

Construction Specification

Documents

Documents covered by this Construction specification are titled:

Lot 139, 140, 141 & 142 (Units 5 to 8)

Groynes Park
Christchurch

Architecturals – 139, 140, 141 & 142, 41 pages

Principal Designer

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Christchurch
City Council



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BCN/2021/7932

Approved Building Consent
Document

15/03/2022

Steven Laird

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See Supporting Documents for manufacturers specification and installation guides.

0.01 PROJECT OVERVIEW

This project is the construction of 4 Residential dwellings

Address

Site Address Lot 139, 140, 141 & 142 Eminence Drive
Suburb Groynes Park
City Christchurch
Lot 139, 140, 141 & 142 DP 6589

Site Conditions

Wind Zone H - High
Earthquake Zone Zone 2
Corrosion Zone Zone C
Climate Zone Zone 3

<u>Site Area</u>		<u>Units Coverage</u>	
Lot 139	228.05m ² (.0228Ha)	86.48m ²	37.92%
Lot 140	221.11m ² (.0221Ha)	94.97m ²	42.9%
Lot 141	332.20m ² (.0332Ha)	153.14m ²	46.0%
Lot 142	382.81m ² (.0382Ha)	153.02m ²	39.9%

0.02 PRELIMINARY & GENERAL

Sums

Where such allowances are described as SUMS, the expenditure shall be the net amount paid for the part of the work specified under such allowances. The Contractor shall include in his tender such profit he may consider himself entitled to on the goods, or parts of the work provided by such monetary allowances. The Builder shall give the Architect or Principal at least two weeks notice to select items before items are required for installation. Any part of a SUM not expended will be deducted from the Contract upon completion. GST is not included in any Sum stated in this specification.

Specifications

The applicable New Zealand Standard Specifications shall be deemed part of this specification. If the Contractor and/or his sub-contractors see or have knowledge of a preferred detail to what is shown or specified, they should raise the matter with the Principal and allow sufficient time to be given to consider the idea.

Maintenance

The Contractor shall maintain the works for ninety (90) days after completion of the Contract, except for mechanical items which shall be maintained for 12 months.

Variations

Any Variation to the Contract works shall be carried out only on the written authority of the Architect. No other form of Variation shall be recognised. The Contractor shall include with the Variation price, details of any possible time extension claims as a result of the variation. All variations prices and claims must be checked and approved by the Architect. The Contractor's processing fee for variations shall be included in his P & G margin.

Costs and Margins

The Main Contractor shall allow for all costs. He shall provide with his tender details of his hourly rate for labour and margins for adjustments to P&G and Variation Sums.

Building Consents

The Principal shall pay for and uplift the Building Consent.
The Contractor shall be responsible for obtaining and furnishing the Christchurch City Council (CCC) with Roof Truss Design Certificates for approval if required.

Code Compliance Certificate

The Main Contractor shall be responsible for applying for and receiving from the CCC the Code Compliance Certificate on completion of the Contract Works.

Insurance

The Contractor shall have in effect an Insurance Policy complying with NZS 3910:2003 Section 8 and shall provide evidence of such a policy to the Principal prior to work commencing on site.

Health & Safety Management Plan

The Contractor shall provide evidence that he has Health & Safety Plan in operation.

Materials

Materials are to be the best of their respective kinds and to the Architects satisfaction. Any substandard materials shall be replaced at the Contractor's expense. The Contractor shall place orders for all materials immediately he receives instructions to proceed with that work and he shall ensure delivery dates agreed with suppliers and adhered to. All fittings, materials and/or equipment shall be delivered to the site in proper packing and any materials damaged in transit shall be rejected. Proper storage, care and protection on the site is required and all damaged items shall be replaced by the Contractor without charge.

Materials used for Boxing etc.

Materials which are to be permanently incorporated in the building shall not be used for boxing or for any other temporary purpose.

Protection of Property

The Contractor shall protect the Principal's property and shall make good all damage caused thereto by the building operation by vehicles, or by workmen under his control to the satisfaction of the Architect. The Contractor is responsible for maintaining all temporary buildings, building materials, scaffolding and the whole site in an orderly state, free of all rubbish.

Care shall be taken to protect existing trees on the site which are to be retained.

Protection of Plant, Materials and Works

The Contractor shall be entirely responsible for all apparatus, equipment and appurtenances furnished by him or his subcontractors. Particular care must be taken on the site to protect materials and finished work from moisture, dirt and damage. The Contractor shall be responsible for any damage to his work or materials from the date of the Contract agreement until the acceptance of the work by the Principal, and shall make good without cost to the Principal, any damage or loss during this period.

Damage

The Contractor shall make good at his own cost and to the satisfaction of the Territorial Authority any damage to footpaths, kerbs, roads, poles, conductors, cables, sewers, service mains or other property. Any damage of neighbouring properties shall also be made good. Each trade shall take steps to prevent damage or disfigurement of the work of other trades and will be responsible for the cost of restoring same.

Water & Power Supply

The Contractor shall arrange for the water & power supply to the site, and shall make the supplies available to all subcontractors and separate contractors.

Cleaning

The windows, fittings and the like shall be thoroughly cleaned and on completion the building shall be left clean, tidy and ready for immediate occupation. If special finishes require special maintenance treatment, detailed information shall be provided by the Contractor. The site shall be completely cleared of all rubbish, building materials, etc and left in a tidy state.

Completion

At the completion of the contract the main Contractor shall provide written warranties for materials and workmanship for the following trades as required by the NZBC:

- Main Contractor including Concrete and Reinforcing Steel
- Electrical
- Plumbing
- Drainlaying
- Aluminium Windows

At the completion of the contract the main Contractor shall provide written guarantees for the following commencing from the date of Practical Completion.

- Roofing
- Drainlaying
- Plumbing
- PWaterproofing

As-Built Drawings

As built drawings shall be provided by the following trades at the completion of each stage of works –

- Drainage
- Plumbing

Ambiguities

Should any ambiguities or apparent errors arise between the contract documents, they shall be referred to the Architect for clarification before any work commences, or if they could affect the pricing of the job shall be referred to the Architect at the time of preparing the tender.

If the Contractor is unclear of what is included in his Building Works Contract and what is included in the separate contracts he shall clarify the details with the Architect immediately.

Construction Hazards

Protection of the public / Site management

All work shall comply with the Health Act 1956, Section 29. The premises shall be constructed so as not to cause a nuisance in terms of the Act (ie: dust).

-Where construction work presents a hazard in places to which the public have access, barriers/hordings shall be erected. These shall be of suitable height & construction to prevent hazards from harming traffic and pedestrians, and be difficult to climb.

-Suitable materials of barriers are: sheet material (eg plywood), proprietary linkmesh fences or similar at least 2000mm high.

-The fence construction shall be such as to restrict access by children.

0.03 GROUND CONDITIONS

Land is designated Technical Category 2 (TC2)

Preliminary & general

This section shall be read in conjunction with all other relevant specification sections.

Materials & construction shall comply with the New Zealand Building Code (plus all associated relevant documents), NZS 3604:2011 & these documents.

Scope

The land has been designated TC2.

See attached geotechnical review of the site by LandTech Consulting.

A rafted slab has been designed by *Meraki Consulting*, see attached calculations and drawings.

Note: Meraki Consulting have been engaged to verify construction.

0.04 EXCAVATION

Preliminary & general

This section shall be read in conjunction with all other relevant specification sections.

Materials & construction shall comply with the New Zealand Building Code (plus all associated relevant documents), NZS 3604:2011 & these documents.

Scope of work:

The scope of work shall include but not be limited to the following:

- Excavate into ground to remove any topsoil, organic matter or uncontrolled fill as per the Geotechnical recommendations.
- Supply, lay and compact hard fill under floor slabs and foundations where detailed. Hard fill material as per the Structural Engineers documents and verified by the Geotech Engineer.
- Foundations shall not be cast until approval from the Engineer has been obtained.

Depth of Excavations

Any soft areas found in the excavation shall be reported to the Geotechnical Engineer who may order extra excavation and backfilling with hardfill as a variation to the contract.

Maintain Excavations

Secure and maintain excavations free from slips, erosion, water and other fluids or fallen materials. Provide and maintain all shoring, strutting, sheet piling, planking, pumps and other materials or plant necessary for carrying out and maintaining excavations, and remove them when no longer necessary.

Excavated Material

All excavated material not required for backfilling, leveling and grading is to remain on the site at a location approved on the Architectural Site Works Plan.

Only for soil required to be stockpiled on site, provide waterproof coverings as required.

All remaining surplus excavated material is to be removed from the site and not stockpiled on Site.

Foundation Excavations & Hardfill

Refer to Structural Engineers plans & specification regarding all work relating to the foundation excavation and hardfill requirements.

Driveway, Terraces & Paths

Truck and car access to the site is to be over the existing driveway area. Allow to strip existing soil and form compacted pit-run shingle to form stabilised site access. To Driveway & path areas generally provide and lay exposed aggregate concrete slabs over compacted hardfill. Allow to saw cut slabs at equal centers, 5mm deep, and fill with grout to give appearance of paving slabs. Finish slabs to smooth, even grades (min 1:100 fall) to direct water away from House. Any disfigurement or damage shall be made good to the Architects satisfaction and the Contractors expense. Finish neatly against timber edging.

Sediment Control

To control stormwater and sediment during the construction process the following measures are to be taken:

- Sediment control fencing is to be erected around the building platform. Details of typical fencing are shown in Appendix S. (An alternative is to have the geo-textile fabric turned up the side of hay bales).
- Driveway to have a consolidated hardfill base to provide a stable vehicle access to the building site during all stages of the Contract.
- Allow to stockpile topsoil, sand and hardfill to locations as indicated on Plans,
- Allow to install downpipes (temporarily if necessary) as early as possible to the stormwater system.

The Main Contractor shall be responsible for checking that these measures are properly maintained.

Site Safety

Provide measures to safeguard workers and neighbouring properties from construction hazards during construction, in particular during excavation work from any possible falling, loose material from existing cliff face.

Where the potential hazard at a work place makes a safety barrier necessary, a barrier complying with Table 1, NZBC F5/AS1 is an acceptable solution.

The location and size of all necessary barriers, site fences, hoardings and gantries are to be confirmed on site by the Contractor and put in place before the start of any construction on site.

Rubbish & Debris

Contractor is to implement effective control of debris and rubbish leaving the site by wind or other means by way of skips etc.

The road is to be swept clear of dust and dirt daily or as required throughout the day.

The In the event of dust being blown around and off the site, the Contractor is to implement effective control by way of damping down the site.

0.05 STRUCTURAL DESIGN

This section shall be read in conjunction with all other relevant specification sections.

CONCRETE WORK

To be read in conjunction with Structural Engineers Plans & Specifications.

Preliminary

Refer to the Preliminary and General section of this specification. These sections are binding on all sections. Read this section in conjunction with all other Trade sections and all Contract Documents. This specification is subdivided into trade sections for the convenience of reference only and it shall not be construed that each section is an entire and separate Contract; hence no claims shall be admitted from sub-contractors for works not specifically mentioned in a trade section but which is provided for, expressed or implied elsewhere in the specifications and drawings.

Scope

This section of the contract consists of the supply, forming and casting of the following:

- Engineer designed slab-on-ground foundations,
- Vapour barrier under foundations.

This includes the supply, bending and placing of reinforcement, vapour barriers and other associated work as shown on the drawings and specified herein.

Building Code

Refer to the following New Zealand Building Code sections to ensure compliance with the code -

B1/AS1 Structure: 2.0 Drains

B1/AS4 Structure-foundations: 1.0 Foundations for small buildings

E2/AS1 External moisture: 4.0 Floors, 5.0 Basements

Materials and Workmanship

All work shall comply with NZS 3109:1987 and related documents listed in that publication. A copy of this Standard shall be kept on site and relevant parts read with this specification.

With reference to NZS 3109:1987, the following additional requirements shall apply:

Clause 6.1: Concrete Strength

- a) Concrete for foundations and ground floor slab shall be 20MPa at 28 days.
- b) Site concrete shall be 7.5mpa at 28 days.

Inspection

The Structural Engineer will inspect the work at various stages to check conformity with this specification. Concrete work not conforming to the required tolerances, which shows grout leakage, which has been damaged or which has been damaged or which is otherwise defective, may be rejected and may remain in the structure only at the Structural Engineer's discretion. No repair work shall be done without specific instructions from the Structural Engineer.

Keep the Structural Engineer fully informed of projected work.

Contractor's Supervision

The Contractor shall supply all necessary testing facilities and supervisory staff to ensure that the work is carried out in accordance with the drawings and specification. In particular all reinforcement placed shall be checked by the Contractor. A competent reinforcement placer shall be present and ensure that reinforcement is not displaced during concrete placing. All reinforcement shall be properly secured before placing commences.

Building In

As the work proceeds, build in all necessary bolts and other fixings. The Concretor shall ascertain from all other subcontractors all particulars relating to their work with regard to order of its execution and details of all necessary items to be built into concrete, and shall ensure that all such items are provided for and/or positioned.

All items detailed or specified to be built in and not shown to be supplied by other trades shall be supplied by Concretor for building in by the trade concerned.

Foundations

Form, reinforce and cast concrete foundations as detailed by the Structural Engineer.

Foundations shall be cast in full depth form work unless otherwise approved by the Structural Engineer.

Vapour Barrier

Lay 0.25mm minimum thickness polythene under ground slab and foundations as detailed, on consolidated hardfill. Lap and seal joints with tape to manufacturer's recommendations. Sleeve and tape V.B around all services penetrating the membrane. The V.B shall be continuous under all slab thickenings or as detailed.

To protect V.B against damage from the fill allow to lay 5-25mm sand blinding over the fill.

Surface Finishes

The contractor shall arrange the pouring of concrete to allow adequate time for floating and finishing.

Calcium Chloride shall only be used with the written approval of the Structural Engineer.

Exposed Concrete surfaces

All concrete which is to remain visible when the building is complete shall be cast to a high standard using accurately constructed formwork. The finished surface shall comply with finish F6 as specified in NZS3114:1987.

Non-Exposed Concrete surfaces

Concrete which is not visible upon completion shall have a surface finish to F2 of NZS3114.

Non-visible Slab finishes

To interior areas to have timber or tiles, finish slabs with a steel troweled finish as specified in NZS3114 grade U3. Finish slabs with suitable power floating and compacting machines to leave a dense level surface which does not vary more than 6mm in 3m. Local areas may be hand floated. Floating and subsequent finishing shall be at the correct times and intervals to obtain the quality of compaction and finish required. No troweling in of fines or dry cement will be permitted.

Curing

Protect new concrete from premature drying and excessive weather conditions.

STRUCTURAL STEEL & METAL WORK

To be read in conjunction with Structural Engineers Plans & Specifications.

Preliminary

Refer to the Preliminary and General section of this specification. These sections are binding on all sections. Read this section in conjunction with all other Trade sections and all Contract Documents. This specification is subdivided into trade sections for the convenience of reference only and it shall not be construed that each section is an entire and separate Contract, hence no claims shall be admitted from sub-contractors for works not specifically mentioned in a trade section but which is provided for, expressed or implied elsewhere in the specifications and drawings.

Scope

This section of the contract consists of the supply, fabrication and erection of all steelwork and metalwork as detailed on the drawings and includes but not limited to the following:

- Steel portal frames,
- Cleats and weld plates,
- Post and beam connections,
- Miscellaneous brackets and strengthening.

Building Code

Refer to the following New Zealand Building Code sections to ensure compliance with the code:

B1/VM1 Structure-general: 2.0 Loadings, 5.0 Steel

F5 Construction and demolition hazards

Comply with NZS/BS4848 Hot-rolled structural steel sections

Pt 2: Hollow sections

Pt 4: Equal and unequal angles

Materials and Workmanship

The Contractor shall adhere to all relevant requirements of NZS4701: 'Metal Arc Welding' for supply of all materials and in workmanship both on and off the site.

