

lot 7 DPS 57718

Moreland Drive.

PRELIMINARY AND GENERAL

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1. CONDITIONS OF CONTRACT

The General Conditions of Contract governing this contract shall be the (A7) seventh edition agreed to in 1989 by and between the New Zealand Institute of Architects and the New Zealand Master Builders' Federation (Incorporated).

Tenderers are referred to these Conditions of Contract and shall make all necessary allowances with their tender to comply with these Conditions.

The Conditions of Contract may be referred to at any time in the office of the Architect.

2. TRADE RELATIONS AND CO-ORDINATION

The Contractor shall be responsible for the complete work, including the work of subcontractors. He shall ensure that all work is free from errors, defects or irregularities which might prevent a satisfactory, properly working and permanent result being obtained. No work shall be done on any previous work where defects, irregularities or errors would prevent a satisfactory and permanent result being obtained. Should any failure or unsatisfactory result occur, the main contractor shall be responsible and shall have the faults corrected without charge to the owner.

3. TIME AND PROGRESS SCHEDULE

At the commencement of the contract, the contractor shall prepare and submit to the Architect a Time and Progress Schedule and a Critical Path Analysis, showing the planned commencement and completion dates of each part of the work leading up to the tendered completion time. Should circumstances cause the programme to become incorrect, an amended programme shall be submitted to the Architect within seven days.

A copy of the programme shall be kept on the job and shall be kept up-to-date at all times.

4. ASSUMPTIONS

Where the drawings and specifications do not appear to give sufficient information for any particular items of labour or material, the tenderer shall make an assumption, making sure to state in his actual tender what assumption he has made and what sum he has allowed for same.

5. AMBIGUITIES

Should ambiguities or contradictions appear to exist, the Contractor when making up his tender shall allow for that method or material which will, in his opinion, involve the greater cost.

PRELIMINARY AND GENERAL

5. AMBIGUITIES (Continued)

Certain clauses in this specification, being written in standard form, may include references to items which the drawings clearly indicate are not part of this contract. Where there is conflict between drawing and specification, the drawings shall take precedence. Large scale details shall take precedence over small scale drawings.

6. CONTINGENCY SUM

Allow the contingency sum of \$1,000-00.  
Do not add for profit.

This sum is to cover unforeseen circumstances which may arise during construction and any expenditure against this sum shall be made only on the written authority of the Architect.

7. BUILDING CONSENT

The Contractor shall apply for and pay for all Building and other Consents required for the contract. If required by the Territorial Authority, the Contractor shall pay all deposits and charges for street crossings and footpath protection, etc.

8. TEMPORARY SERVICES

Provide all temporary services necessary to carry out the the works, pay all charges and remove on completion. These will include:

(a) Water Supply

Contractor is to provide temporary water supply on site for the use of all trades and pay all charges.

(b) WC Accommodation

Provide the accommodation adjacent to site to standard approved by the Health Authorities, bring water and properly set up, and keep clean throughout contract.

(c) Power Supply

Tender is to include all charges for connection of project to temporary power supply for use during the contract period.

(d) Telephone

Tender is to include all charges for connection of project to temporary telephone service. Provide telephone on job for full contract period and pay all charges, and remove at completion. Alternatively, provide use of a cellular mobile phone on the job for use of all trades.

## PRELIMINARY AND GENERAL

### 9. PLANT, SHEDS, ETC.

Provide sheds for Foreman, workmen, materials, tools, etc. Siting of sheds shall be arranged with the Architect.

Provide all plant, implements, tackle and machinery, etc., necessary for the proper, safe and efficient carrying out of the works.

Remove all on completion of the contract.

### 10. SCAFFOLDING

Provide all scaffolding required for the proper carrying out of the works, including that required by subcontractors and nominated subcontractors. Scaffolding shall be in accordance with the current Scaffolding Act.

### 11. USE OF THE BUILDING

No portion of the building under construction shall be used by the contractor, his employees, or subcontractors as a store, office, workshop, or any other purpose without the written permission of the Architect. When any part of the building is locked, duplicate keys shall be handed to the Architect.

### 12. PROTECTION OF THE WORK

Provide all coverings, etc. necessary for the protection of all completed or partly completed work against damage by workmen, other trades, weather and from entry by intruders until the work is completed and handed over. Work shall be suspended when weather might damage or prevent a satisfactory result to work being done.

### 13. WORKS TO BE LEFT COMPLETE

In this specification and also in the drawings, although it may not be expressly mentioned or shown, each and every item, class, detail or particular of work indicated, described or implied shall mean, unless otherwise set out, the providing and finishing of the same complete in every detail and including all appurtenances in order to leave the works in good order and complete.

### 14. CLEANING UP

At regular intervals during construction, when directed by the Architect and at completion, remove all rubbish caused by the operations of all trades, leave all floors broom clean, clean all glass inside and out and remove all paint and putty marks. Replace all cracked or broken glass. Leave the building and the site clean and fit for immediate occupation and to the entire satisfaction of the Architect.

PRELIMINARY AND GENERAL (Continued)

15. WORK AFTER PRACTICAL COMPLETION

Refer to the Conditions of Contract, clause 8.05 for explanation of "Practical Completion".

Items requiring attention during the defects liability period stated in specific Conditions of Contract that directly detract from the function and use of the building shall be attended to as and when instructed by the Architect. The Architect shall be the sole judge of which items may be left to the end of the defects liability period and those which shall be attended to beforehand.

If, during the defects liability period, items are not attended to as required above, the owner reserves the right to employ others to remedy such items at the Contractor's expense.

16 DEFECTS LIABILITY

Any defects or other faults which may appear within the defects liability period stated in specific Conditions of Contract after the completion of the works, arising in the opinion of the Architect from materials or workmanship not in accordance with the drawings and specifications or the written instructions of the Architect, shall - if notice thereof be given within the said period or not later than ten working days thereafter, upon the directions in writing of the Architect and within such reasonable time as shall be specified therein - be amended and made good by the Contractor at his own cost unless the Architect shall decide that he ought to be paid for the same, and in case of default the Employer or the Architect may employ and pay other persons to amend and make good such defects or other faults or damage, and all expenses consequent thereon and incidental thereto shall be borne by the Contractor and shall be recoverable from him by the Employer or may be deducted by the Employer from any moneys due or that may become due to the Contractor. Should any defective work have been done or materials supplied by any subcontractor employed on the works, the Contractor shall be liable to make good in the same manner as if such work or materials had been done or supplied by the Contractor.

17. CONSTRUCTION ACCESS

The Contractor shall be responsible for the provision of the vehicle accessway for the use of all trades.

