

Lot 52 Bullen Rise

Project Specification

45 Tailrace Rise, Arthurs Point, Queenstown, New Zealand
Project Ref: J0349
Date: 16 October 2026

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

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TABLE OF CONTENTS

1210	PROJECT.	4
1211	DOCUMENTATION	5
1212	COMPLIANCE	6
1213	SELECTIONS	7
1220	GENERAL REQUIREMENTS	15
1233	DOCUMENTS REFERENCED	19
2200	GROUNDWORKS & PREPARATION	22
3110	CONCRETE WORK	24
3320	CONCRETE BLOCK MASONRY	26
3800	TIMBER FRAMING	28
4220	WALL CLADDING	30
4240	METAL WALL CLADDING	31
4280	STUCCO/PLASTER SYSTEM	33
4310	ROOFING	35
4337	TIMBER & PLYWOOD, DECKING & ROOFING	37
4400	MEMBRANE ROOFING	38
4520	ALUMINIUM WINDOWS & DOORS	40
4610	GLAZING	42
4710	THERMAL INSULATION	43
5110	INTERIOR LININGS & TRIM	44
5230	INTERIOR DOORS & FRAMES	46
5410	FLOORS	47
5510	JOINERY FIXTURES & FITTINGS	48
6200	TILING	49
6300	FLOOR COVERING	51
6700	PAINTING	53
7120	WATER SYSTEM	55
7150	SANITARYWARE, TAPWARE & ACCESSORIES	57
7410	RAINWATER SPOUTING SYSTEM	58
7420	SANITARY WASTE SYSTEM	59
7430	DRAINAGE SYSTEMS	60
7700	ELECTRICAL	62

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1210 PROJECT.

1 GENERAL

1.1 PROJECT

Street address:	**45 TAILRACE RISE RD 1 QUEENSTOWN 9371**
Legal description:	Lot 52 DP 6177729
Site area:	500 m2
Project type:	New building
Intended use:	Single residential building
Intended life:	Indefinite but not less than 50 years

1.2 PROJECT DESCRIPTION

Construct 3 level residential home with attached garage

1.3 LBP REQUIREMENT

Any site license LBP's shall have a minimum:

Site license in area of practice 1

Bricklaying and Blocklaying 2: Structural masonry
Carpentry
Foundations 1: Concrete foundation walls and concrete slab-on-ground
Roofing 2: Profiled metal roof and/or wall cladding
Roofing 4: Roof membrane

1.4 OWNER

Name:	Allyra and Justin Mathews
Mailing address:	
Telephone:	+64 27 490 5679
Email:	Allyra.Matthews@nzsir.com

1.5 DESIGNER

Name:	Immersion Architecture - Ant Jackson
Mailing address:	8 Alpine Lakes Drive
Telephone:	0274442809
Email:	ant@immersion.nz

1.6 ENGINEER

Name:	Gridline - Warrick Weber
Mailing address:	
Telephone:	021 365 070
Email:	warrick@gridline.co.nz

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1211 DOCUMENTATION

1 GENERAL

1.1 DRAWINGS

Architectural Drawing Set - Building Consent Issue

Structural Engineers Set - Building Consent Issue

Truss Design

1.2 ENGINEERS DOCUMENTS

Drawings

PS1 - Separate Document

1.3 OTHER DOCUMENTS

Design Navigator H1 Calculations

1.4 PRODUCER STATEMENTS

Truss Design - Separate Document

1.5 BRANZ OR OTHER APPRAISALS

Refer M-Docs Schedule

1.6 MANUFACTURERS LITERATURE

Refer M-Docs Schedule

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1212 COMPLIANCE

1 GENERAL

1.1 SITE DATA

Soil type:	Foundations and footings designed to meet the definition of Good Ground (to NZS 3604, 3.2 Soil types)
Exposure zone:	Zone B (to NZS 3604, 4.2 Exposure zones or E2/AS1 Zone E severe marine)
Wind zone:	High (to NZS 3604, table 5.4 Determination of Wind Zone)
Earthquake zone:	Zone 3 (to NZS 3604, figure 5.4 Earthquake zones)

1.2 BUILDING DATA

Building classification:	2 Importance Level (to NZS 3604, table 1.1 Classification of buildings)
Floor live load:	2 KPa (to NZS 3604, table 1.2 Imposed floor live load reference values)
Overall height:	9.1 metres (in accordance with NZS 3604, Fig 1.2 Buildings covered by this Standard)
Risk assessment:	13 Total Risk Score (to NZBC E2/AS1, 3.1 Establishing the risk)

1.3 PRODUCER STATEMENTS

Provide Producer Statements for the following

- Truss design
- Wet area interior waterproofing
- Aluminium, PVC-U or JMF timber joinery
- Glazing
- Fireplace

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.

1.4 RECORDS OF WORK

Provide Records of Work for Restricted Building Work:

- Structural masonry
- Carpentry
- Roofing
- Membrane roof
- 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

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

2 SITE

<< 2200 GROUNDWORKS AND PREPARATION >>

2.1 FILL FOR GROUNDWORK

Type: Refer to Engineers Documents. - Ensure Good Ground is met and Geotech Certification is Supplied

2.2 BACKFILL TO HOUSE RETAINING WALLS

Type: Refer to Engineers Documents - "RIVER RUN FREE DRAINING GRANULAR BACKFILL. FREE FROM FINES IN BIDIM A14 GEO CLOTH"

Drainage coil: Refer to Engineers Documents - "160 NOVAFLO IN GEOSOCK, LAID TO FALL TO APPROVED OUTLET (VIA SILT TRAP)"

3 STRUCTURE

<< 3110 CONCRETE WORK >>

3.1 DAMP-PROOF MEMBRANE - UNDER SLAB

Type/thickness: 0.25 Polythene

3.2 INSULATION - UNDER SLAB

Type/thickness: 60mm XPS Insulation

3.3 CONCRETE REINFORCEMENT

Type: Refer Eng

3.4 CONCRETE

Location: Refer Eng
Strength: Refer Eng
Surface finish: Refer Eng

<< 3320 CONCRETE BLOCK MASONRY >>

3.5 CONCRETE BLOCK MASONRY

Brand/Type: 190/240mm Masonry Block
Bond: Stretcher bond
Pointing: Concave

<< 3410 STRUCTURAL STEELWORK >>

There is no work section specification relating to the following selections

3.6 STEELWORK

Item: Structural Steel - Refer Eng
Finish: Primer, Concealed - Refer Eng

<< 3800 TIMBER FRAMING >>

3.7 SUB FLOOR TIMBER FRAMING

Type/treatment: Radiata pine, Grade SG8, Treated H1.2 (minimum 150mm above ground)



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3.8 FLOOR TIMBER FRAMING

Type/treatment:	Radiata pine, Grade SG8, Treated H1.2
Cantilevered deck joists:	Radiata pine, Grade SG8, Treated H3.2

3.9 EXTERIOR WALL TIMBER FRAMING

Type/treatment:	Radiata pine, Grade SG8, Treated H1.2
Cavity battens:	Radiata pine, Treated H3.1 (non-structural)
Jamb battens:	Radiata pine, Treated H3.1

3.10 ROOF TIMBER FRAMING

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

3.11 ROOF TRUSSES

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

3.12 INTERIOR WALL TIMBER FRAMING

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

3.13 EXTERIOR EXPOSED TIMBER

Cladding & trim:	Radiata pine, Dressing, Treated H3.1
Structure:	Radiata pine, Grade SG8, Treated H3.2 CCA (preservative code 01 or 02)
Deck framing & joists:	Radiata pine, Grade SG8, Treated H3.2 CCA (preservative code 01 or 02)

4 ENCLOSURE

<< 4110 TANKING >>

There is no work section specification relating to the following selections

4.1 TANKING

Brand/Type:	Viking Peel n Stick
Protection:	In accordance with manufactures specification - Viking Drainage Protection Board

