

Approved Building Consent Documents

Please Note: A copy of the stamped approved documents must be available on site for all inspections.

Inspection booking timeframes

Call received	before 3pm inspection will be done	after 3pm inspection will be done
Monday	Wednesday	Thursday
Tuesday	Thursday	Friday
Wednesday	Friday	Monday
Thursday	Monday	Tuesday
Friday	Tuesday	Wednesday

Building inspections and enquiries phone: 03 347 2839

Please ensure all work for inspection is ready the day before. Incomplete work requiring re-inspection will incur an additional inspection fee.

SPECIFICATION + ADDITIONAL INFORMATION

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PRELIMINARY AND GENERAL

Preliminary

This Specification describes the standard of work to be done and the condition and treatment of materials to be used in the construction of the house shown on the attached drawings.

The Extent of work is specified in the signed contract drawings and this construction specification. All Contractors and sub-contractors should be familiar with all documents relating to this contract as specified above.

The main contractor is expected to be familiar with the site, this specification and the signed contract drawings before commencing any work.

Contract Specifics

Specific Conditions

Attention is directed to relevant clauses in the Contract Documents stating specific conditions relating to such matters as bonds, site possession to begin the works, items supplied by the Principal, retentions and their release, payment for items not yet on site, the defects liability period, or completion damages or bonus.

Project Overview

Project Quality

Protection

Take all appropriate precautions to protect all third party property, services, etc. and indemnify the Principal against any claims arising from the construction operations. Any damage to third party property caused by construction activities or failure to protect shall be rectified as soon as possible by the person causing the damage, or by appropriately qualified trades-persons employed by the person responsible for the damage if necessary.

Suspend operations during weather which would affect the quality of work in progress. Secure the works as soon as possible against adverse weather, dust and vandals. Avoid structural damage that is caused by overloading.

Adequately protect all finished work and maintain until the date of Practical Completion. (Each trade shall protect the work of all other trades, and each trade is responsible for making good any damage they cause to finished works). Arrange special protection as required for windows and doors, finished timber work, plumbing fittings and hardware, and cabinets and other joinery. The contractor shall protect adjoining properties during the contract and shall make good all damage at his own expense.

Any trade whose work or materials cause damage to surrounding properties will be held liable for costs to make good.

Responsibility

The Contractor will be held responsible for the full period of his legal responsibility in connection with this Contract for ensuring that all work execution, materials, and fittings, are completely in accordance with Contract requirements.

Contractor is responsible to the Principal for the appropriateness and fitness, in relation to a reasonable expectation or requirement, of all of the materials and workmanship incorporated into the works by himself or his subcontractors; for this reason few specific guarantees are required in these contract documents. The terms and conditions of any warranty or guarantee required or provided shall not in any way negate the minimum remedies available under common law as if no warranty or guarantee had been furnished.

No apparent expression of the Architect's reasonable satisfaction shall be deemed to be acceptance of defective materials or workmanship within the terms of the Contract or to be an authority for any Variation except where such variation is authorised as provided for in the Contract. Instructions that are given verbally are deemed to be instructions for proper execution of the works and do not involve extra charges.

Workmanship in all trades is required to be equal to or better than recognised good trade practice.

Should any tradesperson consider that the surface finish or general conditions of previous work are unsatisfactory to ensure a proper finish for their own work thereon, that tradesperson shall give immediate notice to the Contractor or Architect as appropriate and shall not proceed until necessary improvements have been made. Failing such notice the trade concerned will not be relieved of the responsibility for a poor finish due to such unsatisfactory condition.

Specialist Finishes Subcontractors are responsible for ensuring that substrates are completely appropriate for them to achieve first class results, and to this end shall, in sufficient time, instruct the Contractor with regard any fixings, priming's, sealing's or whatever for the substrate that vary in any way from the substrate manufacturer's standard recommendations.

The Contractor and all Subcontractors affected shall be jointly and severally responsible for completion of the whole of the works in a completely watertight condition and shall therefore examine all details to be satisfied that this condition can be achieved. If any detail is considered unsatisfactory the Architect shall be notified immediately and he will then either interpret the detail to the Contractor's satisfaction, or accept responsibility for watertightness at points in question, always assuming reasonable workmanship.

For all electronic/ electrical/ mechanical operating systems all work and all necessary materials and items incidental to the primary item specified, that are incorporated into the works, shall be such as to leave a neat, efficient, easily maintained and robust installation, completely in accordance with all recommendations of the primary items manufacturers. Where appropriate source all parts of a system from a single supplier or manufacturer.

Ensure that all parts of a construction or finish are compatible and that their individual use is approved by the manufacturers and/or suppliers of other parts of the system.

Works Administration Progress Claims

Shall be in writing, shall be in accordance with the requirements of the Construction Contracts Act, and shall include all of the following: -The Overall amount claimed. -The Percentage completion and amount claimed for each Subcontractor. For accurate claim verification please ensure that this breakdown exactly matches the trade's breakdown supplied with the tender. -The total Contract Sum Adjustment for all Variations authorised prior to the claim. -Items covered by Monetary Allowances listed separately. And, if specifically requested: -Confirmation that amounts previously claimed on behalf of Subcontractors, certified by the Architect/Designer, and paid by the Principal, have actually been paid to the Subcontractor (normal retentions excluded).

Insurances

The Contractor/Owner shall insure the works in an approved Fire Office and such insurance shall cover the full value of the premises when completed. The Contractor shall maintain a Public Liability Policy with an insurance company in New Zealand indemnifying the Contractor against claims in respect of damage to property arising out of the operations of the Contractor or his subcontractors in the execution of said works. All Sub Contractors will have their own Public Liability Policy and any other insurance's required.

Materials & Workmanship

All materials shall be new and the best of their respective kinds, qualities, classes or grades as hereinafter specified. The whole of the work shall be completed in accordance with best trade practices. Work shall be accurately set out, structurally sound, true to line and face and neatly executed and finished. Departures from and variations to this specification can only be made with express permission of the Architect.

Works Management

Setting Out

The Contractor is responsible for accurate setting out of the works.

The Contractor shall provide all necessary setting out information and component dimensions for subcontractors and shall check and be responsible for the accuracy of their work.

Foreman

A competent foreman shall be constantly on the works and any instructions or explanations given to such person shall be deemed to have been given to the Contractor.

Co-ordination of the works

Co-ordinate the works of all trades to ensure efficient progress of the works. Ensure that all holes, sleeves, penetrations, supports etc. that are required for services are correctly incorporated as work proceeds. Identify and sufficiently forward notify the appropriate persons of all deadlines for the supply of components, fittings, information, etc.

Authorities and Charges

Comply with all relevant provisions of the NZ Building Code, and with all relevant territorial or statutory authority regulations, by-laws, obligations etc. Give all required notices.

The Principal has obtained a Land Use Consent. The Principal has applied for and paid for the Project Information Memoranda, the Building Consent and other approvals required for the works to start. The PIM and Building Consent will be forwarded to the contractor as quickly as possible after they are issued by the Territorial Authority. (It is an offence under the Building Act to carry out work not in accordance with a building consent).

Should the building consent be subject to any conditions which modify the contract documents in any way, the Architect/Designer reserves the right to negotiate any or all of these modifying conditions with the Building Consent Authority. If after these negotiations additional work is required, it will be handled as a variation to the contract.

The Principal will apply for the Code Compliance Certificate and any other licenses or approvals for the house to be used. However Practical Completion will NOT be certified until the CCC inspection has occurred and any additional works required by the local Building Consent Authority has been completed. To this end it is recommended that the Contractor obtains all required certificates, guarantees, as-built drawings, etc. required for the CCC application as work proceeds, to facilitate application for the CCC as soon as the works are completed. For his part, the Principal hereby undertakes to apply for the CCC within one day of all required material being in hand. Likewise, the Contractor should have the capacity available to attend upon as soon as possible to any items identified by the Building Consent Authority as being required prior to the issue of the CCC.

Standards

New Zealand Standards (NZS), Australian Standards (AS), joint Standards (AS/NZS), British Standards (BS), Acts of Parliament, Regulations made thereunder, Codes of Practice, and any specific Manufacturer's Instructions or Manufacturer's Recommendations that are referred to in the Contract Documents shall all be deemed to be the latest published edition thereof at the time of drawings issue and shall be followed by the Contractor and all Subcontractors to the full extent applicable consistent with the intent of this Contract. Documents cited within other cited publications are deemed to form part of this specification. Where Standards have a number of Divisions, e.g. AS/NZS 3500.1, AS/NZS 3500.2, etc., each of the Divisions relevant to this project is deemed to form part of this specification.

Retain current copies of significant cited documents and manufacturer's technical literature on the site.

Cleaning and Completion

Clear construction debris and rubbish from the works at regular intervals, and additionally if so instructed by the Architect/Designer. Clean each space thoroughly before commencing any finishing works.

In preparation for the Practical Completion inspection carry out the following: -Clean the works thoroughly, removing all debris, surplus materials, splashes, marks, temporary markings, etc. All cleaning methods and materials shall be as recommended by the manufacturer of the item being cleaned. -Remove protective wrappings and coverings unless otherwise directed. -Touch up minor painting faults, carefully matching colour, and brushing out edges. Repaint any badly marked surfaces back to suitable break lines. -Adjust, ease and/or lubricate as required all doors, drawers, controls and other moving parts to ensure their efficient operation. -Any other works required to leave all spaces ready for immediate occupation and all electronic / electrical / mechanical systems fully operational. -Clean out all spoutings, gutters, downpipes, and gullies and flush out all drains. -Clean all sanitary appliances and check all aspects of the water services. -Thoroughly re-inspect all aspects of the works (and have any defects fully rectified) to be certain that the works are completely ready for the Practical Completion inspection - if an unreasonable number of items are noted by the Architect/Designer during the inspection it will be terminated and then rescheduled for at least a week forward to allow for proper completion to be achieved.

Note that a Code Compliance Certificate must be obtained before Practical Completion will be certified. Obtain all required certificates, guarantees, as-built drawings etc. as work proceeds to enable the CCC application to be submitted as soon as construction is completed.

Interpretation

Work and materials shown in the drawings or work and materials specified but not shown, must be supplied as though both shown and specified. Materials shown but not specified must be of the kinds commonly employed for the service they are intended to perform. All figured dimensions shall be taken in preference to scale.

The Contractor shall be held responsible for the setting out of work and he shall make good at his own expense any errors that occur through lack of checking or faulty workmanship.

Variations

No variations of any kind shall be made to the contract without direct instruction in writing from the owner. The price of any variations must be agreed to in writing before being proceeded with.

Attendance of Trades

The contractor shall leave all necessary holes, chases, sleeves, ducts etc. as required by subsequent trades.

Survey Pegs

Survey pegs required by the Contractor to define the site, unless already established, shall be provided by a surveyor employed by the owner.