It is anticipated that this accessway will be further developed by the owner after completion of the contract. Accordingly, the access shall be located to the approval of the Architect.

Allow to excavate to fully remove all topsoil and to form the required 5.0 metre width accessway using 200mm minimum of compacted AP40 basecourse metal.

Allow to maintain the accessway in good condition during the contract period.

## C O N C R E T E   W O R K

### 1. PRELIMINARY

Refer to the Conditions of Contract and to the Preliminary and General section of this specification, which are equally binding on all trades and sections of this specification.

### 2. CONCRETE

#### (a) Ready-Mixed Concrete

This specification assumes that ready mixed concrete is available from a mixing plant approved and rated by the NZ Ready Mixed Concrete Association to produce high and/or special grade concrete complying with the requirements of NZS 3104 and amendments.

#### (b) Job-Mixed Concrete

Job mixed or concrete from other than an approved batching plant shall be ordinary grade and shall comply with NZS 3108 and the following:

##### (i) Materials

Cement - Portland Cement, conforming with the requirements of NZS 3122:1974. Cement which has become caked or has otherwise deteriorated shall be removed from the site of the work.

Aggregates - Natural sands and gravels, crushed stone or other suitable materials approved by the Architect, complying with NZS 3121:1980, clean and free from vegetable matter, clay films and other adherent coatings.

Fine Aggregate : approved natural sand

Coarse Aggregate : maximum size 20mm

Water - From a public supply where possible; complying with NZS 3121:1986.

##### (ii) Proportions

For small job mixes, 1 : 2 : 4 by volume may be used. All cement shall be estimated and allowed for; only sufficient extra water need be added to produce a workable concrete. Aggregates may be volume batched, making allowance for bulking due to moisture.

##### (iii) Mixing

Mixing shall be under the control of a responsible foreman. Batch type mechanical mixers are to be used at speeds of 12 to 20 rpm. Mixing is to continued for a least 2 minutes.

#### (c) Strength

Specified crushing strength at 28 days for 300 x 150mm cylinders, standard cured - 17.5 MPa unless stated otherwise.

### 3. FORMWORK

Formwork shall comply with the requirements of NZS 3109:1980.

CONCRETE WORK (Continued)

3. FORMWORK (Continued)

Formwork shall be rigidly constructed of approved material, true to shape and dimensions described on drawings. Joints shall be sufficiently tight to prevent the leakage of cement grout. It shall be strong enough to retain correct shape during consolidation of concrete.

No formwork shall be removed until concrete has attained sufficient strength to support its own weight and any load likely to be imposed on it.

4. FOUNDATIONS

Construct foundations to detail in concrete attaining 17.5 MPa strength at 28 days. Foundations shall be taken down at least to the minimum levels shown on the drawings. The bearing quality of the ground shall be checked by the Architect before any concrete is placed. Minimum notification shall be 24 hours for all inspections.

5. CONCRETE IN FILLED CAVITIES OF BLOCKWORK

The minimum crushing strength of concrete shall be 17.5 MPa at 28 days, with 13mm maximum and 9mm minimum sized aggregate. The concrete shall contain Darex WRDA additive and have a 100mm slump.

6. FLOOR SLABS ON GROUND

(a) Place in concrete attaining 17.5Mpa strength at 28 days at the thickness shown.

(b) Damp-Proofing

Place upon the screeded sand layer a complete damp-proof course of 250 m/u black polythene. All joints shall be lapped 150mm and fully sealed with pressure sensitive tape. Turn up ends at walls for full depth of the slab. Seal at edges by bedding membrane in coldseal and taping where necessary. Where pipes, etc., penetrate the membrane, the polythene is to be carefully taped to the pipe. Under no circumstances is the polythene to be pierced for supporting screeds or other boxing, and at all times care must be taken not to otherwise damage or puncture the film. The damp-proofing and set-up of boxing and screeded must be inspected by the Architect before any concrete is placed. The Contractor shall carry out any instructions to remedy faults to the Architect's satisfaction.

(c) Finish To Floor Slabs

The concrete to floors is to be consolidated with an immersion type vibrator and be manually screeded off level or to the falls shown on the drawings. This surface must be left true and accurate, free from imperfections. A monolithic topping of sand and cement in equal parts is to be added dry to the surface of the base concrete while it is still plastic, and compacted with a power driven float. Only operators experienced in this work shall be employed in placing this wearing surface.

CONCRETE WORK (Continued)

6. FLOOR SLAB ON GROUND (Continued)

The floor surface shall be Class U3 to NZS 3114:1980 ie: suitable to receive vinyl floor coverings without showing any marks from the floor below. If the floors do not reach the required standard, remedial work shall be done as instructed by the Architect.

7. REINFORCING STEEL

Steel bars and mesh shall be of the sizes shown, clean and straight. Placing of steel, stirrups, etc., is to be according to the drawings and NZS 3109:1980.

8. SUNDRIES

Provide all minor items of concrete work as set out on the drawings and as necessary to properly complete the work.

Provide all holes and build in all fixings into concretework.

9. CO-OPERATION

This trade shall allow to attend upon and co-operate with subcontractors responsible for in-slab floor heating system installation which shall necessarily be carried out concurrently.

## REINFORCING STEEL

### REFERENCE

The Reinforcing Steelworker shall make himself fully conversant with the provisions of all clauses in the Preliminary and General section of this specification which touch upon his work.

### QUALITY

All steel reinforcing bars shall be in accordance with NZS 3402P:1973 'Hot Rolled Steel Bars for Concrete Reinforcement'. All reinforcing used for stirrups shall comply with the bend test requirements of NZS 3402P:1973.

Welded wire fabric shall comply with the provisions of NZS 3422:1975 'Welded Fabric of Drawn Steel Wire for Concrete Reinforcement'.

All steel which has developed brittleness, cracks or other imperfections, or which does not comply with the specified test requirements, shall be removed from the site.

A test certificate may be required to accompany the delivery of either grade of steel on the site.

### DISTINGUISHING MARKS

All High Tensile reinforcing steel shall be stored separately from Mild Steel reinforcing and at all times the different types shall be readily distinguishable, one from another, by provision of such marking as is necessary.

### FABRICATION

All reinforcement shall be detailed, bent, fabricated and placed in accordance with NZS 1900 Chapter 9.3 and NZS 3109 Section 3, except where shown otherwise on the drawings or as varied herein.

### LAPS AND HOOKS

All mild steel deformed bars shall be lapped 40mm diameters unless otherwise detailed on the drawings.

Standard hooks shall terminate the bars in foundations and shall be placed so as not to reduce the specified cover.

Stirrup anchorages may exceed the standard for fully ductile designs.

### PLACING AND FASTENINGS

All reinforcing shall be accurately placed and maintained in position to the required tolerances in strict accordance with the drawings. To achieve this, the Contractor shall be required to use mortar blocks, of

REINFORCING STEEL

(Continued)

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6. PLACING AND FASTENINGS (Continued)

the same 28 day strength as the structural concrete and of appropriate thicknesses necessary to maintain the correct cover to the reinforcing. Where applicable, the use of approved plastic spacers or distance pieces will be approved, especially in slabs and thin sections.

The upper layer of reinforcing in slabs shall be effectively held in position by the use of metal chairs and/or placer bars in sufficient quantity and strength to secure the steel at all times. Placer bars and/or metal chairs and spacer bars are additional to the steel shown on the drawings and should be allowed for in the same manner as for No. 18 gauge black annealed binding wire, tying the steel at all intersections and laps.

Reinforcement in place in its final position shall be inspected and approved by the Contractor before the Architect is notified for his final inspection. Minimum notification shall be 24 hours.

Immediately prior to concreting, the reinforcing shall be free from dirt, concrete laitance, loose mill scale, loose rust, paint grease, or any other coating which will destroy perfect bond with the concrete.

7. CONCRETE COVER

The minimum concrete cover of reinforcing steel measured from the outside of the bar shall be in accordance with the table below, unless shown otherwise.

Minimum Concrete Cover Of Reinforcing Steel

Member	Against	Against	Exposed to	Exposed	Not
	Natural	Approved	Weather and	to	Exposed
	Ground	Boxing & Backfill Or Similar Construction	Unplastered	Weather and Plastered	to Weather
	mm	mm	mm	mm	mm
FOUNDATIONS	75	50	-	-	-
BEAMS AND COLUMNS					
(a) Principal re- inforcement	75	50	50	40	40

REINFORCING STEEL (Continued)

7. CONCRETE COVER (Continued)

Member	Against Natural Ground	Against Approved Boxing & Backfill Or Similar Construction	Exposed to Weather and Unplastered	Exposed to Weather and Plastered	Not Exposed to Weather
(b) Secondary re- inforcement such as stir- rups, ties, spirals and the like	65	40	40	25	25
SLABS	50	35	35	20	20
WALLS *	50	40	40	25	25

\* The concrete cover of reinforcing bars in walls shall be increased by 15mm where 20mm bars or larger are used.

## CARPENTRY

### PRELIMINARY

Refer to the Conditions of Contract and to the Preliminary and General section of this specification, which are equally binding on all trades and sections of this specification.

### SCOPE OF WORK

The work under this section of the contract includes the supply of all timber materials, linings and sheathings, together with other materials required by this section of the specification, and Builders' ironmongery - additional to that required under the Hardware clause of this specification.

Perform all framing and erection in normal manner of all floor and subfloor framing, walls, partitions, and roof framing, and fix all linings and sheathings. Fix all exterior and interior joinery frames and fittings, complete with doors, sashes, etc. Generally complete all carpentry work as in the accompanying drawings and as specified hereunder. Fix all hardware complete and in first class working order.

Build all necessary scaffolding. Supply all plant, implements, sheds, etc., and attend on all trades, as specified in the Preliminary and General section of this specification.

### 3. MATERIAL

All timber shall be the best of its kind and class, graded and classified in accordance with NZS 3631:1988 and amendments, and suitable for the purpose of its use. In addition, all timber shall be free from any defect such as large or loose knots, open shakes, honeycomb, large gum streaks, sound or otherwise, pinholes, wavy edges, bark and stains.

All framing timber shall be structurally sound and all timber for exposed work and joinery shall be free from defects which would prevent good dressed surfaces being obtained. All external finishing timber must be dry and seasoned, and all machined stuff dry run. Exposed surfaces visible on completion shall be dressed.

As much timber as possible shall be fillet stacked on the site after the signing of the Contract. Cover up and protect all joinery, panels, storage units, etc., from the weather in transit and upon delivery. Preservative treated timber where designated and/or required shall comply with the specifications of the NZ Timber Preservation Council.

CARPENTRY (Continued)

4. MINIMUM STANDARDS

The minimum standards of all materials and workmanship shall be as required by the New Zealand Building Code.

Comply with the requirements of NZS 3604:1990 and amendments, where not specifically detailed otherwise.

5. FRAMING WORKMANSHIP

All work shall be to the best trade practice and to the complete satisfaction of the Architect. The framework shall be so arranged as will provide all necessary support and fixing for the sheathings, and all posts, beams, studs, rafters and purlins shall extend in one piece between supports, and shall only be joined over solid bearings. Cantilevers shall be effectively counter-balanced.

Spacings of all framing shall be regular throughout and shall be to suit the sizes and standard of the linings and sheathings specified.

Joints shall be constructed to transmit the load and stresses to which they are subject, and those exposed to the weather shall be thickly primed.

Plates shall be joined by half lapping or nailplates and shall be double nailed to every stud.

Framework shall be well anchored to foundations, and roof construction shall be adequately secured against displacement in accordance with the requirements of NZS 3604:1990 and amendments.

All frames not otherwise restrained shall be diagonally braced, either with 150 x 25mm bracing checked into the face of studs or with 'Pryde' 1.2mm galvanised steel angle bracing let into studs.

All work shall be accurately set out, neatly executed and finished. Any work which develops defects shall be made good or replaced to the Architect's satisfaction. Punch all nails in exposed work and in work to be painted, and in all flooring.

6. FINISHING WORKMANSHIP

Finishing timbers shall be generally machine dressed. Finishing timbers for fittings and window frames shall be free of blemishes, machine marks and hammer marks. Changes in direction shall be made by mitring. Butt ends shall be bored for nailing. Door frames of solid rebated profile shall be constructed with jambs housed 13mm into the head, and stops shall be mitred at corners. All skirtings, beading and wood trim shall be scribed to irregular surface as required and shall be mitred at angles. All window frames shall be rigidly wedged plumb and true, fixed to ground in masonry or concrete and to the framing in timber construction. All linings shall be fixed with nails punched ready for painting and polishing.

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CARPENTRY (Continued)

7. ATTENDANCE

Cut away for, attend upon and make good after all trades; provide and fix all necessary fixings required for securing work of other trades. Do all setting out as required.

Keep to a minimum the cutting and checking out of framing timbers for the accommodation of pipes, conduits, etc. Purlins and rafters shall not be notched in the middle third of the span and shall only be drilled on the centre line of depth.

8. BUILDERS' IRONMONGERY AND HARDWARE

Provide all nails, brads, screws, bolts, sliding tracks and other ironmongery necessary as shown on the drawings and as specified hereunder and as required to complete the work. All nails and ironmongery shall be of the best quality. See also Hardware clause of this section of the specification.

9. DAMP-PROOF COURSE

Fix two-ply bitumous fabric damp-course between all faces and ends on edges of timber and any concrete or masonry with which timber is in contact.

10. PROTECTION OF WORK

Protect all finished or partially finished work from weather and other damage. Protect floors and finishing timbers from discoloration and surface injury.

Make good any affected work to the satisfaction of the Architect.

11. FRAMING TIMBER

(a) All first floor, wall and roof framing timbers, unless specifically noted on the drawings otherwise, shall be No. 1 framing grade Radiata Pine and shall be Tanalith treated to 3.6 kg/cubic metre minimum retention to TPC Hazard Category H1 and kiln or air dried to 18-24% MC.

(b) Pair Entry Porch posts shall be No.1 framing grade Radiata Pine and shall be Tanalith treated pine to 12.0 kg/cubic metre min retention to TPC Hazard Category H4A and kiln dried.

(c) Timbers for roofing trusses is specified in clause 25 below.

12. EXTERIOR FINISHINGS (where applicable)

(a) Timber shall be 'Huttloc' finger-jointed clear Dressing A Radiata Pine, Tanalith treated to TPC Hazard Category H3, and preprimed.

(b) All exterior finishing timber to be paint finished shall be primed on all surfaces before erection. Prime all end grains at joints.

#### EXTERIOR SHEATHINGS

- (a) Eaves soffits linings shall be 4.5mm 'Hardisoffit 2000' sheets fixed using uPVC jointers.  
Fix sheets using white Nylon fasteners where visible.  
Set edges of sheets into receiving channel of metal fascia.
- (b) Entry Porch soffit linings shall be 6.0mm 'Hardisoffit 2000' sheets fixed using uPVC jointers.  
Fix sheets using white Nylon fasteners where visible.  
Set edges of sheets into receiving channel of metal fascia.
- (c) Wall sheathings generally shall be South Pacific Aluminium 'Nu-wall Cladding' interlocking prefinished extruded aluminium horizontal weatherboards of selected standard colour.  
Provide all necessary matching colour accessory pieces and trims.

Take delivery and fix all 'Nu-Wall' system in strict accordance with the manufacturer's recommendations.

Note: Hamilton agency is:  
Vistalite Aluminium

- (d) Sheathing to roof gable ends shall be 'Insulclad' insulating wall cladding systems as supplied by and installed under licence to Plaster Systems Ltd.

All materials and installation shall be in strict accordance with the manufacturer's specification and complying with the requirements of BRANZ Appraisal Certificate No. 118 (1985)

A first class and weatherproof job is required.

Note: Form decorative semi-circular motif at each gable by profiling 25mm and 40mm thickness to required shape.

#### INTERIOR FINISHINGS

- (a) Timber shall be D.A. Finger-joined clear Radiata Pine, Boric treated or 'Customwood' standard profiles - for paint finishing.
- (b) Provide all timber beads, etc. to detail and as necessary to properly complete the work. Half-round and quadrant beads shall not be used on the job.
- (c) Architraves (if applicable) shall be ex 40 x 12 square profile; cornices shall be ex 40 x 12 single bevelled profile; skirtings ex 100 x 12 single bevelled profile.

#### 5. INTERIOR LININGS

- (a) Line first floor raking ceilings with 12.5mm Gib Board linings.

Line ceilings with 9.5 (tapered-edged) 'Gibraltar board' linings, fixed in accordance with the manufacturer's instructions - for paint finishing.

Use Gib Reinforcing tape, Gib Bedding Compound and Gib Finishing Compound at all joints.

Use 'Beadex' edge trims at exposed timber hip members.

- (b) Line all internal and external timber framed walls with 9.5mm (tapered edge) Gibraltar Board. Fix sheets in accordance with the manufacturer's instructions - for paint finish.

Use 'Slimangle' 0.45mm galvanised steel corner reinforcers at all exterior angles to partitions, fixed over Gibraltar boarding through each provided hole and stopped flush with surrounding wall surface.

- (c) Stop all ceiling and wall sheet fixings and surface blemishes with Gib Finishing Compound over Gib Bedding Compound, steel trowel floated. A first class job by skilled tradesmen is required.

#### 6. HARDWARE

- (a) Allow the net sum of \$1,800-00 for supply only of selected door furniture, locks, latches, door stops, cabin hooks, toilet holders, towel rails, towel rings, internal sliding door gear, cabinet catches and door pulls.

Note: This sum does not cover butts, 'Interlok' stays, aluminium window and door hardware, or builder's hardware, which shall be allowed for separately.

- (b) Butts

(i) Hang internal doors on 1.5 pairs 88mm loose-pin fb butts with brass pins.

(ii) Hang external doors on 1.5 pairs 100mm fixed-pin galvanised steel butts with brass pins.

#### 7. INSULATION

- (a) Insulate all of upper (raking) ceiling areas and ceilings of Office and (part) Lounge at ground floor level using NZFG R2.2 100mm nominal thickness fibreglass friction-fit batts, pressed between roof framing members.

- (b) Insulate all timber framed external walls with NZFG R1.6 75mm nom. thickness fibreglass friction fit batts pressed between wall framing members.

CARPENTRY (Continued)

8. BUILDING PAPER

- (a) Under all roofing, lay 'Flamestop 650' fire retardant building paper upon galvanised wire netting fixed over purlins. Alternatively, provide 'Flamestop 660' fire retardant self-supporting roofing underlay. Overlap all edges 150mm minimum.
- (b) To all exterior timber framed walls, cover the outer face of framing with 'Flamestop 650' fire retardant building paper. Overlap all edges 150mm minimum. Fix building paper using 'Pryda-fix' tabs.

9. JOINERY FIXING WORK

Take delivery and install all aluminium window joinery; timber internal and external door joinery; kitchen fittings; bathroom and laundry fittings.

20. FLOORING

Provide and fix in accordance with the manufacturer's recommendation, one of the following floorings:

- (a) Customwood 600.
- (b) 20mm 'Pynafloor' particle board.
- (c) 20mm 'Finafloor 600' particle board.

Allow for coarse machine-sanding at completion of contract to all flooring joints only.

21. SHOWER COMPARTMENTS

Supply and install shower compartment units at Ensuite and at Bathroom as follows:

- (a) At Ensuite: Allow for one side fixed panel and one pivoting front "frameless" door to suit nom. 900 x 900mm shower base.
- (b) At Bathroom: Allow for one side panel (abutting to bath end) and one pivoting front door "frameless" to suit nom. 900 x 900mm shower base.

Fabricate all units in white powder-coated finished aluminium frames and clear toughened glass.  
Refer to "Shower Master" by Henry Brooks & Co Ltd.

## P A I N T I N G

### 1. PRELIMINARY

Refer to the Conditions of Contract and to the Preliminary and General section of this specification, which are equally binding on all trades and sections of this specification.

### 2. CONTRACTORS

All painting shall be carried out by a firm approved by the Architect.

### 3. INSPECTION

The Contractor or Painter shall examine all surfaces and if they are not in proper condition for painting, he shall notify the Architect before proceeding with the work, failing which he will be held responsible for poor work resulting from imperfect surfaces.

### 4. TESTING

The costs of purchasing and testing samples of materials taken at random from manufacturer's stock for comparison with the tests of samples taken from the job shall be borne by the General Contractor or the Painting Subcontractor, as the Architect may determine.

### 5. SAMPLES

Samples of each of the finishes and colours specified shall be prepared by the Contractor or Painting Subcontractor if so called upon. The Contractor is to allow for colours in walls, ceilings, joinery or other surfaces to be selected, altered or modified at the direction of the Architect.

### 6. PAINTING SYSTEM

All paints, colours, varnishes, enamels, stains and primers shall be of brands approved or later specified by the Architect. The same brand of paints shall be used in all coats on any particular surface. Paints shall be used strictly in accordance with the manufacturer's recommendations.

### 7. ORIGINAL CONTAINERS

All materials are to be delivered to the job in unbroken containers bearing the brand and name of the manufacturer and shall be subject to inspection and approval by the Architect.

### 8. SUPERVISION

The Architect and any representative of the paint manufacturers designated by the Architect, shall have access to the job and to materials being used during the progress of the work.

PAINTING (Continued)

9. UNSUITABLE CONDITIONS

No paint shall be applied to wet or uncured cement or plaster or to surfaces that are not clean, smooth, dry and free from oil or grease, nor until the preceding coat is thoroughly dry, not on metal or exposed work in wet, foggy or frosty weather, save that plastic type paints, if specified, may be applied to wet cement, etc., as directed by the manufacturer.

10. SANDPAPERING

Each coat of paint when dry is to be properly smoothed with sandpaper and dusted clean before the application of the succeeding coat.

11. STAINING AND FILLING

Stains shall be evenly applied to produce the effect required to match in colour the approved samples. All open-grain woods shall be filled to produce a level, smooth appearance.

12. PROTECTION

The Contractor or Painter shall provide and lay adequate dust sheets to protect floors and other surfaces, remove surface hardware switch plates, light fixtures, etc., before painting and replace in condition as found.

Varnish and enamel shall not be applied in the presence of dust.

13. WORKMANSHIP

Employ only skilled tradesmen. Paint and varnish shall not be applied to damp or dirty surfaces and work shall not be proceeded with unless the rooms are free from dust and dirt. Before application of each coat, rough patches and other imperfections shall be rubbed down to obtain a first class finish. Any work damaged by rain, dust or any other cause shall be rubbed down and recoated.

The top and bottom edges of all doors, sashes, facings and the like shall be painted or varnished with the same number of coats as for other surfaces. Each coat shall be applied over all surfaces before a further coat is applied. Paint adjacent to glass surfaces before fixing and place when finished. Any damage or disfigurement which the Painter may cause to the work of his own or any other trade shall be made good at his own expense, so all floors and fittings, etc., must be covered adequately during painting work.

In all cases prior to the application of finishing coat, the recommendations of the manufacturer for that finishing coat shall be strictly adhered to, notwithstanding that the general term 'paint' has been used and a minimum number of coats has been specified. When work is specified to be finished in a particular material or manner it shall

PAINING (Continued)

13. WORKMANSHIP (Continued)

mean the provision of all preparatory work necessary to ensure a proper finish, whether expressly mentioned or not. Application by spray may be done only with the written permission of the Architect.

A first class job is required.

14. COLOUR SCHEME

Where a colour sheme has been prepared, all work is to be completed without deviation from this unless written approval is received from the Architect. The Painter shall apply to the Architect for a colour schedule three weeks prior to the commencement of the Painter's work.

15. STANDARDS

All work shall be carried out in accordance with NZS 7703:1985 New Zealand Standard "The Painting of Buildings".

16. EXTERIOR PAINTING

- (a) Unpainted Items
- |                                   |                               |
|-----------------------------------|-------------------------------|
| Roofing                           | - Monier Tiles                |
| Fascias, gutters, verge flashings | - 'Colorsteel' prefinished    |
| Soffit linings                    | - Hardisoffit 2000            |
| Brickwork veneer                  | - prefinished 'Nu-Wall' cladd |
| Cladding                          | - unpainted                   |
| Blockwork base                    |                               |
- (b) UPVC downpipes  
Apply two coats Resene Lumbersider of selected colour (to match brickwork)
- (c) 'Insulclad' sheathing  
To all pretextured 'Insulclad' surfaces apply by roller three coats of 'Insulcote' 100% acrylic gloss paint at maximum spread rate of 10sq. metre per litre per coat.

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## BRICKWORK

### PRELIMINARY

Refer to the Conditions of Contract and to the Preliminary and General section of this specification, which are equally binding on all trades and sections of this specification.

### 2. WORKMANSHIP

The bricklaying shall be carried out by expert bricklayers and only first class workmanship will be accepted. The work shall be kept clean at all times and shall be covered to protect from damage by other trades. The bricklaying shall conform in all respects to the requirements of NZS 3604:1990.

### 3. BRICKS

Bricks shall be Monier Brickmakers 'Beaumont Red' standard metric size, extruded perforated and wirecut. This selection shall be confirmed with the Owner before ordering.

Bricks shall be ordered immediately the contract is let. A progress payment will be made for the bricks when they are delivered to the site.

### 4. MORTAR

Mortar shall be composed of ordinary Portland cement, sand, water and an approved plasticising admixture, and oxide colourant (where applicable).

The following provisions shall apply:

- (a) All materials shall comply with the relevant NZS.
- (b) Materials for mortar shall be accurately measured by weight or volume in suitable calibrated devices.
- (c) The mixing and proportions of any admixture shall be strictly in accordance with the manufacturer's instructions.
- (d) All materials shall be thoroughly mixed to an even consistency.
- (e) Any mortar not used within 90 minutes after the additions of cement to the mix shall be discarded.
- (f) Satisfactory mortars commonly fall within the following sand:cement ratios:

1 : 3 - 4.5  
cement : sand (parts by volume)

BRICKWORK

(Continued)

MORTAR

(Continued)

- (g) The compressive strength of mortar when tested shall be not less than 12.5MPa.

5. SET OUT

All brickwork shall be carefully set out as shown on the drawings and the set out is to be checked by the Architect before the second and subsequent courses are laid.

6. JOINTING

Joints shall be 10mm width and concave tooled as work proceeds.

Allow for selected oxide colouring to mortars.

7. BRICKWORK VENEER

Construct brick veneers to external walls of the addition. Lay bricks in stretcher bond, plumb and true to line.

- (a) Brickwork veneer shall be tied back to timber framing using galvanised steel "Duo-Tie" fasteners complying with NZS 3604. Fix Duo-Tie fasteners using "Tapcon" galvanised self-threading timber screws.

Generally space veneer ties at 600mm cs horizontally in rows and not more than four courses vertically (maximum 350mm). At openings in veneer space ties at not more than four courses vertically and within 300mm of edge openings.

- (b) Rake out every third perpend in the top and bottom course of bricks for ventilation to veneer walls.

Alternatively provide 10mm continuous ventilation gap between top of brickwork and soffit lining.

- (c) Maintain a clear air space of at least 40mm between timber framing and brick veneer.

Ensure wall ties are cleaned down free of droppings.

- (d) Where necessary provide mild steel angle lintels, hot dip galvanised.

Size of lintels shall be in accordance with Table F1 NZS 3604. Lintels shall have 200mm minimum landing on supporting masonry.

## ELECTRICAL

### 1. PRELIMINARY

Refer to the Conditions of Contract and to the Preliminary and General section of this specification, which are equally binding on all trades and sections of this specification.

### 2. RULES

All electrical work shall be carried out by fully licensed electricians and shall be in strict accordance with the Electrical Act 1992 and amendments with particular reference to the Technical Safety Regulations and the Supplementary Electrical Codes of Practice, each as applicable to this contract. Nothing within this specification or the drawings shall permit work inferior or contrary to the above regulations and should a conflict exist, the contractor shall call the attention of the Architect to the anomaly. No adjustment of cost will be made if a contractor allows for work of insufficient standard.

### 3. MATERIALS

All materials shall be of the best quality and shall comply with the British or New Zealand Standard Specification where such may apply.

The contractor shall, if requested, submit for approval samples, sketches or any other information on any materials proposed to be used in this contract.

### 4. WORKMANSHIP

Good workmanship shall be a prerequisite to compliance with the Electrical specification.

### 5. PERMITS

The contractor shall obtain a permit from the Local Supply Authority for the whole of the work involved. No electrical work shall commence until such permit is properly held.

The contractor shall pay all fees, fines or other such charges as may accrue to the issue of the permit and the inspection of the work.

### 6. CONCEALMENT OF WIRING

Unless specifically stated otherwise on the drawings, all main and sub-main cabling and final circuit wiring shall be completely concealed throughout their entire length.

### 7. EARTH BONDING

Bond all metal water and waste pipes, metal sinkbenches and other plumbing fixtures to the earth bar of switchboard. Bond between hot

and cold pipes at water cylinders. Fully conceal bonding and cabling within the structure or within or under fittings where not exposed to view.

8. POWER SUPPLY

The service cable shall run underground from the street supply to the point of entry to the building as shown on the drawings.

(a) (Where applicable) allow for cable length up the power pole and for connections and potheads as necessary. Allow to protect cabling in accordance with the Local Supply Authority requirements for a minimum 3 metre length up the pole.

(b) Allow for supply and laying service cable, and for trenching, cable protection, PVC signal strip, backfilling and consolidation to comply with the Local Supply Authority's requirements for this work.

Affix enamel-on-steel cable markers at buildings.  
Pay all charges for connection.

Where this work is carried out by the Local Supply Authority the charges shall be ascertained by the tenderer and included in the tender sum.

(c) Provide and lay 80mm diameter uPVC duct under footings and concrete floors with easy bends to floor level directly below meterboard. Where applicable the ducting shall be similarly extended underfloor to the switchboard location.

9. METERBOARD

Supply and install where shown on the drawings a baked enamelled finished galvanised steel domestic electric meter box in accordance with NZS 6206:1980 and to the Supply Authority requirements.

Provide necessary labelling.

10. SWITCHBOARD

Where shown on the drawings supply and install a flush fitting minimum 11 way MCB switchboard. Switchboard shall be capable of recessing flush with a nominal 100mm timber framed wall, and be constructed with metal or self extinguishing plastic cabinet complete with 'Clip Rail' MCB's, 80 amp singlepole main switch, bus bar and neat identification labelling of all circuits, etc., and hinged neutral coloured plastic or vinyl-covered metal door.

Suitable standard switchboards are:

P.D.L. Flush Distribution Board

Federal

N.Z.I. Series S160

ELECTRICAL (Continued)

11. FINAL CIRCUIT WIRING

- (a) Wiring shall be concealed TPS, run generally in ceiling space and timber framed walls. Wiring shall be carefully run and clipped where in accessible ceiling space.
- (b) Wiring shall be adequately protected by means of uPVC sleeves or conduits where passing through concrete work or blockwork, or where they may be subject to damage or abuse. No cable shall be embedded or partly embedded in any plaster or concrete surface.
- (c) No joints will be permitted in cables other than at switch outlets or junction boxes.

12. SWITCHES, SOCKET OUTLETS AND LAMPHOLDERS

- (a) Light switches shall be PDL '500 Series', white colour, vertical, flush polycarbonate switches with face plate set flush against walls.
- (b) Socket outlets shall be PDL '500 Series', white colour, vertical, flush polycarbonate, with face plates set flush against walls.
- (c) Ceiling roses shall be PDL ivory plastic.
- (d) Batten lampholders shall be heat resistant plastic with 225mm diameter conical ivory shade.

13. NOMINATED LIGHT FITTINGS

Where required on the drawings all light fittings shall be supplied only as nominated.

With approval of the Architect, other light fittings of equivalent type, style, wattage, quality and performance only may be substituted.

14. EARTH LEAKAGE CIRCUIT PROTECTION

Allow for one power circuit to be protected by earth leakage circuit breaker 30mA.  
Protection shall apply to power outlets at Ensuite, Bathroom Laundry and Garage.

15. UNIVERSAL TIMER

At Ensuite and Bathroom provide PDL Cat 546 Universal Timer (provisionally set to 10 minutes) for control of operation of extract fans.