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

There is no work section specification relating to the following selections

4.2 DAMP-PROOF COURSE

Brand/Type:	1mm thick bitumous dpc

4.3 WALL UNDERLAY/ROOF UNDERLAY

Brand/Type:	ThermaKraft Covertek 401 Masons Uniwrap - Wall Wrap

4.4 WINDOW FLASHING TAPE

Brand/Type:	Masons Tape

<< 4220 WALL CLADDING >>

4.5 CLADDING

Brand/Type:	Cedar Vertical Shiplap 110 Cover - HP51
Fixings:	85 x 3.25mm HP Crown Head Annular Grooved Shank Nail
Jointers:	Nill
Finish:	Stain - Damper

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<< 4239 SOFFIT LINING >>

4.6 SOFFIT

Brand/Type/thickness:	Cedar Vertical Shiplap 110 Cover - HP51
Fixings:	85 x 3.25mm HP Crown Head Annular Grooved Shank Nail
Jointers:	Nill
Finish:	Stain - Damper

<< 4240 METAL WALL CLADDING >>

4.7 METAL CLADDING

Brand/Type/thickness:	Corrugate / 0.55 mm
Finish/colour:	Sandstone Grey
Profile direction:	vertical

<< 4280 STUCCO/PLASTER SYSTEM >>

4.8 STUCCO

Backing material:	Masonry Block
System/thickness:	Solid Plaster
Finish:	Venitian / Cerano - Polished Plaster

<< 4310 ROOFING >>

4.9 ROOFING

Brand/Type/thickness:	Corrugate / 0.55 mm
Finish/colour:	Sandstone Grey
Profile direction:	vertical

4.10 ROOF SKYLIGHTS

Brand/Type:	Velux - Refer Plans
Flashings:	Refer Details
Colour:	Sandstone Grey

<< 4337 TIMBER & PLYWOOD, DECKING & ROOFING >>

4.11 DECKING SUBSTRATE

Type/grade:	CHH plywood, F11, CD grade minimum, H3 CCA treatment
Thickness:	17.5mm
Fixing:	Adhesive and screw fixed with stainless steel screws

4.12 TIMBER SPACED BOARD DECKING

Brand/size:	Kwila / 19mm x 140mm
Species/grade:	Kwila, Dressed
Textured face:	Down

<< 4400 MEMBRANE ROOFING >>

4.13 DECK MEMBRANE

Brand/type/layers:	Viking Enviroclad TPO
Accessories:	Nurajack self-leveling pedestal for tiles or similar approved
Coating:	Dove Grey

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<< 4520 ALUMINIUM WINDOWS AND DOORS >>

4.14 ALUMINIUM WINDOWS AND DOORS

Brand/Type:	35mm Residential Series, Thermally Broken Double Glazed
Finish/colour:	Sandstone Grey
Jamb liners:	ex.25mm Radiata Pine
Flashings:	Refer to Architectural Drawings
Hardware:	Standard lever type - colour matched

<< 4555 GARAGE DOORS >>

There is no work section specification relating to the following selections

4.15 GARAGE DOOR

Brand/Type:	Insulated Sectional Lift Garage Door - Low Head Height
Face panel:	Colorsteel Endura
Finish:	Sandstone Grey

4.16 GARAGE DOOR CONTROLLER

Brand/Type:	Standard Automatic Opener
Remotes quantity:	3

<< 4610 GLAZING >>

4.17 GLAZING - ORDINARY

Brand / Type:	Standard Clear Float Double Glazed units Low-E & argon filled, incorporating Laminated "A" Grade Safety glazing where required
Obscure Glazing:	Confirm With Owner

4.18 GLAZING - SHOWER SCREENS

Brand/Type:	Toughened Glass - 12mm thick
Hardware:	S.S - TBC with Owner

4.19 GLAZING - MIRRORS

Location:	Ensuite's / Bathroom
Type:	Refer Interiors

<< 4710 THERMAL INSULATION >>

4.20 UNDERFLOOR INSULATION

Brand/Type:	Pink Batts
R value/Thickness:	R 7.0 / 265mm (Level 2) Silencer 90mm (Level 3)

4.21 WALL INSULATION

Brand/Type:	Pink Batts
R value/Thickness:	R 4.0 / 140mm

4.22 CEILING/ROOF INSULATION

Brand/Type:	Pink Batts
R value/Thickness:	R 7.0 / 265mm

<< 4820 FLASHINGS >>

There is no work section specification relating to the following selections

4.23 FLASHINGS - GENERALLY

Type:	0.55 BMT refer Architectural Set

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5 INTERIOR

<< 5110 INTERIOR LININGS AND TRIM >>

5.1 WALL LININGS

Location:	Typical wall areas
Brand/Type/thickness:	GIB / Standard Plasterboard / 10mm - Aqua to Wet Areas + Villaboard to tiled areas.
Finish:	Paint - Level 4

5.2 WALL LININGS - PLYWOOD

Location:	Garage
Brand/Type/thickness:	Trimline / Dressed / 9mm
Grade/Finish:	
Jointer:	3mm Negative

5.3 CEILING LININGS

Location:	Typical Ceilings
Brand/Type/thickness:	GIB / Standard / 13mm - Aqua to Wet Areas
Battens:	35mm Rondo @ 600mm crs.
Finish:	Level 4 - Paint

5.4 INTERIOR TRIM

Skirtings:	135x18 Single Bevel
Architraves:	90x18 Single Bevel
Scotia:	Nill

<< 5230 INTERIOR DOORS & FRAMES >>

5.5 INTERIOR DOORS

Location:	Refer Window and Door Schedule
Leaf type/finish:	Solid Core Doors
Frame type/finish	Radiata Pine, 19mm / Paint grade
Hardware:	TBC with Owner

<< 5410 FLOORS >>

5.6 FLOOR

Location:	Level 3
Brand/Type/thickness:	Laminex / Strandfloor H3.1 T&G / 20mm
Fixing method:	Glued and fixed in accordance with manufactures specs. Example of approved fixing - Self drilling screws corrosion resistant (Bremick) 45mm x 8 gauge @150mm crs perimeter and 200 intermediates

<< 5510 JOINERY FIXTURES AND FITTINGS >>

5.7 FABRICATED JOINERY ITEMS

Refer Client Specs

5.8 FABRICATED TIMBER STAIRS

Stair:	SG8 Stringers with 18mm MDF treads and risers, glued and blocked between.
Balustrade/handrail:	40Ø handrail on standard stand off brackets
Finish:	Timber Overlay

<< 5520 HARDWARE >>

There is no work section specification relating to the following selections

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5.9 HARDWARE BRAND TYPE
Windsor - Futura - Apex - TBC with Owner

6 FINISH

<< 6200 TILING >>

6.1 TILES

Location:	Bathrooms / Ensuite
Floor Tile/substrate:	Marmox 6mm Insulation Board
Wall Tile/substrate:	Gib Aqualine
Grout/colour:	TBC with Owner

6.2 UNDER TILE HEATING

Location:	Bathroom / Ensuite
Brand/type:	Devi or similar brand, thermostatically controlled

6.3 WET AREA WATERPROOFING

Location:	All Tiled Floors and 1.5m minimum from shower rose
Brand/type:	Mapei WPS waterproofing system Refer to Specifications attached

<< 6300 FLOOR COVERING >>

6.4 TIMBER OVERLAY FLOORING

Location:	Refer Plans
Brand/Type/finish:	TBC with owner - Must be E3 Compliant
Laying method:	Glued

6.5 CARPET

Location:	Refer Plans
Brand/Type:	TBC with Owner
Underlay:	11mm thick Premium Foam
Laying method:	Conventional with edge grippers

<< 6700 PAINTING >>

6.6 EXTERIOR PAINTING

Walls + Soffit	Resene Concrete Primer - 1x coat Resene Lumbersider, 2x coats (satin)