The contractor shall ensure that all survey markings or builder's pegs are not damaged or disturbed during site clearance. Any marks close to the works should be suitably protected by the contractor before he begins work.

Damage

The contractor shall, at his expense, be responsible for any damage to footpaths, kerbs, drains etc., to the satisfaction of the local authority. The Contractor will however be able to recover costs when it is known that such damage is caused by one of the Sub contractors, e.g. concrete truck damaging a kerb will therefore establish that the concrete supply company shall reimburse the Contractor.

Maintenance

Any defects in materials, workmanship or any part/s that require adjusting or replacing which are included in the contract for works carried out, shall be repaired, adjusted or replaced at the contractors/subcontractors expense during the maintenance period. The maintenance period is a minimum of 90 days or any extended time deemed fair.

Stability

The contractor and sub-contractor shall brace and support all parts of his work against damage by wind and protect work from the elements as necessary during construction.

Visit Site

The main contractor shall visit the site and ascertain the nature and extent of the work and the rights and interests that may be interfered with and any other matter that may influence the carrying out of the contract in its entirety. The levels shown on the drawings must be confirmed by the builder and any variations reported before any work is carried out.

Conditions of Contract

Shall be NZS 3915:2000 'Conditions of Contract for Building and Civil Engineering Construction' (where no person is appointed to act as engineer for the project)

The Specification and drawings shall be read together, and anything contained in one and not the other shall be equally binding as though in both, and everything shall be done to complete the works together with all preparatory work, expressed or implied.

Generally the drawings show the extent of the work while the Specification defines the standard. As this specification's is written to cover most situations, only those clauses that are relevant to work shown on the drawings shall apply.

Where any discrepancies exist in the documents, the project manager is to be notified.

SITEWORKS

Preliminary

Refer to the General Conditions of Contract and to the Special Conditions of this Specification as appropriate. Read this section in conjunction with all other trade sections.

Drives, Paths & Paving

Driveway

Check that the excavated surface is accurately to the gradients and levels required and then install 100mm of standard basecourse M4 compacted to 95% relative compaction, and cover this with a 30mm depth of 20mm no-fines chips.

Exposed Aggregate Paving

Check that the stormwater sump, phone, power & water service lines are correctly in place and have been fully operationally tested.

Accurately set-out the drive ensuring that all gradients are correct.

Steel trowel finish to a true surface and immediately spread an even layer of the finishing aggregate and press it into the surface. Lightly spray the top surface with a cure retarder and, when the cement has fully bound the aggregate, sweep and wash the top surface to expose it. Ensure the finishing aggregate is spread before the initial set of the concrete to obtain a good bond - to achieve this it may be necessary to finish the slab progressively.

A very well-bonded and well cleaned finished surface with clean straight edges is required. To this end the operative carrying out the exposed aggregate paving must be experienced in work of this nature – if so requested provide two or three location references where his earlier similar work may be inspected.

Asphalt

Check the set-out, gradients, alignments and compaction of the hardfill. Sweep surplus fine hardfill material off the surface.

Apply approved long term weedkiller to the compacted hardfill surface, with the application exactly to the Manufacturers Recommendations. Apply a tack priming coat of bituminous emulsion at the rate of 1sq.m/litre onto the prepared hardfill - mask adjacent surfaces as required, and completely remove any accidental marks. Install Mix 5 hotmix asphaltic concrete, with minimum compacted thickness 40mm to the full area.

Workmanship shall be to Transit Specification P9. Spread and thoroughly roll to a smooth, even surface that is evenly graded with true alignments and smooth transitions and has no local ponding's. Finish with clean lines. Clean up thoroughly on completion and competently make good any damage to adjacent surfaces.

Paving Preparation

To all hard landscaping areas check that all topsoil and soft material has been removed. Check set-out and gradients of landscaping profiling, and check kerbs etc. are accurate and properly cured.

Place and compact, to 95% relative compaction, 100mm minimum thickness of standard M4 basecourse. Build the compacted hardfill up to 80mm below the required finished levels.

It is suggested that the hardfilling is carried out as soon as the excavation is completed, to avoid a quagmire during use by construction activities, and that hardfilling is made good (and up to full compaction required) as necessary just prior to finish paving.

Just prior to paver installation lay a 35mm thick damp sand base on top of the prepared basecourse compacted down to approximately 30mm finished thickness to the required falls with nominal 1:40 fall.

Paving Installation

Lay pavers to true even surfaces with smooth transitions, on a 30mm bed of properly graded sand, with 2 to 3mm joints between pavers. Sand bed to have a very heavy application of approved long-term weedkiller applied just ahead of blocks.

Sand over and compact as recommended, and finish clean and free of blemishes.

Unless otherwise shown install paving with a minimum fall of 1:40 away from buildings.

Vehicle Crossing

If applicable, the contractor shall arrange for the construction of a new vehicle crossing (complete with adjacent kerb and channel reinstatement and making good etc.) to replace the existing crossing, all in compliance with ACC rules. The consent for and adjustment to the existing road edge planter kerbing will be arranged separately by the Principal.

Excavation & Filling

Excavation

Excavation work shall be carried out in accordance with the OSH Excavation Code of Practice. Co-ordinate with other trades as to set-out and timing to ensure that all cut faces are covered or finished etc. as soon as possible after the excavation is complete.

Plan the excavation carefully to ensure that stockpiles will not interfere with concrete construction, to stockpile just sufficient material for the filling, backfilling and reshaping required later, and to avoid overlaying areas outside the works area with material.

Cease machine excavation above final levels and trim to the finish profiles by hand where appropriate. Any over excavation in critical foundation, etc. areas made up with 10MPa concrete unless otherwise approved. Trim slab benches exactly to the required level to allow for hardfill and blinding.

Noisy excavation equipment shall be used only during hours which will avoid undue nuisance to the occupants of adjacent properties.

Excavate accurately in position and true to line and minimum sizes and to levels and grades required for all slabs, footings and foundations, and over the rest of the areas shown for levels adjustment.

Excavations down to firm undisturbed ground, and footings and foundations 200mm minimum into solid, except where shown otherwise.

Below slabs on ground the general intent is to excavate to a stable undisturbed subgrade (of 600 kPa ultimate bearing capacity).

Remove all surplus material from the site as soon as it is excavated, taking care to avoid damaging the footpath or streets or spilling material on to them.

Ensure that rainwater runoff from excavated surfaces does not carry material onto adjacent properties.

Excavation Completion

All workmanship and materials shall comply with the New Zealand Building Code, relevant New Zealand Standards, and accepted trade practice. All work is to be carried out in accordance with the plans, specifications, and job sheets supplied with this contract and as varied from time to time.

Hardfill & Blinding

25mm max. layer of sand blinding on 150mm min. deep compacted AP40 hardfill in accordance with NZS 3604: 2011, clause 7.5.3.2. **NOTE: WELL GRADED HARDFILL MATERIAL IS TO BE COMPACTED IN LAYERS AND NOT DEFORM UNDER THE WEIGHT OF AN ADULTS HEEL IN ACCORDANCE WITH NZS 3604: 2011, 7.5.3.1.** Any concrete floors requiring hardfill to a depth exceeding 600mm shall require an engineer's specific design in terms of NZS 4431:1989.

Site & Scope

Site

Note that no claims will be recognised on the grounds of insufficient description of existing site conditions in the Contract Documents.

Scope

Excavation for construction of foundations, retaining walls and slabs.
Supply and placing of tailings.

Clear Site

The contractor shall be responsible for the removal of all vegetation, trees, roots and other unsuitable material from the area to be covered by the new building, decks, verandas and other associated works. This material is to be removed from the site and suitable disposed of.

Remove a minimum of 100mm topsoil within area to be covered by the building, driveway and paths. Stockpile topsoil on site as directed by owner. Do not remove any other trees or vegetation without consent of owner.

CONCRETE AND REINFORCING

Preliminary

Refer to the General Conditions of Contract and to the Special Conditions of this Specification as appropriate. Read this section in conjunction with all other trade sections.

Standards

Concrete shall be as required and in accordance with NZS 3604:2011, NZS 3109:1997, NZS 3124:1987 or engineer specifications. All concrete to be supplied by a certified ready mix plant and shall comply with NZS 3104:2003 Surface finish grades shall be as specified in NZS 3114; 1987.

Workmanship

Formwork

Provide all necessary formwork to produce finished concrete to the required dimensions, surface finishes and structural tolerances (NZS 3109 table 4, note that slab surfaces shall not vary by more than 3mm from a 3m straightedge placed anywhere on the surface, and that this maximum variation shall extend over a minimum distance of 1m).

Design and construct formwork to withstand total weights and all construction loads. Formwork constructed tightly to prevent undue slurry leaks, with no wire formwork ties, and no part of the formwork ties left within required concrete cover. 20 x 20mm fillet corners. Any release agents used shall be non staining and shall be compatible with all subsequently applied finishes.

Position construction/crack control joints (except where shown otherwise) under walls or elsewhere as approved, in accordance with the following maximum criteria: - Slabs on ground - length 6.0m.

Formwork suitable for required F2 finish to exposed locations for subsequent plastering.

Coordinate with all trades to build in all necessary starters, fixings, anchorages, chases, sleeves, bolts, conduits, electrical / plumbing devices etc., and check their exact positioning before pouring. Coordinate with all trades to form all necessary holes, openings etc. with their positions and sizes exactly as required.

Strike formwork without shock or vibration, and without disturbing, damaging or overloading the structure. Fill all bolt holes as soon as practicable.

Concreting & Curing

All concrete shall be power mixed in a plant approved by the Ready Mixed Concrete Association for required grade. All structural concrete shall have a compressive strength of 20MPa at 28 days. 19mm max aggregate, 80mm slump, and with a maximum water cement ratio of 0.55.

Where considered desirable the manufacturer may add an air entrainment agent complying with NZS 3109 and 3119. No other additives may be used without specific approval of the engineer. Mixes shall be capable of being readily placed and compacted and finished as specified. The manufacturer shall carry out quality control testing to NZS 3104. All other concrete 20 MPa Ordinary Grade with maximum water cement ratio 0.7.

Note that appropriate cold weather pouring and curing techniques MUST be adopted if construction timing/temperatures so dictate.

Advise for inspection 24 hours before placing any concrete. Sequence and size of concrete pours to approval. No concrete pouring in wet weather. Clean out all formwork thoroughly before pouring. Handling, placing and vibration/compaction of concrete shall all be exactly to NZS 3109 requirements, and carried out by skilled operatives. Slabs power float finished to NZS 3114 U2 surface by kelly float, with steel troweling to a similar finish in corners etc., and to a U3 finish localized to resilient flooring areas.

Cure all concrete for 14 days. Do not use sprayed membranes. As soon as practicable pond all horizontal surfaces, or fully cover with polythene or hessian (kept wet). Periodically hose down all formwork. Stripped vertical surfaces shall be kept wet with perforated hoses or similar.