Steel

Hot rolled sections to be grade 300+.

Hollow sections are to be grade 350.

Steel plate is to be grade 250.

Butt welding of lengths will be permitted only with the approval of the Structural Engineer.

Welding

All welded connections to be shown on the drawings. Preparation of any butt joints shall be discussed in advance. Welds exposed and butt welds of stock length shall be neatly finished and ground smooth.

Welding Inspection

The Structural Engineer shall be given reasonable notice when each section of the work is ready for welding and shall be given every opportunity to arrange for inspection and to satisfy himself as to the competence of the Operators and the quality of the work.

The Structural Engineer at no cost to the Contractor may require radiographic examinations.

The Contractor shall supply all necessary facilities, ladders etc required for adequate inspection and radiography.

Welding Defects

Welding defects disclosed by radiography or other investigation shall be assessed by the Structural Engineer and, if he so instructs, be cut out and remade. Joints cut out shall be examined and passed by the Structural Engineer before re-welding.

Welds will not be expected to attain an unreasonably high standard of perfection, but penetration, slag exclusion and weld form will be expected to be of the standard in AS1554.

When welding defects are disclosed, radiography of further welds may be ordered at the Contractor's expense. If stiffeners or other concealing details have been added, these may be required to be removed to permit this additional radiography.

Bolts and Holes

Bolts and holes shall be drilled or punched and not gas cut. Bolts shall be of correct length and with a washer under the nut.

Supply holding down bolts to the Concretor for building in.

Bolts for connecting timber to steelwork are to be supplied and fixed by the Carpenter.

Fabrication

All steelwork shall be accurately assembled and in accordance with NZS 3404. Particular care shall be taken to avoid distortion during fabrication.

Steelwork Finishes

-All exterior steelwork and metalwork specified to be galvanised shall be hot dip galvanised.

-All other steelwork shall be blast cleaned to a Medium or Commercial finish according to AS1627.4 Class 2, or Standard S1 2 of Swedish Standard SIS 05 59 00 and AS 1627.9.

-A Medium or Commercial Blast Cleaned Surface Finish shall be a surface from which all oil, grease, dirt, rust and foreign matter has been completely removed.

-Paint all steelwork, except areas built into concrete by more than 15mm, with two coats of primer in

the shop, to a thickness of at least 0.1mm. After erection, all damaged areas shall be cleaned and painted with two coats of primer to the same thickness. Primer shall be Resene Armeron Rust Arrest Primer or approved alternative, applied in accordance with the manufacturer's recommendations. The first coat shall be applied by brush: the second coat may be brushed or sprayed.

-Painting shall be done by experienced painters from properly constructed working platforms. All paint shall be applied in accordance with the manufacturer's instructions and to the satisfaction of the Structural Engineer. Avoid spills and runs.

Cleats and Weld plates to be built-in

Fabricate all cleats and weld plates to be built-in.

Site weld connections as detailed on the drawings.

Allow to weld cleats on site once the structural steel has been fixed in place, so that the cleats can be located in the correct position. Refer to Engineers drawings.

0.06 CARPENTRY

To be read in conjunction with Structural Engineers Plans & Specifications.

Preliminary

Refer to the Preliminary and General section of this specification. These sections are binding on all sections. Read this section in conjunction with all other Trade sections and all Contract Documents. This specification is subdivided into trade sections for the convenience of reference only and it shall not be construed that each section is an entire and separate Contract; hence no claims shall be admitted from sub-contractors for works not specifically mentioned in a trade section but which is provided for, expressed or implied elsewhere in the specifications and drawings.

Scope

This section of the contract is for all permanent and temporary carpentry work etc. necessary for the full performance of the Contract and as detailed or implied in the drawings and this section of this specification.

Co-operate with all other trades in setting out their work. Cut for, attend on and make good after all other trades. Allow for reasonable facilities for finishing trades towards the end of the work. Provide all fastenings, fixings, backing etc. normally provided by the Carpenter for building in by other trades. Where fixings of framing is not specifically mentioned, it is assumed to be in accordance with best trade practice.

Building Code

Refer to the following New Zealand Building Code sections to ensure compliance with the code:

B1/AS1 Structure-general: 4.0 Timber

E2/AS1 External moisture: Walls, Floors, Construction moisture

F4/AS1 Safety from falling: Construction site barriers

F5/AS1 Construction and demolition hazards, Worksite barriers

Comply with NZS 3604:2011.

DPC

Separate all timber from concrete and concrete blockwork with Malthoid strip Damp Proof Course. Cut DPC neatly over bolts and other protrusions and ensure that it does not project beyond the face of the timber.

Timber

Timber treatment to comply with NZBC B2/AS1 and NZS3602:2003 requirements.

All framing timber to be SG8 grade;

H1.2

framing generally, including;

- floor framing protected from weather but exposed to ground atmosphere,
- enclosed roof framing and trusses,
- enclosed wall framing protected from the weather,
- interior flooring,
- mid-floor framing, including boundary joists

H3

plywood exterior wall bracing,
laminated beams and posts.

H3.1

wall framing to which shelf and lintel angles supporting masonry veneers are fixed,
cavity battens behind claddings,
timber weatherboards,
timber exterior window/door joinery.

H3.2

rafters exposed at eaves,
framing within enclosed cantilevered decks
framing exposed to the weather (above ground),

H4

Framing, such as fence posts and landscaping timbers, exposed to the weather and in contact with the ground.

H5

Framing, such as house piles, poles and crib walling, exposed to the weather and in contact with the ground.

- No timber used for scaffolding, boxing or other temporary work is to be built in.
- Timbers shall be in the longest possible lengths consistent with their situation in the building.
- Framed timbers receiving linings on both sides, shall be face gauged to a constant depth.
- The moisture content of timber shall be no greater than the following percentages:-

Exterior finishing timber 18%

Interior finishing timber 12%

Framing including trusses 16%

(when linings are fixed)

- Protect timber from large and sudden changes in moisture content.
- Internal finishing timber shall be dressing Radiata Pine for paint finish unless specified otherwise.
- For structural use of other species of timber, refer to NZS3602:2003 Tables 1 & 2.
- For non-structural use of radiata pine, Douglas fir and other species, refer to NZS3602:2003 Table 3.

Fabrication and Erection

All work shall be carried out in accordance with best trade practice by experienced carpenters using equipment, material and methods that are appropriate for the purpose. Cut all timber and sheet linings accurately to shape and size to make a neat fit with adjacent work.

Erect all framing and other work plumb square and true to dimensions as shown on the drawings. If the contractor wishes to employ a different system of construction from that shown or specified he shall obtain prior approval from the Architect. All work shall be in accordance with NZS 3602 and NZS 3604 except where modified by this specification.

Fixings

- Timber, where not specifically detailed on the drawings, shall be fixed to concrete and steel in a manner that is appropriate to the situation and that has the Architects approval.
- All timber to timber connections, except where detailed otherwise on the drawings, shall be fixed in accordance with best trade practice and generally in accordance with NZS 3604:2011.
- Bolts shall have a sliding fit in steel and timber and nuts shall be checked for tightness before work is closed in. Bolt heads and nuts shall be separated from timber with suitable sized washers. In general, bolts, screws and nails shall be steel, but where fixings will be subject to corrosion by moisture or by other means, they shall be of galvanised or cadmium plated steel or of brass.
- Nails shall penetrate the holding timber by at least half their length. The length of brads shall be three times the thickness of the attached material or 20mm minimum. Punch nail heads below the surface of the attached material in joinery and finished timbers. Drill nail holes where necessary to prevent splitting of timber.
- Screws fixing hardware shall be of an appropriate size, and shall have a finish matching the hardware.
- Steel fixing durability to comply with NZS3604:2011, Table 4.1.

Attendance

Co-operate with all other trades, and cut and drill timber as they may require. Provide and fix all bolts and other supports. Reduce the cutting of main structural members to a minimum. Do not cut into beams and joists in the middle third of their length except for drill holes which shall be on the center line.