6.7 INTERIOR PAINTING

Walls: Wet Areas	Resene Sureseal - 1x coat Resene Spacecote K&B - 2x coats (low-sheen)
Walls: Elsewhere	Resene Broadwall - 1x coat Resene Spacecote - 2x coats (low sheen)
Ceiling: Wet Areas	Resene Sureseal - 1x coat Resene Spacecote K&B - 2x coats (flat)
Ceiling: Elsewhere	Resene Broadwall - 1x coat Resene Spacecote - 2x coats (flat)
Doors Leafs, Revels & Trims: Wet Areas	Resene Sureseal - 1x coat Resene Lustacryl - 2x coats (semi-gloss)
Doors Leafs, Revels & Trims: Elsewhere	Resene Quickdry - 1x coat Resene Lustacryl - 2x coats (semi-gloss)

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7 SERVICES

<< 7120 WATER SYSTEM >>

7.1 WATER SYSTEM

Pipework concealed:	Polyethylene / Polypropylene / Copper
Exposed internal pipe finish:	Chrome / Copper
Water heater type:	HWC
Water heater brand/model:	Rheem 180L Ambipower MDc-180

<< 7150 SANITARYWARE, TAPWARE & ACCESSORIES >>

7.2 SANITARYWARE / TAPWARE / ACCESSORIES

Location:	Refer Architectural Drawings
Items:	Standard Proprietary Fittings and Fixtures

<< 7410 RAINWATER SPOUTING SYSTEM >>

7.3 SPOUTING

Brand/type/size:	Colorsteel 125 Box Gutter

7.4 DOWNPIPES

Brand/type/size:	100Ø Colorsteel DP

<< 7420 SANITARY WASTE SYSTEM >>

7.5 FINISHES - EXPOSED SANITARY WASTE ITEMS

Exposed traps:	Chrome Bottle Traps to any exposed basin fixtures
Exposed pipe:	Chrome
Floor waste grates:	Allproof Industries InvisiDrain Shower Drain

<< 7430 DRAINAGE SYSTEMS >>

7.6 CHANNEL DRAIN

Type:	Type 1" surface water sump with galvanised grating

<< 7550 HEATING >>

There is no work section specification relating to the following selections

7.7 FIREPLACE

Brand/type/reference:	Escea TFS650

7.8 SPACE HEATING

Brand/type/reference:	Inslab Hydronic Heating

<< 7700 ELECTRICAL >>

7.9 ELECTRICAL OUTLETS AND SWITCHES

Brand/type/reference:	HPM - Excel Life

7.10 LIGHT FITTINGS

Brand/type/reference:	LED : TBC with Owner
Compliance	CA rated down-lights to be used as standard, unless another light source is specified

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7.11 DOMESTIC SMOKE ALARMS

Brand/type/reference: Refer Elec

7.12 HEATING SYSTEM

Brand/type/reference:

7.13 EXTRACT SYSTEMS

Kitchen extract:	Refer Plans
Bathroom extract:	Refer Plans
Toilet extract:	Refer Plans
Laundry extract:	Duct Dryer to Exterior

7.14 EV CHARGING OUTLET

Brand/type/reference: Confirm With Client

8 EXTERNAL

<< 8000 LANDSCAPE >>

There is no work section specification relating to the following selections

8.1 DRIVEWAY

Type/finish: Concrete, Broom Finish - Confirm with Client

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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.



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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.

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

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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.

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.

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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.

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 21 January 2019).
Plumbers, Gasfitters and Drainlayers Act 2006

1.2 NEW ZEALAND BUILDING CODE VERIFICATION METHODS

NZBC E2/VM1	Cladding systems of buildings up to 10 m in height – including junctions with windows, doors and other penetrations

1.3 NEW ZEALAND BUILDING CODE ACCEPTABLE SOLUTIONS

NZBC B1/AS1	Structural provisions for buildings
NZBC B2/AS1	Durability provisions for building elements
NZBC C/AS2	Protection from fire for buildings other than risk group SH
NZBC D1/AS1	Access routes
NZBC E1/AS1	Surface water
NZBC E2/AS1	External moisture provisions for timber-framed buildings up to 10 m in height
NZBC E2/AS3	External moisture provisions for concrete and concrete masonry buildings
NZBC E3/AS1	Internal moisture
NZBC F2/AS1	Hazardous building materials
NZBC F4/AS1	Safety from falling
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 G12/AS3	Water supplies
NZBC G13/AS1	Foul water - Sanitary plumbing
NZBC G13/AS2	Foul water - Drainage
NZBC G13/AS3	Foul water - sanitary plumbing and drainage
NZBC H1/A1	Energy efficiency
NZBC H1/AS2	Energy efficiency

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1.4 NEW ZEALAND STANDARDS

AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
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 2492	Cross-linked polyethylene (PE-X) pipes for pressure applications
AS/NZS 2537.1	Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications -Plastics piping systems for hot and cold water installations – Crosslinked polyethylene (PE-X) - General
AS/NZS 2537.2	Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations – Crosslinked polyethylene (PE-X) –Fittings
AS/NZS 2537.3	Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations – Crosslinked polyethylene (PE-X) -Fitness for purpose of the system
AS/NZS 2537.4	Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations – Crosslinked polyethylene (PE-X) -Guidance for the assessment of conformity
AS/NZS 2589	Gypsum linings - Application and finishing
AS/NZS 2642.1	Polybutylene pipe systems - Polybutylene (PB) pipe extrusion compounds
AS/NZS 2642.2	Polybutylene pipe systems - Polybutylene pipe for hot and cold water applications
AS/NZS 2642.3	Polybutylene pipe systems - Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications
AS/NZS 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	Plumbing and drainage - Sanitary plumbing and drainage
AS/NZS 3500.3	Plumbing and drainage - Stormwater 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
NZS 4210	Masonry construction materials and workmanship
NZS 4211	Specification for the performance of windows
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

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NZS 4514	Interconnected smoke alarms for houses
AS/NZS 4666	Insulating glass units
AS/NZS 4671	Steel for the reinforcement of concrete
AS/NZS 4858	Wet area membranes
AS/NZS 5601.1	Gas installations - general installations
NZS 6803	Acoustics - Construction noise

1.5 OVERSEAS STANDARDS

AS 1432	Copper tubes for plumbing, gasfitting and drainage applications
AS 2345	Dezincification resistance of copper alloys
AS 3688	Water supply and gas systems - Metallic fittings and end connectors
EN 513	Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors. Determination of the resistance to artificial weathering
EN 12608	Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors. Classification, requirements and test methods

1.6 BUILDING RESEARCH ASSOCIATION OF NEW ZEALAND (BRANZ)

Weathertight Solutions Vol. 2: Stucco

Good practice guide: Membrane roofing
Bulletin 519 - Fasteners selection
Bulletin 601 - Sealed for Cladding Joints

1.7 OTHER DOCUMENTS

Concrete NZ

- 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 Code of Practice for Below-Grade Tanking Membranes
- WMAI Code of Practice for Interior Wet Area Membranes
- WMAI Code of Practice for Reinforced Modified Bitumen Membrane (RMBM) 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.

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2200 GROUNDWORKS & PREPARATION

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.

1.2 SITE SAFETY

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

2 PRODUCTS

2.1 FILLING MATERIALS

Volcanic tuff:	Scoriaceous tuff of variable grading excluding silt or clay material, capable of being placed and compacted as specified.
Rock fill:	Hard material comprising rock, broken stone, hard brick, concrete, run of pit scoria, or other comparable inert material capable of being placed and compacted as specified.
Sand fill:	Clean sand of such grading in particle size as to allow for mechanical compaction to 90% maximum density.
Hardcore:	Scoria or crushed rock to GAP (General All Passing) 40 grading.
Granular base:	Screened crushed gravel or scoria graded in size from 20mm to 7mm, clean. When tested with a standard sieve of 4.75 opening no material is to pass.
Dressing course:	Scoria to GAP 20 grading, or "dirty footpath scoria", or equivalent "all in" graded crushed metal aggregate.
Free-draining aggregate:	Scoria or crushed gravel graded 50 to 14 clean.

3 EXECUTION

3.1 EXCAVATION GUIDELINES

Carry out excavation to the guidelines set in WorkSafe, Good Practice Guidelines - Excavation Safety.