Saw cut crack control joints in slabs on ground in a manner that prevents edge chipping during the operation - generally between one and three days after pouring, in the positions shown. Cuts 20mm deep unless otherwise noted.

Materials

Damp Proof Membrane

Polythene damp proof membrane shall be 0.25mm thick and shall be continuous under slabs on grade or fill and under foundations. All joints lapped 200mm and continuously sealed with pressure sensitive tape. Tape seal around penetrations. Inspect immediately before pouring concrete and repair any holes or other damage.

Reinforcement

Reinforcing grades are identified by bar diameters prefixed with letters thus: D indicates Grade 300E deformed bar R indicates Grade 300E plain round bar HD indicates Grade 500E deformed bar HR indicates Grade 500E plain round bar RB indicates Grade 500 Reidbar (uniquely deformation patterned bars).

NOTE: all reinforcing steel rods are to be Ductility class E in accordance with NZS 4671.

All terminal ends of reinforcing bars shall be hooked. Intersecting walls, beams and foundations shall contain return longitudinal reinforcement, as detailed for the intersecting members, all to NZS 3109 unless shown otherwise on the drawings.

Unless detailed otherwise all bars assumed to be continuous, with lap lengths not shown otherwise to be 40 diameters for grade 300 steel, 60 diameters for grade 500 steel, 250mm for mesh. Bars shall generally have minimum bends of five times their diameter.

Support slab steel at 1 metre maximum centres. Use plastic spacers for fair-face concrete. Co-operate with others to accurately place all block/brick starters, as the bending of starters to the core position will not be permitted.

Completion

Leave all clean and tidy at finish and make good any defective work.

CARPENTER AND JOINER

Preliminary

Refer to the General Conditions of Contract and to the Special Conditions of this Specification as appropriate. Read this section in conjunction with all other trade sections.

Carpenter Preliminary

Refer to the General Conditions of Contract and to the Special Conditions of this Specification as appropriate. Read this section in conjunction with all other trade sections.

Standards

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of: -

1491:1996(AS/NZS)	Finger Jointed structural timber.
1859.1:2004(AS/NZS)	Reconstituted wood-based panels - Specifications - Dry-processed fibreboard.
2269.0:2008(AS/NZS)	Plywood - Structural – Specifications.
2295:2006(NZS)	"Pliable, permeable building underlays".
2589:2007(AS/NZS)	Gypsum linings - Application and finishing.
2904:1995(AS/NZS)	Damp-proof courses and flashings.
2908.2:2000(AS/NZS)	Cellulose-cement products - Flat sheets.
3602:2003(NZS)	Timber and wood-based products for use in building.
3603:1993(NZS)	Timber Structures Standard.
3604:2011(NZS)	Timber-framed buildings.
3610:1979(NZS)	Specification for profiles of mouldings and joinery.
3617:1979(NZS)	"Specification for profiles of weatherboards, fascia boards, and flooring".
3618:1984(NZS)	Mechanical stress grading of timber.
3622:2004(NZS)	Verification of timber properties.
3631:1988(NZS)	New Zealand timber grading rules.
3640:2003(NZS)	Chemical preservation of round and sawn timber.
4121:2001(NZS)	Design for access and mobility: Buildings and associated facilities.
4218:2009(NZS)	Thermal insulation - Housing and small buildings.

4232.2:1988(NZS)	Performance criteria for fire resisting enclosures - Part 2: Fire resisting glazing systems.
4234:2008(AS/NZS)	Heated water systems - Calculation of energy consumption.
4244:2003(SNZ/PAS)	Insulation of lightweight-framed and solid-timber houses.
BRANZ	House Insulation Guide Third Edition.
NZBC E2	External moisture

Workmanship

All work carried out by or under the direct supervision of competent and experienced tradesmen and in accordance with the best and latest trade practice.

Cladding & Lining

Fibre Cement Cladding

4.5mm fibre cement to soffits. All aspects of work exactly to the manufacturer's latest recommendations. Dry sheets to equilibrium moisture content before fixing. Incorporate relief and control joints in sheeting as required. Allow timber framing substrate to be dry before jointing and coating. Joint filling compound, reinforcing tape, flexible flushing compound, and coating all by Painter.

Plasterboard Linings

10mm thick to framed walls, 13mm thick to framed ceilings, except use reinforced plasterboard where shown on the Bracing Plan, and water-resistant plasterboard to wet areas walls and ceilings. Install perforated galvanized steel reinforcing angles to all external corners. Fixings and all other aspects of this work, and particularly regarding framing moisture content when the plasterboard is fixed, shall be exactly in accordance with the manufacturer's latest recommendations. Stopping quality Level 4 to all plasterboard. Take care stopping in all positions to avoid plaster staining of finished timbers or other absorbent surfaces. Plasterboard to Plasterboard wall to ceiling junctions square stopped in all situations.

Construction

Enclosed Framing

All enclosed framing shall be thickened, true to line, plumb and square, with a maximum tolerance of 3mm in 2400mm without local irregularities. Plates shall be accurately positioned, halved joined except to braced walls, where the plates shall be 6kN steel strap joined. Dwang or block as required for all linings and services. The security of framing fixings shall be to the Architect's approval, and shall be increased if so directed.

Studs at 600mm centres generally, dwangs at 800mm centres, set out from bottom plate. Refer to floor plan. All roof timbers and their spacing's shall be as noted on the drawings.

Materials

Timber

All timber shall be seasoned or kiln dried to the stable moisture content suitable for its location in the finished construction (approx. 18% for framing timbers, 12% for finishing timbers), and if the use of inadequately seasoned timber results in damage or opening joints in the finished building the timber shall be replaced. Fixing of linings delayed after closing in until the framing has dried back below 20% (and to allow for the maximum settling of substrates).

All non-durable timber, including components in manufactured items, shall be appropriately treated against moisture and/or insect decay by a member of the NZ Timber Industry Federation Inc. Treatment shall be to the requirements of NZS 3602 as an absolute minimum, however it is preferred that all ground contact structural timbers be H5, all ground contact non-structural timbers be H4, and ALL other non-durable timbers used be H3.2 treated. Ensure all treated timber is identified and marked as specified.

All kiln dried, dressed or finishing timbers shall be stacked under cover on delivery to the site, and all timber shall be full to the nominal sizes shown or specified, subject only to normal cutting and dressing tolerances.

All finishing timber shall have machine marks, stains and roughness removed and shall be sanded smooth. (Even traces of planer marks are unacceptable on door jambs, architraves, and other trim).

Ensure that enclosed surfaces and ends of paint finished exterior finishing timbers are fully primed before fixing. If this trade carries out the priming it shall be to the standards required of the Painter.

Other Materials

Shall be delivered with the packaging and labelling intact, shall be of the same type, finish or colour to maintain continuity, shall be handled, stored, and conditioned if required all in accordance with manufacturers recommendations, and shall be protected from rain or dampness where appropriate. The use of items damaged in any way is subject to approval.

Fixings

Nails

Comply with the Nailing Schedules in NZS 3604. All nails fixing exterior timbers shall be stainless steel, (OR hd galv. and nails in cedar shall be st.st), and nails that will be covered with plaster or any similar material shall be hot dip galvanized, unless otherwise specified. Finishing brads to all finishing timbers shall be set out neatly and punched to the diameter of the nail below the surface. Bore slightly undersize holes for nailing that will possibly cause splitting. Machine staples are completely unacceptable in finishing timbers.

Screws

Shall be of suitable gauge, thread design and length to provide secure fastening, stainless steel/hot dip galvanized to the exterior, hot dip galvanized or similar corrosion resistant for damp situations. Screws fixing hardware or similar shall be of the same material and finish as the hardware.

Framing Fixing to Concrete Slabs

Exterior bottom plates are to be fixed with Lumberlock bottom plate fixing anchors at 900mm centres max. Fixing anchors shall be fixed to the boxing over a continuous vapour barrier. Each fixing anchor is nailed prior to concrete pour, and shall be left undisturbed until concrete has hardened ready for timber frames to be installed. When timber framing is in place, the fixing anchors are folded up & over the bottom plate.

Framing Hardware

Multigrips, joist shoes, Z nails, gang nails and similar hardware may be used to obviate traditional jointing procedures where specifically approved, or where required on the drawings or by NZS 3604 schedules.

Adhesives

Aliphatic PVA for dry timber applications. All other adhesives are subject to specific approval. Check surfaces are in appropriate condition to receive adhesive, and all adhesives use strictly in accordance with the manufacturer's instructions. Check alignment of adhesive fixed items pre final set.

Sealants

For critical joints, i.e. primary water/weatherproofing seals, precast panels primary seals, structural floor slab control joints, structural glazing, immersion or hydrostatic pressure seals, etc. etc., either use the sealant noted on the drawings or obtain a reputable sealant manufacturers recommendation for the precise situation, and submit the manufacturers specifications covering all relevant criteria and characteristics of the proposed sealant, primers, joint surfaces preparation, etc. to the Architect/Designer for review and confirmation to proceed. If so requested additionally submit a sample of the proposed sealant made up into a demonstration joint, incorporating the same materials, preparation, finish tooling, etc. After confirmation to proceed with the proposed sealant install a sample joint to approval, length approx. 2% of the overall length of the joints required, with a minimum length of two metres; when accepted this joint becomes the quality control for all subsequent similar joints.

For less critical joints (generally in covered or protected situations) and bathroom and kitchen ceramics and sanitaryware etc., select the sealant from a reputable manufacturers range for the substrate materials involved, with due regard for the flexibility required, acid or neutral curing, mould resistance, paintability (or clear or standard colours), slumping characteristics, temperature extremes expected, etc. (silicone, polymer or polyurethane sealants are anticipated). For all simple gap-filling and draught sealing situations select a paintable acrylic sealant with good adhesion characteristics for the substrates involved. (Be particularly careful in sealant selection with bare metal, polycarbonate, polystyrene or similar substrates or where bituminous based membranes are adjacent or where exposure to solvents is possible).

All joint surfaces preparation and all sealant installation work shall be exactly in accordance with the sealant manufacturer's recommendations, and carried out by competent and experienced operatives.

Ensure that the sealant is being used within the manufacturer's stated design parameters, particularly with regard joint design and anticipated cyclic movement. Check that the joint faces are sound, completely clean and free of dirt rust oil grease laitance etc., dry (and frost-free), and they are primed to suit the surface porosity (particularly for critical locations). Insert a polyethylene tape slip layer at the back of the joint or a closed cell polyethylene backer rod where required, and to the sealant manufacturers recommendations. Mask joint edges where a clean straight finish line is required.

Check the toxicity of the selected sealant and handle it appropriately. Check that the temperature during sealant installation is within the manufacturers guidelines. Install the sealant and then tool the filled joints surfaces smooth and even, utilizing a lubricant as necessary and strictly within the manufacturers guidelines. Remove any masking immediately after tooling, clean up all adjacent surfaces using the recommended cleaning agents as required, and protect the finished joints until they have properly cured.