Wall Framing

Frame up timber walls of the house with 90x45mm and 140x45mm timber framing generally.

- 600mm stud centres generally, 400mm centres for lower floor framing exterior wall areas (stud heights 2.4m – 3.8m generally),
- Construction generally for lintel sizes, stud spacing etc shall comply with NZS 3604: 2011.
- Dwang all walls as necessary (at a maximum spacing of 1200mm) to receive sheet linings and to accommodate fittings.

- Before linings are fixed, check walls for straightness and where necessary plane or pack framing to make a true flat base for receiving linings.
- All connections to allow for High Wind Zone. Refer notes to precut.
- For lintel sizing and fixings refer to precut.
- For rough opening sizes for window & door joinery units, refer Architecturals.

Timber Floor Framing

Frame up the upper floor as shown on Engineers Plans, generally with 300x45mm 'Hyspan' floor beams to First Floor level. See VIP precut documentation.

Allow to form 50mm recess to the timber framed floor at the location of the Ensuite shower enclosure. Lay 105mm & 145mm 'CLT XLAM' flooring system generally over the timber (including 'Hyspan') floor beams, all work to comply strictly with manufacturer's requirements.

Roof Framing

Frame up the roof areas with specified rafters generally. Refer to Architecturals supported by the engineering,

Provide roof-plane bracing to roof planes, extending from ridge line to exterior load bearing walls, with crossed 'Lumberlok Strip Braces' 25x0.91mm straps. Fixings of straps over rafters strictly to manufacturer's specifications.

Aluminium Windows and Doors

Allow to take delivery of and install all aluminium doors and windows including all associated flashings and sealants to the manufacturer's instructions. Ensure a watertight finish is achieved.

Ceiling Framing

Batten the underside of roof framing generally with 35mm Gib Rondo ceiling battens at 600mm centres.

Insulation

Provide and install the following:

- R3.6 (180mm thick) fibreglass insulation to roof areas generally,
- R2.8 (90mm thick) 'Pink Batts' fibreglass insulation to House exterior walls, excluding Garage but including interior wall between Garage and House,
- R3.6 (140mm thick) 'Pink Batts' fibreglass insulation to House 140x45mm exterior framing areas,
- R2.6 (100mm thick) 'Pink Batts Snugfloor' fibreglass insulation to mid floor framing areas.

Ensure a minimum 25mm air gap is maintained between ceiling insulation and underside of roofing underlay at all times.

All installation to comply strictly with manufacturer's instructions. Refer supporting documents for the H1 Calculation Report.

Exterior Linings and Trim

Building Wrap

Provide and install the Barricade Building Wrap to all exterior faces of House and Garage exterior wall framing, from top to bottom plate.

All installation work to comply strictly to manufacturer's specifications. Refer supporting documents. Refer supporting documents.

James Hardies Axon

Supply and install 133 Grained Axon over 20mm cavity battens.

Refer architectural and supporting documents.

70 Series Brick

Supply and install the 70 Series brick cladding over 50mm cavity.

All installation work to comply strictly with E2 and best practice.

Refer architectural.

Resene Integra

Supply and install the 'Integra' cladding over 20mm cavity.
All installation work to comply strictly with E2 and best practice.
Refer supporting documents.

Rockcote Over Masonry

Supply and install the "Rockcote" over masonry block
All installation work to comply with E2 and best practice.
Refer supporting documents

Trim

Provide and fix all necessary H3.1 trim etc as detailed. Prime timbers before fixing and double prime all joints and ends. Mitre all joints, glue to prevent joints from opening up.

Soffit Linings

Provide and fix Hardies 'Hardiesoffit' 4.5mm fibre cement board to all soffits, complete with uPVC jointers, to receive a semi-gloss paint finish.

Plasterboard Interior Linings

Generally fix the following:

- 10mm standard 'Gib' plasterboard to wall studs at 600mm centres, with screws and adhesive, unless noted otherwise.
- 13mm standard 'Gib' plasterboard to ceiling battens at 600mm centres, with screws and adhesive, unless noted otherwise.

Plasterboard linings generally:

- Fix 'Gib Aqualine' to all Bathroom, Ensuite, WC and Laundry walls. Refer supporting documents for fixing details.
 - Refer to Bracing Design for extent of Gib 'Braceline'. Refer supporting documents for fixing details.
 - Provide a Level 4 finish to all walls and ceilings, all square corners.
- The fixing and stopping of all plasterboard is to be carried out by skilled tradesmen specialising in this work and operating in full accordance with the manufacturer's specifications:
- The plaster board contractor shall not fix board in any situation that he considers is insufficiently prepared for him to make a first class job, otherwise he shall be responsible for any subsequent making good.
 - On site the board shall be carefully stacked on a flat surface and protected from dirt, weather and damage Do not use stacked sheets as a storage area or a work platform. Sheets with crushed and broken edges shall be used only in situations which entail cutting away the edge of a sheet, thereby removing the damaged portion.
 - Fix all boards with adhesive and screw fixings in accordance with the manufacturer's instructions, Branz "Good Internal Lining Practice" (1997). Do not screw through adhesive and finish screws just below the paper surface. Use corrosion resistant screws in wet areas.
 - All joints, corners, fixings etc shall be filled with first quality stopping plaster and troweled to a perfectly smooth finish flush with the surface of the board. Tapered edge joints shall be reinforced with purpose made paper tape applied to the joint embedded in the stopping plaster.
 - Particular attention shall be paid to stopping at internal and external corners, at edges and at openings. The painter will not be expected to sand down or fill irregularities in the plaster board surface. The junction between wall and ceiling shall be a straight and true line.
 - Use a casing bead where plasterboard sheets abut against another material.

Joinery

Take delivery of all joinery items and fit and fix these.
Provide and fix all dressed timber not specified under Joiner.
Seal all external joinery as necessary with approved sealant.
Protect all items of joinery from damage before and after they are fixed.

Painting

Specified lighting to be installed before Painter starts on first final coat of paint. If this is not practically possible the Electrician is to arrange for temporary lighting to emulate specified lighting conditions.

Hardware

Allow to install the following:

- Lock and latch sets to all internal doors generally. Internal door handles shall be at a height of 900mm above floor,
- Fixed handle and Lock and Latch set to Entry doors
- Door stops to all interior and exterior non-sliding doors,
- Joinery handles,
- Hand towel holders,
- Toilet roll holders.

Hinges to doors shall be provided by the Joiner and fitted by the Carpenter. Hardware to aluminium joinery shall be supplied by Aluminium window manufacturer.

Painting:

Allow to remove all hardware from doors (other than butt hinges) for the Painter and secure again on completion of painting work. (If brass hinges are used ensure that the painter does not wipe with thinners as this removes lacquered finish to hinges).

Generally leave all hardware lubricated, properly adjusted and in good working order.

Garage Door

Allow to supply & install 1-off motorised operating colorsteel sectional garage door (including 2 remotes) to Garage, sized to suit opening.

Ventilation Ducting

Co-operate with the Electrician to install extract fans to Ensuite and Bathroom.

Allow for supply and installation of fully concealed ducting, terminating at powdercoated aluminium soffit mounted fixed louvred vents, to service the following:

- Ceiling mounted 150mm extract fans to Bathroom & Ensuite,
- Dryer to Laundry,
- Rangehood above oven to Kitchen.

Wet Area Waterproofing

Provide and install 'Davco K10 Plus' waterproofing membrane to the following areas:

- To walls surrounding Bathroom bath, minimum 150mm up walls behind bath level,
- Entire Bathroom & Ensuite floor areas and coved 100mm up walls,
- To walls and floor of shower enclosures to Bathroom.

All membrane to be fully concealed by wall and floor tiling.

Refer to 'Davco' manufacturer's specifications. Refer supporting documents.

Showers (Tiled)

To Bathroom & Ensuite, form fully tiled (walls and floor) shower enclosures, compete with the following:

- 'Gib Aqualine' wall linings,
- 'Davco K10 Plus' waterproofing membrane to floor and walls,
- Glass doors and fixed screens,
- 'Allproof Vision' stainless steel floor channels.