3.2 PROTECT EXISTING

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

3.3 SURFACE PREPARATION

To NZS 3604, 3.5 **Site preparation**, remove all turf, vegetation, trees, topsoil, stumps and rubbish from the area being built on.

3.4 UNDERGROUND ELEMENTS AND SERVICES

Break out and remove underground elements and redundant services. Report for instructions when unexpected voids, made-up ground or services are encountered. Seal off the ends of drains or remove to NUO approval.

3.5 GENERAL EXCAVATION

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

3.6 EXCAVATION FOR FOUNDATIONS

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

3.7 INADEQUATE BEARING

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

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

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

3.8 GRANULAR BASE FOR SLABS

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

3.9 GENERAL BACKFILLING

Compact backfilling in 150mm layers, with the last 200mm in clean topsoil, lightly compacted and neatly finished off.

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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 concrete, maximum aggregate size 19mm to NZS 3104. Site mixed prescribed mix concrete, 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 EQUIPOTENTIAL BONDING REINFORCING

If it is an electrical requirement, ensure that reinforcing is equipotential bonded (or at least conductor cable attached) before the concrete is poured.

3.9 CONCRETE PLACEMENT

To comply with NZS 3109.

3.10 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.

3.11 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.

3.12 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.

3.13 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, 2.3 **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, paragraph 2.3.7.6, NZS 3604 **New clause**.

In the Canterbury Earthquake Region comply with the changes to NZS 3604 in NZBC B1/AS1.

3.14 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 ºC, and 48 hours for average ambient temperatures below 20 ºC). If saw cuts are not indicated on the drawings, than 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.

3.15 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.

3.16 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.

3.17 STRIKE FORMWORK

Strike formwork without damaging or overloading structure.

3.18 CLEAN OUT

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

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3320 CONCRETE BLOCK MASONRY

1 GENERAL

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

1.1 QUALIFICATIONS

The work is to be carried out by workers who are experienced, competent and familiar with the materials and the techniques specified. Work to be carried out or under supervision of a Licensed Building Practitioner (LBP) with the relevant license class.

1.2 INSPECTION

Call for inspection of the work at critical stages including set out, reinforcing, and the time prior to and during grouting. All as set out in NZS 4210, section 1.4 **Inspection**.

1.3 TESTS AND RECORDS

Carry out required tests in accordance with NZS 4210, appendix 2A, **Compressive strength tests for mortar and grout**. Keep accurate records relating to strength and quality of materials used in the construction, and make the information available to the BCA inspector on request.

1.4 DURABILITY

Ensure that, mortar, built in components and reinforcement cover are to NZS 4210, table 2.E1 **Masonry durability requirements**, for the location and the Exposure Zone (refer 1212 COMPLIANCE). To use the table, exposure zones in NZS 3604 comparable with NZS 3101.1 (in brackets) are;

Zone D (B2), Zone C (B1), Zone B (A2), Closed Interior (A1), Walls against earth (B2), Geothermal hotspots (U), and NZBC E2/AS1 Zone E (C).

2 PRODUCTS

2.1 ACCESSORIES

Reinforcement:	To AS/NZS 4671 minimum 300E deformed mild steel except for ties in plain round mild steel and as detailed. For slab mesh refer to Concrete Work section.
Mortar:	Sand to NZS 3103. Chloride levels not exceeding 0.04% by dry weight of sand. Mortar to NZS 4210, section 2.2 **Mortar**. Compressive strength of not less than 12.5 MPa.
Grout:	To NZS 4210, section 2.3 **Grout**. Spread value 450 - 530mm.
Water:	From local authority supply.

3 EXECUTION

3.1 STORAGE

Store masonry clear of the ground, under cover and well ventilated until placed in the work. Ensure masonry units are air dry prior to laying.

3.2 CHECK BASE CONCRETE

Ensure the base concrete is true to line and level, requiring a base mortar bed of 10mm (minimum) to 20mm (maximum).

3.3 STARTER POSITIONS

Before commencing masonry laying check the location of starter reinforcement by measure or by a dry trial lay up of the first course. Do not correct misplacement by cranking bars; obtain direction.

3.4 INSTALL REINFORCEMENT

Detailed, bent and placed in accordance with NZS 4210. Refer to drawings for details of reinforcement and extent of grout filling. Minimum cover as required for reinforced concrete, with grout and masonry work treated as a homogeneous material. Maintain reinforcing bars for retaining walls a minimum of 15mm and for other concrete masonry, a minimum of 6mm, from the masonry face, with the space filled with grout. For slab mesh refer to Concrete Work section.

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3.5 EQUIPOTENTIAL BONDING REINFORCING

If it is an electrical requirement, ensure that reinforcing is equipotential bonded (or at least conductor cable attached) before laying/grouting.

3.6 TOLERANCES

Construct within the tolerances set out in NZS 4210, clauses 2.6.5 **Tolerances** and 2.7.1 **General**. Lay masonry units with bedding of consistent thickness throughout.

3.7 LAY MASONRY UNITS

Execution generally to NZS 4210, NZS 4229 as modified by NZBC E2/AS3 (CCANZ CP 01). Ensure consistent, fully filled and tooled joints. Where walls are reinforced, prevent mortar droppings from entering the cells being grouted. Provide clean out holes at base of wall, unless "low lift" (NZS 4210) grouting is used. Ensure reinforcement is accurately placed and tied. Lay in regular stretcher bond with all necessary special units and sill units. Cut masonry, if necessary, true and square without chipping.

3.8 PROTECTION

Protect fair-faced masonry walls, keeping them clear of mortar droppings, grout splashes, or stains.

3.9 MASONRY JOINTS

Not exceeding 10mm thick, or less than 8mm when the masonry units are bedded in. Joints tooled concave.

3.10 CONTROL JOINTS

Locate at major changes of wall height or thickness, at openings, and at not more than 6 metre centres, or, as shown on the drawings.

3.11 BRACING

Provide sufficient temporary lateral bracing to ensure stability until the final construction is in place.

3.12 GROUTING OF CELLS

Inspect walls prior to grouting. Ensure cells are clean and reinforcement is correctly placed. Grout all masonry cells below finished grades, all cells in retaining walls and all cells containing reinforcing. Use procedures set out in NZS 4210.

3.13 CONSTRUCTION JOINTS

Form and treat construction joints between grout pours and between masonry walls and hardened concrete work to ensure bonding occurs. Comply with NZS 4210, section 2.16 **Horizontal construction joints**.

3.14 BUILD IN

Mortar in components such as sills, copings, lintels, and steps, as work proceeds. Build in plugs, bolts, ties, metal flashings, dowels, fastenings and fixings as required and as shown on the drawings.

3.15 CLEANING

Clean off mortar splashes and grout spills as they occur, making good any damage at the same time. Clean down masonry and remove waste material from adjoining surfaces and floors.

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3800 TIMBER FRAMING

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 SUB-FLOOR FRAMING

Frame up off foundation walls and piles, all fabricated, fastened and braced to NZS 3604, 6 **Foundation and subfloor framing**.

3.5 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**.

3.6 BATTENS

For drained cavity construction nominal 20mm H3.1 cavity battens (non-structural) to NZBC E2/AS1, 9.1.7 Drained cavities. For direct fix cladding window and door openings nominal 20mm H3.1 jamb battens to NZBC E2/AS1, Figure 9.1.9.4: General window and door opening for direct fixed.



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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 TIMBER WEATHERBOARD

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.

2.2 ACCESSORIES

Wall underlay:	Breather type, waterproof.
Rigid Air Barriers:	Proprietary rigid sheet pre-cladding systems.
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/RIGID AIR BARRIER

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

3.4 CAVITY BATTENS OR JAMB BATTENS

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

3.5 PRIME OR SEAL TIMBER WEATHERBOARDS

Prime (for opaque finish) or seal (for clear finish) front and back faces, edges and end grain (minimum 2 coats) before fixing weatherboards and exterior trim.

3.6 INSTALL TIMBER WEATHERBOARDS

Install level, true to line and face, to NZBC E2/AS1, 9.4 **Timber weatherboards**.

3.7 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.