Damp Proofing

Install building paper or breathable/absorbent building wrap behind all exterior claddings, fixed horizontally with 150mm laps, finished at edges as detailed, staple fixed at 300cns to all studs and with staples through nylon straps in exposed locations, all in exact accordance with the manufacturer's recommendations. Any damage shall be made good by lapping in a new section.

Insulation

All ceiling spaces, are to be insulated in with Fibreglass insulation, all in accordance with NZS 4214 and NZS 4218 P and minimum NSBC H1/AS1. All insulation materials are to be installed in accordance with manufacturer's recommendations. Ensure that the insulation fills all framing voids through wall / ceiling junctions and wall corners. Ensure that the ceiling batts are fitted such that its bottom surface will sit tightly on the linings, to leave air space between the insulation and the roofing.

Ceiling insulation: R3.6 Wall insulation: R2.6

Uplift Protection

All work is to be in accordance with NZS 3604:2011 regarding fixings and systems resisting uplift. Allow for high wind zone.

Wall Bracing

Provide all wall bracing as shown on drawings and in accordance with NZS 3604:2011.

Roof Bracing

Roof framing is to be in accordance with NZ Standard 3604:2011 and the manufacturer's instructions. Location and type of brace to be in strict accordance with the plans and bracing schedule that form part of this contract.

Purlins, Eaves & Ceiling Battens

Purlins are to be 70x45 H1.2 pinus radiata timber framing in accordance with NZBC. Eave framing to be 70x35 H1.2 pinus radiata timber framing. Ceiling battens are to be 70x35 H1.2 pinus radiata timber framing @ 600mm ctrs max.

Architraves & Skirtings

Generally skirtings shall be MDF 60mm x 10mm house & 60x12 bevelled pine skirting to wet areas or use tile skirtings (confirm with client).

Finish at junction of floor and wall with 60x10mm MDF skirtings neatly mitred at angles and scribed to floor. Supply and fix beads and half rounds where required (confirm with client).

Bathrooms

Generally bathroom wall linings shall be 10mm aqualine gib-board. All wall linings to be fixed to manufacturer's specification. Provide for all sanitary fittings shown on plan and seal between fitting and wall with flexible paintable sealant.

The building contractor is to ensure that the plumber has installed the shower tray (plumbed) and any other required fittings are in place before he commences work refer clause 9.7 of this specification.

912/AS1/Fig 6 are to be positioned as required.

Concrete slab shall be steel float finished providing an impervious surface.

Meter Box

Provide recess for electric meter board where shown on the floor plan & to the satisfaction of the local electric supply authority. Meter box to be installed in accordance with E2/AS1/E3 NZBC.

Laundry Cabinet & Tub

Install laundry cabinet and tub as shown on the plans and in the client specification. Laundry layout and joinery is to comply with the NZBC G2/AS1 particularly Fig. 1.

The building contractor to ensure that tub pre-plumbing is completed before final fitting of the cabinet.

ROOFING CONTRACTORS

Roofing Systems - Profiled Steel

Scope

Supply galvanised steel roofing and install it to the areas shown on the Roof Plan. All handling and fixing techniques, and all jointing and sealing materials and techniques, shall be exactly as recommended by the roofing manufacturer.

Preparation

Co-operate to ensure that roof framing has appropriate spacing's and fixings, is in accordance with NZS 3604, and coordinate to ensure that all timber members required for ridges, hips, valleys, barges, penetrations, junctions with vertical faces, etc. are correctly in place. Lap sheets away from the prevailing wind. Set-out the roofing sheets exactly square to the building axis and maintain this throughout the works.

Installation

Install the specified underlay running up and down the slope with minimum 300mm side laps. Do NOT install any fixings to the underlay (to avoid dissimilar metals/electrolysis) - install the underlay length by length as the roofing proceeds and ensure it is taut and evenly lapped when the roofing screws are installed.

Fixings

Screw fix with screws that comply with AS 3566 (Self-drilling construction screws) Class 3 or 4. Use only low carbon (<15%) non-conductive sealing washers. Screw at centres as advised by the local Rollformer, to fully comply with the Wind Zone requirements, purlins, spacing's etc. Use fixing systems that will accommodate thermal expansion for long lengths. NO use of abrasive disc cutters.

Flashing

Ridges, hips, and barge flashings etc. shall all be matching galvanized steel, and as detailed. Soft edge flashings very neatly dressed down where required, plumbing penetrations custom flexible rubber flashed (fully sealed), and instruct the Plumber that no copper (or brass) pipes are to discharge on to the roof.

Completion

Protect the galvanizing from damage at all times; replace the whole sheet where a significant depth of the coating has been damaged. Completely clean off all drill and power saw swarf and pop-rivet shanks as the work proceeds (at least daily, and keep them and other rubbish out of the spouting's).

Workmanship

Guarantees

The whole of the roof covering work shall be complete in all respects and absolutely watertight. Commencement of roofing works by any Subcontractor indicates their full agreement to and acceptance of an unwritten guarantee to maintain the whole of their work in a satisfactory and watertight condition, and to arrange and pay for any damage consequential upon the failure of their materials or workmanship, for the periods stated below, irrespective of the 90 day general maintenance period. -Butyl roofer - ten years from completion. -Galvanised steel roofer - two years after completion. -Aluminium roofer - ten years after completion. -Acrylic/f.glass roofer - ten years after completion. -Butyl roofer - ten years from completion.

Co-operation

Co-operate with other trades to ensure that framed roofing substrates have appropriate spacing's, alignments and fixings, and to ensure that sheet roofing substrates have the correct edge and central fixings, appropriate alignments and gradients, edge priming if necessary, and are completely clean. Ensure that each section is waterproofed as soon as possible after preparatory work is complete; allow to carry out the works in several operations if necessary to comply with this condition.

BRICK VENEER

Preliminary

Refer to the General Conditions of Contract and to the Special Conditions of this Specification as appropriate. Read this section in conjunction with all other trade sections.

Standards

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of: -

2699.1:2000(AS/NZS)	Built-in components for masonry construction - Wall ties.
3103:1991(NZS)	Specification for sands for mortars and plasters.
3604:2011(NZS)	Timber-framed buildings.
4210:2001(NZS)	Masonry construction: Materials and workmanship.
4236:2002(SNZHB)	Masonry veneer wall cladding.
NZBC B2	Durability.
NZBC E2/AS1	External Moisture.

Scope

Supply and lay the selected bricks to form the brick elements as shown on the drawings. All aspects of this work shall be in accordance with the related compliance documents and as shown on the drawings.

Workmanship

All work shall be by or under the direct supervision of a Registered Mason certified by NZ Masonry Trades Registration Board, and conform to the requirements of NZS 4210.

Co-operate with the concreter and carpenter in the setting out of the works. Co-operate with other trades to ensure that all preliminary and preparatory works, including all framing, membranes, wraps, rigid air barriers, and flashings, all relevant clearances, and any other related works, are completed to specification and as shown on the drawings. Co-ordinate with trades the locations of pipes, outlets, cables, meter boards and other fittings installed by others.

All brick veneer walls shall be true to line, level and plumb, and within the tolerances tabled in NZS 4210 and SNZ HB4236. All brickwork laid to stretcher bond pattern, with joints width 10mm +/- 3mm.

Installation

Install all brickwork related damp proof courses in accordance with the requirements of NZBC E2/AS1 and to the details shown on the drawings.

Mortar shall have a minimum compressive strength of 12.5 MPa, and be manufactured from cement, sand, lime, and admixtures, and be accurately measured and mixed in accordance with NZS 4210. Mineral oxide pigment dosages shall be to NZS 4210.

Form all necessary openings, reveals, sills, weep-holes, separation and control joints, and cavities to the locations and details shown on the drawings, and in accordance with the requirements of NZBC E2/AS1 and NZS 4210. Install necessary vermin stops. Weatherproof all separation joints to the details shown on the drawings.

Wall tie type, durability, spacing, fixing and installation shall be as defined in NZBC E2/AS1 Tables 18A, 18B, 18C, and NZS 4210.

Install all necessary flashings to openings, and other locations as required, to the details shown on the drawings and in accordance with NZBC E2/AS1 requirements.

During the progress of work every care must be taken to prevent moisture penetration of the bricks. No bricklaying shall proceed during wet weather. Upon completion of each day's work, exposed tops of brick veneers shall be protected from inclement weather. Comply with NZS 4210 Cold Weather Construction and Hot Weather Construction requirements.

On completion of the works leave brickwork clean and free of marks and staining. All brickwork cleaning shall be done to the brick manufacturer's recommendations. Thoroughly clean all other surfaces affected by the brickworks.

Mortar Pointing

Mortar joints shall be concave, tooled to a depth not exceeding 6mm and burnished after the initial stiffening has occurred.

JOINERY

Joiner

Preliminary

Refer to the General Conditions of Contract and to the Special Conditions of this Specification as appropriate. Read this section in conjunction with all other trade sections.

Standards

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of: -

1491:1996(AS/NZS)	Finger jointed structural timber.
1859.1:2004(AS/NZS)	Reconstituted wood-based panels - Specifications – Particleboard.
2208:1996(AS/NZS)	Safety glazing materials in buildings.
2924.1:1998(AS/NZS)	High pressure decorative laminates - Sheets made from thermosetting resins - Classification and specifications.
3601:1987(NZS/BS)	Specification for carbon steel pipes and tubes with specified room temperature properties for pressure purposes.
3602:2003(NZS)	Timber and wood-based products for use in building.
3610:1979(NZS)	Specification for profiles of mouldings and joinery.
3619:1979(NZS)	Specification for timber windows.
3631:1988(NZS)	New Zealand timber grading rules.

WINDOWS & DOORS

Doors

All aspects of exterior and interior doors are specified and noted on the schedules.

Exterior Windows / Doors

All windows shall be to NZS 4211:2008 to suit location and double-glazed.

All aluminium window joinery is to be installed in the positions shown on the plans and to the type specified. The main contractor is to ensure the window reveals are fitted securely and square and that any flashings are watertight. Any manufacturer's instructions provided or indicated are to be strictly adhered to. All reveals to be H3.1 treated radiata for paint finish.

Glass cut true and square, sized to give correct edge clearances, blocked in place as required, bedded fully, and securely beaded or sprigged and puttied.

Interior Doors

All joinery for interior, exterior, wardrobes and cupboards is to be installed as shown on the plans and of the type specified by the owner. Ensure that all doors are hung in a tradesman like manner being true and plumb. All sliding doors units are to be installed to permit the doors to slide truly along the tracks.

Cabinets

Site check overall dimensions as appropriate. Allow positioning tolerances for cabinet's full length between walls. Cabinets shall be assembled true and square. Allow 2mm paint/varnish tolerance where appropriate.

