies to both the BCA and the owner. Provide LBP documents and producer statements in the form required by the BCA.

1.19 CERTIFICATE OF COMPLIANCE

Provide Certificates of Compliance for electrical and gas work carried out.

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1.20 CODE COMPLIANCE CERTIFICATE

Provide documentation that the Owner requires in order to obtain a Code Compliance Certificate for the consented work.

1.21 TRADE GUARANTEES AND WARRANTIES

Where specific trade guarantees/warranties are offered covering materials and/or execution of proprietary products or complete installations, or are required as a condition of Building Consent, provide guarantees/warranties to the owner.

1.22 SITE ACCOMMODATION

Provide, erect and maintain scaffolding, sheds, toilets, water, power and hoardings. Allow for cartage, craneage, plant hire and storage. Arrange for temporary works and services necessary for the completion of the works.

1.23 HEALTH AND SAFETY

Make the works safe and provide and maintain a safe working environment, to the requirements of the [Health and Safety at Work Act 2015](#). 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 and risks.

1.24 PROTECT THE WORKS

Protect parts of the work liable to damage 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.

1.25 STORAGE AND PROTECTION

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.

1.26 ANTIQUITIES AND ITEMS OF VALUE AND INTEREST

Report immediately the finding of any fossils, antiquities, pre-1900 items, or objects of value. Ensure they remain undisturbed until approval is given for their removal.

1.27 MEANS OF COMMUNICATION

All directions and approvals in writing.

1.28 PROGRAMME

Provide a programme for the contract works, including the work of separate contractors being carried out concurrently 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. Supply a copy of the programme, and any updates to the owner.

1.29 WORKING HOURS

Work on site is restricted to between 0800 to 1800, Monday to Friday, excluding statutory holidays. Work outside these hours may be permitted, with prior approval in writing by the owner.

1.30 RESTRICTIONS

Do not:

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

1.31 QUALITY ASSURANCE

Carry out and record regular checks of material quality and accuracy. Provide all necessary materials, equipment, plant, attendances, supervision, inspections and programming to ensure required standards are met.

1.32 DAMAGE AND NUISANCE

Prevent damage and nuisance from water, fire, smoke, vehicles, dust, rubbish, noise and other causes resulting from the contract works. Comply with the requirements of the TA and relevant Acts and Standards.

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1.33 SET-OUT AND DATUM

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

1.34 EXECUTION OF THE WORK

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.

1.35 MATERIALS AND PRODUCTS

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

1.36 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.

1.37 COMPLETE ALL SERVICES

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

1.38 CLEAR AWAY

Regularly clear away trade debris, unused materials and elements from the site. On completion of the work 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.

1.39 CLEAN

Clean and wash down external surfaces to remove dirt, debris and marking. Clean interior surfaces including floors, glass, cabinetwork, joinery, sanitary and hardware items.

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1233 DOCUMENTS REFERENCED

1 GENERAL

Documents listed below are, when referred to in the text, part of this specification. However, this specification takes precedence in the event of it being at variance with and requiring a higher standard than any cited document.

The latest edition of the cited document (including amendments and provisional editions) at the date of this specification applies unless stated otherwise.

1.1 ACTS AND REGULATIONS

[Building Act 2004](#)

[Gas \(Safety and Measurement\) Regulations 2010](#)

[Health and Safety at Work Act 2015](#)

[Health and Safety at Work \(Asbestos\) Regulations 2016](#)

[Electricity \(Safety\) Regulations 2010](#) (Reprint as at 4 April 2016)

[Plumbers, Gasfitters and Drainlayers Act 2006](#)

1.2 NEW ZEALAND BUILDING CODE VERIFICATION METHODS

[NZBC E2/VM1](#) External moisture

[NZBC G12/VM1](#) Water supplies

1.3 NEW ZEALAND BUILDING CODE ACCEPTABLE SOLUTIONS

[NZBC B1/AS1](#) Structure - general

[NZBC B2/AS1](#) Durability

[NZBC C/AS1-AS7](#) Protection from fire

[NZBC D1/AS1](#) Access routes

[NZBC E1/AS1](#) Surface water

[NZBC E2/AS1](#) External moisture

[NZBC E2/AS3](#) External moisture

[NZBC F2/AS1](#) Hazardous building materials

[NZBC F7/AS1](#) Domestic smoke alarms

[NZBC G1/AS1](#) Personal hygiene

[NZBC G10/AS1](#) Piped services - Gas

[NZBC G11/AS1](#) Gas as an energy source

[NZBC G12/AS1](#) Water supplies

[NZBC G13/AS2](#) Foul water - Drainage

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1.4 NEW ZEALAND STANDARDS

AS/NZS 1604.3	Specification for preservative treatment - Plywood
NZS/AS 1884	Floor coverings - Resilient sheet and tiles - Installation practices
AS/NZS 2269.0	Plywood - Structural - Specifications
AS/NZS 2455.1	Textile floor coverings - Installation practice - General
AS/NZS 2455.2	Textile floor coverings - installation practice - Carpet tiles
AS/NZS 2589	Gypsum linings - Application and finishing
AS/NZS 2642.2	Polybutylene pipe systems - Polybutylene pipe for hot and cold water applications
AS/NZS 2699.1	Built-in components for masonry construction Wall ties
AS/NZS 3000	Electrical installations (known as the Australian/NZ Wiring Rules)
NZS 3101.1	Concrete structures standard
NZS 3103	Sands for mortars and plasters
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Concrete surface finishes
AS/NZS 3500.2:2015	Plumbing and drainage - Sanitary plumbing and drainage
NZS 3501	Specification for copper tubes for water, gas and sanitation
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3622	Verification of timber properties
NZS 3631	New Zealand national timber grading rules
AS/NZS 4130:2009	Polyethylene (PE) pipes for pressure applications
NZS 4210	Masonry construction materials and workmanship
NZS 4211	Specification for the performance of windows
NZS 4218	Thermal insulation - Housing and small buildings
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.2	Glazing in buildings - Insulating glass units
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live actions
NZS 4229	Concrete masonry buildings not requiring specific engineering design
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
NZS 4251.1	Solid plastering - Cement plasters for walls, ceilings and soffits
AS/NZS 4666	Insulating glass units
AS/NZS 4671	Steel reinforcing materials
AS/NZS 4858	Wet area membranes
AS/NZS 5601.1	Gas installations - general installations
NZS 6803	Acoustics - Construction noise

1.5 BUILDING RESEARCH ASSOCIATION OF NEW ZEALAND (BRANZ)

Weathertight Solutions Vol. 2: Stucco
 Good practice guide: Tiling
 Good practice guide: Membrane roofing
 Bulletin 441 - Sealed joints in external claddings - 2. Sealants
 Bulletin 519 - Fasteners selection

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1.6 OTHER DOCUMENTS

Cement & Concrete Association of New Zealand

- [CCANZ CP 01](#): Code of practice for weathertight concrete and concrete masonry construction

WorkSafe New Zealand (OSH)

- [Good Practice Guidelines - Excavation Safety](#)
- [Repainting lead based paints](#)
- [Management and Removal of Asbestos \(Approved CoP\)](#)

Waterproofing Membrane Association Inc.

- [WMAI CoPTM](#): Code of practice for torch-on membrane systems for roofs and decks

New Zealand Demolition and Asbestos Association (NZDAA)

- [Best Practice Guideline for Demolition in New Zealand.](#)

New Zealand Metal Roofing Manufacturers Inc

- [NZMRM COP](#): NZ Metal roof and wall cladding: Code of practice

Window & Glass Association NZ (WGANZ)

- [PQAS](#): Powder Coating Quality Assurance System
- [Window Installation Guide](#): Guide to Window Installation as described in E2/AS1 Amendment 7.

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3110 CONCRETE WORK

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work using persons competent and experienced in the trade. Structural and foundation work to be carried out by or supervised by the appropriate LBP.

2 PRODUCTS

2.1 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](#) Class E. Mild drawn steel tying wire not less than 1.2mm diameter.

2.2 MESH FOR SLABS TO NZS 3604 OR NZS 4229

For slabs on ground, welded reinforcing mesh to [AS/NZS 4671](#), minimum to [NZBC B1/AS1](#) - Grade 500E, 2.27kg/m² (1.14kg/m² in each direction).

2.3 SPACERS AND CHAIRS

Precast concrete or purpose made moulded PVC. Use concrete spacer blocks only where the concrete surface is not exposed in the finished work.

2.4 CONCRETE

Strength as selected. Ready-mix normal grade, maximum aggregate size 19mm to [NZS 3104](#). Site mixed prescribed grade, using either separate batching of sand and coarse aggregate, or builder's mix, to [NZS 3104](#).

3 EXECUTION

3.1 HANDLE AND STORE REINFORCING

Handle and store reinforcing steel and accessories without damage or contamination. Ensure reinforcement is clean and remains clean and free of 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.

3.3 CUT AND BEND

Cut and bend bars using proper bending tools to avoid notching and to the requirements of [NZS 3109](#). Do not rebend bars without written approval. Bend main reinforcing bars, stirrups and ties to the former pin diameters as given in [NZS 3109](#), figure 3.1, **Standard bend, hook and stirrup**.

3.4 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](#), 3.3. **Hooks and bends**.

3.5 LAPPED SPLICES

Set length of laps, where not dimensioned on the drawings, in accordance with [NZS 3109](#): 3.7, **Splices in reinforcement**. Plain bars lapped splices must be hooked.

3.6 MESH LAPS FOR SLABS TO NZS 3604 OR NZS 4229

For slabs on ground, mesh to be lapped and tied, so the outermost wires overlap by the greater of the spacing of the cross wires plus 50mm or, 150mm or, manufacturer's requirements. Do not count bar extensions beyond the outermost cross wire.

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3.7 REINFORCEMENT COVER TO NZS 3604

Minimum cover to all reinforcing bars, stirrups, ties and spirals, as shown on drawings. Where cover is not shown on drawings provide minimum cover to **NZS 3604** requirements.

3.8 CONCRETE PLACEMENT

To comply with **NZS 3109**.

3.9 SURFACE FINISHES

To comply with **NZS 3114**, section 105 **Specification of finishes**, or as denoted on the drawings. Formwork linings and surface finishes as nominated for both fair face and concealed or exposed surfaces. Surface tolerances to comply with **NZS 3114**, section 104 **Surface tolerances** and 105.3.2.

3.10 DAMP-PROOF MEMBRANE

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

3.11 CASTING IN

Build in grounds, bolts and fixings for wall plates and bracing elements, holding down bolts, pipes, sleeves and fixings as required. Form pockets, chases and flashing grooves as required. No grounds exceeding 100mm in length. Minimum cover on conduits 40mm. Do not encase aluminium items in concrete. Do not paint steel embedded items more than 25mm into the concrete encasement. Cut back form ties to specified cover and fill the cavities with mortar. Wrap all pipes embedded in concrete with tape to break the bond and to allow for expansion.