3.8 INSTALL FLASHINGS

Install flashings, covers and soakers as detailed on the drawings and to NZBC E2/AS1, 4.0 **Flashings**.

3.9 USE OF SEALANTS

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

3.10 COMPLETE

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

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4240 METAL 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..

1.2 WIND LOADINGS

Use fixings and methods capable of sustaining the loads appropriate to the area as set out in NZS 3604, 5 **Bracing design**, and confirmed under 1212 COMPLIANCE.

2 PRODUCTS

2.1 PROFILED METAL SHEET CLADDING

Profile, metal and finish as selected. Accessories, cappings, flashings and fixings to match and to the metal cladding manufacturer's requirements. . Refer to 1213 SELECTIONS for type.

2.2 ACCESSORIES

Wall underlay:	Breather type, waterproof.Roofing type underlay for direct fix profiled metal.
Rigid Air Barriers:	Proprietary rigid sheet pre-cladding systems.
Nails, screws, fastenings:	Metal, size and pattern, to metal cladding manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4 **Durability** and NZBC E2/AS1.
Fixing clips:	When required by cladding manufacturer.
Flashings:	As required
Base closer:	Cavity closer or closure flashing to suit application to NZBC E2/AS1
Foam seals:	Non-bituminous compressible, profiled foam strips, to NZBC E2/AS1, and foam tape where required

3 EXECUTION

3.1 STORAGE

Stack metal cladding 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 wall features.

3.3 MOISTURE CONTENT

Maximum allowable moisture content to NZS 3602, table 4 **Allowable moisture content….**

3.4 SEPARATION

Separate metal sheeting from treated timber (except LOSP treated) with wall underlay or other suitable isolation material. Use strips of underlay over cavity battens when necessary. Bitumen based underlay must not be in contact with LOSP treated timber.

3.5 INSTALL WALL UNDERLAY/RIGID AIR BARRIER

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

3.6 CAVITY BATTENS OR JAMB BATTENS

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

3.7 TAKE CARE

Take care to avoid damaging pre-finished cladding both during and after fixing. Mark only with chalk or spirit-based pen. Remove metal filings daily.

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3.8 INSTALL PROFILED METAL SHEET CLADDING

Use cutting tools recommended by the cladding manufacturer. Fold ends and seal cut edges to the cladding manufacturer's requirements. Fix complete with matching accessories, foam seals, flashed to cladding features and penetrations; all in accordance with NZMRM CoP and NZBC E2/AS1: 9.6 **Profiled metal Wall cladding**. Refer to 1213 SELECTIONS for direction to run profile.

3.9 FIXINGS AND SEALANTS

Refer to the cladding manufacturer's literature for fixing details and to NZS 3604 for fixings durability requirements. Select and use sealants only as recommended by the cladding manufacturer.

3.10 INSTALL FLASHINGS

Flash to penetrations, cap corners and edges, using sealant and fixings/rivets to detail, to the cladding manufacturer's requirements and to NZBC E2/AS1.

3.11 PENETRATIONS

Flash penetrations, and fit proprietary boots to pipework penetrations to suit cladding, to NZBC E2/AS1.

3.12 COMPLETE

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



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4280 STUCCO/PLASTER SYSTEM

1 GENERAL

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

1.1 QUALIFICATIONS

Carry out solid plaster work using competent, experienced plasterers.

Work to be carried out by or supervised by the appropriate LBP.

2 PRODUCTS

2.1 MATERIALS

Wire mesh:	Galvanized (to 320 g/m2) 15mm hexagon mesh to NZS 4251.1, clause 4.2.8 **Types of reinforcement (rigid backings)** or 5.3.3 **Types of reinforcement (non-rigid backings)** 0.9mm diameter steel wire in 900mm (minimum) wide rolls. 6mm deep, 25mm diameter purpose made plastic spacers and galvanized flathead nails
Metal lath:	Minimum 0.45mm thick steel, galvanized to 320 g/m2, slit and expanded, complete with all control joints, beads sections and fixings supplied by manufacturer
Sand:	To NZS 4251.1, clause 2.2.2.4 **Sand**
Cement:	Portland cement to NZS 4251.1, clause 2.2.2.3 **Cement**
Lime putty:	To NZS 4251.1.clause 2.2.3.2 **Lime**
Admixtures:	To admixture manufacturer's requirements

2.2 MODIFIED PLASTER SYSTEM

Proprietary plaster system complete with mesh reinforcement and accessories.

2.3 PLASTER MIX

(C =cement; L = lime; S = sand)

On concrete/concrete masonry

Finish	Mix	Thickness
Bond coat	1 : 1.5 CS	Combined bond and flanking coats, 15mm (minimum) 12mm on concrete masonry
Flanking coat	1 : 1 : 6 CLS	
Finish coat - sponge	1 : 1 : 6 CLS	Finish coat 3mm (maximum)

Rigid or non-rigid backing on steel or timber framing

Bond coat	1 : 1 : 6 CLS or	Combined bond and flanking coats 18mm (minimum all mixes)
	1 : 0.5 : 4.5 CLS	
Flanking coat	1 : 1 : 6 CLS or	
	1 : 0.5 : 4.5 CLS	
Finish coat - sponge	1 : 2 : 9 CLS	Finish coat 3mm (maximum)
	1 : 0.25 : 3.5 CLS	

3 EXECUTION

3.1 STORAGE

Store materials on site in conditions ensuring protection from contamination and deterioration.

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3.2 BACKGROUND STANDARD

Ensure that backgrounds and adjoining surfaces are (with the preparation called for) of a standard required for plastering. Protect existing adjoining work and surrounding areas with boards, dust sheets and protective panels. Completely mask metals, joinery, glass and other adjoining finished surfaces. Ensure flashings and penetrations are in place, and work liable to damage the plaster complete before commencing laying up.

3.3 PREPARATION OF SOLID BACKGROUND

Hack off projections, fill voids. Remove oils, retarders, loose material and leave surfaces dust free. Roughen concrete to provide a mechanical bond, rake out concrete masonry joints and dampen surface if necessary before applying the bond coat.

3.4 PLASTERING

Lay up all coats to the requirements of NZS 4251.1 under atmospheric conditions that will not adversely affect the finished work. Scratch the initial coats of plaster to provide a mechanical key for following coats. Complete any coat in sufficient time to enable subsequent coats to be applied under conditions that give full bond. Cut out damaged and faulty work in any coat and make good before proceeding.

3.5 ACCURACY

For trowelled surfaces no deviation more than 3mm from a 1200mm long straight edge. For textured surfaces no deviation more than 3mm from a 900mm long straight edge.

3.6 PROVIDE CONTROL JOINTS

To NZS 4251.1, 2.1.9 **Control Joints**, when detailed as shown on the drawings.

3.7 CURING

Wet cure unmodified plaster by continuous mist spray or protect with wet hessian for 4 days and then slowly dry for 3 days. Wet cure acrylic-modified plaster for 1 day and shade for another 4 days. Protect finished work from the weather and from damage by building operations or other causes.

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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, 8.1.3 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 NZMRM CoP and NZBC E2/AS1, 8.4 Profiled metal roof cladding.

3.6 INSTALL ROOF WINDOWS/ROOFLIGHTS/SKYLIGHTS

Check that the trimmed openings are formed and constructed to suit. Install and fix roof windows/lights/skylights in accordance with the manufacturer's installation instructions. Install flashings and overflashings as detailed and as required to make the installation completely weatherproof. Install selected accessories and hardware. Install and complete operating systems.

3.7 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.

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3.8 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.

3.9 PENETRATIONS

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

3.10 COMPLETE

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

3.11 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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4337 TIMBER & PLYWOOD, DECKING & ROOFING

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 TIMBER SPACED BOARDING FOR EXTERIOR DECKS

Selected radiata pine, treated to H3.2 to NZS 3602, table 2A. Dressed four sides and with arrises.

2.2 FIXINGS FOR DECKING

Galvanised 60mm X 3.15mm annular grooved jolt head nails for up to 21mm thick boards, 75mm nail length for boards over 21mm.