Materials

Timber

All timber true to NZS 3631 and equal or better than dressing A for all joinery work. Items fabricated from timber.

All timber shall be seasoned to the stable moisture content (approximately 12% for most joinery applications) suitable for its location in the finished work; if the use of inadequately seasoned timber results in winding, warping, twisting or shrinkage opening of joints in the finished work the item shall be replaced (by the Joiner, excepting where the damage has resulted from excessive heating, placing in direct sun or other improper handling). Installation of cabinets shall be delayed until the building is watertight and has dried sufficiently to allow for the maximum settling of substrates.

All timber shall be to nominal sizes shown or specified subject only to normal cutting and dressing tolerances. All non-heart timber used, including cores to doors, etc. shall be treated, and shall be re-seasoned to the correct moisture content after treatment. Joinery timber shall have all machine marks, stains and roughness removed and shall all be sanded smooth.

Ensure that all enclosed surfaces of exterior joinery frames are fully primed before fixing. (If this trade carries out the priming it shall be to the standards required of the Painter).

Hardware

Nails and screws for construction shall be of appropriate gauge, thread design, corrosion resistance, length, material, and finish. Screws to hardware of material and finish to match the hardware item.

Refer to drawing notes for all finishing hardware.

Plastic Laminate

All work shall be by an approved specialist firm, in accordance with recognised good trade practice, and shall be exactly in accordance with the laminate manufacturer's recommendations. Check that substrates are completely appropriate for laminating. External corners lightly arrissed, internal cut-outs shall be small radiused in corners to prevent stress cracking. Any chipped, scratched or bubbled laminates shall be replaced.

Workmanship

All work shall be carried out by or under the direct supervision of competent and experienced joiners in accordance with recognised good trade practice, and shall be carried out in a properly established workshop complete with all mechanical equipment appropriate for the work. All work shall be in strict accordance with the drawings.

Confer with the Main Contractor to check openings sizes, fittings limiting dimensions and available access dimensions (and make provision for site assembly if appropriate). Additional dimensions will be supplied by the Architect/Designer if required.

All items assembled by appropriate joints customarily employed in good quality work. Joints shall be accurately cut, fitted and full surface glued and shall be tongued, mortice and tenon, doweled or housed in preference to scarfed or mitred. Use screws in preference to nails or brads. Install glue blocks in appropriate locations. Unavoidable screw pockets matching buttoned in clear finished work.

Fine machine sand all visible surfaces and handsand finish to a clean, even surface all clear finished cabinets. Lightly sand arris all projecting edges.

The following are unacceptable defects and will most likely result in rejection of cabinets specified for clear finishing: a) Scratches, bruises, machine or hammer marks on exposed surfaces; b) Glue stains on clear finish specified work; c) Iron-on veneers; d) Corrugated fasteners and machine staples; e) Baseboard showing through veneers through excessive sanding (to remove marks presumably).

Delivery

Brace and / or crate all items as required to prevent distortion or disfigurement during transit. Arrange for delivery to site, not during inclement weather. Attend upon the carpenter to identify items and instruct in assembly procedures.

Aluminium Windows Preliminary

Refer to the General Conditions of Contract and to the Special Conditions of this Specification as appropriate. Read this section in conjunction with all other trade sections.

Standards

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of: -

1734:1997(AS/NZS)	"Aluminium and aluminium alloys - Flat sheets, coiled sheet and plate".
2208:1996(AS/NZS)	Safety glazing materials in buildings.
3504:2006(AS/NZS)	Fire blankets.
4211:2008(NZS)	Specification for performance of windows.

4223.3:2016(NZS)	Glazing in buildings - Part 3: Human impact safety requirements.
4666:2000(AS/NZS)	Insulating glass units.
4667:2000(AS/NZS)	Quality requirements for cut-to-size and processed glass.
AS/NZS 1231	Aluminium, anodic coatings.
AS/NZS 1865	Drawn aluminium rod, bar and strip.
AS/NZS 1866	Aluminium / alloys - extruded sections

Aluminium Windows Alternatives

The materials and elements specified indicate the required standards for these works. Alternatives which are equal to or superior to these materials and elements may be tendered for approval. Thermal performance (NZBC H1/AS1) must be as required to meet the Designer's Thermal Evaluation.

Installation Type

Timber Frame Installation - Cavity Construction

All windows (and aluminium frame external doors) installation work shall be exactly in accordance with NZBC E2/AS1, the Windows Association's Windows Installation System (WANZ:WIS), and details on the drawings or supplied by the windows manufacturer. Check framing alignment, and that window openings are square and the correct size for fitting tolerances. Prepare framing openings by neatly cutting the building wrap at 45° into the corners, turning wrap through the frame depth and fixing to the inside face, flashing the bottom corners with moulded plastic and over-flashing the full sill and 200mm up the jambs with the specified flexible flashing tape, stapled to hold the stretched external corners. At head corners install flashing tape 200mm each way from the corners. Install the WANZ extruded aluminium support bar with built in drainage and ventilation to NZBC E2, to provide continuous support to the window unit. Install the head cavity closer, positioned to provide a 15mm drip edge to the cladding. Set shims or pack as necessary and install the frames exactly true and square, blocked-up off the support bar as required. Use appropriate separators between aluminium and other materials, and fix securely with due regard for any anticipated movements and for linings, trim etc. Install the head flashing, extending 35mm up behind the cladding (and in turn over-flashed with an additional piece of wrap cover extended up under the wrap or flashing or eaves above), sloping at 15° down to the exterior, and turning down to cover the top of the aluminium frame by at least 10mm, before finishing with a 5mm 45° 'kick out'. Upstand the head flashing ends as detailed. Install jamb flashings/ sealant or scribes as detailed. After frames installation install closed cell backing rods as required and expanding foam air-seal the gap between framing and liners.

Reveal

Timber reveals for paint finish with all sides primed.

Glass Platform

Double Glazed.

Finish

Powder Coated Aluminium - Semi Gloss

Polyester powder coating in accordance with WANZ Powder Coating Quality Assurance System and AAMA 2603-98 performance is required.

Hardware

Hardware colour matched to Aluminium Joinery. Hinges, stays, catches, fasteners, latches, locks and furniture as offered by the window and door manufacturer. Key alike all lockable window hardware able to be keyed alike. Account for all keys and deliver separately to the site manager. Factory fit all required and scheduled hardware.

Workmanship

These windows will be manufactured in workshops containing all mechanical equipment appropriate for the work, and by experienced and competent tradesmen who are familiar with the techniques and materials specified. The manufacturer will co-ordinate with other trades to establish the exact sizes for all frames before fabrication. Frames and sashes will be fabricated true, square, rigid, and 'out of wind', with all joints strongly mechanically fixed, and with mitres tight and fully sealed. Potential thermal, wind and seismic movements will be accommodated within the construction. All cavities will drain to the exterior, and all drilling swarf etc. will be removed during fabrication. Stays, hinges, running gear and glazing will be installed as scheduled (the Designer will be notified if any scheduled hardware of fixing position appears to be inappropriate for this project). Hardware will be fixed true to line and position, and adjusted and oiled as required for correct operation. Glass will be cut true and square, sized to provide correct edge clearances, blocked into place as required, and all units will be delivered either pressure fit, pocket glaze, or beaded/wedged, unless site glazing is required. Glazing gaskets will be compatible with all adjacent materials, and cut 1% over-length to absolutely avoid stretching during installation. Frames will be braced etc. as necessary for transportation to the site. Flashings as detailed will be supplied. Flashing materials will be compatible with the windows.

Delivery and Installation

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and the construction principles that are embodied in the Acceptable Solutions. Arrange for delivery of windows to the site only when a suitable storage situation is available for them, handle the windows in accordance with the manufacturer's requirements, avoid any frame distortion, avoid rubbing damage, avoid contact with concrete, plaster, mud etc. and keep them dry. Retain protective coverings for as long as possible, and remove them at completion. Experienced and competent tradesmen who are familiar with the techniques and materials specified shall carry out all installation work. Fix in accordance with the manufacturer's instructions. Take utmost care to avoid damage to anodized or powder coated surfaces - correction of any such disfigurement requires written authority - replace any badly damaged items. Use fixings compatible with the materials involved, as recommended by the windows manufacturer and to comply with the DWP requirements, basically aluminium or Type 316 stainless steel where exposed externally; galvanized to AS/NZS 4680, 610g/m², may be used where not exposed. Thoroughly check all preparatory work to openings prior to installation, including wrap, corner seal tapes, adjacent cladding, pre-installed flashings, etc. as appropriate. Use inert barriers or coatings to prevent contact between dissimilar metals or between aluminium and concrete. Install flashings as detailed and supplied by the windows manufacturer, installed tightly and neatly with absolute minimum tolerances, with head weathering jamb, jamb weathering sill, and sill open (draining) to exterior. Except where the window is recessed all head flashings shall extend 30mm minimum beyond the frame. Air-seal all frame perimeters to adjacent structure to a depth of 15 - 20mm with expanding foam or appropriate sealant including a PEF rod at head, sill and jambs to retard the spread of sealant. Weather-seal frame jambs etc. to adjacent surfaces (or to each other) as detailed or as required by the windows manufacturer, to achieve a fully watertight installation. In preparation for sealant the joints shall be clean, dry, and primed if necessary. Insert closed cell polyethylene backer rods or a polyethylene tape slip layer if required. Mask adjacent surfaces if appropriate, install the sealant fully in accordance with the sealant manufacturer's recommendations, and finish to even smooth surfaces. Remove trade debris progressively, appropriately clean any affected adjacent surfaces, thoroughly clean the windows, check that all hardware is in full working order, and provide safety indication of the glass for the balance of adjacent works.

PLUMBER

Preliminary

Refer to the General Conditions of Contract and to the Special Conditions of this Specification as appropriate. Read this section in conjunction with all other trade sections.

Standards

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of: -

1254:2010(AS/NZS)	PVC-U pipes and fittings for stormwater and surface water applications.
1260:2009(AS/NZS)	"PVC-U pipes and fittings for drain, waste and vent application".
1477:2006(AS/NZS)	PVC pipes and fittings for pressure applications.
2032:2006(AS/NZS)	Installation of PVC pipe systems.
2033:2008(AS/NZS)	Installation of polyethylene pipe systems.
2492:2007(AS/NZS)	Cross-linked polyethylene (PE-X) pipes for pressure applications.
2537.1:2011(AS/NZS)	Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications - Part 1: Plastics piping systems for hot and cold water installations - Crosslinked polyethylene (PE-X) – General.
2642.2:2008(AS/NZS)	Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications.
3501:1976(NZS)	"Specification for copper tubes for water, gas, and sanitation".
4121:2001(NZS)	Design for access and mobility: Buildings and associated facilities.
4603:1985(NZS)	Installation of low pressure thermal storage electric water heaters with copper cylinders (open-vented systems).
4606.1:1989(NZS)	Storage water heaters - General requirements.
4607:1989(NZS)	Installation of thermal storage electric water heaters: valve-vented systems.
4611:1982(NZS)	Non-thermostatic shower mixing valves.
4617:1989(NZS)	Tempering (3-port mixing) valves.
4692.1:2005(AS/NZS)	"Electric water heaters - Energy consumption, performance and general requirements".
7602:1977(NZS)	Specification for polyethylene pipe (Type 5) for cold water services.
7643:1979(NZS)	Code of practice for the installation of unplasticized PVC pipe systems.
AS/NZS 2053	uPVC conduit and fittings.