Glass doors and screens to be 1800mm high generally, polished edges, all to minimal aluminium channels on top of aluminium box trim to floor and recessed into wall tiling depth.

Refer supporting documents for waterproofing and construction details.

Showers (Cubical)

To Bathroom & Ensuite, acrylic shower enclosures, compete with the following:

- 'Gib Aqualine' wall linings,
- Newline base,
- Glass doors and fixed screens,

Heat Pump System

Allow to co-operate and co-ordinate where necessary with the heatpump contractor who shall be supplying and installing Heatpump units and related exterior units, pipework and condensation drains as required.

Allow for wall framing where floor mounted units are to be recessed and high-level units are to be hung.

Allow to co-ordinate the contractor to ensure all pipework is fully concealed within wall framing, under floor or above ceiling and that allowance has been made for any pipework required through concrete work.

Gas Fire

~~Allow to supply and install a gas fireplace to Living room, complete and flue and associated fittings, cowl, thermostat and wall switch. Allow to cooperate with Carpenter who will construct the rough opening for the fire.~~

~~Installation is to be strictly in accordance manufacturer's instructions.~~

HWC Restraints

Co-operate with Plumber to provide earthquake restraints to HWC.

Cupboard & Wardrobe Shelving

Allow to fabricate & install selected built-in joinery units to wardrobes and cupboards generally, to be confirm by Principal.

Interior Stairs

Allow to install MDF interior stairs with equal risers (approx 190mm), treads 280mm (nosing overhang 20mm, going 260mm).

Install 18mm MDF treads and risers.

Install 50mm paint grade pine handrail to selected steel brackets to wall, at 900mm above stair nosing.

Balustrading

Allow to construct a 1000mm high glass balustrade to SED at the top of the landing. All fixing to SED. Please refer to the engineers documents.

0.07 TILING

Preliminary

Refer to the Preliminary and General section of this specification. These sections are binding on all sections. Read this section in conjunction with all other Trade sections and all Contract Documents.

Scope

This section of the contract consists of the supply and laying of floor tiles (and skirting tiles) to the following areas:

- Bathroom shower enclosure

Building Code

Refer to the following New Zealand Building Code sections to ensure compliance with the code E3/AS1
Internal Moisture: 3.0 Watersplash
Brnz Bulletin 339
Brnz 'Good Tiling Practice'
Tiling must be carried out in accordance with the requirements of AS 3958.

Materials and Workmanship

All work shall be carried out by skilled tradesmen using proper and adequate equipment in accordance with the best trade practice to the entire satisfaction of the Architect.
Materials are to be of the best quality.

Adhesive & Grout

Use a water and mould resistant grout. The adhesive must comply with AS 2358: 1990.

Installation

- Ensure that all backgrounds and adjoining surfaces are of a standard required for first class work. Commencement of the work indicates that the substrate is accepted by the sub-contractor as satisfactory for first class work. Before starting discuss the setting out of the tiles with the Architect.
- Do not start work until finished lighting is in place and working.
- Cut edges smooth and install without jagged or flaked edges. Uneven tiles or tiling will not be accepted.
- Adequately protect all dressed woodwork, joinery fittings and all other finished surfaces against plaster droppings or damage during the whole of the plastering. Any damaged surfaces shall be made good to the satisfaction of the Architect.
- Grout shall be cleaned from tiles leaving flush smooth joints, max. 2mm wide for walls, 4mm wide for floors.

Guarantee

Guarantee this work under normal conditions of use against failure of materials and workmanship for a period of two years dated from completion. The guarantee is to be written out to the Owner and approved by the Architect.

Completion

Leave all surfaces smooth, clean and even with a true finish free of blemishes. Comply with CP4251:1974.

0.08 PLUMBING

Preliminary

Refer to the Preliminary and General section of this specification. These sections are binding on all sections. Read this section in conjunction with all other Trade sections and all Contract Documents. This specification is subdivided into trade sections for the convenience of reference only and it shall not be construed that each section is an entire and separate contract; hence no claims shall be admitted from sub-contractors for works not specifically mentioned in a trade section but which is provided for, expressed or implied elsewhere in the specifications and drawings.

Scope

This section of the contract consists of the supply, plumbing and installation (unless otherwise stated) of the following:-

- Sanitary fittings and fixtures including tapware,
- HWC
- Stainless steel sinks and tubs,
- Exterior hose taps,
- Miscellaneous cappings and flashings not included in other trades.

Building Code

Refer to the following New Zealand Building Code sections to ensure compliance with the code:

G1/AS1 Personal Hygiene: 2.0 Fixture construction and installation

3.0 Location of sanitary fixtures

G12/AS1 Water supplies

G13/AS3 Foul water sanitary plumbing

All work to be carried out by or under the supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act.

Workmanship

All work shall be carried out in accordance with the Drainage and Plumbing Regulations, local authority requirements, good trade practice, all relevant New Zealand Standards and where applicable, with the Code of Practice for the installation of PVC piping.

All materials shall be new, first quality and undamaged. All water, waste, soil and vent pipes shall be concealed from view wherever possible.

Co-operate with the Concretor in the location and size of any chases etc., to be left in the slab for pipework, and any pipework that must be cast in.

Tests

Subject all water installation to a full water pressure test before pipework is closed in.

Cold Water Supply and Reticulation

Connect to existing cold water supply. Confirm precise location on site.

High pressure supply to exterior hose taps. Supply and install all necessary relief valves, isolating taps, drains and pipes etc. Allow to conceal all pipes and wrap for noise reduction and to prevent freezing.

Water pipes to be 20mm for main lines and 15mm for branch lines.

Co-operate with the Electrician to have water supply in the same trench as power and telephone cables if possible.

Hot Water and Reticulation

Allow to supply and install 1-off 180 litre hot water cylinder to the ground floor cupboard.

The water heater shall comply with NZS 4602: 1988 or NZS 4606 Pts 1, 2, and 3: 1989 and carry the 'A' Grade Watermark label.

Cooperate with installation of earthquake restraints to cylinder. Refer to Appendix P.

From the cylinders supply and fix a tempering valve and then take 18mm hot supply with appropriate tees to fittings. Ensure the temperature of the water delivered from the shower, bath and wash hand basins does not exceed 55°C.

Note: if more than one restricted temperature required, specify more than one tempering valve.

Pipework

Hot and cold pipework within the building shall be copper or an approved polybutylene system fixed exactly to the manufacturer's specifications. Conceal all pipework from view where possible. Insulate all hot pipework (and cold when at risk from heat or frost) with 13mm min wall thickness preformed insulation, seal edges closed.

All exposed water supply pipes shall have a chrome finish.

Chases

Co-operate with CONCRETOR in the location and size of any chases etc. to be left in the slab for pipework and any pipework that must be cast in.

Soil Waste & Vent Pipes

Supply, install and connect up all soil, waste and vent pipes required for the contract and as required by the NZ Building Code G13/AS3.

- All pipework shall be concealed where possible. Unless specified otherwise, pipework shall generally be uPVC.
- All exposed waste pipes shall be chrome-plated pipes. At wall penetrations fit chrome plated collars.
- Wrap pipes in 'Densotape' where they pass through concrete slab or walls.
- Connect all waste outlets to traps with waste pipes and back vents sized and fixed in accordance with NZ Building Code G13/AS3. Discharge wastes into drainage system stack soil pipe or gully trap as shown. Ensure that all existing pipes are clear and discharging into the appropriate gully traps etc.
- Combine vent pipes where possible within the building to reduce the number of pipes penetrating the roof. Fit vent pipes with flashing coves and bird cages. Roofer will flash roof.

Fittings

Allow to supply, install and connect to services the all fixtures shown and implied on the architectural drawings.