3.12 FLOOR SLABS TO NZS 3604

Slabs on ground to **NZS 3604** as modified by **NZBC B1/AS1** and **NZBC E2/AS3**. Construct to **NZS 3604**, 4.5 **Concrete and concrete masonry** and **NZS 3604**, 7.5, **Concrete slab-on-ground floors in timber buildings** as modified by **NZBC B1/AS1**, 3.0 **Timber**. Lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish. Tolerance on flatness: maximum 3mm gradual deviation over a 3 metre straight-edge, to **NZS 3114**, 304, **Surface tolerances**. Allow for free joints maximum 24m centres to **NZBC B1/AS1**, 3.1.13 **NZS 3604 New clause**. In the Canterbury Earthquake Region comply with the changes to **NZS 3604** in **NZBC B1/AS1**.

3.13 SAW CUTS TO NZS 3604

Cut slabs where indicated on the drawings as required to control shrinkage cracking. Form by saw cutting the slab (blade width approximately 5 mm) to a quarter of the depth of the slab after it has hardened (saw cutting shall take place no later than 24 hours after initial set for average ambient temperatures above 20 °C, and 48 hours for average ambient temperatures below 20 °C). If saw cuts are not indicated on the drawings, then provide saw cuts as per the requirements for shrinkage control joints in **NZS 3604**.

For saw cuts filled with sealant, increase width of cut to suit sealant.

3.14 SURFACE REPAIRS

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

3.15 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.

3.16 STRIKE FORMWORK

Strike formwork without damaging or overloading structure.

3.17 CLEAN OUT

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

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3800 TIMBER FRAMING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

Use experienced competent carpenter familiar with the materials and techniques specified. Work to be carried out by or supervised by the appropriate LBP.

2 PRODUCTS

2.1 TIMBER FRAMING GENERALLY

Species, grade and level of treatment to [NZBC B2/AS1](#), [NZS 3602](#), tables 1 to 3 **Requirements for wood-based building components** ..., and moisture content to [NZS 3602](#), table 4 **Allowable moisture content** Structural Grade (SG) to [NZS 3604](#), [NZS 3622](#) with properties to [NZS 3603](#).

2.2 TIMBER TRUSSES

To FTMA Code of Practice. Moisture content 16% at supply.

2.3 ACCESSORIES

Damp-proof course:	High impact embossed polyethylene
Stud straps	Polypropylene tape run horizontal at 300mm centres over flexible wall underlay, for drained cavities with stud spacings greater than 450mm.
Nails, bolts and screws:	Steel, stainless steel, galvanized steel of pattern to suit the location and to BRANZ BU 519: Fasteners selection. To NZS 3604 , 4 Durability and NZBC E2/AS1 .
Nail plates connectors:	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 and to NZS 3604 , 4 Durability . Galvanized steel and stainless steel connectors and brackets to the connector manufacturer's design for locations shown on drawings and to NZS 3604 , 4 Durability and NZBC E2/AS1
Corrosion risk	For exterior timber, timber in damp areas and timber subject to occasional wetting, use only stainless steel (or equivalent) fixings and connectors, when the timber is treated with; Copper Azole (CuAz, Preservative code 58), Alkaline Copper Quaternary (ACQ, Preservative code 90), Micronise Copper Azole (code 88) or Micronised Copper Quaternary (code 89). For interior timber, treated with copper-based timber preservatives (H3.2 or higher), use a minimum of hot-dipped galvanized steel fixings and fasteners.

3 EXECUTION

3.1 ATTENDANCE

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

3.2 MOISTURE CONTENT

Maximum allowable moisture content to [NZS 3602](#), table 4 **Allowable moisture content...**, for framing supporting interior linings:

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

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3.3 EXECUTION GENERALLY

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

3.4 INSTALL FLOOR, WALL AND ROOF FRAMING

Floors and bottom plates framed and fastened to **NZS 3604**, **7 Floors**. Frame walls to required loading and bracing complete with lintels, sills and nogs, all fabricated and fastened to **NZS 3604**, **8 Walls**. Frame roof to required loading and bracing complete with valley boards, ridge boards and purlins to **NZS 3604**, **10 Roof framing**. Design and fit roof trusses complete with anchorage. All fabricated and fastened to **NZS 3604**, **9 Posts**, and **NZS 3604**, **10 Roof framing**.

3.5 BATTENS

For drained cavity construction nominal 20mm H3.1 cavity battens (non-structural) to **NZBC E2/AS1**, **9.1.8.4 Cavity battens**.

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4220 WALL CLADDING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work using persons competent and experienced in the trade.

2 PRODUCTS

2.1 FIBRE CEMENT WEATHERBOARD

Cellulose cement autoclaved boards.

2.2 FIBRE CEMENT SHEET CLADDING

Cellulose cement autoclaved sheets.

2.3 FIBRE CEMENT SOFFIT LINING

Cellulose cement autoclaved sheets.

2.4 TIMBER FASCIAS AND BARGE BOARDS

As selected, or radiata pine to [NZS 3631](#) for grading and to [NZS 3602](#), table 2 **Requirements for wood-based building components...**, for selection and treatment.

2.5 ACCESSORIES

Wall underlay:	Breather type, waterproof.
Jointers:	To suit cladding type and thickness.
Nails, screws, fastenings:	Metal, size and pattern, to cladding manufacturer's requirements and complying with the relevant aspects of NZS 3604 , section 4: Durability and E2/AS1.

3 EXECUTION

3.1 MOISTURE CONTENT

Maximum allowable moisture content to [NZS 3602](#), table 4 **Allowable moisture content....**

3.2 EXECUTION GENERALLY

To [NZBC E2/AS1](#) except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.3 INSTALL WALL UNDERLAY

Fix to the manufacturer's requirements. Refer to 1213 SELECTIONS for type.

3.4 CAVITY BATTENS

As specified in the section 3800 TIMBER FRAMING, to suit the selected wall cladding and construction type.

3.5 INSTALL FIBRE CEMENT WEATHERBOARD

Install level, true to line and face, to the manufacturer's requirements and [NZBC E2/AS1](#), 9.5 **Fibre cement weatherboards**.

3.6 INSTALL FIBRE CEMENT SHEET CLADDING

Install level, true to line and face, to the manufacturer's requirements, as detailed and [NZBC E2/AS1](#), 9.7 **Fibre cement sheet**.

3.7 INSTALL FIBRE CEMENT SOFFITS

Cut sheets dry and scribe fit to fully support all edges and joints. Nail and drill for and insert fasteners to the sheet manufacturer's requirements. Fit complete with jointers and capping moulds. Refer to the cladding manufacturer's literature for fixing details and fixings durability requirements to [NZS 3604](#), section 4 **Durability**.

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3.8 INSTALL EXTERIOR TIMBER FINISHINGS

Install timber fascias, barge boards, facings, beads, trim and enclosures level, true to line and face, with all end grain sealed and joints mitred.

3.9 INSTALL FLASHINGS

Install flashings, covers and soakers as detailed on the drawings and to [NZBC E2/AS1, 4.0 Flashings](#).

3.10 USE OF SEALANTS

Selection and use of sealants to follow BRANZ BU 601: Sealants for cladding joints.

3.11 COMPLETE

Complete all flashings, finishings and trim so the cladding system is completely weathertight.

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4223SC SHADOWCLAD® PLYWOOD CLADDING

1 GENERAL

This section relates to the use of the CHH Woodproducts' Shadowclad® range of plywood exterior cladding on a drained cavity.

It includes:

- Shadowclad® Natural Texture
- Shadowclad® Natural Groove
- Shadowclad® Ultra Texture
- Shadowclad® Ultra Groove

1.1 RELATED WORK

Refer to 4223 James Hardie Linea Weatherboard Cladding
Refer to the appropriate timber framing section for timber framing.
Refer to the appropriate painting section for applied finishes.

1.2 ABBREVIATIONS AND DEFINITIONS

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

The following abbreviations apply specifically to this section:

FSC® Forest Stewardship Council®
COC Chain of Custody

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External moisture
AS/NZS 1604.3	Specification for preservative treatment - Plywood
AS/NZS 2269.0	Plywood - Structural - Specifications
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings

Window & Glass Association NZ (WGANZ) documents:

Window Installation Guide	Guide to Window Installation as described in E2/AS1 Amendment 7
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Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

1.4 MANUFACTURER'S DOCUMENTS

CHH Woodproducts documents relating to work in this section are:

Shadowclad® Specification and Installation Guide for Cavity Construction (Sept 2015)

BRANZ Appraisal 764 - Shadowclad® Ventilated Cavity Cladding System

FSC Certification available on request for W8.1 Plywood FSC Mix

CHH Tokoroa FSC-C012019 SCS-COC-001316 Controlled Wood SCS-CW-001316 - expires 5 June 2023

Copies of the above literature are available at

Web: www.chhwoodproducts.co.nz

Telephone: 0800 326 759

Requirements

1.5 QUALIFICATIONS

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

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1.6 NO SUBSTITUTIONS

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

1.7 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1234 DOCUMENTATION for provision of the following general operation and maintenance information as electronic PDF format documents:

Shadowclad® Specification and Installation Guide for Cavity Construction (Sept 2015)

Performance

1.8 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed cladding system, including all penetrations.

2 PRODUCTS

Materials

2.1 SHADOWCLAD® NATURAL TEXTURE CLADDING

Radiata pine veneer 12mm (nom) ply sheet to [AS/NZS 2269.0](#). Treated LOSP Azole H3.1 to [AS/NZS 1604.3](#). Bandsawn surface finish and vertical ship lap joint. Standard sheet cover width is 1200mm. Standard sheet lengths are 2440mm and 2745mm.

2.2 SHADOWCLAD® NATURAL GROOVE CLADDING

Radiata pine veneer 12mm (nom) ply sheet to [AS/NZS 2269.0](#). Treated LOSP Azole H3.1 to [AS/NZS 1604.3](#). Vertically grooved, bandsawn surface finish and vertical ship lap joint. Standard sheet cover width is 1200mm. Standard sheet lengths are 2440mm and 2745mm.

2.3 SHADOWCLAD® ULTRA TEXTURE CLADDING

Radiata pine veneer 12mm (nom) ply sheet to [AS/NZS 2269.0](#). Treated LOSP Azole H3.1 or CCA H3.2 to [AS/NZS 1604.3](#). Pre-primed bandsawn surface finish and vertical ship lap joint. Standard sheet cover width is 1200mm. Standard sheet lengths are 2440mm and 2745mm.

2.4 SHADOWCLAD® ULTRA GROOVE CLADDING

Radiata pine veneer 12mm (nom) ply sheet to [AS/NZS 2269.0](#). Treated LOSP Azole H3.1 or CCA H3.2 to [AS/NZS 1604.3](#). Pre-primed, vertically grooved, bandsawn surface finish and vertical ship lap joint. Standard sheet cover width is 1200mm. Standard sheet lengths are 2440mm and 2745mm.