Elements

Sanitary Fittings

Supply and fix all of the sanitary fittings as scheduled on the drawings. All fittings checked on delivery for 'perfect' condition, and all fittings plain white. Supply and fix all normal accessories that are not usually supplied with the fitting. The Plumber is responsible for fittings from delivery until Practical Completion of the contract.

Flashings

Ridges, hips, barges, valleys, aprons etc. flashings all supplied and installed by the Roofer. Metal window flashings (those installed during window installation ONLY) will be supplied by the window subcontractor and installed by the Carpenter. All other flashings including wall penetration flashings, soakers, etc. that are required to leave the building completely water and weathertight are the Plumber's responsibility.

All flashings shall be machine folded to profiles as shown or required, incorporating capillary breaks where appropriate, shall be formed in one piece where possible, and lead or other soft edged where required. Stop ends, external angles, junctions etc. soldered or sealed and blind riveted as appropriate.

All flashings 1mm powder coated aluminium unless otherwise noted. Supply the flashings to appropriate trades for building in as work proceeds, with all flashings neatly dressed to substrates.

Downpipes

Position downpipes as they are shown on drawings. Down pipes to comply with NZBC E1/AS1 clause 4.0 and table 5.

Materials

Materials shall be delivered with packaging and labelling intact. Incidentals (jointing compounds, PTFE tape, seals, washers, silfos, solvent cements, etc.) shall be completely appropriate for the application involved. The use of imperfect items or items damaged in any way is always subject to approval.

Materials Separation

Separate dissimilar metals in any circumstances which could produce contact or electrolytic action by a water film, with thick plastic tape, bituminous felt or other inert material. Pipes in contact with or built into concrete or masonry shall be fully spiral wrapped in Denso tape or equal.

Systems

Wastes & Vents

All traps sized to G13/AS1/AS2. Wastes and vents all uPVC. Wastes shall be to G13/AS1/AS2 falls as a minimum. Vents shall be generally as indicated, but avoid where permissible in compliance with G13/AS1/AS2, or shall be combined above the flood level of the fittings. Fit bird proof domes to all vents.

Cold Water System

Supply From Existing Toby

All cold water supply pipework shall be polybutylene, arranged and fixed so that all joints are in a fully 'relaxed' condition, without any stress or tension. Lay on a 20mm main from the existing toby along the route shown on the Site Plan to the connection position noted on the Floor Plan (pipe depth, protection, backfilling, signal strip etc. to comply with all Supply Authority requirements). At the connection position take a branch feed off for the hosecocks (and reticulate to the positions shown and install angle hosecocks) and toilet cisterns and then take the main feed through an accessibly positioned cleanable in-line sediment and dirt filter. Primary distribution from the water filter shall be in 20mm piping, reducing to 15mm for the final feed to individual items. Install conveniently located isolating valves to turn off each group of fittings, and install a small isolating valve alongside each toilet cistern not integrally fitted with one.

Electric Hot Water System

Install 300 Litre Hot Water Cylinders complete with 1500 watt element and thermostat with 20mm dia supply pipe and 15mm dia branches or risers to sink, wash hand basin, bath, shower and laundry tub. Hot water supply pipe work to be polybutylene.

HWC tempering valve to comply with NZ Standards to all hot water supply pipe work prior to all fittings: Set valve to 55 degrees centigrade in accordance with NZBC G12/AS1 Clause 4.13.2. Fit seismic restraints as per NZBC.

All pipe work to be clipped in accordance with NZBC G12/AS1 Table 7 and G13/AS1 7.1.3 Table 7.

Consult with owner on choice of brands and fixing of all taps, faucets and mixing valves. Provide and fix all other water supply fittings as necessary, to manufacturer's instructions and specifications.

Workmanship Co-operation

Co-operate with all other trades. Attend upon Concretor, Drainlayer and Carpenter to set out the exact positions of pipe runs before adjacent work is put in hand, and to ensure that all pipes, sleeves, fixings, flashings etc. are correctly incorporated into the structure as construction proceeds.

Workmanship

All plumbing work shall be carried out by, or under the direct control of, properly qualified tradesmen, and shall be to recognised high standards.

Observe best local trade practice to avoid problems which arise from freezing winter conditions.

The cutting away and checking of timbers shall be limited to such dimensions as will not prejudice the purpose for which the timber is used; observe NZS 3604 restrictions on the holing and checking of joists and beams. Chasing and checking of other materials only to approval. Install seismic restraints to storage tanks and HWCs.

Weatherseal wherever pipes, screws, bolts or other fastenings penetrate an external surface, and particularly roofing; seal with gaskets, flashings (and overflashings if necessary) or mastic as appropriate - any damage that results from failure of such seals will be made good at the Plumber's expense.

Adequately protect all surfaces. Any damage to fittings or surfaces made good by the appropriate trade at the Plumber's expense.

Pipework

Joints between pipes of different materials shall always be to the approval of the TA Plumbing Inspector.

Pipework set-out neatly with a minimum number of bends, and more or less parallel to and at right angles to structural elements - avoid diagonal piping.

All internal pipework shall be concealed except where otherwise is either shown or approved. Exposed pipework shall be accurately and neatly run. Arrange all pipework (and particularly traps) in a manner which will allow maximum future accessibility for repairs or maintenance. Arrange for access panels to any primary maintenance positions, and install conveniently located isolating valves for each group of fittings. Wingbacks securely and squarely fixed. Crox unions usually acceptable only at the final connection to fittings. Install white plastic flanges where pipes penetrate linings in visible locations.

Where pipes are covered with nail fixed linings and trim ensure that their positions are marked on the linings to minimise the risk of subsequent nailing's penetrating the pipe. Any such damage shall be rectified immediately, with all consequential damage made good.

Set pipework out in straight runs to even gradients. Fix all pipes to the structure sufficiently to fully support and to prevent sagging or vibration. Clips and saddles shall be the same material as the pipe. Exterior pipes on stand-off brackets. Fixings to the exterior or damp locations shall all be hot dip galvanized unless otherwise noted. Sleeves for pipes or drains penetrating concrete or masonry shall be uPVC, 20mm minimum larger internal diameter than the external diameter of the pipe, finished flush with concrete or masonry, and packed and mastic sealed.

Close open ends of the systems during construction to prevent the entry of foreign matter.

Temperature Movement

All work shall respect in full all probable thermal movements - layouts, fixings and jointing's shall be arranged to allow thermal movement without risk of prejudice to watertight conditions, or risk of damage from straining of the pipes which will generate failures. In particular, observe best local trade practice to avoid problems arising from freezing conditions.

Excavation

Allow to carry out all excavation that is required to suit the services installed by this trade. Check for other services before excavation. Trenches true to line and level, base of trenches clear of loose material, and shore trenches as required to suit the ground conditions. Backfilling shall be carried out by this trade, and be to the requirements specified in Site Works.

Testing

All plumbing services shall be completed in stages which will allow for proper testing under normal working pressures prior to the application of insulation, concealment or other enclosure. All leaks remedied and retested. On completion the whole of the plumbing services to be subjected to full operational tests in the presence of the plumbing inspector, with any defects revealed in these tests properly remedied.

Warranties

Warranty cards and manufacturer's guarantees for all items supplied and installed by this trade shall be correctly filled in and handed over at Practical Completion.

Cleaning

On completion thoroughly clean down all fittings and ensure no debris is remaining. Check no damage has been sustained during installation.

All wastage is to be removed from site or if possible placed in waste bin on site. At no times shall any waste be left uncontained on site.

ALL DRAIN PIPE MATERIAL AND JOINTS TO COMPLY WITH AS/NZS 1260.

DRAINLAYER

Preliminary

Refer to the General Conditions of Contract and to the Special Conditions of this Specification as appropriate. Read this section in conjunction with all other trade sections.

Standards

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of: -

1254:2010(AS/NZS)	PVC-U pipes and fittings for stormwater and surface water applications.
1260:2009(AS/NZS)	"PVC-U pipes and fittings for drain, waste and vent application".
1547:2000(AS/NZS)	On-site domestic wastewater management.
2032:2006(AS/NZS)	Installation of PVC pipe systems.
7643:1979(NZS)	Code of practice for the installation of unplasticized PVC pipe systems.

Elements

Drainlaying

Commence drainlaying at the low end of even fall sections of drains and proceed in a continuous sequence to the fittings connections. Sumps, gullies, etc. solidly bedded. Lay 110mm uPVC drains to connect gullies, sumps, stacks, and downpipes through to the street edge connections. Every junction and bend shall be an inspection position. Temporarily seal the open ends of incomplete drains to prevent entry of foreign matter. Make appropriate provision for any anticipated differential settlement. Place signal strip above all drains. Ensure that stormwater drains are very accurately positioned so that downpipes can drop directly into them, without offsets.

Testing

The sewer and stormwater systems shall both be fully tested to the approval of the Territorial Authority Inspector before being covered in. If any defects show rectify and then fully retest.

Workmanship

General

Carry out all required works to leave the sewer and stormwater systems shown on the drawings in correct working order complete with all normal incidentals. Comply with Local Authority By-laws and Health Department Regulations as appropriate. Obtain all necessary permits and consents, serve all necessary notices, arrange all tests and pay all fees and customary charges in connection with the works.

Co-operation

Cooperate with all trades and attend upon the Concretor and Plumber to set out exact pipe runs before any adjacent work is put in hand and ensure that all sleeves etc. are correctly incorporated as work proceeds.

Materials

All pipes and other materials shall comply with the appropriate Standards, and shall be protected from damage of any kind until installation is complete. All incidentals appropriate for the applications involved. Concrete shall be 17.5MPa and as specified under Concretor, Mortar shall be as specified in Blocklayer.

Workmanship

All drainlaying shall be carried out by, or under direct control of, properly qualified tradesmen, and shall be to recognised high standards. Ensure cast-in items are installed when required so that no delay is caused by this trade. Adequately protect all adjacent surfaces - clean down to remove dirt etc., and any damage shall be made good by the appropriate trade at the Drainlayers expense. On completion of drainlaying clean up full area affected by this trade to the condition it was in before drainlaying commenced. Site is to be returned as close as possible to its present condition on completion of the contract.