0.09 DRAINLAYING

Preliminary

Refer to the Preliminary and General section of this specification. These sections are binding on all sections. Read this section in conjunction with all other Trade sections and all Contract Documents. This specification is subdivided into trade sections for the convenience of reference only and it shall not be construed that each section is an entire and separate Contract; hence no claims shall be admitted from sub-contractors for works not specifically mentioned in a trade section but which is provided for, expressed or implied elsewhere in the specifications and drawings.

Scope

This section of the contract consists of the supply and laying of the following:

- Stormwater drains,
- Foulwater drains,
- All traps inspection bends, joints and cleaning eyes.

Building Code

Refer to the following New Zealand Building Code sections to ensure compliance with the code

B1/AS1 Structure: 6.0 Drains

E1/AS1 Surface Water: 3.0 Drainage system materials and construction

E2/AS1 External moisture: 5.2 Drainage

G13/AS3 Foul water-drainage

Materials and Workmanship

Materials and workmanship shall conform in all respects to the requirements of the CCC drainage administration and the above documents.

Lighting, Protection & Insurance

The Contractor at his own cost shall provide protection, lights and other matters deemed necessary for protection and security of the work and of public and all property whatsoever near to or liable to be affected by the work. At all times, adjoining roadways and footpaths shall be kept free from obstruction to avoid interference with traffic. The Contractor shall at his own cost recompense and make good all damage to property including that of adjoining owners; and also in respect of loss, injury or damage to persons caused by the Contractor's operations.

Trenches

Excavate all necessary trenches, true to line and grade as shown and of sufficient width to admit all operations necessary for adjoining of pipes being carried out with freedom. Where necessary secure and maintain side of trenches with suitable timber placed so that it will not interfere with work of pipelaying and jointing. Timber shall be withdrawn as trenches are being refilled. Before laying pipes maintain trenches free of water by pumping.

Pipelaying

All drains shall be started at point of outfall and work back to highest point. All pipes shall be uPVC and laid with greatest possible accuracy to give true and even gradients. All branches and connections, cleaning eyes etc. shall be put in as work proceeds. Ensure sufficient protection to drains and fittings beneath sealed areas.

Pipework to be suspended from underside of timber floor framing to allow falls to gully traps and main drain connection points.

Joints

All joints in pipes and fittings are to be laid down to the manufacturer's instructions and the approval of the Christchurch City Council.

Stormwater Downpipes

Provide and install 80mm diameter colorsteel downpipes generally, 100mm diameter from upper roof

area, to locations as indicated on the Plumbing & Drainage Plan.

Each downpipe shall be set centrally over the socket of a uPVC bend set on a 75mm bed of concrete haunched to the side of the pipe. Fit each socket with a galvanised steel grating set at top of sump at 75mm above ground level,

Surface Water Drains

Provide and install as shown on the plans 100mm perforated pipes behind all concrete blockwork and timber retaining walls, all laid to falls and to discharge via silt traps to stormwater drains. Allow for connection of above to the stormwater drains.

Stormwater Drains

Excavate for and lay 100mmØ stormwater drains as shown on Drainage Plan, Sheet A7, from downpipes to discharge into existing stormwater outfall. Confirm outfall level on site to ensure drains are laid to sufficient gradients.

Note: No building work will be started on this project until the construction of a new stormwater outfall has been completed.

Allow to confirm condition of all existing retaining wall drainage pipes and sumps. Make good as required.

Foul water Drains

Excavate for and lay 100mmØ foul water drains from gully traps and WC's, to discharge into existing shared private sanitary sewer system.

Confirm precise location and depth of the lateral on site.

Bedding & Backfilling

No trench is to be back filled before it has been inspected and approved by the Local Authority.

Backfilling is to be well compacted and brought up to original grade. If excavation material is unsatisfactory for backfilling imported fill is to be allowed.

All bedding and backfilling work to stormwater and foul water drains to comply with NZBC.

0.10 ALUMINIUM JOINERY

Preliminary & general

Refer to the Preliminary and General section of this specification. These sections are binding on all sections. Read this section in conjunction with all other Trade sections and all Contract Documents.

This specification is subdivided into trade sections for the convenience of reference only and it shall not be construed that each section is an entire and separate Contract; hence no claims shall be admitted from sub-contractors for works not specifically mentioned in a trade section but which is provided for, expressed or implied elsewhere in the specifications and drawings.

Scope

This section of the contract consists of the manufacture, supply glazing and delivery to site of the following:

- Powdercoated aluminium window frames and sashes with associated color-matched hardware and fixings,
- Powdercoated aluminium door frames and hinged doors with associated hardware and fixings,
- 25mm pine (H3.1) paint grade rebated reveals,
- Clear double glazing units unless stated otherwise in Schedule,
- Provide 'WANZ' sill support bars to all joinery units,
- Flashings to render the above waterproof.

Refer to Exterior Door & Window Schedule.

Building Code

Refer to the following New Zealand Building Code sections to ensure compliance with the code:

B1/AS1 Structure-general: 7.0 Glazing

E2/AS1 External moisture: 3.0 External joinery

F2/AS1 Hazardous materials: Glazing

Performance of windows to comply with NZS4223(Parts3):2016, NZS4211:1985 and NZS3504.

Powder-coating to comply with AS 3715.1989.

Glazing to comply with NZS4223:1999 Part 3 (Safety Glazing notes)

Workmanship

The whole of the work shall be carried out by skilled tradesmen using adequate and proper equipment and methods in accordance with best trade practice, and shall be of the best description.

Materials and Finish

Aluminium frames, doors and sashes shall be fabricated from a suite approved by the Architect, fully gasketed for draught proofing with corners mechanically jointed, reinforced and assembled in adhesive sealant to manufacturer's recommendations. Fix with stainless steel fixings. The metal window contractor shall be responsible for and shall take all necessary precautions to protect and ensure that all junctions between frames and structure are weather tight.

Powdercoat colour is to be from the standard colour range. Door and window hardware style and finish to be confirmed by Architect.

Deadlocks and latch-backs are to be fitted to exterior doors. Latch-back hardware to be confirmed by Architect.

Sizes

All window frames shall be purpose made to fit the individual openings. Any errors in sizes shall be the manufacturer's responsibility and fixed at no extra cost.

Flashings

The flashings to be aluminium supplied and installed by the window manufacturer.

Protection

Arrange for main contractor to supply and fix additional protection to prevent marking of surfaces.
Prevent contact with plaster or cement on glass and aluminium and clean immediately if contact is made.

Delivery and storage

Do not deliver to site any components which cannot be immediately unloaded into suitable conditions for storage. Unload, handle and store components in accordance with manufacturer's recommendations.

Subcontractor's Co-operation

This contractor shall co-operate with the main contractor and all other affected subcontractors, in every way, to ensure the correct finishes, relationships both as to dimension, detail and finishes between his work and all other surrounding work. He shall provide and/or obtain all necessary information as to setting out, sizes, proportions and locations of all holes, bolts, chases, etc. which may affect the performance of his, or others, work sufficiently in advance of the time when it will be needed so as not to delay any part of the contract. He shall carry out his part of the contract with all due diligence and efficiency at such times and in such order as the main contractor may require, and so as to finish the parts and the whole of, his workmen required, to fit in with the overall programme of work laid down by the main contractor

0.11 JOINERY

Preliminary & general

Refer to the Preliminary and General section of this specification. These sections are binding on all sections. Read this section in conjunction with all other Trade sections and all Contract Documents.

This specification is subdivided into trade sections for the convenience of reference only and it shall not be construed that each section is an entire and separate contract; hence no claims shall be admitted from sub-contractors for works not specifically mentioned in a trade section but which is provided for, expressed or implied elsewhere in the specifications and drawings.

Scope

This section of the contract consists of the fabrication and supply to the job of all joinery as detailed or implied in the drawings and this section of this specification including the following:

- Built-in joinery units to Kitchen & Laundry,
- Shelving and rails to Cupboards & Wardrobes,
- Interior timber trim,
- Interior doors.

Building Code

Refer to the following New Zealand Building Code sections to ensure compliance with the code

D1/AS1 Access routes: 1.0 General criteria
 7.0 Doors and openings

Comply with NZS 3604:2011.