2.5 WALL UNDERLAYS

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

2.6 EXTERIOR CAVITY WALL BATTENS

Radiata pine battens, nominal 20mm thick, 45mm wide and height to match timber framing studs. To [NZS 3602](#), table 1, reference 1D.10. Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

2.7 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Shadowclad® cavity base closure with upstand one side 10mm and the other 75mm. Combined length to suit cavity.

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

To [NZBC E2/AS1](#): Vermin-proofing clause 9.1.8.3 and Cavity base closer figure 66.

2.8 EXTERIOR COVER BATTENS & TRIM

Radiata pine battens, trim and covers to profiles as required by the cladding manufacturer. Clears grade or finger-jointed, treated H3.1.

- cover battens minimum 65mm x 18mm with 6mm x 6mm weather grooves
- internal corner/soffit battens 18mm x 18mm with back corner chamfered

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

Components

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2.9 NAILS

Refer to the **Shadowclad®** Specification and Installation Guide for Cavity Construction fixing requirements for size and use. Refer to SELECTIONS for material and type.

- Minimum 60mm x 2.8mm. (hand driven)

When using rigid air barriers, increase fixing length by at least the thickness of that panel. Refer to power tool manufacturers for equivalent power driven nail size.

2.10 SCREWS

Refer to the **Shadowclad®** Specification and Installation Guide for Cavity Construction fixing requirements for size and use. Refer to SELECTIONS for material and type.

- Minimum No. 8 x 65mm countersunk screws.

When using rigid air barriers, increase fixing length by at least the thickness of that panel.

2.11 FLASHINGS

Shadowclad® flashing range either; aluminium mill finish or anodised, or G304 stainless steel.

Note, lengths and finish do vary for aluminium profiles, but stainless steel profiles are all 3000mm long.

To [NZBC E2/AS1](#), Table 20 **Material Selection**. Refer to the **Shadowclad®** Specification and Installation Guide for Cavity Construction.

2.12 FLASHING TAPE

Flexible flashing tape to [NZBC E2/AS1](#), 4.3.11 Flexible flashing tape, UV resistant for exposed applications.

Accessories

2.13 SEALANT

Refer to the plywood manufacturer's requirements for elastomeric sealant to waterproof penetrations.

2.14 TREATMENT OF SHEET CUTS

Holdfast® Metalex® Clear wood preservative applied to sheet cuts.

3 EXECUTION

Conditions

3.1 HANDLE

Handle sheets carefully and reject all those with damaged faces or edges.

3.2 STORE

Store sheets in stacks clear of the ground, supported without sagging on evenly spaced horizontal bearers. Protect from damage and weather.

3.3 TIMBER FRAMING

Ensure it is to [NZS 3604](#) and the manufacturer's requirements.

3.4 SUPPORT

Fully support all edges and joints.

3.5 VERTICAL JOINT EXPANSION - SHADOWCLAD® TEXTURE

Provide 2-3mm gap at all vertical edges of cladding for sheet expansion.

Maintain 2mm minimum expansion gap in the vertical shiplap joint to create an adequate expansion allowance. Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

3.6 VERTICAL JOINT EXPANSION - SHADOWCLAD® GROOVE

Use a 9mm temporary spacer in the groove of the vertical shiplap joint to create an adequate expansion allowance. Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

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3.7 HORIZONTAL JOINT EXPANSION - SHADOWCLAD® 'Z' FLASHING

For horizontal joints using **Shadowclad® 'Z'** flashings, provide a horizontal 9mm gap between the 'Z' flashing and the sheet above at the outside face to create an adequate expansion allowance. Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

3.8 FRAMING MOISTURE CONTENT

Maximum moisture content 20% to [NZS 3602](#) for general framing and cavity battens

Application**3.9 DRAINED CAVITY - 600 STUD SPACING**

Confirm that drained cavity is installed as follows with 600mm stud spacing and 800mm max nog spacing.

20mm nominal thickness drained cavity to [NZBC E2/AS1: 9.0 Wall claddings](#), with battens over underlay or rigid air barrier. Vertical cavity battens fixed at 300 centres, battens to each stud and one in between the two studs fixed to top and bottom plates and nogs. Do not fix the cladding to the battens fixed between studs as it is only to restrain the building underlay and insulation from bulging into the drained cavity. Top of the cavity is to be sealed. Cavity closer/vermin proofing should be used at the base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). Horizontal cavity battens should not be used except when closing off the top of a cavity from all roof spaces and enclosed soffits to prevent entry of moist air.

Cavity spacers (i.e. short pieces of horizontal cavity batten) may be used to support the bottom sheet edge (or provide intermediate support where required eg above window openings) but must allow water drainage to the outside. The cavity spacers must be fixed at a 5° minimum slope with a 50mm minimum air gap at either side.

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

3.10 PENETRATIONS

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

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

Refer to the [WGANZ Window Installation Guide](#). This covers the WGANZ recommendations on the preparation of window/door openings, minimum clearances between rough openings and the window/door frame, dressing of the wall underlay into the prepared opening, application of flexible flashing tape to the sill and top corners of the opening, installation of window/door frames and flashings, sealing of the window/door frame into the opening to create a pressure equalisation cavity, installation of flashings and the maintenance of appropriate clearances between the frame and the surrounding construction.

3.11 TREATING CUT EDGES

Treat cut edges of plywood with Metalex Clear to Holdfast® requirements, before fixing. Also for **Shadowclad® Natural®** (not uncut **Ultra®**) seal bottom edge of sheet and back of sheet to height of 150mm.

Cut edges must be placed at the top of the sheet to avoid rain drips soaking in to cut end grain.

Note: For treated surfaces that need further finishes, Metalex has a drying period of 7 to 10 days before over painting or staining.

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

3.12 PRE-PAINTING OR STAINING

Before installation pre-paint or pre-stain as appropriate, up to one finishing coat on exposed edges and surfaces that will be difficult to paint after installation.

Note: If Metalex treatment has been used, it has a drying period of 7 to 10 days before over painting or staining.

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

3.13 INSTALL SHADOWCLAD® PLYWOOD CLADDING

Install to the requirements of **Shadowclad®** Specification and Installation Guide for Cavity Construction.

Ensure sheets are installed vertically, do not install horizontally.

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

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3.14 FIXING SHADOWCLAD® PLYWOOD CLADDING

Fix at 150mm maximum centres at sheet edges and no closer than 7mm to the sheet edge. Fix intermediate supports at 300mm maximum centres to studs and nogs. Sheets to be nailed off independently of each other, with nailing pattern and ship lap joint nailing to detailed requirements of **Shadowclad®** Specification and Installation Guide for Cavity Construction (in particular refer details SC003, SC006, SC007, SC008) . Do not fix through grooves.

Finish fixings flush.

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

3.15 INSTALL COVER BATTENS AND TRIMS

Install as detailed on the drawings and in accordance with the cladding manufacturer's requirements.

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

3.16 INSTALLING FLASHINGS GENERALLY

Install flashings and covers as detailed on the drawings and in accordance with **Shadowclad®** recommended details, and to **NZBC E2/AS1, 4.0 Flashings**.

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

3.17 INSTALLING SHADOWCLAD® 'Z' FLASHINGS - CONTINUOUS CAVITY

Install **Shadowclad®** standard Horizontal 'Z' flashing with the upstand over the cavity battens to **Shadowclad®** recommended details and as detailed on the drawings, also to **NZBC E2/AS1, 4.0 Flashings, NZBC E2/AS1, 9.8 Plywood Sheet**.

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

3.18 INSTALLING SHADOWCLAD® 'Z' FLASHINGS - NON-CONTINUOUS CAVITY

Install **Shadowclad®** Inter-Storey 'Z' flashing with the upstand under the cavity battens along with **Shadowclad®** Cavity Base Closure, to **Shadowclad®** recommended details and as detailed on the drawings.

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

3.19 JOINTING & TERMINATING SHADOWCLAD® 'Z' FLASHINGS

Horizontal 'Z' flashings shall be jointed as follows:

- Butt jointed over back flashing for aluminium flashings
- Overlapped by 150mm for stainless steel flashings

Horizontal 'Z' flashings shall have ends terminated as follows:

- 50 mm strip of neutral cure silicon or
- Stop ends
- End terminations not required butting into **Shadowclad®** metal corner flashings.

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

3.20 COMPLETE

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

Completion**3.21 REPLACE**

Replace all damaged or marked elements.

3.22 LEAVE

Leave work to the standard required for following procedures.

3.23 REMOVE

Remove debris, unused materials and elements from the site.

3.24 PROTECTION

Protect this work as it proceeds, and when completed, from the weather and until it is covered, coated or sealed.

4 SELECTIONS

For further details on selections go to: www.chhwoodproducts.co.nz.

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Substitutions are not permitted to the following, unless stated otherwise.

4.1 SHADOWCLAD® NATURAL TEXTURE PLYWOOD CLADDING

Cladding type: Shadowclad® Natural Texture
 Treatment: H3.1 LOSP
 Finish: Client to confirm (refer to appropriate painting section)
 Prime: ~ for exposed edges (refer to appropriate painting section)
 Thickness: 12mm (nominal)

4.2 SHADOWCLAD® NATURAL GROOVE PLYWOOD CLADDING

Cladding type: Shadowclad® Natural Groove
 Treatment: H3.1 LOSP
 Finish: Client to confirm (refer to appropriate painting section)
 Prime: Client to confirm for exposed edges (refer to appropriate painting section)
 Thickness: 12mm (nominal)

4.3 CAVITY BATTENS

Timber species: Radiata pine
 Timber grade: Merchantable
 Treatment: H3.1
 Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

4.4 SHADOWCLAD® FLASHINGS - ALUMINIUM

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

Location	Flashing	Finish
Cavity base:	Cavity Base Closure	Natural Anodised or uPVC
Horizontal joints:	Horizontal Z Back	Client to confirm
Horizontal joints:	Horizontal Z	Client to confirm
Inter storey junction:	Inter-Storey Z Back	Mill (only)
Inter storey junction:	Inter-Storey Z	Client to confirm
Internal angle:	Internal 90 Angle	Natural Anodised (only)
Internal angle	Internal W Angle	Client to confirm
Internal angle	Large Internal W Angle	Client to confirm
External angle:	External Box Angle	Client to confirm
External angle:	Large External Box Angle	Client to confirm
Vertical details	Vertical Top Hat	Client to confirm

Note: If powder coating is required, contractor to organise coating separately (not by Shadowclad)

Fixings	Size	Material
Flat head nail	40mm x 2.5mm	Galvanized

4.5 SHADOWCLAD® FLASHINGS - STAINLESS STEEL

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

Location	Flashing
Cavity base:	Cavity Base Closure
Horizontal joints:	Horizontal Z
Inter storey junction:	Inter-Storey Z
Internal angle:	Internal 90 Angle
Internal angle	Internal W Angle
External angle:	External Box Angle

Fixings	Size	Material
Flat head nail	60mm x 2.8mm	Galvanised steel
Rose head nail	60mm x 2.8mm	Galvanised steel
Countersunk screw	No. 8 x 65mm	Galvanised steel

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4.6 FASTENINGS FOR CLADDING - GALVANIZED

Location: Refer Architectural Drawings
Type/size: Client to confirm
Material: Galvanized

Note: Use with H3.1 treated timber and aluminium flashings only, increase length of fixing if rigid air barriers are used. Do not use with Stainless Steel flashings or H3.2 timber.
Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

4.7 COVER BATTENS AND TRIMS

Location	Material	Size	Finish
Refer Architectural drawings	Timber	Vertical joint batten 65x18	Builder to confirm
Vertical joint batten	(H3.1	Vertical mid batten 65x18	
External corner battens	or H3.2)	External corner battens (roughly)	
Soffit batten		65x18 plus 83x18	
Facings			

FINISHING

4.8 PAINTING

Refer to the appropriate painting section(s).