Excavation

As required for sewer and stormwater. Check for other service lines before excavation - the Drainlayer is responsible for making good any damage. Trenches true to line and with even gradients between gullies, soil stack terminations or downpipes, etc. Keep the bottom of trenches clear of loose material. All pipes shall be laid in appropriate bedding material, compacted as required. Shore trenches if required to suit ground conditions. Backfilling shall be by this trade, to the standards required in Site Works.

Drain Trenches

The excavation of trenches for drains is to be a minimum of 600mm in depth for mains cable, to be backfilled and shall be accurately made with base clean and true to grade so that no unnecessary filling is required. Adequate width shall be allowed in accordance with depth of drain to enable laying and jointing to be properly carried out. Trenches shall be kept firm and dry and shall be opened up only in lengths that can be protected, utilized and refilled within a reasonable time.

Laying of Drains

All drains are to be laid on 100mm thick base and surrounded to mid point with approved 20mm stone chip. The pipes are to be laid to straight lines and even grades with socket against fall in all cases.

Joining & Bedding of Pipes

The pipes are to be jointed with rubber sealing rings in a proper manner and each and every junction or change of direction is to have removable cover plates for inspection.

Fall of Drains

The whole of the soil and stormwater drains are to be laid to a regular and even fall.

Gully Traps

Supply all gully traps and securely bed and build up with 5:1 concrete surround 100mm above finished ground levels. All gully traps are to be fitted with gratings above the wastes discharging in to them.

Connecting to Services

Connect foul water pipe to existing lateral. The drainlayer is to seek all permits and approvals prior to connection.

Comply with the NZBC and the relevant NZ Standard.

Refer to the SITE PLAN for the layout of stormwater drains:

- Provide all necessary bends, junctions, inspection fittings, etc.
- Bed "easy bends" in concrete below downpipe entries; fit grating and cover plate cut around downpipe.
- Connect stormwater to soak pit in compliance with NZBC.

Completion

Properly backfill all trenches, consolidate as filling proceeds and leave area in a tidy state. At time of full water test inspection, provide an accurate as laid plan to a local council officer.

Cleaning

On completion, ensure no debris remains. Check no damage has been sustained during installation. All wastage is to be removed from site or if possible placed in a waste bin on site. At no time shall any waste be left uncontained on site.

ALL DRAIN PIPE MATERIAL AND JOINTS TO COMPLY WITH AS/NZS 1260.

ELECTRICIAN

Preliminary

Refer to the General Conditions of Contract and to the Special Conditions of this Specification as appropriate. Read this section in conjunction with all other trade sections.

Standards

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of: -

2201.1:2007(AS/NZS)	"Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance".
3000:2007(AS/NZS)	Electrical installations (known as the Australia/New Zealand Wiring Rules).
3350.2.35:1999(AS/NZS)	Safety of household and similar electrical appliances - Particular requirements - Instantaneous water heaters.
5000.1:2005(AS/NZS)	Electric cables - Polymeric insulated - For working voltages up to and including 0.6/1 (1.2) kV.
60335.2.30:2009(AS/NZS)	Household and similar electrical appliances - Safety - Particular requirements for room heaters.
AS/NZS 1125	Conductors in insulated electric cables.
AS/NZS 2053	uPVC conduit and fittings.
AS/NZS 3012	Construction site electrical installations.
AS/NZS 3018	Domestic electrical installations.
AS/NZS 3085	Telecommunications installations.
AS/NZS 3100	Requirements for electrical apparatus.
AS/NZS 3191	PVC insulated flexible cords.
AS/NZS 3439	Electrical switchgear and control gear.
AS/NZS 3947	Low-voltage switchgear.
AS/NZS 60227	PVC insulated cables and flexible cords.
AS/NZS 60598	Light fittings.
AS/NZS 60898	Miniature circuit breakers.
AS/NZS 61009	Residual current operated circuit-breakers.

NZCEP 54	Recessed luminaires.
NZS 1989	Plugs and socket outlets.
NZS 6206	Electric meter boxes

Elements

Appliances

All appliances are exactly identified on the drawings notes. Main Contractor will establish, in consultation with the Plumber and Electrician, which of them will be supplied by each of these trades. The Electrician shall supply appliances that are his responsibility, install them exactly in accordance with their manufacturer's instructions, and protect them until completion.

Light Fittings

All light fittings are identified as to type on the drawing, and will be supplied by the Principal. Take delivery, install in accordance with any directions supplied and protect until Practical Completion.

Tele Communications

Workmanship shall be recognised best trade practice, and in accordance with the manufacturers' recommendations. All work shall be by competent and experienced operatives.

Other Wired Services

Co-operate with all other trades to ensure that the following services are installed complete and in accordance with their manufacturer's recommendations with all normal or necessary incidentals and with all wiring concealed. SKY TV, Garage door operating mechanisms, wall mounted fan heaters & front door bell, supply electrical feed and connect. Kitchen, laundry (if not in garage) and wet areas air exhaust fans and ducting as noted, supply and install. Under-tile electric heating to the bathroom (if applicable) complete with thermostat control installed where shown. Supply and install (immediately prior to tiles installation) exactly to the suppliers recommendations. Heated towel rails to bathroom. Hot water cylinders installed complete by the Plumber. Main contract Electrician shall verify that all aspects of this work comply with all relevant main contract requirements. Heat pump-Supply a Heavy Duty TV Aerial (suitable for TV1, 2, and 3, Sky, and all local and community TV stations) and install on the roof ridges where directed, stayed against wind, and with all connections compatible with the roofing and waterproof. Feed to the outlets shown with the complete system exactly to aerial supplier's recommendations.-Heating.-Install ceiling fans with variable speed controllers supplied by owner.

Electronic Security System

If specified by the owner, the system shall include in-built anti-tamper devices, and shall comprise:-Smoke Detectors.-Passive infra-red detectors.-Motion detector activated cameras.-Primary digital pad indicating activated zone and for passcode changing, testing, checking and other control functions.-Digital pads for access.-Control box for zone system and incorporating a back-up battery, etc. Connect to the telephone distribution system for silent monitoring.-110db piezo sirens.-Polycarbonate satellite siren/strobe.-Main bedroom panic button.-A proposal for a Testing Contract for regular maintenance complying with NZS 4301.-Digital video recorder, Dedicated Micron or equal, also located in the foyer cupboard, complete with a 30 cm flat panel monitor.

Materials & Control

Materials

All materials delivered with packaging and labelling intact. All required incidentals (insulating tape, seals, fixings, etc.) shall be completely appropriate for the application involved. The use of items damaged in any way is subject to approval in each instance.

Switchboard

The main switchboard and the sub-board(s) shall be appropriate sized standard PDL DBF series boards installed fully recessed where shown and at 2m to the top of the boards. Install appropriate sized MCB's for all circuits, including a minimum of two power and one lighting RCDs as required to cover all outlets to each board. Sub-main(s) from the main switchboard to the sub-board(s) shall be neutral screened 16mm or 2 x 16mm as appropriate, run along the routes indicated / as approved. Pay particular attention to spreading the distribution of the various probable loadings evenly across the phases to obtain an optimum balance of the system.

Systems

Earth

Provide a driven main earth suitable for the full installation, close to the meter board, complying fully with all appropriate regulations and too the complete approval of a certified inspector. Bond all exposed metals, including light fittings and piped services and provide earth conductors for the entire system. Sheathing to any neutral screened cables may be used for earthing.

Mains

Install a neutral screened 2 x 16mm main cable underground (depth, cover/protection, backfilling, signal strip etc. to comply with all relevant regulations) from the grid connection position noted on the Site Plan along the route indicated to the meter board, positioned where shown on the Floor Plan, and make appropriate arrangements for the grid connection. Install pilot as required. The meter board shall be metalclad with a meter reading window, recessed maximum depth into the wall and at 2m to the top of the board, with the meters and water heater controllers by the supply company nominated by the Principal. Install all switches and fuses that are necessary. From the meter board run (route to approval) a neutral screened 2 x 16mm main plus controllers etc. to the main switchboard.

Workmanship

General

Supply and install all materials, including all necessary minor and incidental items, for proper completion of all of the electrical services specified or shown on the drawings. The contract will not be deemed to be complete until the Electrician has provided an Electrical Certificate of Compliance in accordance with NZECP 11 (made available to the Contractor in time for the Code Compliance Certificate application).

The position of switches, light and power outlets and other fittings, although shown specifically in some instances, are in general only shown diagrammatically. The exact location of each of these items will be as directed on site by the Architect/Designer; the Electrician shall give reasonable notice of when this information is required. Items positioned in contravention of this shall be repositioned if directed, including rewiring if necessary, all at the Electrician's expense. Unless drawn (on 1:20 wall elevations) or specified otherwise the mounting height to the centreline of the following items above the floor shall be: -1000mm for lighting switches; -2000mm for wall mounted lights; -2100mm for the bayonet of pendant lights; -300mm for power points, except at benches. (Notify the Architect/Designer if either the actual fitting or mounting position seem to make the mounting height noted above inappropriate).

Warranty cards and manufacturers guarantees for items supplied and installed by this trade shall be filled in correctly and handed over at Practical Completion. Arrange all circuits to obtain an optimum balance of the system, and check and reconnect where necessary to achieve this on completion. Leave the works clean and tidy and in full operational order.

Co-operation

Co-operate with all other trades and attend upon the Concretor and Carpenter to set out all required penetrations and to ensure that all wiring and fittings are correctly incorporated as work proceeds. The Carpenter will provide and fix all necessary dwangs and timber supports in locations determined by the Electrician.

Workmanship

All electrical work shall be carried out by, or under the direct control of, registered tradesmen, and shall be to recognized high standards. All work shall be such as to leave a neat, efficient and robust installation. Neatly label switchboards to identify each circuit.

The cutting away and checking of timbers shall be limited to such dimensions as will not prejudice the purpose for which the timber is used; observe NZS 3604: 2011 restrictions on the holing and checking of joists and beams. Chasing and checking of other materials shall be only to approval.

Adequately protect all surfaces. Any damage to fittings or surfaces made good by the appropriate trade at the Electrician's expense.

Wiring

Joints within cable runs will not normally be accepted. TPS cable shall be adequately supported, and clipped at regular intervals. At terminations all strands of conductors shall be fully secured in a terminal block or clamped under a screw head washer; do not cut away any strands. Wiring which terminates in enclosed fittings and/or where subject to heat liable to cause deterioration, shall be high temperature type, with the tails made off with heat resisting sleeves, to protect the permanent wiring.

Conceal all wiring except as noted on drawings or below. All wiring cast into concrete shall be run in conduit pipes. All cables shall be stranded (single core is unacceptable).

Wire more or less parallel to and at right angles to the structural elements - avoid any diagonal wiring. Layout of the principal distribution wiring shall be to approval. Position all wires to minimise the risk of damage from subsequent nailing of linings etc.