Materials and Workmanship

All timber shall be clean, straight, evenly grained and free from splits, knots and other defects and shall have a moisture content of not more than 12% when assembled. All glue shall be approved high strength waterproof glue used strictly in accordance with the manufacturer's specification.

All joints are to be neatly and accurately cut, fitted and well glued to develop their maximum strength.

Any work showing poor joints, damaged timbers, shrinking or any other defect will be rejected.

All timber shall be machine dressed on four faces, and all surfaces exposed to sight or touch shall be machine sanded or hand finished to a smooth finish. Arises shall be very lightly removed. Timber shall be the size shown on the drawings. Any discrepancies or omissions on the drawings shall be referred to the Architect for his decision.

All joinery is subject to a site measure by the Joiner prior to starting work and once house is in a ready state. Joiner is then to reconfirm all colours, finishes and appliances. The Architect accepts no responsibility for any errors in manufacture or any errors occurring as a result of check-measuring by the Joiner or by changes made to this plan and not notified to them.

The onus is on the Joiner to ensure that all appliances correctly fit cabinetry, that allowances are made for ventilation clearances and are installed as per manufacturer's instructions. The Joiner is to ensure that all Joinery is fully functioning and operating by the end of installation.

Interior Trim

Supply the following items to the Carpenter for fixing:

- pre-primed MDF 50x12mm beveled skirting to all dry areas,
- pre-primed pine 50x12mm beveled skirting to Laundry, Bathroom & Ensuite,
- other miscellaneous timber trim.

Interior Doors

- All doors shall have 1.5 pairs of 90mm satin chrome square butt hinges, fixed pin for exterior and loose pin for interior. Precise type of hinges to be approved by Architect.
- Doors generally to be of hollow core construction with flush panel for paint finish for interior doors.
- All interior door heights to be to underside of ceiling lining, with no top jamb.
- Jambs (to sides only) to be 25mm MDF rebated.

Built-in Joinery

Allow to fabricate and install joinery items to the Kitchen & Laundry.

For in-built joinery items generally:

- all cupboard doors and drawers to be fitted with clear round self-adhesive buffers,
- cupboard doors on quality self-closing fully concealed and adjustable hinges with 90 and 170 degree opening hinges where appropriate,
- drawers on Blum or equivalent roller guides appropriate to the weight of the drawers,
- drawer carcasses to be full width and depth with full sides. Allow for non-slip pads to base of larger drawers
- all cabinets from 18mm melamine (colour to be confirmed) carcasses, interior, shelves and other fully concealed surfaces. All cabinets to have backs recessed in,
- adjustable shelves within cabinets on brass supports with 8mm collars, holes at 50mm centers.
- Allow for 10mm shadow edge to joinery at edges where against plasterboard wall linings. Provide solid continuous blocking to back of shadow edge, finish to match joinery.

0.12 ELECTRICAL

Preliminary

Refer to the Preliminary and General section of this specification. These sections are binding on all sections. Read this section in conjunction with all other Trade sections and all Contract Documents. This specification is subdivided into trade sections for the convenience of reference only and it shall not be construed that each section is an entire and separate contract; hence no claims shall be admitted from sub-contractors for works not specifically mentioned in a trade section but which is provided for, expressed or implied elsewhere in the specifications and drawings.

Scope

This section of the contract is for the supply (unless stated otherwise) and installation of the following:

- Distribution boards and meter boxes (including mains cables),
- Electrical cabling,
- Boxes and plates to socket outlets,
- Light fittings (interior and exterior) and switches,
- Electric Hot Water System
- Telephone & television connections,
- Door bell,
- Smoke detectors (with hush and test facilities),
- Supply and connection of fixed appliances and fittings,
- Extract fans and related ducting to WC, Bathroom and Ensuite,
- Connection to automatic Garage door,
- Alarm system with monitoring system,
- Other miscellaneous electrical work.

Building Code

Refer to the following New Zealand Building Code sections to ensure compliance with the code:

G9/VM1 Electricity

F6/AS1 Lighting for Emergency

F7/AS1 'Warning Systems': Provide smoke detectors with hush facilities.

Comply with the Electricity Regulations 1993.

Workmanship

The electrical installation is to be carried out in strict accordance with the Electrical Wiring Regulations and the requirements of the local power supply authority. All work is to be carried out by or under the supervision of a person holding an employer license under Electricity Regulations 1993.

Before starting work the electrician shall confer with the Architect on the site regarding the exact location of light and power outlets and switches.

Co-operate with all trades to ensure the provision of all necessary fixings, holes, chases, sleeves etc.

Arrange the work so that other trades are not hindered or delayed.

Consents and Inspections

Allow for making all tests prescribed by the Regulations, and pay for all fees, obtain all permits and arrange all inspections to the satisfaction of the local Electrical Supply Authority.

Mains

Allow to connect up to existing mains and Telecom wiring at boundary. Provide adequate trench for new mains and telecom wiring. Arrange temporary supply for the building work.

Switchboard & Meter board

Supply and install a fully recessed metal powder coated distribution board and meter board to Garage, complete with neutral and earth busbars, MCB's and 60 amp main switch.

For installation details of meter board, refer 'Hardies Axon' cladding manufacturer's details.

Care shall be taken to ensure that practical means of access is maintained for future wiring extensions.

Circuit identification charts for all Distribution Boards shall give full circuit information and identification.

Charts shall be on stiff white material, printed in black using a non fading process, mounted in a clear 1.5mm thick plastic envelope fixed to the inside of the cabinet door.

Wiring

All sub-circuit wiring shall be completely TPS cable reticulated through wall and roof framing. Holes in framing for cable shall be no more than 20mm dia. and shall be in the centre of the depth of the member.

All wiring to be concealed.

All cables run to power outlets, lighting points and permanently connected appliances shall incorporate an earth continuity conductor.

Bathroom and kitchen outlets shall have Residual Current Devices attached at the D.B.

Install no more than ten lights outlets on one circuit.

Install no more than six power outlets on one circuit.

Lighting circuits to be wired in 1.0mm twin cable. Power circuits to be wired in 2.5mm twin and earth cable.

Lighting

Allow to install the lighting as indicated on the plans. Confirm precise positions with Architect before cutting holes. Switches generally 1.1m above floor unless specified otherwise.

Socket Outlets

Wire for and install power outlets as shown on the drawings, confirm with Architect precise positions before installing. Sockets to generally be 300mm above floor unless specified otherwise.

All general-purpose outlets shall be protected by ELCB's.

Power outlets and light switches shall be from the 'Voltex Shadowline' range, coloured white.

Fixed connections

Allow to supply, install and wire the following fittings:

- Oven
- Hob
- Rangehood
- Microwave
- Extract fan
- Dryer
- Heated towel rail
- Mirror demister

And any other item shown or implied on the architectural documents.

Smoke Detectors

Materials & workmanship shall comply with the New Zealand Building Code F7/AS1.

Detectors shall Have a 'hush' facility having a minimum duration of 60 seconds to turn off if false alarm.

Be listed or approved by a recognized authority as complying with at least one of the following; UL 217, UCL S531, AS 3786, BS 5446 Part 1.

0.13 ROOFING

Preliminary

Refer to the Preliminary and General section of this specification. These sections are binding on all sections. Read this section in conjunction with all other Trade sections and all Contract Documents. This specification is subdivided into trade sections for the convenience of reference only and it shall not be construed that each section is an entire and separate contract; hence no claims shall be admitted from sub-contractors for works not specifically mentioned in a trade section but which is provided for, expressed or implied elsewhere in the specifications and drawings.

Scope

This section of the contract consists of the supply and fixing of the:

- Colorsteel roofing, including all necessary underlays, fixings, cappings and flashings, generally to all units.

Refer to the supporting documents for specifications.

Building Code

Refer to the following New Zealand Building Code sections to ensure compliance with the code
E2/AS1 External moisture: 1.0 Roofs

Workmanship

All work shall be carried out by skilled tradesmen using adequate and proper equipment and methods in accordance with the best trade practice, the manufacturers' instructions and recommendations, and shall be of the best description, to the entire satisfaction of the architect and the manufacturers of the material used.