Panels are to be Brush coated within 3 months of installation, over 3 months ensure panels are prepare to **Shadowclad®** Specification and Installation Guide for Cavity Construction, Section 5.0. For paint and film forming stains ensure cover is at least 90 microns (Min 30 microns/coat). For penetrating stains follow stain manufacturer's requirements.

Refer **Shadowclad®** Specification and Installation Guide for Cavity Construction.

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4231HL JAMES HARDIE® LINEA™ CLADDING

1 GENERAL

This section relates to the supply and fixing of the following fibre cement products:

- James Hardie® Linea™ Weatherboard cladding

Documents

1.1 DOCUMENTS

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

NZBC E2/AS1	External moisture
NZBC E2/VM1	Weathertightness
AS/NZS 1170.2	Structural design actions - Wind actions
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

James Hardie® documents relating to this part of the work:

Linea™ Weatherboard Technical Specification

Linea™ Oblique™ Weatherboard Horizontal Installation Technical Specification

Linea™ Oblique™ Weatherboard Vertical Installation Technical Specification

James Hardie® Technical Supplement - James Hardie® Claddings Installation to Steel Framing

James Hardie® Fire and Acoustic Design Manual

James Hardie® Bracing Design Manual

BRANZ Appraisal 446 - Linea™ Weatherboard Direct Fixed Cladding

BRANZ Appraisal 447 - Linea™ Weatherboard Cavity Cladding

BRANZ Appraisal 896 - Linea™ Oblique™ Weatherboard (Horizontal) Cavity Cladding

BRANZ Appraisal 897 - Linea™ Oblique™ Weatherboard (Vertical) Cavity Cladding

CodeMark™GM-CM30018 James Hardie® Linea™ Weatherboard Direct fixed and Cavity Cladding

CodeMark™GM-CM30059 James Hardie® Linea™ Oblique™ Weatherboard Cavity Cladding

Manufacturer/supplier contact details

Company: James Hardie New Zealand Limited

Web: www.jameshardie.co.nz

Email: info@jameshardie.co.nz

Telephone: Ask James Hardie™ on 0800 808 868

BRANZ appraisal is available at www.branz.co.nz.

CodeMark™ Certificate is available at www.building.govt.nz

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER - LINEA™ WEATHERBOARD

Provide a material manufacturer/supplier warranty:

25 years: For Linea™ Weatherboard product (refer to James Hardie® product warranty)

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

From: Date of purchase

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.4 QUALIFICATIONS - NON-CODEMARK INSTALLATION

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

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1.5 NO SUBSTITUTIONS

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

1.6 SAFE WORKING

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

1.7 INFORMATION FOR OPERATION AND MAINTENANCE

Provide relevant James Hardie® maintenance requirements at completion of the work. Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the information.

Requirements - Linea™ Weatherboard with CodeMark™ Certificate**1.8 QUALIFICATIONS - LINEA™ INSTALLER**

Installer to be experienced in the application and;

- A Licenced Building Practitioner; or,
- A person with a trade certificate being a current member of a Building Trade Association.

If requested provide evidence of qualification prior to commencing work.

1.9 LINEA™ WEATHERBOARD INSTALLATION CHECKLIST

Installer to complete, sign and provide a James Hardie® Installation Checklist incorporating the Certificate of Installation requirements of Global-Mark CodeMark Certification program. Contact James Hardie® for a copy of the Installation Checklist.

1.10 LINEA™ WEATHERBOARD INSTALLATION INFORMATION

Installer to comply with all the relevant information in;

- Linea™ Weatherboard Technical Specification; and,
- [BRANZ Appraisal 446](#) or [BRANZ Appraisal 447](#)

Performance**1.11 PERFORMANCE, WIND**

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

2 PRODUCTS**Materials****2.1 LINEA™ WEATHERBOARDS**

James Hardie® Linea™ Weatherboards, bevel back, 16mm thick, pre-primed, manufactured from a reduced density cellulose fibre cement formulation and cured by high pressure autoclaving, manufactured to [AS/NZS 2908.2](#), tested to [NZBC E2/VM1](#) for weathertightness and complying with the NZBC.

2.2 WALL UNDERLAY

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

2.3 EXTERIOR CAVITY BATTENS

Radiata pine battens, minimum 45mm wide x 18mm thick, H3.1 treated, height to match timber framing studs. To [NZS 3602](#), Table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance.

Components - Linea™ Weatherboards**2.4 SOAKERS**

External metal corner soaker. Refer to SELECTIONS.

2.5 INTERNAL "W" MOULD 90

Etched primed aluminium extrusion.

2.6 INTERNAL "W" MOULD 135

Etched primed aluminium extrusion.

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2.7 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Perforated PVC, with upstands.

2.8 JH CORNER UNDER FLASHING

50 x 50mm PVC moulding.

2.9 CANT STRIP

Cant strip, uPVC profiled strip.

2.10 FILL

ADOS CRC Builders fill, two part exterior grade fill to finish over jolt head nails.

2.11 FLEXIBLE SEALANT

Bostik Seal N Flex-1 or Sikaflex AT Facade or Sikaflex MS sealant for tongue and groove joint at ends of Linea™ Weatherboards.

2.12 FASTENER TYPE

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

Refer to [NZBC E2/AS1](#), Table 20, Material selection, and [NZBC E2/AS1](#), Table 21, Compatibility of materials in contact, for selection of suitable fixing materials and their compatibility with other materials.

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

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

2.13 GALV STEEL CONCEALED NAILING OVER BATTENS & FLEXIBLE UNDERLAY

Hot-dipped galvanized, 60 x 3.15mm HardieFlex™ nails for Linea™ Weatherboard concealed nailing over cavity battens over flexible underlay into timber stud.

2.14 GALV STEEL FACE NAILING OVER BATTENS & FLEXIBLE UNDERLAY

Hot-dipped galvanized, 75 x 3.15mm jolt head nails for Linea™ Weatherboard face nailing (with pre-drilling) over cavity battens over flexible underlay into timber stud.

Accessories**2.15 SEALANT**

Silaflex AT-Facade sealant.

3 EXECUTION**Conditions****3.1 STORAGE**

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

3.2 HANDLING

Avoid distortion and contact with potentially damaging surfaces. Carry weatherboards on edge. Do not drag weatherboards across each other, or across other materials. Protect edges, corners and surface finish from damage.

3.3 SUBSTRATE - TIMBER FRAMING

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

Application - particular installations**BUILDING CONSENT****GRANTED**
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3.4 FIRE RESISTANCE RATING

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

3.5 BRACING SYSTEM

Fix Linea™ Weatherboards to James Hardie® Bracing Design Manual.

Application - generally**3.6 INSTALL CAVITY BATTENS**

Install 18mm minimum thick cavity battens to [NZBC E2/AS1: 9.0 Wall claddings](#), where required. Fix vertical cavity battens to wall framing studs. The battens are fixed by the cladding fixings which will penetrate the wall framing studs under the wall underlay. Seal the top of the cavity and install cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). Do not use horizontal cavity battens. Use cavity spacers where fixing is required between cavity battens.

3.7 PENETRATIONS AND FLASHINGS

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

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

3.8 INSTALL LINEA™ WEATHERBOARDS

Cut weatherboards to required lengths and fit joints off-stud using tongue and groove ends. Fit internal corners and fix weatherboards as per Linea™ Weatherboard technical specifications. Fit and fix external corners and flexible sealant to tongue and groove joints as required.

3.9 INSTALL FLASHINGS

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

Completion**3.10 REPLACE**

Replace all damaged or marked elements.

3.11 LEAVE

Leave work to the standard required for following procedures.

3.12 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

4.1 CAVITY BATTENS

Timber species: Radiata pine
Treatment: H3.1

Linea™ Weatherboards**BUILDING CONSENT****GRANTED**
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4.2 JAMES HARDIE® LINEA™ WEATHERBOARDS

Location: Refer to Architectural Drawings for location
Brand/type: James Hardie® Linea™ Weatherboard
Thickness: 16mm
Width: 180mm
Nailing: Refer to items under 2.0 PRODUCTS

4.3 JAMES HARDIE® LINEA™ WEATHERBOARD SOAKERS

Size: 200mm long for 180mm WB
Material:

4.4 PRIMER TO CUT ENDS

Type: Dulux 1 Step, Acraprime 501/1, Resene Quick Dry or similar product. Select to ensure primer is compatible with paint system.

Finishing**4.5 PAINTING**

Refer to painting section(s) for details.

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4239JH JAMES HARDIE® SOFFITS

1 GENERAL

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

- James Hardie® Eclipsa™ Eaves Lining
- James Hardie® HardieFlex™ Eaves Lining
- James Hardie® HardieGroove™ Soffit Lining
- James Hardie® HardieSoffit™ Lining
- James Hardie® Villaboard™ Soffit Lining

Documents

1.1 DOCUMENTS

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

NZBC E2/AS1	External moisture
AS/NZS 1170.2	Structural design actions - Wind actions
AS/NZS 2908.2	Cellulose-cement products - Flat sheet
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NASH Standard	Residential and low-rise steel framing Part 1: Design Criteria

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

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

Manufacturer/supplier contact details

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

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years: For James Hardie® ~
(refer to James Hardie® product warranty)

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

From: Date of purchase

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.4 QUALIFICATIONS

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

1.5 NO SUBSTITUTIONS

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

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1.6 SAFE WORKING

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

1.7 INFORMATION FOR OPERATION AND MAINTENANCE

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

Performance**1.8 PERFORMANCE - UP TO AND INCLUDING VERY HIGH WIND ZONE**

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

2 PRODUCTS**Materials****2.1 HARDIESOFFIT™ LINING**

James Hardie® HardieSoffit™ Lining, 4.5mm thick cellulose fibre reinforced cement sheet. Manufactured to [AS/NZS 2908.2](#) from Portland cement, ground sand, cellulose fibre and water.

Components**2.2 FASTENER TYPE**

Fasteners to minimum durability requirements of the NZBC. Refer to [NZBC E2/AS1](#), Table 20, Material selection for fixing material, and [NZBC E2/AS1](#), Table 21, Compatibility of materials in contact, for selection of suitable fixing materials and their compatibility with other materials.

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

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

Components - HardieSoffit™ Lining**2.3 SOFFIT JOINTERS AND MOULDS**

Extruded uPVC jointer, capping and scotia mould.