Generally, do not run TPS horizontally within timber walls except in the area up to 300mm above floor. Wire in the ceiling framing and drop vertically to outlets and switches.

Wire exterior lighting in screened cable.

Low voltage 2 core wire in parallel from the vacuum system outlets back to the vacuum unit position. (Vacuum unit has transformer).

PAINTER

Preliminary

Refer to the General Conditions of Contract and to the Special Conditions of this Specification as appropriate. Read this section in conjunction with all other trade sections.

Standards

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of: -

2310:2002(AS/NZS)	Glossary of paint and painting terms.
2311:2009(AS/NZS)	Guide to the painting of buildings.
AS 1580	Methods of test for paints.
BRANZ IB 257	Wood primers.
NZS 7702	Colours for specific purposes.

General

Alternatives

The materials specified in this section or on the drawings indicate the required standards for these works. Alternatives which are considered equal to or superior to these may be tendered for approval (in writing, and they must NOT be used unless they are approved in writing).

Co-operation

Co-operate with all trades and attend upon Concretor, Joiner, Carpenter, etc. to ensure that the surfaces provided by these trades are completely suitable for the Painter works that are required.

Preparation

No painting or varnishing or other surface coating work shall be undertaken unless the surfaces to be coated are in a correct and proper condition to ensure first class results. Inspect the works of other trades on which Painter work is scheduled and report to the Main Contractor and the Architect any defects or irregularities that would affect the permanency or finish of the painting work, and do not proceed until the defects or irregularities have been completely rectified. Failure to examine and report will be construed as an acceptance that all preparatory works are completely satisfactory. This clause does not relieve the Painter of any of the usual preparatory work to surfaces customarily performed by this trade. Clean down all surfaces with sugar soap, strippers, mould killers, etching agents, etc. as required. Sand or rub all sharp edges off exterior timbers and other materials as appropriate before painting. Finish rub down ALL surfaces. Ensure that the moisture content of all substrates is appropriate. Remove locks, fastenings, and similar hardware before painting and refix on completion. Remove all electrical switch and power plates before painting and refix them on completion. Mask adjacent surfaces as required to a true line and remove the masking on completion. Dust and wipe down all surfaces for Painter work and completely remove all dust, rubbish, dirt etc. from areas involved immediately prior to commencement. To each area of the works complete all surface preparation before applying paint to any surface.

Protection

Take adequate precautions to prevent paint spots falling on prefinished or similar surfaces, and extreme care to keep absorbent materials (e.g. cedar, sawn framing, decking, paving) completely clean during all adjacent painting work. Correction of any such disfigurement shall be to the Architects approval.

Qualifications

All work by the Painting Subcontractor shall be of the highest reasonable standard, and executed by experienced and competent tradesmen to the Architects approval.

Workmanship

Strictly adhere to all Manufacturers' instructions. Strictly observe Manufacturers requirements with regard to surface and air temperatures for painting. No work shall be carried out on surfaces that are not completely dry, and no external work shall be carried out during damp or wet conditions. In all finishes any irregularities or brush marks or dust etc. in each preceding coat shall be rubbed down to provide a smooth clean surface for the following coat. Each coat shall be finished over all surfaces before a further coat is applied, and each coat shall be completely dry before subsequent coats. Finish broad areas before painting trim, paint ceilings before walls and walls before joinery, trim and other items. Each coat and the full completed system shall be of uniform finish, colour, texture and sheen, shall have proper covering of thin edges, corners, end grain etc. and shall be free of blemishes such as runs, sags, fat edges, entrained hairs, brush marks, starved patches etc.

Wallpapers & Lining Papers

Wallpapers and lining papers, where scheduled, shall be hung plumb, true and square, and with precise butts. Patterns shall be accurately matched at each join. All rolls used in any one area shall be from the same batch. Use a fungicide incorporated adhesive that is recommended by the supplier. Edges neatly and precisely cut to the adjacent element. Finish free of air bubbles, wrinkles, gaps or stains.

General

The schedules indicate the general extent of the works to be carried out but are in no way exhaustive in their description of the actual items for painter work. Complete all work necessary for the proper and entire completion of the works. All items and portions of items reasonably inferable but not specifically mentioned are deemed included, i.e. cupboard interiors, the top and bottom of doors, unseen cabinetry tops, etc. All doors shall have equal painter work on ALL surfaces. Where timber work is specified for priming before fixing the priming shall be thoroughly brushed in to all surfaces, and all exterior timber work for paint finishing shall be fully primed within one week of fixing. Should more than one month elapse between priming and undercoating the timber shall be fully re-primed. Stopping up work shall be carried out immediately the priming or sealing coat is dry, and shall be solidly placed to finish clean and dry. Stopping tinted to match the timber for clear finished work. Paint putties within one month of glazing timber frames; paint to impinge on glass to assist sealing.

Materials

Generally all materials shall be of New Zealand manufacture of approved brands. All glazing to comply with F4/AS1 and F2/AS1 NZBC. All Painter materials shall be ready mixed and delivered in unopened containers. Materials shall be used only for the purpose and in the manner intended by the manufacturer. Where surfaces are specified to be finished in a particular manner or material, all preparatory work, priming, or undercoating that is necessary to ensure a proper finish shall be provided, irrespective of any apparent omission herein. Thinning shall only be to manufacturer's specification. Thoroughly stir as required to lift any settled pigment and ensure the paint is homogenous. Paints shall be factory or shop tinted to the colour required. Undercoats shall be fully tinted to match the final colour scheduled. All paints shall have the finished film thickness that is specified by the manufacturer (checked by monitoring the coverage per litre).

Painting of Exterior Surfaces

Exterior paint is to be applied to all soffits and other areas as specified by the Building Overseer.

Soffits to be three-coat lumbersider system. Skirting's and reveals to be one coat quick-dry, one coat acrylic undercoat and one coat Enamacryl.

Painting of Interior Surfaces

Interior paint is to be applied to all walls, doors, wardrobes, cupboard doors, and ceilings. The colours are to be as specified by the client.

"All paints used are to comply with the requirements of their respective manufacturer in terms of what building products it is suitable for use on."

Internal surfaces shall have 3 coats of acrylic paint, sanding out blemishes between each coat. All walls to be fixed before wallpapering.

Painting of Wet Areas

All wet area walls & ceilings are to be lined with GIB aqualine gib-board and painted with gloss or semi-gloss paint, in compliance with NZBC E3, section 3.

Completion

Allow to touch up to approval any Painter work which is damaged during the finishing works of other trades. Replace all hardware, remove all masking, covers, containers etc., thoroughly clean all affected surfaces, and leave all spaces ready for immediate occupation. Avoid scratching or abrading glass or hardware during any cleaning.

TILER

Preliminary

Refer to the General Conditions of Contract and to the Special Conditions of this Specification as appropriate. Read this section in conjunction with all other trade sections.

Materials

All adhesives/beddings/grouts shall be selected for each specific tile/substrate situation, selected as the best readily available, and each is subject to approval by the Architect/Designer (who may require appropriate manufacturers information for consideration prior to approval).

Water, cement, sand and sand particle size grading, all exactly to the relevant NZS requirements.

Crack control joint filler as recommended by the tiles supplier, with the colours selected from the standard range. Materials shall be from the same batch for even type and colour, and shall be delivered with their packaging and labelling intact.

Store in dry areas, machine mix all materials to the manufacturers requirements, and do not mix proprietary materials.

Tiles/Scope

All tiles true to shape, free of warp, and accurate in dimensions to facilitate laying with minimum joint width. All tiles true to samples and free of imperfections. Tiles from the same batch where possible, and delivered with the original packaging and labelling intact. Tiles handled and stored carefully to preserve edges.

The square metre referred to in the Tile Prime Cost allowances includes sufficient additional tiles for cutting to margins and for minimal wastage. The Sums will be adjusted Net against the invoiced Trade Price or as Trade Price quoted to the Architect/Designer for the purchase in the quantities required. The tiler shall state in his tender the area allowed for each type of tile.

The exact set-out will be notified with the tile(s) selection.

Installation

All laying methods, cutting, grouting, and positioning of movement control joints shall be carried out by competent and experienced tillers, who shall ensure that all services and accessories are in place and located to suit the tile layout, with the substrate required for tiling work. Commencement of the work means the substrate and environment are accepted by the tile layer as satisfactory. Do not carry out tiling where the ambient temperature is below 5 degrees C, or onto a substrate with a temperature higher than 40 degrees C. Before commencing work, obtain approval for the proposed layout of tiles, expansion joints and other visual considerations of the finished work. Prepare surfaces and carry out the tiling work in accordance with AS 398, part 1 as modified by BRANZ "good tiling practice". Remove all contaminants that may affect bonding or adhesion.

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. Install joints over expansion joints in structure at junctions between different backgrounds, where abutting other materials, at storey heights horizontally and 3.0 metres vertically, at internal corners and at junctions with floors and columns.

Ensure joints are clean, formed and filled and the sealant inserted, all to the sealant manufacturers requirements.

Waterproofing

All waterproofing shall be in accordance with AS 3740 as set out below:

Apply flexible mastic around any tap body intersections. Apply flexible mastic in place of the grout at tiled junction of the wall/wall, wall/floor, hob/floor and hob/wall.

All tiles are to be laid to best trade practice and in accordance with the relevant NZ Standards.

Clean Up

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. Remove unused materials from the site. Protect from damage by later trades.

INTERIOR LININGS

Preliminary & General

Read and note all clauses under preliminary and general of this specification where they apply to this trade.

Work Included

The application of Gypsum board sheet to wall or ceiling surfaces as specified and the plastering of all surfaces as specified.

Materials & Workmanship

All Gypsum board and other products shall be manufactured and fixed, strictly in accordance to NZS 4221 or with the code of practice of the New Zealand Gypsum board Manufacturers. The whole of the labour required for the erection, fixing, wadding and stopping shall be that of competent gypsum board fixers. Admixtures, release agents and stopping materials shall not be of a deleterious nature nor used in quantities sufficient to impair the properties of the sheet when used with or without decoration.

All interior plastering finished to level 4 minimum.

Framing

All dwangs, trimmings, straightening and packing of studs or joists necessary for the fixing of gypsum board products shall be provided and completed by the main contractor before the commencement of such work. The surface to which gypsum board is fixed must be clean, straight and dry.

Bracing

Allow to install all structural bracing as shown on drawings in accordance with GIB bracing systems manual and NZS 3604:2011.

Wet Areas

Line all wet areas with gib-board 10mm aqualine to walls.

Ceiling

On completion remove all wastage and rubbish from site, including mixing drums, application boards, bags, sandpaper etc. Scrape plaster droppings from floor areas and sand off droppings which have contacted reveals or skirting's. Leave the job in first class condition free from sanding dust and contaminates, ready for painting contractor.