It shall be the responsibility of the roofing contractor to consult with the manufacturers of the roofing material before and during the performance of the contract to ensure that the contract is carried out in accordance with the manufacturers' recommendations and to their entire satisfaction of the Architect.

Roof Structure

The Roofer shall inspect the structure of the roof before commencing work, to ascertain that the spacing of purlins is as shown on the drawings, that all purlins are fixed satisfactorily, that the tops of the purlins are in place with the roof slope with no deviations that may damage the roofing. Failure to inspect and comment on the structure shall indicate acceptance of the surfaces and responsibility for workmanship to satisfy this specification will fall entirely on the roof fixer.

Structure

Roofing materials shall be protected from damage and stored on the site in a sheltered position near to point of installation. Stack sheets on firm, level ground raised up on timber bearers in the packs in which they were consigned.

Inspection

Roofing material shall be inspected on delivery, and again prior to laying by the roofing contractor who will satisfy himself that the materials are in good condition and conform to the manufacturers' specification.

Material that does not conform shall not be used and be removed from the site.

Other Trades

Where another sub-contractor of the main contractor shall find it necessary to cut or deform in anyway the roofing or flashings, then the subsequent method of flashings or otherwise protecting the opening shall be to the Architect's direction and must be carried out by the applicator for any warranty to apply. It is the Roofer's responsibility for the water tightness of the roof.

Materials

Colorsteel roofing

Roofing underlay to be 'Thermakraft' underlay, in conjunction with all related manufacturer's recommended tapes.

Refer manufacturer's specifications and installation instruction in supporting documents.

Roofing shall be 0.4mm Colorsteel G2z or Colorcote ZR8 galvanised, hot dipped aluminiumzinc alloy coated steel manufactured to NZS/AS 1397. Colorsteel colour to be confirmed.

All accessories shall be factory made and colour matched to the roofing. Ridging, barge rolls and flashings shall be 0.55mm Colorsteel. Ridging and barge rolls shall be al-edged with matching finish.

Butyl rubber membrane

~~Supply and fix 2.0mm grey butyl rubber membrane with laptapes, adhesives and other accessories as specified by the Manufacturer. Allow to form internal gutters to Balcony edges, with minimum 1:60 fall to 'Ardex 10785' dropper (sized to suit 100mm diameter downpipe).~~

~~Dress butyl rubber into the dropper to best trade practice.~~

~~All storage, installation, fixing and flashing of roofing to comply fully with manufacturer's instructions and specifications.~~

Fixing

Colorsteel roofing

Supply and lay roofing underlay lapped in accordance with manufacturer's specifications.

Greatest care shall be taken to avoid any damage to the paper during and after fixing. Those areas damaged shall be replaced at no extra cost. Place temporary walk boards over fixed paper to prevent damage.

Fix steel roofing in full lengths to roof pitch specified on drawings and to manufacturer's specifications and recommended fixing pattern.

Butyl rubber membrane

~~Lay Butyl rubber as per manufacturer's instructions on plywood (supplied and fixed by Carpenter) that is dry with a smooth surface free of defects. During laying and after completion all personnel shall only use soft rubber soled footwear. The roofing contractor shall ensure that all other trades adhere to this rule.~~

Flashings

Provide, fit and fix all flashings and cappings that are required to render the roof watertight.

Co-operate with the Plumber in flashing around all roof penetrations, and vents after they have been supplied and fixed by other trades.

It shall be the Roofer's responsibility to ensure that all flashings and cappings are held securely and will not dislodge or rattle in high winds. Take account of thermal expansion when fitting flashings and allow adequate clearance.

Downpipes

Sizing of downpipes in relation to area of roof collection shall comply with the New Zealand Building Code E1/AS1, clause 4.0

Supply & install new 80mm Colorsteel down pipes to position as shown on the drawings.

Fix temporary downpipes to spouting once the roofing material has been fixed in place (until permanent downpipes are installed) & secure over rainwater drain riser to prevent rainwater carrying soil fines off site or discharging into streams etc.

Completion

On completion of his work the Roofer shall arrange for the roof to be inspected by the Architect for his approval and shall remove all rubbish, clean in accordance with manufactures' instructions.

Once the roof is agreed to be in accordance with this inspection and the manufacturer's recommendations, it shall become the main contractor's responsibility to provide and maintain any such further protection as is necessary to maintain the watertight conditions of the roof.

Any subsequent damage to the roof shall be made good by the Roofer, at the Main Contractor's cost,

and to the approval of the Architect.

Guarantees

Colorsteel roofing

Guarantee this work under normal conditions of use against failure of materials for 30 years, coating for fifteen years and workmanship for five years dated from practical completion. The guarantee is to be written out to the Owner and to be approved by the Architect before the final is written.

Butyl rubber membrane

~~Guarantee that the rubber membrane, flashings and adhesives will remain weather tight and free from defects for a period of 15 years. It will include making good any defects which allow entry of water or detract from the appearance of the work.~~

0.14 PAINTING

Preliminary

Refer to the Preliminary and General section of this specification. These sections are binding on all sections. Read this section in conjunction with all other Trade sections and all Contract Documents. This specification is subdivided into trade sections for the convenience of reference only and it shall not be construed that each section is an entire and separate Contract, hence no claims shall be admitted from sub-contractors for works not specifically mentioned in a trade section but which is provided for, expressed or implied elsewhere in the specifications and drawings.

Scope

This section of the contract consists of all interior and exterior painting specified hereunder. The work shall include all require ladders, scaffolding, drop cloths, maskings, scrapers, tools, dusters, cleaning solvents required to perform the work. Also includes sealing of all exposed blockwork.

Building Code

Refer to the following New Zealand Building Code sections to ensure compliance with the code:-

B2 (AS1) Durability

C3 (AS1) Spread of fire

E2 (AS1) External Moisture

E3 (AS1) Internal Moisture

NZS 7703:1985 'The Painting of Buildings'.

Materials and Workmanship

- All paint, stains, varnishes, papers and other materials shall be supplied to the job unadulterated and in containers unopened since manufacture except for the purpose of tinting under controlled conditions.
- Before starting work, the Painter shall obtain from the Architect a schedule of colours and finishes.
- Allow for six large scale brush outs.
- Protect all finished work, including glass, flooring, sanitary fittings and fabrics from paint splashes and other damage. The Painter shall be liable for the making good of such damage. Protect all finished work from dust, dirt and other disfigurement.
- Prepare all surfaces by cleaning off all dust, dirt and other deleterious substances, by sanding, scraping or filling to remove roughness and by applying such sealers or other materials as are necessary to obtain a good finish.
- The painter shall not apply paint or varnish to any surface that is not capable of achieving a first class finish. Commencement of the work indicates that the substrate has been accepted by the sub-contractor and, where necessary, he shall be liable for the cost of repainting the work.
- In general, allow for 1 x undercoat and 2 x finish coats unless specified otherwise.
- Allow to apply waterproofing sealer to exterior cement-based plaster.
- To 'wet area' (Ensuite, Bathroom, Laundry) plasterboard walls and ceiling linings, finish with 1 x undercoat and 2 x semi-gloss or gloss enamel based paint.
- Upstands to basins, sinks etc shall be sealed to the wall surface by a bead of paintable sealant.

Lighting

Ensure lighting is installed by the Electrician before first top coat of paint is applied. If lighting is not installed arrange for Main Contractor to provide for temporary lighting to emulate future lighting conditions.

Hardware

Ensure that all hardware has been removed (not including Hinges) by the Carpenter. If brass hinges have been installed, provide adequate protection so that thinners does not come in contact with the brass as this removes the protective lacquer finish. Allow to mask all hinges.

Protection

Protect all finished work, including glass, flooring, sanitary fittings joinery and fabrics from paint splashes and other damage. Protect all finished work from dust, dirt and other disfigurement. Clean paint splashes from glass with sharp undamaged blades to prevent scratching of glass.

Any surfaces damaged this way will be replaced at the expense of the Painter.