2.4 HARDIEFLEX™ NAILS

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

2.5 FASTFIX FASTENERS

38 x 12mm, Nylon / White Fastfix Fasteners.

2.6 ADHESIVE

Refer to SELECTIONS.

2.7 INSEAL TAPE

Inseal® 3259, 1.5mm thick x 50mm wide black compressible medium density closed cell foam tape.

Components - General**2.8 FLEXIBLE JOINT SEALANT**

Refer to SELECTIONS.

3 EXECUTION**Conditions****BUILDING CONSENT****GRANTED
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3.1 STORAGE

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

3.2 HANDLING

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

3.3 SUBSTRATE - TIMBER FRAMING

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

3.4 COMMENCE WORK

Do not commence work until the roof has been installed.

Application - general**3.5 SHEET LAYOUT**

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

3.6 CUTTING SOFFIT CLADDING

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

3.7 CIRCULAR HOLE FORMING

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

3.8 IRREGULAR HOLE FORMING

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

3.9 INSTALL HARDIESOFFIT™ LINING

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

3.10 CONTROL JOINT

Install control joint to James Hardie® installation manual requirements.

3.11 FASTENER - SIZE AND LAYOUT

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

3.12 SEALANTS

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

3.13 PAINTING

Refer to painting section/s for protective coating system.

Completion**3.14 COMPLETE**

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

3.15 REPLACE

Replace all damaged or marked elements.

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- 3.16 **CLEAN**
Clean surfaces.
- 3.17 **LEAVE**
Leave work to the standard required for following procedures.
- 3.18 **REMOVE**
Remove debris, unused materials and elements from the site.

4 **SELECTIONS**

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

Materials

4.1 **HARDIESOFFIT™ LINING**

Location:	Refer Architectural drawings
Brand/type:	James Hardie® HardieSoffit™ Lining
Thickness:	4.5mm
Width:	450mm, 600mm (2400mm sheet length)
Fixing Method:	HardieFlex™ nails (usual fixing method)
Fixing type:	Galvanized HardieFlex™ Nail, 40 x 2.8mm Suitable for Exposure Zone B only
Joint detail:	Client to confirm

Painting

- 4.2 **PAINTING**
Refer to painting section/s for details.

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4310 ROOFING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Use experienced competent roofers familiar with the materials and techniques specified. Work to be carried out by or supervised by the appropriate LBP.

1.2 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 **Bracing design**, and confirmed under 1212 COMPLIANCE.

2 PRODUCTS

2.1 PROFILED METAL

Profile, metal and finish as selected. Accessories, cappings, flashings and fixings to match and to the roofing manufacturer's requirements.

2.2 ACCESSORIES

Roof underlays:	As selected.
Nails, screws, fastenings:	Metal, size and pattern, to roofing manufacturer's requirements and complying with the relevant aspects of NZS 3604 , section 4 Durability and NZBC E2/AS1 .
Flashings:	As required.

3 EXECUTION

3.1 STORAGE

Stack roofing and accessories on clean, level areas of the site. Cover and protect from damage and from weather until ready to fix in place.

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. Overlaps to face away from prevailing wind direction.

3.3 LAY ROOF UNDERLAY

Lay and fix to [NZBC E2/AS1](#), 8.1.5 **Roof Underlays**.

3.4 TAKE CARE

Take care to avoid damaging pre-finished roofing both during and after fixing. Mark only with chalk or spirit-based pen. Wear only soft-soled shoes on the finished surface. Remove metal filings daily.

3.5 INSTALL PROFILED METAL

Use cutting tools recommended by the roofing manufacturer. Fold ends and seal cut edges to the roofing manufacturer's requirements. Fix complete with matching accessories, flashed to roof features and penetrations; all in accordance with NZ metal roof and wall cladding code of practice and [NZBC E2/AS1](#): 8.4 **Profiled metal roof cladding**.

3.6 FIXINGS AND SEALANTS

Refer to the roofing manufacturer's literature for fixing details and to [NZS 3604](#) for fixings durability requirements. Select and use sealants only as recommended by the roofing manufacturer.

3.7 INSTALL COVERS AND FLASHINGS

Provide apron, verge and ridge flashings. Install and fix as detailed and to the roofing manufacturer's details and to comply with [NZBC E2/AS1](#), 4.0 **Flashings**, [NZBC E2/AS1](#): 5.0 **Roof/wall junctions**, and [NZBC E2/AS1](#): 6.0 **Parapets**.

3.8 PENETRATIONS

Flash and overflash penetrations through the roof. Fit proprietary boots to pipework penetrations.

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3.9 COMPLETE

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

3.10 CLEAR

Clear trade debris 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.

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4520 ALUMINIUM WINDOWS & DOORS

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

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

1.2 CERTIFICATION

Provide documentation that the windows and doors comply with [NZS 4211](#) and safety glass complies with [NZS 4223.3](#).

1.3 WIND LOADINGS

Refer to section 1212 COMPLIANCE for wind zone.

2 PRODUCTS

2.1 WINDOW AND DOOR REVEALS

As selected, manufactured to comply with [NZS 4211](#). Timber jamb liners to [NZS 3602](#).

2.2 FLASHINGS

To [NZBC E2/AS1](#), 9.1.10 **Windows and Doors** and as required.

2.3 POWDER COATING FINISH

To Window & Glass Association NZ: Powder Coating Quality Assurance System. All finished surfaces to show uniformity of gloss and colour (to match sample) free of all coating defects.

2.4 SEALANT, GLAZING TAPE AND GASKETS

To the window manufacturer's requirements.

2.5 FIXINGS

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

3 EXECUTION

3.1 OPENING PREPARATION

Confirm framing openings (including jamb battens for direct fix cladding) on site for dimension, plumb and straightness prior to fabrication or ordering of aluminium joinery. Prepare and trim to Window & Glass Association NZ: Guide to Window Installation requirements. For openings over 600mm wide on cavity construction provide sill support bars.

3.2 EXECUTION GENERALLY

To [NZBC E2/VM1](#) and [NZBC E2/AS1](#). Install to the Window & Glass Association NZ: Guide to Window Installation requirements.

3.3 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.

3.4 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.

3.5 FIX FRAMES

Fix frames rigidly in place without distortion, to the window manufacturer's requirements and to [NZBC E2/AS1](#), 9.1.10.8, **Attachments for windows and doors**, plumb, true to line and face, weathertight and with all openings operating freely.

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3.6 DRAINAGE

Anti-condensation channels to sills. All sills to sashes and fixed lights to incorporate positive drainage to the exterior.

3.7 GLAZING INSTALLATION

All glass held in aluminium beads and black PVC gaskets.

3.8 SAFETY GLASS INSTALLATION

Use in doors, sidelight panels, low level windows and all other locations to comply with [NZS 4223.3](#).

3.9 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 on head flashings to match window finish.

3.10 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. Provide a continuous internal air seal between reveals and framing, using sealant over a backing rod.

3.11 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. Permanent manifestations, if required, to [NZS 4223.3](#), 2.2 Manifestation (making glass visible).

3.12 CLEAN GLASS AND FRAMES

Clean off or remove glass indicators at completion of the building. Clean glass inside and out to a shining finish. Clean down both sides of window and door frames using the methods required by the window and door manufacturer.

BUILDING CONSENT

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4610 GLAZING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

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

1.2 CERTIFICATION

If not supplied with windows, provide documentation that the safety glass complies with [NZS 4223.3](#).

2 PRODUCTS

2.1 GLAZING TAPE

Pressure sensitive, self-adhesive vinyl foam tapes, selected to suit the glazing detail.

2.2 GLASS THICKNESS

As selected and to [NZS 4223.1](#), [NZS 4223.3](#), [NZS 4223.4](#).

2.3 LAMINATED GLASS

To [NZS 4223.3](#).

2.4 TOUGHENED GLASS

To [NZS 4223.3](#).

Heat soaked toughened glass to [NZS 4223.1](#), Appendix E required for critical areas (balustrades etc) to reduce inclusion failure.

2.5 DOUBLE GLAZING

As selected and to [AS/NZS 4666](#). and [NZS 4223.2](#)

2.6 MIRROR GLASS

Clear annealed mirror float glass, including silver, activation, passivation and two protective coats.

2.7 SETTING BLOCKS

Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, at the base of glass panes.

3 EXECUTION

3.1 EXECUTION GENERALLY

To [NZS 4223.1](#), and for human impact safety glazing to [NZS 4223.3](#). Insulating glass units to [AS/NZS 4666](#) and [NZS 4223.2](#).

3.2 INSTALL GLASS TO ALUMINIUM FRAMES

Install glass to [NZS4223.1](#).

- Bead glaze to Section 4 Glazing.
- Channel glaze to Section 4 Glazing, and Section 5 for Framed, Unframed, Partly Framed Glass Assemblies.

3.3 SAFETY GLASS INSTALLATION

Use in doors, sidelight panels, low level windows, bathrooms and all other locations to comply with [NZS 4223.3](#).

3.4 INSTALL MIRRORS

Install mirrors as detailed. Seal to vanities and basins where required.

3.5 SAFETY

Indicate the presence of transparent glasses, with whiting, tape or signs compatible with the glass type. Do not apply indicators other than whiting to the glass surface. Permanent manifestations if required, to comply with [NZS 4223.3](#), 2.2 Manifestation (making glass visible).

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3.6 CLEAN

Clean off or remove indicators at completion of the building. Clean glass inside and out to a shining finish.

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4710 THERMAL INSULATION

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

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

2 PRODUCTS

2.1 THERMAL INSULATING PADS

Rectangular insulating pads manufactured from fibreglass, polyester, wool or similar.

3 EXECUTION

3.1 INSTALL INSULATION - GENERAL

Lay, install, fit and fix to [NZBC H1/AS1](#): Energy efficiency, 2.0 Building thermal envelope, and to the insulation manufacturer's requirements. Install in housing to [NZS 4218](#) and [NZS 4246](#).

3.2 FIT 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.

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5110 INTERIOR LININGS & TRIM

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 FRAMING MOISTURE CONTENT

Maximum allowable moisture content to [NZS 3602](#), table 4 **Allowable moisture content...**

1.2 PROTECT

Protect joinery, fittings and finishes already in place from water staining or damage from lining installation. Ensure building is weatherproof before lining work commences.

2 PRODUCTS

2.1 PLASTERBOARD

Gypsum plaster core encased in a durable face and backing paper formed for standard use, bracing use, fire rated use and water resistance use.

2.2 PLASTERBOARD ACCESSORIES

External angles:	Slim type 0.5mm galvanized steel.
Casing bead:	Slim type 0.5mm galvanized steel or PVC.
Cornice:	Plasterboard scotia type.
Nails:	Galvanized clouts 40mm x 2.5mm.
Screws:	40mm x 6 gauge zinc electro-plated bugle head gypsum drywall screws
Jointing compound & paper tape:	To the board manufacturer's requirements.
Adhesive:	Multi-purpose water based wallboard adhesive.