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ELECTRICAL (Continued)

16. SELECTED ELECTRICAL EQUIPMENT

The owner will supply and deliver to the site the following selected electrical equipment for installation by the electrician (and plumber where applicable):

Refer to clause 28 of the Carpentry Section of this specification for selected Electrical and Gas equipment to be supplied by the Owner.

Allow to install all Electrical equipment (in conjunction with Plumber/Gasfitter where applicable). Provide Electrical connection at each Gas fittings.

17. 'ESWA' CEILING HEATING

Provide and install ESWA heating elements to all ceiling areas at First Floor level.

Provide individual thermostatic control at each room (except toilet).

Tenderers are referred to WELMARK for supply of the ALCATEL ESWA System components.

18. 'PYROTENEX' FLOOR HEATING

Provide and install 'Pyrotex' floor heating to first floor areas of Ensuite, Bathroom and WC Compartment only. These floor areas shall have ceramic tile finish upon 40mm thickness concrete topping.

Provide Thermostatic control at each room (except WC compartment) in conjunction with ESWA ceiling heating.

19. RADIO PREWIRING

Allow to prewire only for remote controlled pair (stereo system) speakers at each of Lounge, Dining, Family room and Bedroom 1.

Location of speaker outlets and Stereo unit shall be to later direction on site.

20. TV AERIAL INSTALLATION

Allow to supply and install new Hills TV aerial (5 element).

Provisionally allow to roof-mount aerial using bracing stays.

Provide 4 way splitter box and reticulate with co-axial cable to locations shown on the drawings.

21. CO-OPERATION

The electrical contractor shall co-operate fully with all trades to ensure that no confliction of services will occur and so that a pleasing finish is obtained throughout the whole installation.

## P L U M B I N G

### 1. PRELIMINARY

Refer to the Conditions of Contract and to the Preliminary and General section of this specification, which are equally binding on all trades and sections of this specification.

### 2. STANDARDS

All work shall be carried out to comply with the requirements of the New Zealand National Building Code.

An 'acceptable solution' shall be deemed as compliance with the Plumbing and Drainage Regulations 1978 and amendments.

All work shall also be to the satisfaction of the Architect and Territorial Authority Inspector.

### 3. WORKMANSHIP

All work must be carried out in a proper workmanlike manner by competent tradesmen used to the various classes of work involved. All systems in connection with the various services specified herein are to be thoroughly tested by the methods usually accepted for each particular service. The whole of these tests must be carried out to the entire satisfaction of the Architect.

### 4. MATERIALS

All materials must be new and of the best quality procurable.

#### (a) uPVC Soil, Waste, Downpipe and Vent Systems

All items of these systems must be manufactured to the dimensions and performance requirements of NZS 7641 'Unplasticised PVC Waste and Ventilating Pipe, Fittings and Accessories' and of NZS 7642 'Unplasticised PVC Soil and Ventilating Pipe, Fittings and Accessories'.

#### (b) Copper Tubing Reticulation for Hot and Cold Water Services

Pipework shall be solid drawn half -hard copper pipe in accordance with the requirements of NZS 1755:1965.

#### (c) uPVC Tube Reticulation For Cold Water Service

All items of the system shall be manufactured to the dimensions and performance requirements of NZS 7648:1974 'Unplasticised PVC Pipe For Cold Water Services' and installed in accordance with the requirements of NZS 7643:1979 'Installation of Unplasticised PVC Pipe Systems'.

### 5. SETTING OUT

The Plumber must do the whole of the setting out necessary for the various services and must arrange for the Contractor to leave openings and chases wherever required and must provide and insert all necessary sleeves, pipes, etc., for insertion through walls, floors, beams and

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PLUMBING (Continued)

5. SETTING OUT (Continued)

columns wherever required for the running of pipes, etc. The position of runs shall be submitted to the Contractor and Architect, and approved by them.

The Plumber is responsible for the accuracy of the setting out.

6. WASTE, VENT AND SOIL PIPES

Waste, vent and soil pipes shall be uPVC proprietary system.

Generally, all pipework shall be fully concealed.

Install all pipework and fittings in strict accordance with the manufacturer's instructions and set out as shown on the drawings.

7. COLD WATER SUPPLY

(a) Arrange for the Local Authority to provide a water connection to the street boundary, complete with stop valve and cast iron toby box and pay all charges.

(b) From the boundary, lay a 20mm nominal diameter high pressure alkathene, uPVC or copper supply buried 450mm minimum in the ground.

(c) From the point of entry, run cold water service to all plumbing fixtures as shown on the drawings.

(d) Pipe shall be copper or uPVC and shall be fully concealed. Do not run pipes under concrete floors but reticulate within ceiling and wall framing.

8. HOT WATER SUPPLY

(a) Where shown on the drawings, provide one Rheem 38/170 outdoor, high efficiency, gas-fired hot water storage cylinder.

Provide isolating valve, non return valve, cold water expansion valve and isolating valve at inlet.

(b) From hot water cylinder extend a 20mm solid drawn copper vent pipe through the roof. From the vent pipe take off a 20mm main supply pipe in copper pipework. Extend the main supply and take 15mm branch pipework to all plumbing fixtures requiring hot water.

(c) Pipes shall be copper and shall be fully concealed. Do not run pipes under concrete floors but reticulate within ceiling and wall framing. Insulate all pipework with reflective adhesive foil tape.

(d) At Kitchen sinkbench provide and install one auxiliary hot water cylinder viz 45 litre mains pressure electrical underbench hot water cylinder (EA045M).

PLUMBING

8. HOT WATER SUPPLY (Continued)

(d) (Continued)

Provide 3 KW element & thermostat and pressure and temperature relief valve.

Take drainage pipe to discharge at exterior.

9. PLUMBING FIXTURES

(a) WC Pan (3)

At First Floor WC (2) - Fowlers 'Pacific' 400mm pedestal type white vitreous china toilet pan, or similar approved. Pan shall be fitted after floor coverings are laid.

At Ground Floor WC - 'Kensington' wall-hung selected colour vitreous china toilet pan.

(b) WC Cistern and Seat

At First Floor WC (2) - 'Caroma Dual-flush' selected colour polypropylene low-down cistern complete with matching colour double-flap seat, complete with fixings, flush pipe and connectors.

At Ground Floor WC - 'Caroma Wall-line' selected colour polypropylene semi-recessed cistern complete with matching colour double-flap seat, complete with fixings, flush pipe and connectors.

(c) Washbasins

At vanities (3) - Fowler 'Congress' semi vanity basin in selected colour vitreous china complete with cp waste outlet, C.P. plug and chain.

At WC compartment - surface-mounted 'Clearlite WB21' in selected colour acrylic, complete with cp waste outlet and mini-skirt to cover waste and water pipes.

(d) Sinkbench

Burns & Ferrall 'Premiere' c.p. 1.5D stainless steel sinkbench insert with single sink plus waste disposal sink and drainer tray.

(e) Showers (2)

At Ensuite & Bathroom - One 'Clearlite' No. 2A two-piece shower corner cubicle in selected colour fibre-glass and complete with 'Easiclean' cp shower waste outlet.

(f) Bath

Clearlite 'Pacific' 1655mm selected colour acrylic standard bath, complete with cp waste outlet, C.P. plug and chain.

(g) Tub

Burns and Ferrall LP2, 560 x 450 x 240mm stainless steel tub, pressed from one piece with radiused corners and complete with cp waste outlet, plug and chain.

PLUMBING (Continued)

10. TAPS AND VALVES

- (a) At entry to house - 20mm brass stop valve in cast iron toby box.
- (b) At hot water cylinders - brass stop valve.
- (c) Hose tap - where shown on drawing, provide 15mm brass bib hose taps with screwed ruff. The risers to the hose taps shall come up inside the wall.
- (d) WC Cistern - 15mm angle cock, Methven 'Novaline' NL 28C.
- (e) Washbasins  
WC compartment - two 15mm pillar taps, Methven 'Novaline' NL 16.  
Vanities - 3 hole 15mm basin faucet Methven 'Novaline' NL93
- (f) Sinks - 15mm Sinkmixer with swivel spout, Methven CR 573.
- (g) Showers - 'Topliss' shower mixing valve with 'Pacific' deluxe hand shower, chrome slide rail, h.p. clear hose and flanged c.p. elbow connection.
- (h) Bath - 20mm concealed faucet, Methven 'Novaline' NL 94.
- (i) Automatic washing machine - two 15mm concealed body stop taps Methven 'Novaline' NL 31B.
- (j) Tub - two 15mm flanged bib taps Methven 'Novaline' NL 50.

11. FLASHINGS

- (a) All pipes passing through the roof shall be flashed with lead.
- (b) Overflash window and door openings using 'Nu-Wall' purpose-made aluminium extrusion.
- (c) All valley gutters, secret gutters at verges and roof flashings shall be 0.55mm BTM galvanised steel Coloursteel G" prefinished. Provide lead-edge overflashings; allow to touchup paint coat to leadwork to match roofing tile colour.

12. GUTTERS AND DOWNPIPES

- (a) Provide and install proprietary external gutter and fascia system in Colorsteel G2 prefinished 0.55mm BTM galvanised steel. Supply 'Stratco' Clickfast fascia and gutter system or 'Klass' External Rainwater System.
- (b) Provide round downpipes of sizes stated on the drawings complete with all outlets bends stand-off brackets shoes and spreaders as necessary.

13. COMPLETION

On completion, test all systems and check that they are in perfect working order, ready for immediate use.

## DRAIN LAYING

### PRELIMINARY

Refer to the Conditions of Contract and to the Preliminary and General section of this specification, which are equally binding on all trades and section of this specification.

### 2. STANDARDS AND WORKMANSHIP

All work shall be carried out to comply with the requirements of the New Zealand National Building Code, in particular clause G13/AS2 Drainage.

All work shall also be carried out to the satisfaction of the Architect and Territorial Authority Inspector.

Where uPVC drains are installed carry out all work in accordance with the requirements of NZS 7643:1979 "Code of practice for the installation of Unplasticised PVC pipe systems".

### 3. PERMITS

The Contractor shall obtain a permit from the Local Authority for the whole of the work involved. No drainage work shall commence until such permit is properly held.

The Contractor shall pay all fees, fines or other such charges as may accrue to the issue of the permit, connection into Local Authority drains, and the inspection of the work.

### 4. MATERIALS

(a) Cement, sand and concrete shall be as specified in the Concrete Work section of this specification.

(b) Pipes generally shall be salt-glazed earthenware with rubber ring or rubber sleeve and stainless steel wire joints, in accordance with NZS 3302:1983. Soil drain pipes and fittings shall be Class A. Stormwater pipes and fittings may be Class B.

(c) Where approved for use by the Local Authority, unplasticised PVC soil pipes, fittings and accessories shall conform in dimension and performance to the requirements of NZS 7649:1974.

(d) Where applicable, precast concrete drainage pipes shall conform with the requirements of NZS 2238.

### 5. DRAIN LAYING GENERALLY

Minimum trench excavation depth for drains shall be sufficient to enable laying of pipes with 500mm minimum ground cover to pipes at the highest points of the drains.

DRAINLAYING (Continued)

5. DRAINLAYING GENERALLY (Continued)

Trenches shall be not less than 900mm clear of the foundation, and increased by 150mm for each 300mm that the trench exceeds 600mm in depth.

Shallow drains close to or under foundations shall be laid before the foundation is built.

Commence laying drains from the lowest point.

All pipes and fittings shall be properly boned in so that their invert level is to a true and even gradient. Generally, a minimum grade of 1 in 40 shall be maintained.

The interior of pipes shall be thoroughly cleaned as the work proceeds. All drainage pipes and fittings are to be set with a continuous solid bearing, the earth being removed to accommodate the sockets.

6. DRAINS IN UNSTABLE GROUND

If soft or unstable ground is encountered, it shall be referred to the Architect who will instruct in writing where and how it shall be strengthened. The strengthening shall be as follows:

(a) Pipes shall be laid on a continuous concrete bed 100mm thick by 150mm wider than the external diameter of the pipes and grooved to receive the collars to give full length bearing. After joints have been made, pipes shall be haunched in with concrete from edge of bed to the horizontal diameter of the drain.

or:

(b) The pipes shall be laid on a 100mm thick bed or clean, hard gravel of 19mm metal.

7. DRAINS UNDER BUILDINGS

Pipes shall be uPVC, using the O-ring method of jointing; glazed earthenware using rubber sleeved method of jointing.

Pipes shall be firmly laid on a 100mm minimum bed of clean, hard 19mm metal and further fully encased in the 19mm metal.

8. GULLY TRAPS

All gully trap dishes shall be set at minimum 75mm below floor level and minimum 75mm above finished ground level.

All gully traps shall be set level on a 75mm bed of concrete haunched to the side of the trap.

Where ceramic gully trap dishes are provided they shall be encased in concrete and neatly plastered with cement compound to a smooth and even finish. Provide a removable cast iron grating.