Use stainless steel nails for Exposure Zones D & E, refer to section 1212 COMPLIANCE for project zone.

2.3 PLYWOOD MEMBRANE SUBSTRATE

Radiata pine veneer ply to AS/NZS 2269.0, face sanded, 17 to 25mm thick, CD grade as scheduled. H3 CCA treated to AS/NZS 1604.1. Stress grade F11 for decks.

2.4 FIXINGS FOR PLYWOOD

Stainless steel, counter-sunk No.10 X 50mm screws. Or to the plywood manufacturer requirements for size and use. Single pack waterproof general purpose construction adhesive.

3 EXECUTION

3.1 LAY TIMBER DECKING

Drill for all fixings. Stagger end joints. Space boards a minimum of 2mm apart in general conditions, or minimum 3mm apart if boards are likely to swell after fixing. Leave a 12mm minimum gap between the exterior wall and the adjacent timber slat. Fix using annular grooved jolt head nails, heads driven flush with the board surface.

3.2 SUPPORT PLYWOOD EDGES AND JOINTS

Fully support edges and joints of sheets.

3.3 FIXING PLYWOOD UNDER MEMBRANES

To NZBC E2/AS1, 8.5 **Membrane roofs and decks**. Screw and adhesive fix sheets for membrane type roofing to the plywood and membrane manufacturers' requirements. Provide a 5mm radius chamfer to external edges where the membrane is to be wrapped over. Fix H3.2 CCA treated internal corner fillets.

Provide the required falls.

3.4 PROTECT PLYWOOD

Protect work from the weather until it is covered, coated or sealed.

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4400 MEMBRANE ROOFING

1 GENERAL

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

1.1 QUALIFICATIONS

Use only experienced roofers, licensed and recommended by the membrane system manufacturer. Work to be carried out by or supervised by the appropriate LBP.

1.2 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Applicators approval certificate from the manufacturer / importer / distributor
- Manufacturer's, importer's or distributors warranty
- Installer's / applicator's warranty
- Producer Statement - Construction from the applicator / installer

2 PRODUCTS

2.1 ACCESSORIES

Tapes:	Lap and moulding tapes to the roofing manufacturer's requirements for each location.
Galvanized clouts:	As supplied and required by the roofing manufacturer.
Edge trim:	To the roofing manufacturer's details for the specific location.
Outlets:	As supplied and required by the roofing manufacturer.
Cappings and flashings:	As detailed and as required by the roofing manufacturer.
Fixings:	Adhesives, primers, sealants and solvents compatible with the membrane and approved by the roofing manufacturer.
Vents	As supplied and required by the roofing manufacturer.

3 EXECUTION

3.1 ROOFING GENERALLY

All work and materials to NZBC E2/AS1: 8.5 **Membrane roofs and decks**, and to the membrane roofing manufacturer's requirements and complying with the relevant requirements of BRANZ Good practice guide - Membrane roofing and the WMAI Code of Practice for Reinforced Modified Bitumen Membrane (RMBM) Systems for Roofs and Decks.

3.2 STORAGE

Take delivery of sheet in packs/rolls undamaged and allow for site handling facilities where required. Stack off the ground on a level surface and with accessories secured against damage.

3.3 WEATHER

Apply in dry atmospheric conditions and only when the temperature is above 8°C.

3.4 PRELIMINARY WORK

Before laying ensure all preliminary work, including surface finish, formation of falls, provision of suitable flashing chases and fillets, fixing of vents and roof outlets to correct levels, is complete and formed to allow the system to work as intended.

3.5 PLYWOOD SUBSTRATE

Confirm that sheets have been adhesive and screw fixed, are rigid, with joints flush, no loose or protruding fixings, no lumps or hollows, smooth, clean, dry and free of all debris. Refer to section 4337 TIMBER & PLYWOOD, DECKING & ROOFING.

3.6 LAYING MEMBRANE ROOFING

Ensure substrate condition and preparation, materials, accessories, fixing and laying methods are in accordance with the roofing manufacturer's specifications, details and applicator requirements.

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3.7 LAY SHEET WATERPROOFING MEMBRANE

Apply the selected sheet waterproof membrane system to the membrane manufacturer's requirements.

3.8 FINISH AT PENETRATIONS

Form and finish to all upstands, downturns, penetrations, sumps and vents as detailed and to the roofing manufacturer's requirements.

3.9 SEAL PENETRATIONS

Seal, flash and overflash all penetrations through the roof as detailed and to the roofing manufacturer's requirements.

3.10 EXPANSION JOINTS

Finish and seal all expansion, contraction, construction and control joints as detailed and to the roofing manufacturer's requirements.

3.11 PROTECT FINISHED SURFACE

Wear only soft-soled shoes on the finished roof surface. Do not place any materials on, or support any ladders or scaffolding off, the finished surface.

3.12 INSPECT

Inspect and test all joints on completion. Flood test any enclosed areas.

Testing Procedure

3.13 FLOOD TESTING

Where practical, flood test and make good any lack of water tightness when the surface is completely dry.



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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, 9.1.9 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, paragraph 9.1.9.10, 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.

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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 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.

2.4 INSULATED GLASS UNITS

As selected and to AS/NZS 4666. and NZS 4223.2

2.5 MIRROR GLASS

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

2.6 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).

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.

2.2 CELLULAR PLASTIC RIGID BOARD

Polystyrene foam board manufactured from fire retardant grade resin.

3 EXECUTION

Conditions

3.1 INSTALL INSULATION - GENERAL

Lay, install, fit and fix insulation without gaps, tucks, folds and over compaction to NZBC H1/AS1 or AS2 and insulation manufacturer's requirements. For all housing and buildings up to 300m install in accordance to NZS 4246 sections 5 Walls, 6 Ceilings & Roofs, 7 Underfloor - Suspended Framed Floors and 10 Concrete Slab-on-Ground Insulation, for residential light timber or steel framed buildings.

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.

3.3 FIT CELLULAR PLASTIC RIGID BOARD

Friction fit board after roof and wall claddings have been installed. Cut oversize lengthways for a tight compression fit between framing. Leave no gaps between, and maintain full thickness of the insulating segments over the whole of the installation. Fit board between floor joists and timber framing using proprietary fixing clips. Ensure separation from electric cabling. Do not cover vents. Leave a 200mm clear gap around recessed light fittings and metal flues. In windy locations secure floor insulation with proprietary support brackets.

3.4 INSULATION CLEARANCES

Provide insulation clearances to NZS 4246 and for recessed luminaires AS/NZS 3000, 4.5.2.3. Where allowed by these standards provide insulation clearances to product manufacturer's stated clearances. Secure insulation in place so clearances are maintained and use guards/barriers , if required, where insulation is not secured.

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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 PLYWOOD

Appearance grade plywood sheet

2.4 NAILS

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

2.5 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.

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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.

3.5 FIX PLASTERBOARD EXTERNAL ANGLES

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

3.6 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.

3.7 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).

3.8 INSTALL PLYWOOD LININGS

Adhesive and nail to timber framing with jointing as detailed and to the panel manufacturer's requirements. Punch nails and fill to suit finish required.

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 INTERIOR CAVITY SLIDERS

Hollow core door within a proprietary cavity slider frame, with brand-matched sliding door gear.

2.3 INTERNAL JOINERY FRAMES

Fabricate as detailed.

2.4 DOOR HINGES

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

2.5 INTERIOR SLIDING-FOLDING DOOR GEAR

Bi-fold pattern to suit size and weight of doors and as detailed.

2.6 DOOR HARDWARE

As selected.

2.7 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 INTERNAL CAVITY SLIDERS

Install in accordance with the door manufacturer's requirements.

3.4 FIT HARDWARE

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

3.5 CHECK

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

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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.

2.4 SCREW FIXING PARTICLEBOARD OR PLYWOOD

Sure-fast type countersunk 50mm x 10 gauge screws, with one-component polyurethane based construction adhesive or elastomeric construction adhesive. Increase screw 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 & 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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6200 TILING

1 GENERAL

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

1.1 QUALIFICATIONS

Use tilers experienced with the materials and techniques specified.

1.2 SLIP RESISTANCE

Accessible routes slip resistance to NZBC D1/AS1, 2.1 Slip resistance.

2 PRODUCTS

2.1 ADHESIVES COMPATIBILITY

On proprietary substrates or waterproof membranes use only adhesives with documented compatibility approval from the respective manufacturers.

2.2 ACCESSORIES

Waterproofing membranes:	As selected.
Cement-based screed:	Mix of 3:1 Portland cement, wash-mix sand, gauged with liquid polymer additive to the tile manufacturer's requirements.
Tile adhesive:	To the tile manufacturer's requirements.
Grout:	Cement based, compressible and to suit the particular location and use.
Control joint sealant:	To BRANZ Good practice guide: Tiling, section 5.0.

3 EXECUTION

3.1 HANDLING AND STORAGE

Handle tiles with care to avoid chipping, soiling and damage. Store on hard, level standings in non-traffic, non-work areas that are enclosed, clean and dry. Reject all damaged tiles.

3.2 SUBSTRATE

Ensure all services and accessories are in place, located to suit the tile layout, with the substrate required for tiling work.

3.3 TEMPERATURE

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

3.4 LAYOUT

Obtain confirmation of the proposed layout of tiles, expansion joints and other visual considerations.

3.5 EXECUTION GENERALLY

Prepare surfaces and carry out the tiling work in accordance with BRANZ Good practice guide: Tiling.

3.6 SURFACE PREPARATION

To BRANZ Good practice guide: Tiling, section 4.0.

3.7 LAY PROPRIETARY SCREED

Apply a proprietary cement slurry bond coat over the whole of the floor. Mix and place a 40mm thick mortar bed over the bond coat and firmly tamp, screed and compact to the required level. In waterproofed areas where the cement screed has been laid over the waterproofing membrane, prepare the screed surface by applying a further waterproof coating before laying tiles.

3.8 APPLY LIQUID WATERPROOFING MEMBRANE

Apply the selected liquid waterproof membrane system to the membrane manufacturer's requirements. Flood test shower cubicle floors.

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3.9 INSTALL UNDER TILE ELECTRIC HEATING

Install to the membrane manufacturer's requirements. Arrange for electrician to connect power supply.

3.10 TILE FIXING, RIGID SHEET

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

3.11 GROUTING

Remove spacers. Prepare joints, mix and apply proprietary grout and finish off the grout uniform in colour, smooth and without voids, pinholes or low spots.

3.12 MOVEMENT CONTROL JOINTS

Minimum width of 6mm, carried through tile and bedding. Where substantial movement is anticipated, carry through the rigid sheet to the structure. Ensure joints are clean, formed, filled, and the sealant inserted to the sealant manufacturer's requirements.

3.13 CLEAN

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



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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 CARPET

Textile floor coverings to, AS/NZS 2455.1 for broadloom or AS/NZS 2455.2 for tiles.

2.3 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.

2.4 TIMBER OVERLAY FLOORING

Laminated timber overlay flooring strips/planks for floating floor installation.

2.5 ACCESSORIES - TIMBER OVERLAY FLOORING

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.
Foam underlay	2mm thick, closed cell foam underlay to provide a moisture membrane.
Trims and edging:	As supplied by the manufacturer 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 - 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.

3.6 SURFACE PREPARATION - TIMBER OVERLAY FLOORING

To manufacturer's requirements. Clear substrate of debris, repair and sand/grind as necessary. Check moisture content and do not commence final sanding or laying until readings for the whole area show a maximum moisture content of, 60/70% RH for concrete, 14% for timber or 12% for timber with air conditioning. For concrete apply sealer if necessary. Clean surface.

3.7 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.

3.8 TIMBER OVERLAY FLOORING, INSTALLATION, DIRECT STICK

Apply adhesive approved by the flooring manufacturer, at the required spread rate. Install the flooring to the manufacturer's requirements. Ensure the required expansion gap is left at perimeters and around fixed obstacles.

3.9 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 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 COPPER WATER PIPE

To NZBC G12/AS1, 2 Materials. Copper pipe to NZS 3501, AS 1432 (type A, B & C) and AS 3688 for fittings.

2.2 POLYBUTYLENE WATER PIPE

To NZBC G12/AS1, 2 Materials. Polybutylene tubing complete with fittings and accessories brand-matched to AS/NZS 2642.1, AS/NZS 2642.2 and AS/NZS 2642.3

2.3 CROSS LINKED POLYETHYLENE WATER PIPE

To NZBC G12/AS1, 2 Materials. Proprietary high-density cross-linked polyethylene composite pipe and fittings to AS/NZS 2492 for pipes and AS/NZS 2537.1, AS/NZS 2537.2, AS/NZS 2537.3 and AS/NZS 2537.4 for fittings.

2.4 INSULATION FOR HOT WATER PIPES

Preformed closed cell foam.

2.5 DE-ZINCIFICATION RESISTANT WATER SUPPLY SYSTEM COMPONENTS

All copper alloy components to comply with G12/AS1 clause 2.2.3 and AS 2345.

2.6 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.

2.7 VALVES AND FITTINGS

All valves and fittings required for the system, to NZBC G12/AS1.

2.8 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 COPPER WATER SUPPLY

Size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Run pipes in straight runs, firmly fixed to falls, with long radius bends and jointed by brazing or with crox fittings, all to NZBC G12/AS1, 5.0 **Water supply**. Conceal piping, insulate hot water pipework and pressure test before the wall linings are fixed.

If it is an electrical requirement, before enclosing, ensure metallic water supply pipes and metallic sanitary fixtures are equipotential bonded (or at least conductor cable attached) to NZBC G12/AS1, 9.0.

3.3 INSTALL POLYBUTYLENE/ CROSS LINKED POLYETHYLENE 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.

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3.4 OUTLET LOCATIONS

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

3.5 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.

3.6 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.

3.7 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 NZBC G11/AS1 and AS/NZS 5601.1.

3.8 PENETRATIONS

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

3.9 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 G1/AS1, E3/AS2, G12/AS1 or AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 and NZBC G13/AS1 or AS/NZS 3500.2 as modified by NZBC G13/AS3, as applicable and to the fixture manufacturers requirements.

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. Seal between all sanitary fixtures and floors, wall linings, fixtures and the tops they are in, the tops of wall linings to NZBC E3/AS1, 3.2.

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 TEST

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

3.5 ENSURE

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

3.6 EQUIPOTENTIAL BONDING METALLIC FIXTURES

Before enclosing, co-ordinate with electrician to provide for equipotential bonding to metallic water pipes and metallic sanitary fixtures using an earth bonding conductor to requirements of NZBC G12/AS1, 9.0 Equipotential Bonding and/or AS/NZS 3000, 5.6 Equipotential Bonding.



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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.

2.3 RAINWATER HEADS, DROPPERS, OVERFLOWS

Fabricate and install as detailed.

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
- stainless steel pipe and associated fittings
- PVC, PE polyethylene or polypropylene pipe, including all associated fittings.

3 EXECUTION

3.1 EXECUTION GENERALLY

Carry out sanitary plumbing work and tests as applicable to one of the following:

- NZBC G13/AS1 or
- AS/NZS 3500.2, as modified by NZBC G13/AS3

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 one of the following:

- NZBC G13/AS1 or
- AS/NZS 3500.2, as modified by NZBC G13/AS3

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 or AS/NZS 3500.2, section 15 Testing of sanitary plumbing and sanitary drainage installations, 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 complete with grating:	To NZBC G13/AS2, 3.3 Gully traps, or AS/NZS 3500.2, 4.6 Gullies, as modified by NZBC G13/AS3
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 - WASTEWATER

Carry out drainage work as applicable to one of the following:

- NZBC G13/AS2 or
- AS/NZS 3500.2

3.4 EXECUTION GENERALLY - STORMWATER

Carry out drainage work as applicable to one of the following:

- NZBC E1/AS1, or
- AS/NZS 3500.3

3.5 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.