2.3 NAILS

Zinc-plated steel, stainless steel and galvanized steel of pattern to suit location and to BRANZ BU 519: **Fasteners selection**.

2.4 INTERIOR FINISHING TRIM

Timber selection to [NZS 3602](#), table 3 **Requirements for wood-based building components....** Profile as selected or to match existing. Jointer profiles to suit location.

3 EXECUTION

3.1 SUBSTRATE

To [NZS 3604](#), section 8 **Walls**, section 10 **Roof framing**, section 12 **Interior linings**, section 13 **Ceilings**, and the standard required by the lining manufacturer's requirements. Ensure moisture content of timber framing is at or below specified levels.

3.2 CONFIRM LEVELS OF PLASTERBOARD FINISH

Before commencing work, confirm the surface finish assessment procedures necessary to ensure the specified levels of finish will be obtained. Provide levels of finish as laid down in [AS/NZS 2589](#).

3.3 LINE PLASTERBOARD CEILINGS AND WALLS

Line walls and ceilings with plasterboard sheets, fastened to the plasterboard manufacturer's requirements.

3.4 SPECIAL PLASTERBOARD LININGS

Line wet area walls with water resistant plasterboard sheets using adhesive and nail fixing to studs at centres to suit the surface finish. Form bracing panels using high density plasterboard sheets, fixed with clout-washers and clouts and to conform to [NZS 3604](#), 5.4 **Wall bracing design**, and 13.5 **Structural ceiling diaphragms**. Form sound rated panels following the sheet manufacturer's specifications and details for the required sound rating. Form fire rated panels following the sheet manufacturer's specifications and details for the required fire rating.

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3.5 FIX PLASTERBOARD EXTERNAL ANGLES

Fix full length to external corners, with clouts at 100mm each side staggered.

3.6 FIX PLASTERBOARD CORNICE

Fix with adhesive and with joints scribe-fitted to the plasterboard manufacturer's requirements.

3.7 PLASTERBOARD JOINTING AND STOPPING

Fill joint recess with bedding compound, centre the paper tape, apply second coat of bedding compound followed by a coat of finishing compound. Allow to dry and lightly sand off. Fill nail holes and flush up external angles with two successive coats of bedding compound followed by a coat of finishing compound. Allow to dry and lightly sand off. All to the plasterboard manufacturer's requirements.

3.8 LEVELS OF FINISH

Provide levels of finish to standards laid down by [AS/NZS 2589](#) as follows:

Level 4: For thin coating finishes (paint) and surfaces receiving light texture or wall covering finishes

Level 5: Where specifically detailed for surfaces receiving thin coating finishes (paint).

3.9 INSTALL TRIM

Scribe and fit reveal linings to exterior timber joinery, architraves to interior joinery, skirtings to walls and timber beads to wall/ceiling junctions, and other trim as detailed.

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5230 INTERIOR DOORS & FRAMES

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Trades people qualified or experienced in 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, and stairs).

2 PRODUCTS

2.1 DOORS GENERALLY

As selected.

2.2 INTERNAL JOINERY FRAMES

Fabricate as detailed.

2.3 DOOR HINGES

Type: loose-pin zinc-plated steel
Size: 89mm
Material: zinc-plated steel
Number: 3 hinges per door

2.4 INTERIOR SLIDING DOOR GEAR

To suit door size and weight and as detailed.

2.5 DOOR HARDWARE

As selected.

2.6 NAILS

Zinc-plated steel, stainless steel and galvanized steel of pattern to suit location and to BRANZ BU 519: **Fasteners selection**.

3 EXECUTION

3.1 PROTECT

Protect joinery, fittings and finishes already in place from water staining or damage from lining installation. Ensure building is weatherproof before lining work commences.

3.2 FIT INTERNAL JOINERY FRAMES

Wedge and rigidly fix in place without distortion, plumb, and true to line and face.

3.3 FIT HARDWARE

Fit hardware selected and provided, all in accordance with the hardware manufacturer's requirements.

3.4 CHECK

Check and adjust operation of doors sets, hardware and furniture.

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5313KL RONDO CEILING SYSTEMS

1 GENERAL

This section relates to the supply and installation of Rondo Ceiling Systems. It includes;

- Rondo KEY-LOCK Concealed Ceiling System
- Rondo Drywall Concealed Ceiling System
- Direct-fix or fully suspended applications
- Non-fire rated and fire-rated systems
- Bulkhead, curved ceilings
- Seismic and acoustic designs

Documents

1.1 DOCUMENTS

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

NZBC B1/VM1	Structure general
AS/NZS 1170.0	Structural design actions - General principles
AS/NZS 1170.1	Structural design actions - Permanent, imposed and other actions
AS/NZS 1170.2	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 2588	Gypsum plasterboard
AS/NZS 4600:2005	Cold formed steel structures
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium

1.2 MANUFACTURER/SUPPLIER DOCUMENTS

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

Rondo Professional Design Manual
KEY-LOCK® installation guide

Manufacturer/supplier contact details

Company: **Rondo Building Services Pty Ltd**
Web: www.rondo.co.nz
Email: steve.hardy@rondo.co.nz
Telephone: 09 636 5110

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years For Rondo branded products against defects in materials under normal use.

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

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.4 QUALIFICATIONS

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

Installation by a manufacturer's accredited installer, using the manufacturer's technical services. Accredited installers must be members of the AWCINZ. Provide evidence of experience, listing completed projects of similar size and complexity.

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1.5 NO SUBSTITUTIONS

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

1.6 SHOP DRAWINGS

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

Provide shop drawings to show the general arrangement including, but not be limited to:

- Design calculations.
- Fully dimensioned elevations of all elements (minimum scale 1:20)
- Complete details of construction, connections and all support systems (minimum scale 1:10)
- Dimensions of all typical elements
- Jointing details and method of fixing between individual elements and between this installation and adjacent work
- Provision for thermal movement
- Provision for seismic movement and movement under prevailing wind loads
- Bracing requirements, due to wind and seismic loads (indicate any design and construction work by others, to meet these requirements)
- Sequence of installation
- Co-ordination requirements with other work
- A full schedule of materials, finishes and componentry

1.7 INFORMATION FOR OPERATION AND MAINTENANCE

Supply information on the materials and method of cleaning the ceiling system over its expected life.

Compliance information (Additional options available)**1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE**

Provide the following compliance documentation: -

- Manufacturer / supplier warranty
- Producer Statement (PS3) - Construction from the applicator / installer
- Producer Statement (PS4) - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

Performance**1.9 LOADING CODE REQUIREMENT**

To [NZBC B1/VM1](#), [AS/NZS 1170.0](#), [AS/NZS 1170.1](#), [AS/NZS 1170.2](#), [NZS 1170.5](#), [AS/NZS 4600](#).

Performance - Wind (design by contractor)**1.10 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR**

Design the installation to the wind pressure parameters of [AS/NZS 1170.2](#). Refer to general section 1220 PROJECT for details.. Contact Rondo Building Services Pty Ltd for the engineering design service and Producer Statement - Design (PS1) for code compliance documents.

Performance - Seismic (design by contractor)**1.11 SEISMIC - SPECIFIC DESIGN**

Design the system and its anchorages/fixings to resist the earthquake loads of the seismic zone in accordance with [NZS 1170.5](#).

Refer to general section 1220 PROJECT for details. Contact Rondo Building Services Pty Ltd for the engineering design service and Producer Statement - Design (PS1) for code compliance documents.

Quality control and assurance**2 PRODUCTS****Materials - Rondo KEY-LOCK Concealed Ceiling System****BUILDING CONSENT****GRANTED
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2.1 KEY-LOCK DIRECT FIX CEILING SYSTEM

KEY-LOCK ceiling system to [AS/NZS 2785](#), hot-dip galvanized steel elements manufactured from steel strip to AS 1397.
Including furring channels, Direct fix clips for fixing to timber, steel and concrete. For suspension depths of up to 200mm.

2.2 PRIMARY SECTIONS

Rondo 25mm or 38mm top cross rail to AS 1397. Steel grade and zinc coating class G2 Z275 to AS 1397.

2.3 FURRING BATTEN SECTIONS

Rondo furring/batten sections to AS 1397. Steel grade and zinc coating class G2 Z275 to AS 1397.

Components**2.4 DIRECT FIX CLIPS**

Hot-dip galvanized steel elements manufactured from steel strip to AS 1397.

2.5 SECTION JOINERS

Hot-dip galvanized steel elements manufactured from steel strip to AS 1397.

2.6 RONDO WALL TRIM

Rondo wall trim sections to AS 1397. Steel grade and zinc coating class G2 Z275 to AS 1397.

Accessories**2.7 FASTENERS DIRECT FIX**

8g-16 x 25mm (minimum) self drilling wafer head screws or 30mm clouts for fixing to timbers detailed in Rondo Professional Design Manual and to Rondo Building Services Pty Ltd requirements.

2.8 SCREWS

25mm x 6 gauge non-rusting Type S self-drilling and self-tapping buglehead screws as detailed in Rondo Professional Design Manual and to Rondo Building Services Pty Ltd requirements.

Lining and Insulation**2.9 PLASTERBOARD**

Gypsum plaster core encased in a face and backing paper formed to [AS/NZS 2588](#). Refer to SELECTIONS for type and thickness.

2.10 LINING BOARD

Refer to SELECTIONS for type, thickness and finish.

2.11 INSULATION

Refer to SELECTIONS for type and thickness.

Access Panels**2.12 ACCESS PANEL**

Refer to SELECTIONS.

3 EXECUTION**Conditions****3.1 DELIVERY, STORAGE AND HANDLING**

Take delivery of materials and goods and store on-site on a level, firm base and protect from airborne contaminants such as acid and salt spray.
Protect finished surfaces, edges and corners from damage. Do not drag Rondo steel members across each other, or across other materials.
Move/handle goods in accordance with manufacturer's requirements.
Reject and replace goods that are damaged or will not provide the required finish.

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3.2 SUBSTRATE

Ensure substrate is plumb, level and in true alignment. Do not start erection if the substrate will not allow work of the required standard. Complete any remedial work found necessary before starting light steel framing erection.

3.3 COMMENCING THIS WORK

Commencing this work means the substrate is accepted as allowing work of the required standard.

3.4 CO-ORDINATE SERVICES

Co-ordinate and co-operate with electrical and mechanical work to avoid conflict between suspension members and luminaires, diffusers, pipework and ducting. Confirm the provision of extra hangers and fixings.

Ensure co-operation with work in and above the ceiling, including the marking of specific ceiling tiles below major access points to above-ceiling services. Colour coded markings to follow the standards laid down by mechanical and electrical services.

3.5 SITE CONDITIONS

Do not begin installation until the building is closed in, fully glazed, the roof watertight, and mechanical and electrical duct work above the ceiling completed.

Installation/application**3.6 STANDARDS AND TOLERANCES**

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 INSTALL

Install the system to [AS/NZS 2785](#) minimum standards and the ceiling manufacturer's requirements.

