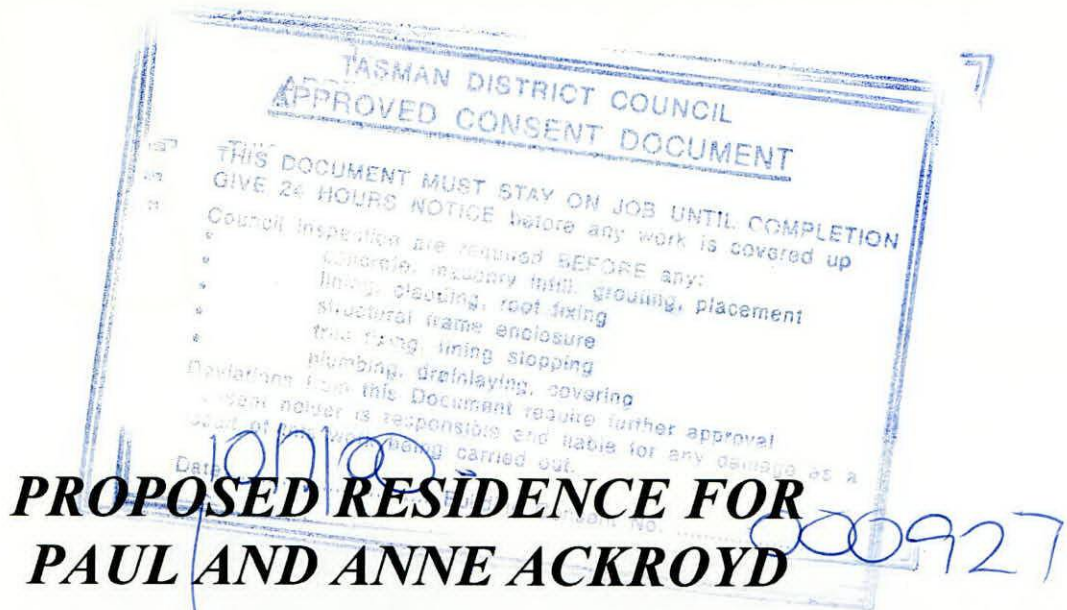




**PROPOSED RESIDENCE FOR
PAUL AND ANNE ACKROYD**

MOUTERE HIGHWAY, MOTUEKA

Property owners have a legal obligation under the Plumbers Gasfitters and Drainlayers Act 1976 to have a craftsman plumber and registered drainlayer carry out their appropriate trade. Failure to do so could lead to legal action.

PRESENTATION HOMES LTD

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PRESENTATION HOMES LTD

JOB AND SITE SPECIFIC SPECIFICATION

OWNER : Paul and Anne Ackroyd

SPECIFICATIONS FOR NEW RESIDENCE AT: Moutere Highway, Motueka

LOT 1 DP 14033

LOCAL AUTHORITY / DISTRICT COUNCIL: Tasman District Council

PRELIMINARY AND GENERAL (all trades)

NOTE: This specification is subject to the requirements of the New Zealand Building Code 1992 (NZBC) using NZS 3604 Light Timber Framed Buildings, NZS 4229 Concrete Masonry Buildings as a means of compliance. Both NZS 3604 and NZS 4229 are acceptable solutions under NZBC 1992. Specifications may also be subject to other design certificates and producer statements as provided by Approved manufacturers or registered engineer.

BUILDING CONSENT -

Presentation Homes Ltd shall be responsible for the Building Consent and all charges and fees associated with the application. Fees associated with the building consent i.e. water connection, in certain areas will not be included and will be paid by the owner/client. No work shall begin until the local authority has issued a relevant building permit, and all resource consents as required have been obtained. Refer to and comply with Project Information Memorandum. Presentation Homes Ltd shall insure the works with a Builders All Risk Policy. This insurance shall cover the full value of the premises when completed.

Presentation Homes Ltd shall be held responsible for any damage or loss by fire and theft of materials off-site. The policy is to remain in force until the completion of the contract. This will also mean the inclusion of a Master Build Guarantee and 90 day Maintenance cover.

COMPLIANCE CERTIFICATES-

The contractor shall ensure that all compliance certificates have been issued.

HEALTH AND SAFETY-

The contractor shall comply with the Health and Safety in Employment Act 1992, effectively operating a Safety Management Programme for the duration of the contract.

SUBCONTRACTORS-

All subcontractors employed by the main contractor shall be bound equally by the Preliminary and General section of this specification.

ATTENDANCE-

The contractor shall allow for attendance upon all sub-contractors as necessary to enable the completion of the works. Allow for forming of all holes, chases, building in, making good and cutting away for all trades.

COMPLETION-

The contractor at the conclusion of the contract shall have all trade rubbish/debris removed from the site and the building left cleaned and ready for occupation. All services and mechanical parts shall be in good working order.

EXCAVATOR-

PRELIMINARY AND GENERAL -

Take note where preliminary and general clauses apply to this trade.

SCOPE OF WORK -

The work specified in this section consists of clearing the site, earthworks for site development, excavations, trenching and trimming etc, necessary to prepare the site as specified and indicated on the drawings.

The contractor shall arrange to check existing site levels before commencing work as no claim will be allowed in respect of any discrepancy on levels or amount of variation from what may have been anticipated, once the work has started.

Where a geo-technical investigation report is available, the contractor shall obtain a copy of this report and be fully familiar with its contents and recommendations. Where appropriate the contractor shall carry out these recommendations.

NOTE: NZS 4431: 1978 - Code of Practice for Earth-fill for Residential Development
Building Code Reference B1/VM1/VM4

GENERALLY -

Remove all turf or other vegetation, including trees, stumps, etc, from the area to be built on. Clear the site to the levels shown on the drawings. (Check original conditions.) Excavate as required for all wall footings, pile footings, steps, etc as shown on the drawings. Footing excavations are to be taken down to a solid bearing and to be not less than 300mm deep (450mm in clay conditions).

Excavations are to be stepped to suit the slope of the ground, and kept level at the bottom, maintained free from water or fallen material and shall be firm before placing reinforcing or concrete. Backfill and ram the earth around the foundations after concrete work has firmly set. Deposit the surplus soil on the site or cart away as directed by the owners.

HARDFILL -

Back filling and bulk filling to bring floors up to grade shall be broken rock or 30-50mm river rounds (no-fines shingle) in layers no more than 150mm thick with a mechanical compactor and finished with a sand blinding of 50mm

All fill and backfill materials shall be placed and compacted in layers in accordance with NZS 4431: 1989.

INSPECTION -

The contractor shall notify the Territorial Authority Inspector (or Building Certifier) and Engineer if required for approval of the excavations and reinforcing before the placing of any concrete.

CONCRETE PLACING-

PRELIMINARY AND GENERAL -

Note all clauses under preliminary and general, which shall apply to this section of the work.

SCOPE OF WORK -

Comprises of the setting out, boxing and placing of concrete in the foundations, floor slabs, and any other concrete work shown on the plans and shall finish to the dimensions shown or specified. Concrete foundation walls shall be finished with a fair face finish (all other defects made good and projections removed).

NOTE – Refer to the following approved documents for curing of concrete and times of removal.

NZS 3109: 1987 - Specification for Concrete Construction

Building Code Ref.: B1/AS1 E1/AS1

NZS 3114: 1987 - Specification for Concrete Surface Finishes

Building Code Ref.: G15/AS1

NZS 3604: 1990 - Code for Practice for Light Timber Framed Buildings

Building Code Ref.: B1/AS1/AS3/AS4 E1/AS1

MATERIALS -

Concrete to be pre-mixed with a test of 20 Mpa for footings and 17.5 Mpa for floor slab after 28 days or as required by Engineer. Reinforcement to be round mild steel rods as indicated on drawings and associated engineers requirements and reinforcing mesh, as detailed, free from scale, loose rust, paint, grease, dirt, etc.

CONCRETE FOUNDATION WALLS -

Foundation footings, walls and reinforcing shall be to the sizes shown on drawings in accordance with Table 4 and relevant clauses of NZS 3604, supporting single storey or two storey as appropriate. Such walls shall finish not less than a total of 225mm above finished ground level to the top of floor slab but not measure more than 2m above bottom footings.

CONCRETE SLAB-ON-GROUND FLOORS -

Floors having foundation walls that support only one storey need not be reinforced providing that shrinkage control joints are provided at 3m spacing for 74mm thick slabs or 4m spacing for 100mm thick slabs. In all other cases concrete slab-on-ground floors and porches shall not be less than 100mm thick on well compacted granular fill and reinforced with a layer of 668 welded reinforcing mesh lapped 225mm at joins (or 665 mesh if cast in more than 15mm maximum dimension in one operation). Reinforced slab-on-ground porches may be cast separately from foundation walls but shall be securely anchored to them with R 6 bars at 600mm crs lapped not less than 300mm with the slab reinforcing.

VAPOUR BARRIERS-

Where floor slabs occur in rooms for habitation they shall have 0.25mm thick polythene sheet under, either welded into one continuous sheet or with joints lapped not less than 150mm and sealed with self adhesive tape to manufacturers specification. The contractor shall not use any other vapour barrier without approval in writing and shall protect from punctures and tears before and during placement of concrete. Any damage done to the vapour barrier shall also be made good before placing concrete.

BUILD-IN BOLTS ETC -

Provide in concrete for openings for vents or as required by other trades and for holding down bolts in accordance with NZS 3604. Install PVC piping through the foundation for power, telephone, water and drainpipes.

BRICKLAYER-

PRELIMINARY AND GENERAL-

Note Preliminary and General clauses as they apply to this section.

SCOPE OF WORK-

Includes supply and laying of all brick veneer units as shown on the drawings. A skilled tradesman shall lay all brick veneer work. Angles and intersections shall be properly bonded not more than 10mm thick, with all openings and chases provided as necessary.

MATERIALS -

Bricks and mortar shall be of first quality as produced by a reputable manufacturer. Owners to select type and colour of bricks. Water shall be of drinking quality and sand shall comply with the relevant clauses of NZS 3103. Oamaru stone to be 100mm thick units laid in random or standard bond pattern (check with owner) and as recommended by supplier/manufacturer.

VENEER WALLS -

Shall be formed with 40mm minimum cavity between masonry and timber framing and approved wall ties and metal lintels as laid out in Appendix F, NZS 3604. All mortar joints to be "weathered" type. During the course of the work, ensure cavity is kept clear of mortar droppings and at completion clean out debris from cavity and clean down veneer removing any stains, etc. Carry out any plasterwork required to finish pipe-work penetrations and at junction with barge.

MORTAR -

Shall comply with NZS 1900 ch 9.2 mixed in the proportion of one part cement, 1/4 part lime, 4 parts sand. An approved plasticiser may be substituted for the lime in manufacturers recommended proportions. NOTE - Use white cement in mortar for Oamaru stone.

PREPARATION OF MORTAR -

Mortar shall be prepared by mixing in an approved mixer. Measurement of materials shall be by volume using suitable containers. Mortar shall be mixed until a homogenous mass is obtained but for not less than 5 minutes. All mortar, whether on the boards on left in the mixer, shall be used within 90 minutes. Mortar not used in this time shall be discarded.

GROUT -

Shall be ready mixed grout of 15 MPa strength and shall comply with NZS Chp. 9.2.

GENERAL -

a) Building Paper -

Run ordinary black bituminous breather type building paper to NZS 2295 (or fire resistant breather Type) horizontally and well secure to outside face of framing from bearer to top plate. Repair tears and holes before constructing veneer.

a) Clay Brick Veneer: Construct brick veneer with approved face fixed ties at correct spacings in accordance with Appendix F of NZS 3604 and with materials and workmanship to NZS 4210. NZBC ref - B1/AS1/AS3 E2/AS1

A cavity of not less than 40mm and not more than 75mm shall be maintained between building paper and veneer. Where necessary weep holes shall be left every third joint for the discharge of water, as under Concrete Blocklayer. Keep the cavity and upstand clean, free from mortar protrusions and droppings. Keep pipes or electrical wire, junction boxes etc, out of cavity. Build in the required number of subfloor vents to provide not less than 3500mm² of ventilation per 1m² of floor area. Keep top of vents below bottom of bearers. Thoroughly clean down the face of work on completion, leave free of mortar stains and efflorescence.

b) Vermin Proofing: Secure galvanised wire mesh to bottom plates, slope downwards and across cavity and embed each length of mesh at least 25mm in mortar joints. Vermin proof dividing wall and wherever else necessary.

c) Sills: Sills to be brick on edge brought to underside of wooden sills of aluminium joinery. Junction between to be filled with a suitable sealant as recommended by the Joinery Manufacturer and overpointed with cement mortar.

COMPLETION-

On completion of all work ensure that all debris is removed and site is left in a tidy state.

CARPENTER-

PRELIMINARY AND GENERAL -

Read and note all clauses of the Preliminary and General that will apply to all works of this section. All work shall comply with NZS 3604 and NZBC acceptable solutions.

MATERIALS AND WORKMANSHIP -

All material used shall be the best of their respective class and type specified. Any materials that are not up to standard shall be removed immediately from the site. All work shall be carried out in a workmanlike manner in accordance with best trade practice and as or where especially specified. Any work that is intended or implied but not specifically shown, mentioned or specified as necessary for the proper completion of the building shall be included.

All timber shall conform to grades defined by NZS 3631: 1988 and amendments, and which shall form part of this Specification. Unless otherwise shown on the drawings, all external timber exposed to the weather shall be H3 treated Radiata Pine or Cedar. All internal framing shall be Chemical Free Laserfame Radiata Pine or Douglas. Moisture content reading of framing before lining commences shall be no greater than 16% or less if specified by contractor. All internal finishing timber shall be of D.A. Rimu or paint quality Radiata. Timbers shall be to the sizes shown. Refer: NZS 3631: 1988 NZ Timber Grading Rules, Building Code Refs. - B1/AS2/AS5.

SEASONING OF ALL TIMBER -

Before being machined, all joinery and dressing timbers shall be thoroughly air seasoned or kiln dried, and before being built in, all joinery, dressed and finished timber and all pre-cut components shall be stacked under cover from weather at all times prior to erection on the site.

CO-OPERATION -

Attend upon all other trades providing all blockings, fixings, trims, nogging as necessary for the full completion of their respective works and make good after all trades.

DAMP PROOFING -

All timber to be protected from dampness with 3-ply bituminous felt or other approved damp proofing material when in contact with concrete or brickwork, except as provided for under Clause 2.1.4 of NZS 3604.

PRIMING -

All exterior finishing timber, all timbers in contact with concrete blockwork and all external faces, rebate, etc, of all doors, windows, frames and all woodwork of sashes, shall be primed before fixing unless otherwise specified in 'Painter'.

CLEANING -

The contractor at the conclusion of the contract shall have all ceilings, walls and woodwork carefully dusted and wiped down. Windows washed and glass free from scratches and paint. Floors brushed and the entire building site left in a clean condition for occupation.

FASTENING AND FABRICATION -

a) The contractor should especially note that all aspects of fastening and fabrication of timber framing members and wood-based products on this contract shall accord with the following clauses of NZS 3604:

Clause 2.5.1 - General

Clause 2.5.2 - Adhesives for timber and wood-based products

Clause 2.5.3 - AND APPENDIX A - for nailing and use of wire dogs

Clause 2.5.4 - for bolting and screwing

b) Reference shall also be made to Appendix A of NZS 3604 for the proper fixing of sheet lining and cladding materials for walls and ceilings that are not wood-based e.g. Gypsum board, fibrous plaster or wood cellulose sheeting: especially where such materials are used as diaphragms and for wall bracing.

c) Mild steel structure components used in subfloor spaces, exposed to the weather or in position where condensation or dampness will occur shall be hot dipped galvanised after forming and shall provide the necessary "capacities" called for by NZS 3604 dependant on function and location.

d) In all other cases, select and use connectors according to manufacturers' literature conforming to NZBC 3604 requirements and the NZBC.

MOISTURE CONTROL -

Where a vapour barrier is required in the form of foil or polythene film, this barrier shall be fixed according to B.R.A.N.Z. Bulletin No 217. Foil or Polythene film shall not be used as a substitute for building paper. Building paper shall be properly fixed to bottom plates, especially in veneer construction, to prevent entry of subfloor air into stud cavities. There should be no unsealed openings for service pipes and wiring etc. There should be no discharge from cooking extractors or clothes dryers into any wall, roof or floor cavity. Linings shall not be fixed until moisture content of framing has been tested and approved. A proper solvent based paint or varnish finish must be used for plasterboard (Gypsum board or fibrous plaster) linings to 'wet' rooms, such as kitchens, bathrooms and laundry. Floors for 'wet rooms' to be finished with an impervious floor covering as per NZBC 1990 E3/AS1.

Water based emulsion paints must not be used.

SCHEDULE OF TIMBER GRADES -

Use -

Trimmer joists, timbers in contact with concrete or within 50mm off the ground
Wall framing
All interior finishing woodwork
Beams
Exterior

Timber -

Pressure treated H4 Radiata

Chemfree Laserframe Radiata, Pine
Rimu Dressing A or approved timber
Chemfree Radiata or approved timber
Cedar weatherboard or as per plan

SCHEDULE OF TIMBER -

Top Plate	100 x 50
Bottom Plate	100 x 50
Studs @ 600mm max centres	100 x 50
Dwangs @ 800mm centres	100 X 50
Beams	As shown on plans
Rafters	100 x 50
Ceiling Battens @ 400 centres	75 x 40

Barges - Fascia	Steel fascia system
Soffit	Hardiflex
Wall Braces	Metal angle brace
Veranda posts	100 x 50 (H3)
Skirting	60 x 10 bevel
Scotia (if applicable)	CS 45
Purlins	75 x 50
Roof Trusses	Connector system to manufacturers specifications
N.B.: This schedule shows sawn size. All framing timbers are Laser Frame 90 x 40	

LINTEL SIZES -

Lintel sizes are to comply with Table 6.7 of NZS 3604: 1990 for appropriate loading.

GENERAL FRAMING -

All framing to be 100 x 50mm stud. Top and bottom plates to be same size as studs in long lengths, halved or nail plated at wall junctions and jointed over studs. All studs at 600mm max. Provide rows dwangs at centres as shown on Working Drawings. Heights of stud walls as shown on plans.

WALL BRACING -

Provide wall bracing as shown on drawings and wall bracing calculation sheets as is intended to satisfy the NZBC. Keep strictly to the 'Type', lengths and locations shown on plan and elevations.

WALL FRAMING -

a) Ground Floor -

Erect pre-nailed frames to ground floor, supply temporary props and braces as required.

Ensure all frames are plumb and square and fix frame to frame joints with 4N nail plates.

Fix all metal angle braces and straps to frames where shown on drawings and bracing schedule.

Each wall partition wall shall be braced as shown on plan and as detailed in bracing schedule.

BUILDING PAPER-

Run heavy duty black bituminous breather type building paper to NZS 2295 (or fire resistant breather type) horizontally and well secure to outside face of framing from bearer to top plate. Repair tears and holes before cladding of exterior commences.

INSULATION -

Refer to NZBC Clause H1. Install insulation as required in NZBC Acceptable Solution H1/AS1. All insulation materials are to be installed in accordance with manufacturers recommendation and NZBC.

Walls -

Fix fibreglass insulation RI.8 into wall framing; Batts '600' and Batts '400' are engineered to friction fit between stud spacings of 600 and 400 respectively. Polystyrene cladding may negate the need for wall insulation, refer to drawings.

Ceilings -

Fix fibreglass insulation R 2.6 between rafters/truss spacings' of 900crs.

WALL LININGS -

Supplied in manufactured sheets and require to be cut on site around openings and beams, and to suit wall lengths. Generally shall be of 9.5mm Gypsum Board and shall be fixed to internal walls with 30mm flat head galvanised clouts or screws only after placement of thermal insulation (bulk insulants). All wall linings to be nailed or fixed as per Appendix A of NZS 3604 or manufacturers instructions and stopped to manufacturers instructions; in particular where contributing to wall bracing.

Bedrooms, lounge, passage, dining room, kitchen Gypsum Board

Bathroom and laundry
Shower box
Garage walls

Wet wall gypsum board lining
Moulded unit
Gypsum Board

CEILINGS -(refer Drawings and Detail Specification)

Gypsum Board - Fix painting quality 9.5mm gypsum board to joists or ceiling battens, rafters with 30mm flat head galvanised clouts or screws, with nails stopped and all joints flushed up to a true, even, smooth surface. In particular, fix all ceilings serving as structural ceiling diaphragms under terms of NZS 3604. (See Winstone (Auck) Ltd taped joint system). Check that each wall under or connected to has adequate bracing for a diaphragm.

FINISHINGS -

Skirting as scheduled to all rooms. Mitre external angles and scribe internal angles. This also applies to Scotia mould to some ceilings.

SOFFIT LININGS-

Fix 4.75mm Hardiflex to soffit bearers. Joints shall be finished with pvc jointers.

CEILING ACCESS-

Fit ceiling access panel and frame in pre-designated location.

WARDROBES-

Fit 400mm wide shelves of 18mm mdf board and clothing hanger rail.

LINEN / HWC CUPBOARD-

Fit radiata paint quality slats, frame and rails to cupboard ensuring three sided support.
Construct a level hwc stand from chemfree 100 x 50 framing to support the supply tank and cylinder.
Allow for seismic restraints to comply with NZS 4603: 1985. See details at end of specification.

FIREPLACE-

Install the fireplace where shown on the plans and complete with seismic restraints on hearth. Work shall comply with NZS 7241: 1990 specification for installation of solid fuel burning appliances. Fireplace shall comply with NZS 7401: 1985 specification for solid fuel burning appliances. Complete with wetback connection to hwc.

TIMBER EXTERIOR CLADDING -

- Timber weatherboards shall be supplied in accordance with standard timber grading requirements.
- Bevel cut each joint 30 - 45 degrees.
- Maximise length of weatherboard to avoid offcuts.
- All corners finished with timber corner battens provided. Alternative corner details optional.
- Do not punch nails. Use only galvanised jolt heads provided.
- Two nails per stud per board. One nail to be concealed on lap.
- Leave weatherboard 5mm short of side flashings.
- Stain or paint all bevel cuts and end joints.
- 1 coat of stain oil, or paint, as soon as the timber arrives on site and second and or third coat after fixing to dwelling (application to be as per paint manufacturers recommendations).
- Heavyweight building paper fitted to all exterior walls.
- Strip stack in a shaded area out of the weather or cover until ready to use.

EXTERIOR WALL COVERINGS -

Exterior Cladding - supplied as either:

- a) Weatherboards in long lengths - cedar rusticated / board and batten
- b) Other exterior wall coverings shown on the working drawings shall be fixed in accordance with manufacturers specifications.

Veneer shown on drawings shall be as given under "BRICKLAYER".

NOTE 1 - Other exterior wall covering shown on the drawings and mentioned in Section 8 of the NZS 3604 should be fixed in accordance with all requirements therefore. Should the owner specify overwide boards and any finish other than paint and not adequately maintain, the responsibility for any resultant poor performance should not be apportioned to the Contractor.

COMPLETION-

On completion of all work ensure that all debris is removed and site is left in a tidy state. Sweep all floors and generally leave the building cleaned and ready for occupation.

JOINER-

The timber for the joiners work to be sound and well conditioned clean, free from waness, open shakes and all to be thoroughly aired or kiln seasoned.

Timber to various items to be in accordance with the following -

Door frames	Paint quality Radiata
Exterior doors	Glazed aluminium or Cedar
Internal doors	paint quality m.d.f.

HARDWARE -

The contractor shall allow fitting the hardware supplied to complete the work and leave in good working order. Construct all joinery to the best trade practise. Provide all screws, hinges, nails or other fixings that may be necessary for the proper execution of the joinery work specified.

KITCHEN JOINERY -

Supply and fit by contracted kitchen joiner.

ROOFING CONTRACTOR-

PRELIMINARY AND GENERAL -

Read and note all clauses under Preliminary and General of this specification where they apply to this trade. (Also see Plumber.)

SCOPE OF WORK-

All valleys, hips, dormers and penetration cuts are to be made on site. The fixing of the roof cladding with flashings and ridging will be the responsibility of the Roofing contractor. Fix selected roofing over self-supporting roofing underlay to roofing manufacturers specifications. Where other roof claddings are specified and where at less than 12-1/2 degree pitch undertake all work in accordance with a method approved in writing from the cladding manufacturer for the particular job.

ROOF FRAMING AND WALLS -

Roof framing shall provide adequate support and fixings for purlins (roofing battens). No member shall be overloaded by landing heavy, localised, stacks of cladding on them.

ROOFING UNDERLAY -

Underlay shall be breather type building paper to NZS 2295: 1988. Run horizontally with upper sheets lapped 75mm over lower sheets and with bottom edges turned over fascia into gutters. Such underlay shall be provided under all metal roofs and be adequately supported unless self-supporting type.

Where other roof claddings are specified and where at less than 12-1/2 degree pitch undertake all work in accordance with a method approved in writing from the cladding manufacturer for the particular job.

ROOF CONSTRUCTION- (see *Drawings and Schedules of Timbers for types*) NZBC E2 / AS1 clause 1.0

a) Trussed Roofs - Drawings showing clearly the type, pitch, span, spacing and overhangs of roof trusses and details of roof claddings shall be provided to the truss manufacturer to allow him to comply with Clause 10.2.3 of NZS 3604. Thereafter, the Contractor shall match construction with the drawings and details provided by the truss manufacturer throughout all stages of fixing and bracing. The Contractor shall especially accord with the manufacturers instructions for tying down where overhangs exceed 750mm. In all cases anchorage of all trusses to plates shall be with not less than 2/100mm skew nails plus 2/4.9mm wire dogs.

PURLINS, EAVES, GABLE ENDS -

Size of framing, spacing, overhangs and sheathing type as shown on plan.

FASCIA BOARDS, ETC -

Fix fascia, barge, frieze etc, to suit roofing selected (See ROOFING CONTRACTOR). Steel fascia and gutter system.

PREPARATORY WORK -

Provide all gutters, valleys and underflashings before cladding commences. Except where stated, valleys shall be made of 0.6mm galvanised steel at least 400mm wide with folded edges and with lower end finishing well into spouting. Use 0.7mm aluminium valley for aluminium roofing. For profiled metal roofing, set out purlins to give reduced span at eaves and between top purlin and ridge as recommended. Ensure all edges of roof cladding are adequately supported around projections such as pipes, ducting and roof lights.

ROOF CLADDING MATERIALS AND COMPONENTS -

Roof cladding shall be g2 Zinalume corrugated roofing (nominated colour and type), manufactured by BHP.

Materials selected shall be set out and fixed by approved FIXERS and all shall accord with the manufacturers specification and in all cases with NZS Specifications or other where appropriate i.e.-

NZS 3403: 1978 Hot-dipped galvanised corrugated steel sheets for building purposes

NZS 3441: 1978 Hot-dipped zinc-coil and cut lengths

BS 4300/6: NS31 sheet and strip (Part 6 is one of a series covering wrought aluminium and aluminium alloys)

Thickness of materials unless otherwise specified shall not be less than the following:

Aluminium cladding, valleys and flashings	0.7mm
Galvanised steel cladding, spouting, downpipes and overflows	0.6mm
Lead flashings to small diameter vent pipe with PVC flashing cone	1.7mm
Other lead flashings and soakers	2.0mm

FACTORY PREFINISHED MATERIAL-

Treat all such material with great care and obtain matching colour for making good minor damage and covering fixings made through the face of the claddings.

COMPLETION-

On completion of all work ensure that all debris is removed and site is left in a tidy state.

PLUMBER:

PRELIMINARY AND GENERAL -

Read and note all clauses in the Preliminary and General of this specification that shall apply to all work in this section. (ALSO SEE ROOFING CONTRACTOR) All plumbing work to comply with the requirements of the NZBC, refer to sections G1-G4 and G10-G15.

EXTENT OF WORK -

Provision of all materials and execution of all works necessary for the proper completion of the plumbing work. All work is to be carried out by tradesmen registered as required by the plumbing and drainage regulations. All pipework is to be concealed where possible within the wall spaces.

PERMITS, FEES -

Give all notices, pay all fees and arrange for the inspection of the work and the materials.

MATERIALS-

Provide all material, labour, and plant necessary to complete the work in accordance with the drawings and specifications, NZBC approved documents as specified in B1/1;E1; G1; G2; G13/1;G13/2, or other Local Body regulations. All internal water pipes shall be copper. All supplies to wet areas shall be 20mm with 15mm branches. Test all fittings and pipework and ensure there are no leaks and all are in good working order.

FLASHINGS -

Generally provide all flashings required by all other trades to make the building weathertight. Flash and counter flash all pipes, vents and exhausts with lead neatly capped to roofing.

SPOUTING AND DOWNPIPES -

Spouting shall be that manufactured by the roof cladding manufacturer, or standard 125mm quadrant type galvanised steel, or approved white PVC. Provide and fix as recommended with even fall to downpipes. Provide all necessary stopped ends, mitred returns and outlets and ensure all joints in metal spouting are adequately soldered or welded, or for PVC, are made with solvent cement except where joints provide for thermal movement. Connect outlets to 80mm diameter downpipes fixed at not more than 1200mm centres down the length of the downpipe. Downpipes are to discharge stormwater into soakways or street channel, NOT into foulwater drainage system.

(a) Cold water can be obtained from a Local Authority mains normally providing adequate water pressure and volume; so avoiding the need for a cold water supply tank in or on the roof or on-site well providing a potable water supply.

(b) Water heating is to be mainly by means of a low-pressure thermal storage electric water heater; with cold water feed into Hot Water Cylinder through a pressure-reducing valve and separate non-return valve and complete with tempering valve set to maximum delivery temperature of 55 degrees C.

Alternatives include;

B1. Use of a break-pressure tank installed above hot water cylinder OR

B2. A mains pressure water heater; with check valve (gate valve) between two stop valves.

COLD WATER SUPPLY - NZBC G12 / ASI

Tap off from mains service pipe in Alkathene. Run pipes not less than 450mm below finished ground level to house with entry through or under the wall foundation.

Provide pipe to hose taps at front and rear of building and to all fittings including hot water cylinder and washing machine. All branches to be short, straight and at as even gradient as possible with easybends used throughout (NOT ELBOW FITTINGS). Use only approved connections throughout. All pipes are to be adequately supported, well secured and where possible concealed. Plumber to discuss with electrician, and provide, means of ELECTRICAL EARTHING, when using any form of plastic piping.

HOT WATER SUPPLY - NZBC G12 / AS1

Supply one low-pressure electrical hot water cylinder of 250 litre capacity of approved make and type. Provide COPPER hot water supply pipes and branches to all fittings including drain from hwc to exterior of building discharging over a gully trap. Installation shall be complete with seismic restraints and anti-scald device as per NZBC G12/AS1.

PIPE SUPPORTS

Pipes and their supports shall be electrochemically compatible.

Except where anchor points are necessary, the pipes shall be supported in a way that permits free movement of the pipe along its length. Acceptable methods include lagging the pipe at the support with flexible material or passing the pipe through a sleeve.

Support Spacing

Above ground water supply pipework shall be securely supported at centres of no greater than those in Table 7 of NZBC G12.5.0.

Movement in concrete or masonry

Pipes penetrating or installed in concrete or masonry walls or floors shall be either lagged with a flexible material, or passed through a sleeve, to permit free movement for expansion and contraction.

Anchor Points

Anchor points shall be provided where:

- a) Seal ring joints are used, and
- b) The joint is not able to resist the thrust imposed by the water pressure.

Protection from frosts

Water supply pipework shall be insulated where water is likely to become frozen.

Comment

Locations where the water supply pipe work is likely to become frozen include pipes concealed in exterior walls; ceiling spaces or basements fixed to the outside of buildings.

SANITARY FITTINGS ETC -

Allow to fix fittings for the following. Carefully note dimensions and install where shown on plan and to owners' approval.

....1..... Bath

....2..... W.C.s

...2..... W.C. Cisterns

...3..... Basins

...2..... Shower Units

...1..... Sink with single or double drainer

...1..... Laundry Tub

NOTE - BS 5575: Code of Practice for Sanitary Pipe Work

TAPS, FAUCETS AND VALVES -

Fix all taps, faucets and mixing valves. Provide and fix all other water supply fittings as necessary.

VENTS, SOIL STACKS-

The above shall be PVC extended up through the roof and flashed with approved flashing material.

NOTE- Building code reference G12/VM1/AS1 provides a more comprehensive list of references that must be complied with.

COMPLETION-

On completion of all work ensure that all debris is removed and site is left in a tidy state.

DRAINLAYER:

PRELIMINARY AND GENERAL-

Read and note all Clauses under Preliminary and General of this contract where they apply to this trade. All drainage work to comply with the requirements of the NZBC, refer to sections G1-G4 and G10-G15.

EXTENT OF WORK -

Work in this section of the contract comprises all surface and foul water drainage up to above ground level to connect to Plumbers work. Include all pipes and specials, inspection points, fittings, construction of manholes, all gully traps and connections for terminal vents, soil and waste pipes. The Drainlayer shall confer with the Plumber and shall arrange with the Contractor before the foundations are laid to fix the exact position of all connections of wastes and drains.

STANDARD OF WORK -

Experienced tradesmen to the satisfaction of the Owner or agent shall carry out the whole of this work. The Contractor shall allow accordingly should conflict exist and arrange for all tests.

NOTE -

NZS 4452: 1986 - Code of Practice for the Construction of Underground Pipe Sewers and Drains.
Building Code Ref B1/AS1 E1/AS1 G13/AS2 G14/VM1

NZS 4610: 1982 - Specification for Household Septic Tank - Building Code Ref G13/AS2

MATERIALS -

All materials shall be the best of their respective kinds.

CONNECTION TO EXISTING DRAINAGE -

The Drainlayer is responsible for verifying the position and depth of the connection and commence laying his drains from this point.

DRAIN TRENCHES -

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

LAYING OF DRAINS -

All drains are to be adequately supported in the bottom of the trench. The pipes are to be laid to straight lines and even grades with socket against fall in all cases.

FITTINGS -

The Site plan shows the layout of the system. Additional fittings that are normally required, such as inspection points and inspection bends, etc, that may be required but are not specifically shown must

be allowed for by the Drainlayer to comply with normal practice under the regulations or special requirements of Local Council.

JOINTING OF PIPES -

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

FALL IN DRAINS -

The whole of the soil and stormwater drain system is to be laid to a regular and even fall.

GULLY TRAPS -

Supply all gully traps and securely bed and build up with 5.1 concrete surround, 150mm below finished floor levels. All gully traps are to be fitted with plastic gratings and also a grating or perforated plate above the wastes discharging into it.

SEWER AND STORMWATER CONNECTIONS -

The owner shall arrange for the Council to connect drain to sewer and stormwater where provided and pay all charges in connection therewith.

COMPLETION-

On completion of all work ensure that all debris is removed and site is left in a tidy state. Properly backfill all trenches and consolidate as filling proceeds.

ELECTRICIAN: NZBC G9 / VM1

PRELIMINARY AND GENERAL -

Read and note all clauses under Preliminary and General of this specification where they apply to this trade.

FEES -

The electrician is responsible to pay all fees and charges and obtain all necessary consents for this trade.

SCOPE OF WORK -

Carry out the whole of the electrical installation in strict accordance with the latest Electrical Wiring Regulations.

MATERIALS AND WORKMANSHIP -

All materials used under this contract shall be of approved British or New Zealand Standard Specification. Allow for all materials necessary to complete the contract whether specified or not. A Registered Electrician in accordance with regulations and best trade practice shall carry out all work and in a manner that will cause minimum inconvenience to other workmen and the work as a whole. Do all cutting away, drilling, etc, and with timber cut the minimum only away for the entry of cables.

CO-OPERATION

Co-operate with the Building Contractor and other sub-contractors in all phases of work. Ample notice must be given to enable the Contractor to arrange the necessary void, chase data, etc.

COMPLETION AND CONNECTION OF POWER -

Leave work complete. The owner is responsible to arrange for all inspections and tests and for the connection of power to the works. It is the responsibility of the Electrical Contractor to ensure that no delay is occasioned to the job once the contract is completed.

POWER SUPPLY -

The owner shall arrange with the power supply authority for the connection of an underground, or overhead, supply to the residence.

METER BOX -

Provide and install recessed meter box where shown on plan. Confer with Carpenter for trimming same.

MAIN SWITCHBOARD -

Provide and install in recess main switchboard complete with all necessary control and auxiliary equipment.

ELECTRIC STOVE -

Provide and fix a 30-amp flush switch and plug for stove/wall oven and provide sufficient cable for connection and allow for installation.

WATER HEATER -

Allow for the permanent connection of the water heater to the electrical system. Provide and install element and thermostat to 250 litres hot water cylinder provided by the Plumber. Refer clause 3 of this section.

POWER POINTS -

All wall plugs shall be 230v. 10 amp, 3 pin flush type. Generally install plugs 300mm above the floor or 225mm above bench top. Points to washer/dryer space and refrigerator 1200mm from the floor. The exact position of all power points shall be determined on the job by the Owner.

LIGHTS -

All lights to be first quality, plastic batten holder shall be reinforced. All roses and holders not covered by fittings shall be white.

LIGHT SWITCHES -

Light switches shall be 10-amp, all insulated PDL micro-gap type or equivalent. Where indicated fit flush type with plain Bakelite flush plate. Fix switches generally 1200mm above the floor.

COMPLETION-

On completion of all work ensure that all debris is removed and site is left in a tidy state.

PAINTER:

PRELIMINARY AND GENERAL -

Note all clauses under Preliminary and General of this specification, which shall apply to this section of the work.

MATERIALS -

All material shall be of the best quality and skilled tradesmen shall perform all work. Colours to be selected by owner as required.

WORKMANSHIP -

All work shall be carried out in accordance with good trade practice. Surfaces shall be clean and properly prepared before coating and work shall be in accordance with Code of Practice NZS 7703 'Painting of Building '.

EXTERIOR WORK -

Exterior woodwork will be finished with either an approved stain or oiled to a natural finish. Exterior weatherboards' to be finished painted or stained as per paint or stain manufacturers' recommendations. Barge boards and facings to be primed all around before fixing by builder. Stop with first quality putty and allow for at least two topcoats of an approved paint.

INTERIOR WORK -

Generally, all room doors require staining or painting, as do window reveals, wardrobe and cupboard doors. Trim to be painted. Kitchen interiors, cupboard doors etc are prefinished customwood Beauty Board. All walls lined with Gypsum Board can be papered or painted. Beams should be stained or painted before erection. Verify against schedule of finishes on drawings.

PAPERHANGER -

Paper all walls not otherwise specified with paper to be selected by the owner. Add Shirilan WS or sodium pentachlophenate to all size and paste. Hang papers plumb and in full lengths and widths with butt joints. Approved washable paper in the bathroom/laundry, toilet and kitchen. Note schedule of finishes on drawings.

COMPLETION -

On completion the residence is to be left clean and tidy, window and other glasswork is to be cleaned. All trade debris is to be removed from the site and the building left cleaned and ready for occupancy.

ALUMINIUM JOINERY-

PRELIMINARY AND GENERAL -

Note all clauses under Preliminary and General of this specification that shall apply to this section of the work.

SCOPE OF WORK -

The work done under this section comprises the supply and glazing of all windows, doors and flashings normally supplied by the window manufacturer, glazing of interior door panels where applicable, decorative glass and mirrors.

NOTE -

NZS 3504 : 1979 Specification for Aluminium Windows

NZS 4211 : 1985 Specification for Performance of Windows - NZBC ref.: B1/VM1, E2/AS1

NZS 4223 : 1993 Code for Practice for Glazing Buildings - NZBC ref. : B1/AS1, F2/AS1, B1/AS1

EXTERIOR JOINERY -

All windows shall be to NZS 4211 to suit location.

All windows and external sliders and doors are of aluminium powder coated manufacture. Aluminium joinery is supplied complete with all hardware, timber reveals and head and side fittings.

Fix and plumb both ways and in correct alignment and flash all in accord with manufacturers instructions. Sliding patio doors shall be safety glazed and fixed to timber sub-frames as per Code. Glazing and safety glazing as per NZS 4223 part 3 1993.

NOTE - Owner should check with manufacturer regarding manner or type of safety glazing (also in shower screens). Also seek advice on satisfying the need for simple secure means of maintaining a little

ventilation at night or when the house is empty. Options can include substituting double spur catches for single, fixing security fasteners or provision of small sliding panes, or louvers or grill at high level.

MATERIALS -

Powder coated aluminium windows, doors and reveals as per drawings as supplied by aluminium fabricator.

PLASTERER / GYPSUM BOARD STOPPER-

PRELIMINARY AND GENERAL -

Note all clauses under Preliminary and General of this specification that shall apply to this section of the work. Installation shall be in accordance with the "Code of Practice for Fixing Fibrous Plaster" unless specified otherwise and in accordance with the manufacturers instructions for paper face gypsum brands.

WORKMANSHIP -

Work carried out under this section shall be by qualified tradesperson and in accordance with the best of trade practice.

At the completion of all fixing and nailing, fill all internal and external angles, joints and nail heads with stopping plaster. Trowel all areas to a flat even finish and leave the whole of the work ready for the painter. All materials, including exterior corners are to be supplied by the plastering contractor.

LEVEL OF FINISH -

Winstone Wallboard Limited provide the following recommended levels of finish and the methods of achieving them for the final decoration.

LEVEL 0 : This level of finish may be useful in temporary construction or whenever the final decoration has not been determined.

LEVEL 1 : For use in plenum areas above ceilings, in attics, in areas where the assembly would generally be concealed, or in building service corridors and other areas not normally open in public view.

LEVEL 2 : For use in garages, warehouses, storage or other similar areas where surface appearance is not of primary concern.

LEVEL 3 : For use in appearance areas which are to receive heavy or medium texture (spray or hand applied) finishes before final painting, or where heavy grade wall coverings are to be applied as the final decoration.

LEVEL 4 : For use where light textures or wall coverings are to be applied or economy is of concern. Also where non-critical lighting areas where flat and low sheen paints are to be applied.

LEVEL 5 : This level of finish is for use where gloss, semi-gloss, low sheen or non textured flat paints are specified or where critical lighting conditions occur.

The contractor shall be fully familiar with the manufacturers specification on how to achieve the recommended level of finish and shall implement them as indicated by the type of wall decoration specified. Refer to Gib Board Publication on Quality of Finish for more information and guidance on levels to wall surfaces.

REGULATIONS AND STANDARDS -

All work and materials shall be in accordance with the requirement of the Building Regulations 1992 and with the New Zealand Building Code Handbook and Approved Documents.

The contractor and sub-contractors undertaking this work shall obtain copies of the relevant sections of the New Zealand Building Code and documents relating to acceptable solutions and verification

methods and shall be conversant with their contents. Refer to approved documents B2 of the New Zealand Building Code and Approved documents. Where applicable the following Standards, their related documents and subsequent amendments shall form part of this specification:

NZS 4221 : 1971 Specification for Fibrous Plaster Sheet

AS 2592 : 1983 Gypsum Plaster for Building Purposes

ISO 6308 : 1980 Gypsum Plasterboard

Winstone Wallboard Limiteds Gibraltar Board Technical Information.

New Zealand's Fibrous Plasterer Manufacturers Association's Technical Manual for Architects.

Where there is conflict between any two Standards, the requirements of the appropriate New Zealand Standard shall apply.

COMPLETION-

On completion of all work ensure that all debris is removed and site is left in a tidy state.

Property owners have a legal obligation under the Building Gasfitters and Drainlayers Act 1976 to have a craftsman plumber and registered drainlayer carry out their appropriate trade. Failure to do so could lead to legal action.

WISMAN DISTRICT
SHELVED CONSTRUCTION

THIS DOCUMENT MUST BE
GIVEN 24 HOURS NOTICE

Common inspection are:

- concrete, masonry
- lining, cladding
- structural work
- trim fixing
- plumbing

Exemptions from this document

Consent holder is

result of this work

Date: 10/7/00

000027

Wall Bracing Calculation Sheet A**Job Details**

box 1

Name PAUL & ANNE ACKROYD

Street and Number MOUTERE HIGHWAY, MOMEKA

Lot and DP Number LOT 1 DP 140 33

City/Town/District UPPER MOUTERE, NELSON

Location of Storey: single/upper of two storeys Floor load: 2kPa/2kPa

Building height to apex 5.5 m

Roof height above eaves 3.2 m

Stud height 2.4 m

Average roof pitch 30°

Building length BL = 26.7 m

Building width BW = 17.8 m

Roof weight light/heavy

Cladding weights: Subfloor light/medium/heavy

Lower Storey light/medium/heavy

Upper Storey light/medium/heavy

Room in Roof Space Yes / No

Gross Building

Plan Area, GPA = 261 m²

Note: When the average roof pitch is over 25 degrees, use the eaves length and width to determine BL and BW.

Note: For heavy roofs use the roof plan at eaves level to determine GPA.

Wind Zone

box 2

Region: R1 0 ☒ Inland 0 ☒ Exposure: Sheltered 0 Topography: Gentle 0

R2 1 ☐ Coastal 1 ☐ Exposed 1 ☒ Moderate 1 ☒

Total points 2 Extreme 3 ☐

Wind Zone: ☐ Low (0) ☐ Very high (3)

☒ Medium (1) ☐ Specific Design (4)

☒ High (2)

Earthquake Zone

box 3

From figure EQ1 select Earthquake Zone: A B C

BU's required Wind

box 4

From Table W1A/W1B

W along = 78 BU's/m

W across = 78 BU's/m

Total wind load,

W ALONG:

W along x BW = 1388 BU's

W ACROSS

W across x BL = 2083 BU's

BU's required Earthquake

box 5

From Table EQ1/EQ2/EQ3/EQ4/EQ5/EQ6

E = 5.6 BU's/m²

Note: For a room in the roof space use E + 3

Total earthquake load,

EQ ALONG and EQ ACROSS

E x GPA BU's = 1462 BU's

SECONDARY
BRACING ELEMENT→ = diagonal
brace.**Wall Bracing Calculation Sheet B**

Along

Wall or Bracing Line		Bracing Elements Provided			Wind		Earthquake	
1	2	3	4	5	6 W	7 W	6 E	7 E
Line Label	Minimum BUs Required	Bracing Element No.	Bracing Type	Length Element (m) L	Rating BU/m W	BUs Achieved (BU/m x L) W	Rating BU/m E	BUs Achieved (BU/m x L) E
A		a1	gblb	3.4			50	170
		b1	brg	1.0			50	95
		b2	gblb	2.9			50	145
B		b3	brs	1.2			50	111
		b4	gblb	2.1			50	105
C		c1	gblb	3.6			50	180
		c2	gblb	4.8			50	240
D		d1	gblb	2.4			50	144
		d2	brs	2.3			50	115
E		d3	brs	1.4			50	115
		e1	brs	0.7			50	67
		e2	brs	0.8			50	76

170
 95
 145
 111
 105
 180
 240
 144
 115
 115
 67
 76

6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ

Totals Achieved		W		E	1643
From Sheet A	Totals Required	W	1389	E	1462
Wreq/Ereq =		*			

* If Wreq/Ereq is 1 or less complete E column only
 If Wreq/Ereq is 1.5 or more complete W column only
 Otherwise complete both W and E

Across

Wall or Bracing Line		Bracing Elements Provided			Wind		Earthquake	
1	2	3	4	5	6 W	7 W	6 E	7 E
Line Label	Minimum BUs Required	Bracing Element No.	Bracing Type	Length Element (m) L	Rating BU/m W	BUs Achieved (BU/m x L) W	Rating BU/m E	BUs Achieved (BU/m x L) E
M		m1	brs	1.3	115	150	85	111
		m2	brs	0.9	110	99	85	86
		n1	gblb	2.3	55	127	50	115
N		o1	brs	1.5	115	173	85	128
		o2	gblb	2.2	55	121	50	110
O		o3	brs	0.6	110	66	85	57
		o4	brs	0.6	110	66	85	57
P		p1	gblb	3.8	75	285	50	190
		p2	gblb	4.4	75	330	50	220
Q		p3	gblb	2.6	80	208	70	182
		q1	gblb	3.9	75	293	50	195
		r1	gblb	3.5	75	263	50	175
		s1	gblb	3.0	75	225	50	150

150
 99
 127
 173
 121
 66
 66
 285
 330
 208
 293
 263
 225

111
 86
 115
 128
 110
 57
 57
 190
 220
 182
 195
 175
 150

6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ
 6KZ

Totals Achieved		W	2406	E	1776
From Sheet A	Totals Required	W	2083	E	1462
Wreq/Ereq =		*			

Design Steps 4 and 5 – Bracing Units Achieved (Wind and Earthquake)

The next step is to place selected wall bracing systems on the bracing lines. A range of Gib® bracing systems have been tested and the specifications and Bracing Unit ratings are listed below. Standard Gib® plasterboard systems often represent the majority of the wall bracing elements. Gib® Braceline or Gib® Toughline systems are used for narrow walls or when high Bracing Unit ratings are required. Gib® Noiseline and Gib® Ultraline Bracing Unit ratings generally fall between Standard Gib® plasterboard and Gib® Braceline.

Wall Heights Other Than 2.4m

The published Bracing Unit ratings are based on a 2.4 metre height. For other heights, the ratings must be multiplied by a factor $f = 2.4$ divided by actual wall height. The Bracing Unit ratings for walls higher than 2.4 metres will reduce, and the Bracing Unit rating for lower walls will increase. Factor f must not be greater than 1.3.

TABLE 1: Bracing Unit ratings for 9.5mm & 12.5mm Standard Gib® plasterboard, 9.5mm Gib® Ultraline, 9.5mm Gib® Aqualine, 9.5mm Gib® Fyrelene, 9.5mm Gib® Noiseline.

Type	Minimum length (m)	Lining Requirement	Additional Requirement	Bracing Units per metre (wind)	Bracing Units per metre (Earthquake)
Standard 9.5mm Gib® plasterboard bracing systems (these ratings also apply to 9.5mm Gib® Aqualine, and 9.5mm Gib® Fyreline)					
GIB1a	1.8-2.4	Standard 9.5mm Gib® plasterboard one face, fixed horizontal or vertical	diagonal brace	55	50
GIB1b	Over 2.4			75	50
GIB2a	1.8-2.4	Standard 9.5mm Gib® plasterboard both faces, fixed horizontal or vertical	diagonal brace	75	60
GIB2b	Over 2.4			80	70
GIB3	1.2	Standard 9.5mm Gib® plasterboard both faces, fixed horizontal or vertical	N/A	65	60
Standard 12.5mm Gib® plasterboard bracing systems					
GIB10	1.8	Standard 12.5mm Gib® plasterboard one face, fixed horizontal or vertical	N/A	65	60
GIB11	1.2	Standard 12.5mm Gib® plasterboard both faces, fixed horizontal or vertical	N/A	65	65
9.5mm Gib® Ultraline bracing systems (these ratings also apply to 9.5mm Gib® Noiseline)					
UL1	1.2	Gib® Ultraline one face, fixed horizontal or vertical	6kN connections	70	60
UL2	1.2	Gib® Ultraline both faces, fixed horizontal or vertical	6kN connections	100	85

Design Steps 4 and 5 – Bracing Units Achieved (Wind and Earthquake)

TABLE 2: Bracing Unit ratings for 9.5mm Gib® Braceline and 9.5mm or 12.5mm Gib® Toughline.

Type	Minimum length (m)	Lining Requirement	Additional Requirement	Bracing Units per metre (wind)	Bracing Units per metre (Earthquake)
9.5mm Gib® Braceline bracing systems (these ratings also apply to 9.5mm or 12.5mm Gib® Toughline)					
BR1a	1.8-2.4	Gib® Braceline one face, fixed horizontal or vertical	diagonal brace	70	60
BR1b	Over 2.4			90	75
BR2a	1.8-2.4	Gib® Braceline one face, fixed vertical	N/A	75	60
BR2b	Over 2.4			85	60
BR3a	1.8-2.4	Gib® Braceline one face, fixed horizontal	N/A	60	45
BR3b	Over 2.4			95	65
BR4	0.9-1.2	Gib® Braceline one face, fixed vertical or horizontal*	6kN connections	100	85
BR5	1.2	Gib® Braceline one face, fixed vertical or horizontal*	6kN connections	115	85
BR6	1.2	Gib® Braceline one face, Standard 9.5mm Gib® plasterboard on the other, fixed vertical or horizontal*	12kN connections	150	110
BR7	0.9	Gib® Braceline one face, 7.5mm plywood on the other, fixed vertical or horizontal*	6kN connections	145	145
BR8	0.9	Gib® Braceline one face, 4.75mm hardboard on the other, fixed vertical or horizontal*	6kN connections	120	95
BR9	0.6	Gib® Braceline one face, fixed vertical or horizontal*	6kN connections	110	95

- Notes:**
- 1) Where linings are specified on both faces (Systems GIB2, GIB3, GIB11, UL2, BR6, BR7, BR8) each face must be fastened as a braced element. Refer page 12 for fastening systems relating to Plywood and Hardboard.
 - 2) See notes on Hold-Down Strap Placement, Page 12.
 - *3) For horizontal fixing of linings in Systems BR4, BR5, BR6, BR7, BR8, BR9, see page 18.

Construction Details

Framing

General framing requirements such as grade, spacings and installation shall comply with the provisions of NZS 3604. Winstone Wallboards recommends the use of kiln-dried machine stress graded framing (KD MSG). To achieve the published bracing performance the minimum actual framing dimensions are 90 x 35mm for external walls and 70 x 35mm for internal walls. System BR9 always requires a minimum of 90 x 35mm framing.

Wall bracing tests on Gib® Systems were undertaken without nogs. Nogs are not considered to add to the bracing performance of the wall.

Fastening Gib® Plasterboard Linings

Standard 9.5mm and 12.5mm Gib® plasterboard, 9.5mm Gib® Ultralite, 9.5mm Gib® Noiseline and 12.5mm Gib® Toughline may all be fastened using 32mm x 6g Gib® Grabber drywall screws or 30 x 2.8mm Gib® Nails. Gib® Braceline and 9.5mm Gib® Toughline must be fastened with 32mm Gib® Grabber Braceline screws, or 30mm Gib® Braceline nails and washers.

Gib® linings for designated bracing elements are fastened at 150mm centres around the perimeter of the bracing element. **The first fastener is always placed 50mm away from the sheet corner. See detail page 16.**

Fastening in the field of the bracing element is conventional and the screw and glue method is recommended. (See Fastener Layout details, pages 14, 15).

When fixing part sheets of Gib® plasterboard, a minimum width of 300mm is recommended for bracing elements.

Full height sheets shall be used where possible. Where sheet end butt joints are unavoidable they must be formed over nogs (or over the studs where horizontal fixing is permissible) and fastened at 200mm centres. Alternatively, the sheet end butt joints may be back-blocked.

Plywood (BR7) and Hardboard (BR8)

'Plywood' specified in BR7 is a grade C-D 7.5mm construction plywood manufactured to AS/NZS 2269:1994, fixed with 30 x 2.8mm Gib® Nails at 150mm centres around the perimeter of the bracing element and at 300mm centres to intermediate framing.

'Hardboard' specified in BR8 is 4.75mm standard or oil tempered hardboard manufactured by Fletcher Wood Panels Ltd., fixed with 30 x 2.8mm Gib® Nails at 150mm centres around the perimeter of the bracing element and at 300mm centres to intermediate framing.

Fire Resistance Ratings

9.5mm Gib® Braceline, 9.5mm Gib® Aqualine, 9.5mm Gib® Noiseline, 9.5mm Gib® Ultralite and 9.5mm Gib® Toughline may be substituted for 9.5mm Gib® Fyrelite in fire rated constructions.

The fastener length for the fire rated system applies. The field of the braced element must also be fastened in accordance with the fire rated specification (adhesive not permitted).

Jointing and Stopping

All sheet joints must be paper tape reinforced and stopped in accordance with the publication entitled, "Gib® Living Solutions Site Guide", April 1999.

Fastening the Bracing Element to Timber Floors

Fastening of the bottom plate of a Gib® wall bracing element to a timber framed floor must be in accordance with NZS3604 with pairs of 100 x 3.75mm nails at 600mm centres. In addition 6 or 12kN connections must be installed when specified for the particular bracing element type.

Fastening the Bracing Element to Concrete Slabs

Fastening of the bottom plate of a Gib® wall bracing element to concrete floors must be in accordance with NZS3604 for external walls, which includes a 12mm bolt (complete with a 50 x 50 x 3mm square washer) or a proprietary fixing with equivalent performance within 150mm (90mm for BR6) from both ends of the wall bracing elements.

On internal bracing lines, the bottom plate of Gib® Bracing elements may be fixed using 3.8mm shot fired fasteners fitted with 16mm discs, spaced at 150mm and 300mm from the end studs and thereafter at 600mm centres. This method only applies to Systems Gib1, 2, 3, 10, 11 and BR1, 2, 3.

Hold-Down Strap Placement (Refer Illustrations Pages 17 and 18)

Where 6kN connections are specified in the 'Additional Requirements' column, they are required only if the bracing element terminates within 1.2 metres from a door or window opening (see illustration, page 18).

Where 12kN connections are specified they must be installed at both ends of the bracing element in all cases.

Openings in Bracing Elements

Openings are allowed within the middle third of a wall bracing element's length and height. Neither opening dimension shall be more than one third of the element height. Wall linings are fixed to opening trimmers at 150mm centres. Small openings (e.g. power outlets) of 90 x 90mm or less may be placed no closer than 90mm to the edge of the braced element.

Angle Braces

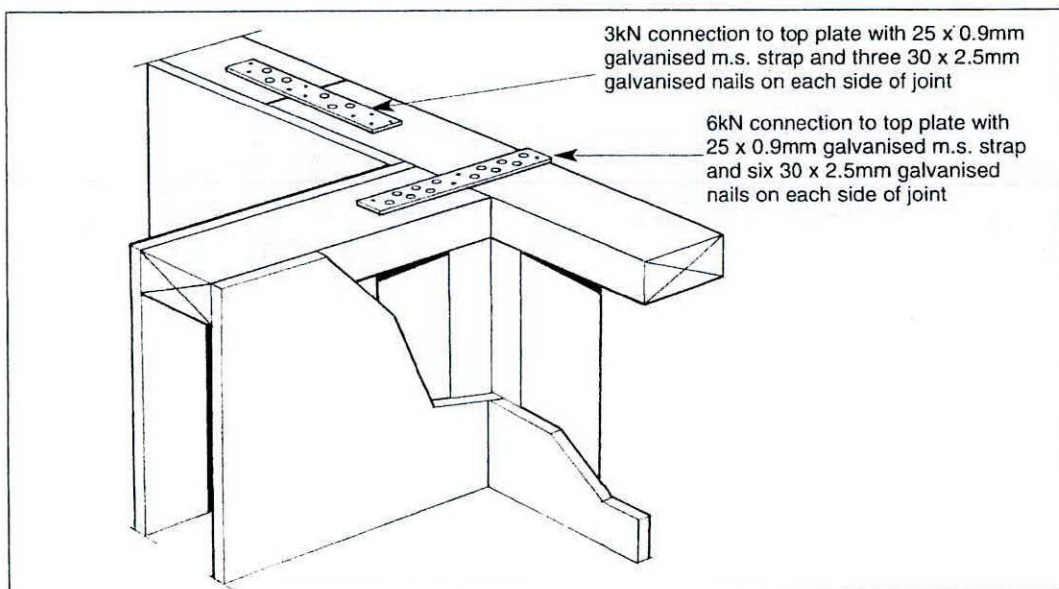
Angle braces serve to keep frames square during transport and construction. They also act as part of the temporary bracing of a building under construction. Angle braces contribute only a fraction to the bracing of a completed structure. The performance of a completed building depends mainly on the wall linings and their fixings.

Where specified, metal angle braces must be placed at an angle no steeper than 55 degrees, and within the designated length of the bracing element. For elements longer than 3.6 metres, pairs of angle braces (in opposite directions) are required. Fixing of angle braces is with three 30 x 2.8mm Gib® nails to top and bottom plates, and two 30 x 2.8mm nails to intermediate framing.

Top Plate Connections

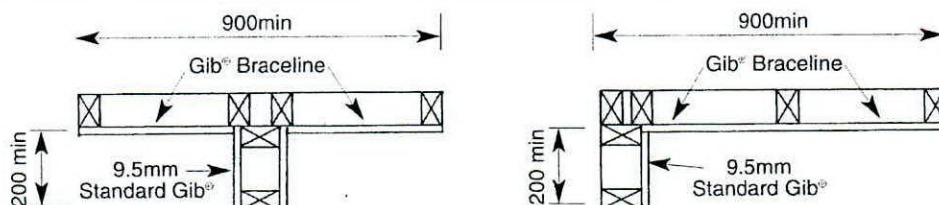
The top plate of a wall that contains one or more wall bracing elements shall be jointed according to the rating of the highest-rated individual wall bracing element as follows:

- (a) Rating not exceeding 100 bracing units: A 3kN connection as shown or by an alternative fixing of 3kN capacity in tension or compression along the plate;
- (b) Rating exceeding 100 bracing units: A 6kN connection as shown or by an alternative fixing of 6kN capacity tension or compression along the plate.



Guidelines for Intersecting Walls (all Gib® