Avalon Station House

Project Specification

57 Avalon Station Drive, Wānaka, New Zealand

Project Ref: 006

Date: 06 September 2026



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

TABLE OF CONTENTS

1210	PROJECT.	3
1212	COMPLIANCE	4
2200	GROUNDWORKS & PREPARATION	5
3110	CONCRETE WORK	7
3320	CONCRETE BLOCK MASONRY	9
3800	TIMBER FRAMING	11
4220	WALL CLADDING	13
4310	ROOFING	15
4520	ALUMINIUM WINDOWS & DOORS	17
4710	THERMAL INSULATION	19
5410	FLOORS	20
6200	TILING	21
6300	FLOOR COVERING	23
6700	PAINTING	24
7700	ELECTRICAL	26

1210 PROJECT.

1 GENERAL

1.1 PROJECT

Street address:	57 Avalon Station Drive
Site area:	450 m2
Project type:	New building/Addition / Internal alteration / Demolition
Intended use:	Single residential building
Intended life:	Indefinite but not less than 50 years / ~ years

1.2 PROJECT DESCRIPTION

New home

1.3 LBP REQUIREMENT

Any site license LBP's shall have a minimum:

Site license in area of practice 1

Bricklaying and Blocklaying 1 : Brick / masonry veneer
Bricklaying and Blocklaying 2: Structural masonry
Carpentry
External Plastering 1: Solid plastering
External Plastering 2: Proprietary Plaster Cladding Systems
Foundations 1: Concrete foundation walls and concrete slab-on-ground
Foundations 2: Concrete or timber pile foundations
Roofing 1: Concrete or clay tile roof
Roofing 2: Profiled metal roof and/or wall cladding
Roofing 3: Metal tile roof
Roofing 4: Roof membrane
Roofing 5: Torch on roof membrane
Roofing 6: Liquid membrane roof
Roofing 7: Shingle or slate roof

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1212 COMPLIANCE

1 GENERAL

1.1 SITE DATA

Soil type:	~ (to NZS 3604, 3.2 **Soil types**)
Exposure zone:	Zone ~ (to NZS 3604, 4.2 **Exposure zones** or E2/AS1 Zone E severe marine)
Wind zone:	~ (to NZS 3604, table 5.4 **Determination of Wind Zone**)
Earthquake zone:	Zone ~ (to NZS 3604, figure 5.4 **Earthquake zones**)

1.2 BUILDING DATA

Building classification:	~ Importance Level (to NZS 3604, table 1.1 Classification of buildings)
Floor live load:	~ KPa (to NZS 3604, table 1.2 Imposed floor live load reference values)
Overall height:	~ metres (in accordance with NZS 3604, Fig 1.2 Buildings covered by this Standard)
Risk assessment:	~ 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:

- Brick/masonry veneer
- Structural masonry
- Carpentry
- Solid plastering
- Proprietary Plaster Cladding Systems
- 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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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 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 FIBRE CEMENT WEATHERBOARD

Cellulose cement autoclaved boards.

2.3 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 FIBRE CEMENT WEATHERBOARD

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

3.8 INSTALL EXTERIOR TIMBER FINISHINGS

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

3.9 INSTALL FLASHINGS

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

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3.10 USE OF SEALANTS

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

3.11 COMPLETE

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

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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 FIXINGS AND SEALANTS

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

3.7 INSTALL COVERS AND FLASHINGS

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

3.8 PENETRATIONS

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

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3.9 COMPLETE

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

3.10 CLEAR

Clear trade debris and unused materials from the roof and surrounds regularly during the work and at completion. Sweep down the completed roof and flush out spoutings, gutters and rainwater pipes.

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4520 ALUMINIUM WINDOWS & DOORS

1 GENERAL

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

1.1 QUALIFICATIONS

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

1.2 CERTIFICATION

Provide documentation that the windows and doors comply with NZS 4211 and safety glass complies with NZS 4223.3.

1.3 WIND LOADINGS

Refer to section 1212 COMPLIANCE for wind zone.

2 PRODUCTS

2.1 WINDOW AND DOOR REVEALS

As selected, manufactured to comply with NZS 4211. Timber jamb liners to NZS 3602.

2.2 FLASHINGS

To NZBC E2/AS1, 9.1.9 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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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 BLANKET

Roll form insulation blanket manufactured from fibreglass or polyester.

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 BLANKET

Install in ceiling/roof cavity and mid-floor cavity were specified Slightly oversize length for friction fit and tear by hand across pad and fill cavity. Tear to smaller pieces for smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating segments 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, 4.5.3.2. Where allowed by these standards provide insulation clearances to product manufacturer's stated clearances. Secure insulation in place so clearances are maintained and use guards/barriers , if required, where insulation is not secured.

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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 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.

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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 INSTALL UNDER TILE ELECTRIC HEATING

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

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3.9 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.

3.10 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.

3.11 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.

3.12 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 TIMBER OVERLAY FLOORING

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

2.3 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.

3.5 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.

3.6 TIMBER OVERLAY FLOORING, INSTALLATION, FLOATING

Install 2mm foam underlay to the total floor area, in long, continuous runs, allowing to cove up walls 50mm. Tape joints using moisture resistant tape, to create an impervious membrane. Install the timber floor strictly in accordance with the flooring manufacturer's requirements. Ensure the required expansion gap is left at perimeters and around fixed obstacles. Adhesive fix flooring to stair treads, risers and landings, to manufacturer's requirements.

3.7 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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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 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

2.3 ELECTRICAL ACCESSORIES

As selected and to the following details:

Switch units	Minimum 16 amp, 230 volt flush polycarbonate units. For number of switches per unit, dimmer units, neon (indicator or toggle) units, locator units and 2-way units refer to the electrical drawings.
Switched socket units:	10 amp, 230 volt flush polycarbonate 3 pin combined switch units.

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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.

2.4 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.

2.5 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.

2.6 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

2.7 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.

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.

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.

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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 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.

3.6 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.

3.7 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.

3.8 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

3.9 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.

3.10 COMPLETION

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

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