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3.6 INSTALL GULLY TRAPS

Set in a minimum 75mm thick concrete with top surround 25mm above paving and 75mm above other surfaces.

3.7 LAY STORMWATER DRAINS

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

3.8 LAY GROUNDWATER DRAINS

Lay perforated coil piping firmly in a granular bed in straight runs to correct gradients, discharging into a sump. Carry the granular bed up over the pipes without disturbing them, to a total depth of 300mm and cover with geotextile fabric; all to the pipe manufacturer's requirements.

3.9 INSTALL STRIP DRAIN CHANNEL

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

3.10 INSTALL SURFACE WATER SUMP

Install surface water sump to one of the following:

- NZBC E1/AS1, 3.6 Surface water inlets to drains or
- AS/NZS 3500.3, section 7.

Ceramic half-siphon pipe. Cast iron frame with a lift out grating.

3.11 TESTING - WASTEWATER

Test to one of the following:

- NZBC G13/AS1, 7.1 Test Methods or
- AS/NZS 3500.2, section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations

Field test drains for watertightness to the satisfaction of the BCA inspector.

3.12 TESTING - STORMWATER

Test to one of the following:

- NZBC E1/AS1, 8.0 Drain Leakage Tests or
- AS/NZS 3500.3, section 9, as modified by NZBC E1/AS2.

Field test drains for watertightness to the satisfaction of the BCA inspector.

3.13 BACKFILL

Backfill drain lines in 100mm 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

Electrical workers holding a current Practising Licence (with an appropriate Registration class) to carry out prescribed electrical work. An Electrical Worker who holds a Trainee Limited Certificate or a Limited Certificate to be supervised by a licensed electrical worker with an appropriate Registration class.

1.3 ELECTRICAL CERTIFICATE OF COMPLIANCE

At the completion of electrical work provide a Certificate of Compliance (CoC) to Electricity (Safety) Regulations 2010, regulation 65-67. Provide a copy to the Contract Administrator and NUO prior to connection and when required to the BCA for Code Compliance.

- Arrange for the NUO to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.
- Arrange for an inspector to inspect high risk electrical work as required by Electricity (Safety) Regulations 2010,regulation 70 High-risk prescribed electrical work to be inspected.

1.4 ELECTRICAL SAFETY CERTIFICATE

Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010, Reg 74A, to the owner and when required the BCA. To be provided no later than 20 working days after connection, 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 in accordance with AS/NZS 3000 2.10 Switchboards, complete with neutral and earth busbars, MCB's, RCD's, main switch and, if required, additional isolation switches. 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 and AS/NZS 3000 Table 3.6, Under-Ground Wiring Systems - Minimum Depth of Cover, 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 to AS/NZS 3000 Section 3 Selection and Installation of Wiring Systems.

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

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	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.

2.5 DOMESTIC SMOKE ALARMS

Type 1 Inter-connected smoke alarm system to NZS 4514 including multi-sensor smoke alarm, photoelectric smoke alarm and if required heat alarm. Complete with required components including accessible hush-button, internal or external battery for hardwired systems or sealed battery for wireless systems.

2.6 DEGREES OF PROTECTION - DAMP CONDITIONS

For electrical equipment installed in classified zones (baths, showers, and other fixed water containers), provide a degree of protection to AS/NZS 3000, clause 6.2.4.1.

Zone 0	IPX7
Zones 1 and 2	IPX4
Zone 3	no specific degree of protection

Refer to AS/NZS 3000, Table 6.1 for requirement for selection and installation of electrical equipment.

2.7 EXTERIOR LIGHT FITTINGS

Weather protection minimums:

- IP54 for protected areas under eaves or verandahs etc.
- IP55 for exposed areas not subject to pressurised water (hoses).
- IP66 for areas subject to pressurised water or major splashing.
- IP67 for inground lights
- IP68 for submerged pool fittings

2.8 EXTERIOR SWITCHES AND SWITCHED SOCKET UNITS

Exterior grade, weather protected, switches and sockets to IP56 minimum. Sockets fitted with safety shutters behind socket pins, and all products able to be padlocked off or on.

2.9 EV CHARGING OUTLETS

Mode 2, Mode 3 or Mode 4 electric vehicle charging outlet socket to AS/NZS 3000, 7.9 Supplies for electric vehicles.

3 EXECUTION

3.1 CABLING

Install to AS/NZS 3000 Section 3 Selection and Installation of Wiring Systems, 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 ensuring cables are located minimum 50mm from the surface of a wall, roof, ceiling or floor, where they are fixed in position to AS/NZS 3000, 3.9.4.

Provide main earth and equipotential bonding to AS/NZS 3000, section 5, including (if in project) for at risk; structural steel, light steel framing, concrete reinforcing (if bath, shower, swimming/spa pool involved), conductive pipes (& connected metalwork like SS sinks), conductive elements within 1.25m of swimming/spa pool edge.

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.

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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.

Install recessed fittings to manufacturer's instructions, AS/NZS 3000, 4.5.2.3 Recessed Luminaires, and NZS 4246. Residential recessed light fittings to AS/NZS 3000, 4.5.2.3.5:

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

3.4 ELECTRIC HOT WATER SYSTEM

Install to manufacturer's requirements and to AS/NZS 3000, 4.8.2 Water heaters. Wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end.

3.5 SPACE HEATERS

Install to the manufacturer requirements, and to AS/NZS 3000 4.9 Room Heaters. Fit neatly and without damage to surrounding finishes. Ensure control switches and thermostats are fitted to appliance or otherwise connect to a control switch located adjacent to the heater and a remote thermostat. Isolation switch shall be provided adjacent to entrance of room or area the heating system is located or installed in switchboard.

3.6 UNDERFLOOR HEATING SYSTEMS

Connect under floor heating systems complete with thermostats to manufacturer's requirements and to AS/NZS 3000, 4.10 Electric Heating Cables for Floors and Ceiling and Trace Heating Applications and NZS 6110. Isolation switch shall be provided adjacent to entrance of room or area the heating system is located or installed in switchboard. Install a 30mA RCD to heating cables and refer to AS/NZS 3000, 4.10.5 for earthing requirements.

3.7 AIR CONDITIOING & HEAT PUMP SYSTEMS

Connect to electricity supply to manufacturer's requirements and to AS/NZS 3000, 4.19 Air Conditioning & Heat Pump Systems. Any system incorporating a compressor shall be provided with a lockable isolating switch installed adjacent to the unit.

3.8 COOKING APPLIANCES

Install cooking appliances to manufacturer's requirements and to AS/NZS 3000, 4.7 Cooking appliances. Provide a switching device to all cooking appliances that have an open cooking surface such as a hob in a visible and accessible position within 2m of appliance, but not in prohibited location, refer to Figure 4.17.

3.9 INSTALL DOMESTIC SMOKE ALARMS

Install Type 1 domestic, inter-connected smoke alarm system to NZS 4514 and to manufacturer's requirements, fitted neatly and without damage to the surrounding finish.

3.10 INSTALL EXTRACT SYSTEMS

Install extract fans, rangehoods, ducts and grilles to NZBC G4/AS1 and manufacturer's requirements.

Household extracts for cooktops, showers and baths to have a minimum flow rate (in fans and ducts) to NZBC G4/AS1 of:

- 25 L/s for showers and baths
- 50 L/s for cooktops

3.11 INSTALL EV CHARGING

Install electric vehicle charging outlet socket to AS/NZS 3000, 7.9 Supplies for electric vehicles. For domestic installation:

- For Mode 2 charging, final subcircuit shall be minimum 20A and shall not supply any other socket-outlet or point in wiring.

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- For Mode 3 & 4, final subcircuit shall be minimum 32A and shall not supply any other socket-outlet or point in wiring. Protect with 30mA Type B RCD and provide an isolating switch adjacent to the charging facility.

3.12 ELECTRIC FITTINGS AND EQUIPMENT

Install and wire selected fittings and equipment to the individual fittings and equipment manufacturer's requirements and AS/NZS 3000. Refer to the drawings for required layouts and locations for equipment.

3.13 COMPLETION

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

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