3.8 ACCESSIBILITY

Provide access to the ceiling system and the in-ceiling and above-ceiling services so that maintenance and removal of any part can be carried out without damage to the ceiling system or panels.

3.9 PENETRATIONS

Accommodate recessed light fittings, air conditioning outlets and other electrical and/or mechanical services that are fixed to or pass through the ceiling system. Provide independent support for these as necessary.

3.10 INSTALLATION - GENERAL

Installation to Rondo Professional Design Manual and Rondo Building Services Pty Ltd requirements. Fix, erect and fit to finish rigid, plumb, square and true to line and face.

3.11 SETTING OUT

Set out the framing work true to line and square before starting erection.

3.12 ISOLATE

Isolate dissimilar metals with neoprene sheeting, tape or pipe lagging.

3.13 LINING

Fix and finish lining boards to manufacturer's and Rondo Building Services Pty Ltd requirements. Install services before lining. Stagger sheet joins.

3.14 INSULATION

Install insulation to insulation manufacturer's and Rondo Building Services Pty Ltd requirements.

3.15 ACCESS PANEL

Install to Rondo Panther installation requirements.

Installation - Rondo KEY-LOCK Ceiling System**BUILDING CONSENT****GRANTED**
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3.16 FLUSH CEILING

Install the Rondo KEY-LOCK suspension system to [AS/NZS 2785](#) minimum standards, and the Rondo Professional Design Manual and KEY-LOCK® installation guide. Screw-fix sheets to furring channel sections at the centres required by the ceiling lining manufacturer. Stagger joints and fully support on furring sections and primary sections at centres to suit the load and Rondo installation manual. Refer to 5113 PLASTERBOARD LININGS for plasterboard and stopping specification.

Completion

3.17 ROUTINE CLEANING

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

3.18 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Leave work to the standard required for following procedures.

Commissioning

3.19 FINAL INSPECTION AND TESTING

3.20 HANDOVER

4 SELECTIONS

For further details on selections go to www.rondo.co.nz
Substitutions are not permitted.

Rondo KEY-LOCK Ceiling System

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5410 FLOORS

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

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

2 PRODUCTS

2.1 PARTICLEBOARD FLOORING

Flooring grade high density resin bonded.

2.2 PLYWOOD FLOORING

Structural plywood for bracing and floors, F11, CD grade, sanded face, H3.2 CCA.

2.3 NAIL FIXING PARTICLEBOARD OR PLYWOOD

Hand-driven 60 x 3.15mm hot-dipped galvanized csk annular grooved flooring nails, or power-driven 65 x 2.87mm hot-dipped galvanized annular grooved flooring nails, along with one-component polyurethane based construction adhesive or elastomeric construction adhesive. Increase nail lengths for flooring over 21mm thick.

3 EXECUTION

3.1 LAY PARTICLEBOARD FLOORING

Fasten to the flooring manufacturer's requirements and [NZS 3604](#), 7.2.3 **Wood-based sheet flooring**. Punch nails, fill holes, then sand with one coarse and one fine paper, hand sanding into corners.

3.2 LAY PLYWOOD FLOORING

Fix to the plywood manufacturer's requirements and to [NZS 3604](#), 7.2.3 **Wood-based sheet flooring**. Punch nails, fill holes, then sand , hand sanding into corners.

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5510 JOINERY FIXTURES AND FITTINGS

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

To include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

2 PRODUCTS

2.1 TIMBER BOARDS AND FRAMES

Carefully sawn to minimise the inherent warping, twisting and bowing of the selected species and to give a finish suitable for clear finishing.

2.2 MEDIUM DENSITY FIBRE BOARD

Resin bonded wood fibre sheet with selected finish.

2.3 STAIRCASE ELEMENTS

Exposed stairs to [NZS 3602](#), table 1 **Requirements for wood-based building components...**, and protected stairs to [NZS 3602](#), table 2 **Requirements for wood-based building components...**

3 EXECUTION

3.1 TRANSIT AND DELIVERY

Load, transport and unload fittings without distortion or damage and keep covered to protect from the weather. Do not deliver fittings until floor, wall and ceiling surfaces are in place and the fittings can be placed in their final location.

3.2 FABRICATION QUALITY

Check site dimensions. Carry out machining within the practices required for the particular timber or wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's requirements. Work accurate, square and true to line and face.

3.3 FABRICATE JOINERY FITTINGS

Carry out jointing, dowelling and other operations necessary for the proper assembly of the fittings as detailed, with fixings concealed unless otherwise detailed. Use glue joints where provision for shrinkage is not required, with contact surfaces, glueing and pressure all applied to the glue manufacturer's requirements. Locate and drive connectors and fasteners to the bolt manufacturer's requirements. Scribe fit adjustable shelves with 4 shelf pins and locate force fit pin holes at 50mm maximum centres in solid cheeks. Hang doors on concealed hinges.

3.4 FABRICATE TIMBER STAIRS

To [NZBC D1/AS1](#), 4.0. **Stairways, closed type**, unless detailed otherwise. Fabricate and install the handrails and balustrading as detailed, complete with associated metal componentry and hardware.

3.5 ASSEMBLE PROPRIETARY ITEMS

Check all components are included. Assemble to manufacturer's instructions to achieve finished item.

3.6 INSTALL FITTINGS

Scribe fit on site and install level, square, plumb and true to line and face.

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6300 FLOOR COVERING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Use flooring trades people appropriately experienced with the materials and techniques specified.

2 PRODUCTS

2.1 ADHESIVES COMPATIBILITY

Use only compatible adhesives approved by the respective manufacturers.

2.2 RESILIENT FLOOR COVERING

Includes vinyl, linoleum or rubber, either sheet or tile

2.3 ACCESSORIES - RESILIENT FLOOR COVERING

Rigid sheet underlay:	Wood based sheet overlays for uneven timber floors
Primer and sealers:	To the adhesive manufacturer's requirements for the particular substrate.
Adhesive:	To the manufacturer's requirements.
Trims and edging:	As supplied by the manufacturer to complete the work.

2.4 CARPET

Textile floor coverings to, [AS/NZS 2455.1](#) for broadloom or [AS/NZS 2455.2](#) for tiles.

2.5 ACCESSORIES - CARPET

Rigid sheet underlay:	Wood based sheet overlays for uneven timber floors
Underlay:	To AS/NZS 2455.1 Soft underlay and underlays manufacturer's requirements.
Adhesives:	To the manufacturer's requirements.
Edge grippers:	To the manufacturer's requirements.
Tape:	To the manufacturer's requirements.
Trims and edging:	Binder bars, divider strips and nosings to complete the work.

3 EXECUTION

3.1 HANDLING AND STORAGE

Maintain materials and accessories undamaged and dry. Store any rolls and other material to manufacturers requirements, on level surfaces, in non-work areas that are enclosed, clean and dry. Avoid distortion, marking and damage to edges while shifting and handling materials and accessories. Do not use faulty or damaged material.

3.2 SUBSTRATE

Ensure the building is enclosed, wet work complete, finishes and trim complete, and good lighting available. Inspect the substrate to ensure it is of the standard required for work in this section.

3.3 TEMPERATURE

Acclimatize flooring to a room temperature above 16°C to manufacturer's requirements. In air-conditioned buildings run air-conditioning to flooring manufacturer's requirements. Turn off floor heating for at least 48 hours before and after laying.

3.4 LAYOUT

Before beginning the installation confirm the proposed layout of material, location of joins and other visual considerations of the finished work.

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3.5 SURFACE PREPARATION - RESILIENT FLOORING

To [NZS/AS 1884](#) including necessary repairs and sealing. Check for moisture content to [NZS/AS 1884](#), Appendix A, and do not commence final sanding or laying until readings for the whole area show a maximum moisture content of, 75% RH for concrete, 14% for timber or 12% for timber with air conditioning. Clean surface.

3.6 SURFACE PREPARATION - CARPET

To [AS/NZS 2455.1](#), section 2. including necessary repairs and sealing. Check for moisture content to [AS/NZS 2455.1](#), Appendix B, and do not commence laying until readings for the whole area show a maximum moisture content of, 75% RH for concrete, 14% for timber or 12% for timber with air conditioning. Clean surface.

3.7 RESILIENT FLOOR LAYING

Carry out the whole of the work to [NZS/AS 1884](#), and the flooring manufacturer's requirements.

3.8 RESILIENT FLOOR JOINTING

Provide the joints/seams described in 1213 SELECTIONS or the drawings, to [NZS/AS 1884](#), and the flooring manufacturer's requirements.

3.9 FIT RESILIENT SKIRTING

Fit skirting in accordance with the skirting manufacturer's requirements.

3.10 CARPET INSTALLATION, CONVENTIONAL SYSTEM

Install underlay to manufacturer's requirements, and lay at right angles to the carpet direction. Tape carpet joints, fix grippers to floor and install underlay and carpet to [AS/NZS 2455.1](#), section 3. Stretch carpet tight in both width and length evenly without bowing, square with walls. Fix trim.

3.11 CLEAN

Upon completion clean to manufacturer's requirements.

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6700 PAINTING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work using competent and experienced painters.

1.2 HEALTH AND SAFETY

Refer to the requirements of the [Health and Safety at Work Act 2015](#) and if elimination or isolation is not possible, then minimise the hazards in this work. Refer to WorkSafe NZ publication, [Repainting lead based paints](#), for the required procedures and precautions when treating or removing lead based paint, burning or sanding off paint, or using solvent based paint removers.

1.3 SELECTIONS

Confirm all selections, colours and finishes with the owner.

2 PRODUCTS

2.1 PAINT

As selected and 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 SURFACES

Inspect surfaces being painted 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 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.

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 SHARP EDGES, CRACKS AND HOLES

Repair as required by the paint manufacturer.

3.7 PREPARE SURFACES

Prepare surfaces as required by the paint manufacturer. Make good all damage and defects.

3.8 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.

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3.9 MANUFACTURER'S MANUALS

Refer to the paint manufacturers' 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.

3.10 SCUFF BETWEEN COATS

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

3.11 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.

3.12 CLEAN

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

3.13 REFIT HARDWARE

Refit hardware without damage to the hardware or the adjoining surfaces.

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7120 WATER SYSTEM

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work by or under the direct supervision of a certifying person under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

2 PRODUCTS

2.1 POLYBUTYLENE WATER PIPE

Polybutylene tubing complete with fittings and accessories brand-matched to [AS/NZS 2642.2](#).

2.2 CROSS LINKED POLYETHYLENE WATER PIPE

Proprietary high-density cross-linked polyethylene composite pipe and fittings to [AS/NZS 4130:2009](#).

2.3 INSULATION FOR HOT WATER PIPES

Preformed closed cell foam.

2.4 WATER METER

Meter, gate valve and back flow prevention to the requirements of the network utility operator. Minimum 25mm OD Polyethylene cold water main. Allow to excavate, install and back fill for the water main.

2.5 VALVES AND FITTINGS

All valves and fittings required for the system, to [NZBC G12/AS1](#).

2.6 WATER HEATERS

Generally to [NZBC G12/AS1](#), 6.0 **Hot Water Supply Systems** as applicable. Refer to 1213 SELECTIONS/drawings for specific water heater.

3 EXECUTION

3.1 EXECUTION GENERALLY

Carry out work and tests as applicable to [NZBC G12/AS1](#).

3.2 INSTALL POLYBUTYLENE/POLYETHYLENE/POLYPROPYLENE WATER SUPPLY

Type as selected. 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](#), 5.0 **Water supply**. Conceal pipework and pressure test before wall linings are fixed.

3.3 OUTLET LOCATIONS

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

3.4 BACKFLOW PREVENTION

Fit back flow prevention devices to all outlets where it is possible for water or contaminants to backflow in to the potable water supply system.

3.5 INSTALL HOT WATER PIPE INSULATION

Insulate hot water pipes in accordance with the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of steel studs. Where hair felt is used, wrap around pipes in two layers in opposite directions and secure with galvanized steel wire ties.

3.6 INSTALL WATER HEATER

Install where shown complete with all the necessary fittings to the water heater manufacturer's requirements and [NZBC G12/AS1](#), 6.11 **Water heater installation**. Gas water heaters also to [AS/NZS 5601.1](#) and [NZBC C/AS1-AS7](#), 7.2 **Gas-burning appliances**.

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3.7 PENETRATIONS

Provide and fit collars and escutcheon plates to match pipework at penetrations through constructions.

3.8 COMPLETION

Pressure test to ensure no leakage and leave in proper working order. Clean tapware and fittings.

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7150 SANITARYWARE, TAPWARE & ACCESSORIES

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work by or under the direct supervision of a certifying person under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

2 PRODUCTS

2.1 SANITARY FIXTURES, TAPWARE, APPLIANCES AND ACCESSORIES

Refer to 1213 SELECTIONS and drawings for product selections.

3 EXECUTION

3.1 EXECUTION GENERALLY

Carry out installation work and tests to [AS/NZS 3500.2](#), as applicable.

3.2 INSTALL SANITARYWARE

Fit and install sanitaryware 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.

3.3 INSTALL TAPWARE

Install tapware in accordance with the tap manufacturer's requirements. Flush out on completion. Check that washers or ceramic discs are operating correctly.

3.4 INSTALL SHOWER CUBICLE

Install to [NZBC G1/AS1](#) and in accordance with shower manufacturer's details and requirements. Ensure that screens and doors fit closely and accurately. Test for water egress around sides and base.

3.5 TEST

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

3.6 ENSURE

Ensure all sanitary plumbing fittings and pipework are complete and operational.

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7410 RAINWATER SPOUTING SYSTEM

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 LIAISON

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

1.2 ELECTROLYTIC ACTION

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

2 PRODUCTS

2.1 ALUMINIUM/ZINC ALLOY COATED PRE-PAINTED STEEL SPOUTING

Profile, jointing, brackets and fittings brand matched and complete to the spouting manufacturer's specifications.

2.2 ALUMINIUM/ZINC ALLOY COATED PRE-PAINTED STEEL DOWNPIPES

Seam jointed and complete with stand-off brackets, galvanized screw fixed.

3 EXECUTION

3.1

INSTALL ALUMINIUM/ZINC ALLOY COATED STEEL PRE-PAINTED SPOUTING AND DOWNPIPES

Screw fix brackets, set to falls to outlets, with spouting joints silicone sealed and pop-riveted to the spouting manufacturer's requirements. Screw fix stand off brackets, set pipes plumb and clear of the wall, with joints silicone sealed. Discharge into stormwater bends.

3.2 ENSURE

Ensure rainwater services are operational, flashings complete and the building weathertight.

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7420 SANITARY WASTE SYSTEM

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work by or under the direct supervision of a certifying person under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

2 PRODUCTS

2.1 PVC-U WASTE, SOIL AND VENT PIPES

PVC-U pipe, complete with fittings brand-matched to the pipe manufacturer's requirements.

2.2 EXPOSED PIPES AND TRAPS

As selected and to the following details:

- chrome plate on copper pipes and associated copper and brass fittings
- white polybutylene or PVC, including all associated fittings.

3 EXECUTION

3.1 EXECUTION GENERALLY

Carry out sanitary plumbing work and tests as applicable to:

- [NZBC G13/AS1](#)

3.2 ELECTROLYTIC ACTION

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

3.3 INSTALL TRAPS, WASTE AND VENT PIPES

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to [NZBC G13/AS1](#). Discharge wastes into floor waste gully, drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to roof vents and vermin proof mesh to untrapped waste pipes.

3.4 PENETRATIONS

At penetrations through constructions provide and fit collars and escutcheon plates to match pipework. Exterior roof and wall penetrations to [NZBC E2/AS1](#).

3.5 TEST

Test soil and waste disposal systems to [NZBC G13/AS1](#), to ensure no leakage exists and leave in working order.

3.6 ENSURE

Ensure all sanitary plumbing fittings and pipework are complete and operational.

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7430 DRAINAGE SYSTEMS

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work by or under the direct supervision of a person registered under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

1.2 AS BUILT DOCUMENTS

Supply a 1:100 as-built drawing to the BCA and the owner on completion.

2 PRODUCTS

2.1 MATERIALS

Concrete:	17.5 MPa prescribed grade.
Reinforcement:	Grade 300 deformed bars.
PVC-U pipes:	PVC-U pipes bends, junctions, fittings and joints.
Field drains:	Plastic pipes for field drains perforated and coiled with filter fabric over.
Drainage/filling materials	
Granular fill:	Clean gravel or crushed stone or a blend of these. Particle size from minimum 7mm to maximum 20mm.
Selected fill:	Fine grain soil or granular material suitable for bedding, excluding topsoil.
Ordinary fill:	Top soil or other excavated materials.

2.2 FITTINGS

Gully traps:	To NZBC G13/AS2 , 3.3 Gully traps , complete with grating.
Strip drain channel:	Proprietary, modular, variable invert, PVC-U or precast concrete drainage channel sections and drainage sump, embedded in site concrete and fitted with selected metal gratings.

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 EXECUTION GENERALLY

Carry out drainage work as applicable to:

- [NZBC G13/AS2](#) and [NZBC E1/AS1](#).

3.4 LAY WASTEWATER DRAINS

Lay drains in straight runs to correct gradients, to discharge into the NUO's sewer. Set inspection fittings on a concrete base.

3.5 INSTALL GULLY TRAPS

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

3.6 TESTING

Complete all tests to G13/AS1, 7.1 Test Methods for sanitary drainage, and to E1/AS1, 8.2 Drain Leakage Tests for stormwater drainage. Field test drains for watertightness to the satisfaction of the BCA inspector.

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3.7 BACKFILL

Backfill drain lines in 150mm layers, well tamped but without disturbing the drains. Finish off garden areas with 150mm of topsoil, slightly mounded above the finished ground line. Public roads and footpaths to be made good to the controlling authority requirements.

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7700 ELECTRICAL

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 COMPLY

Comply with the Electricity (Safety) Regulations 2010, [AS/NZS 3000](#) for listed and prescribed work and with the NUO's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

1.2 QUALIFICATIONS

Carry out work by or under the direct supervision of an electrical licensed supervisor under the Electricity (safety) Regulations 2010.

1.3 ELECTRICAL CERTIFICATE OF COMPLIANCE

Provide, prior to connection, a Certificate of Compliance (CoC) as required by the Electricity (Safety) Regulations 2010, to the owner and if required to the NUO. Allow the NUO to view before the meter installation, listed work inspection, polarity check and livening of supply.

1.4 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010, to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.

1.5 SAFETY OF INSTALLATION

When required by the Electrical (Safety) Regulations 2010, before installation work commences, provide a Certified Design to Electrical (Safety) Regulations 2010, regulations 58. This will may not be required for domestic installations or Low Risk Work.

2 PRODUCTS

2.1 METER BOARD / DISTRIBUTION BOARD / SUB BOARD

Proprietary manufactured meter board complete with flashing kit. Proprietary manufactured distribution board, zinc plated powder coated, or heavy duty plastic, fire resistant enclosed construction, complete with neutral and earth busbars, MCB's, RCD's and main switch. All protective devices: 6kA MCB's of the appropriate rating. Fit to board manufacturer's requirements where detailed. Recess into wall and ensure fire containment properties of the enclosure is maintained.

2.2 MAIN SUPPLY

Excavate, lay underground mains to NUO requirements, install cable marker, back fill. Public roads and footpaths to be made good to the controlling authority requirements.

2.3 CABLES

Tough plastic sheathed copper conductors. Minimum sizes are indicated below. Increase these as necessary due to method of installation, cable length or load.

Lighting circuits: 1.5mm² on 10 amp MCBs for domestic construction
Power circuits: 2.5mm² on 16 amp MCBs for domestic construction

2.4 ELECTRICAL ACCESSORIES

As selected and to the following details:

Switch units	Minimum 16 amp, 230 volt flush polycarbonate units. For number of switches per unit, dimmer units, neon (indicator or toggle) units, locator units and 2-way units refer to the electrical drawings.
Switched socket units:	10 amp, 230 volt flush polycarbonate 3 pin combined switch units.
Hot water system switch:	One way 20 amp switch complete with clamp for flexible PVC conduit.
Stove/range socket outlet and switch:	32 amp, 230 volt flush polycarbonate 3 pin combined switch unit, with remote isolating switch.

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3 EXECUTION

3.1 CABLING

Install with a maximum of 10 light outlet units or 6 switched socket units on any circuit. Separate circuits for all electric heating appliances. 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. Provide earth bonding and main earth.

3.2 INSTALL SWITCH AND SOCKET UNITS

Fit single and double switch units and socket units level and plumb where shown on the drawings. Install at the following heights (to the centre of the unit) unless shown otherwise on the drawings or to match existing.

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

Mount switches vertically and socket units horizontally. Label switch units which control electrical equipment by engraving on the rocker switch.

3.3 INSTALL LIGHT FITTINGS

Install selected light fittings in the locations and heights shown on the drawings and in accordance with the fitting manufacturer's requirements. Recessed fittings to [AS/NZS 3000](#), types IC-F, IC, CA-80 or CA-135 only (no clearance to insulation required for these types).

3.4 ELECTRIC HOT WATER SYSTEM

Wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end.

3.5 WIRE FOR PLUMBING FITTINGS

Wire for fittings to the Electricity (Safety) Regulations 2010 and to the fitting manufacturer's requirements.

3.6 INSTALL DOMESTIC SMOKE ALARMS

Install alarms to [NZBC F7/AS1](#), 3.3 Location of smoke alarms, and to manufacturer's requirements, fitted neatly and without damage to the surrounding finish.

3.7 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire selected fittings and equipment to the Electricity (Safety) Regulations 2010 and the individual fittings and equipment manufacturer's requirements. Refer to the drawings for required layouts and locations for equipment.

3.8 COMPLETION

Leave all fittings, lamps and tubes operational, with equipment and diffusers clean.

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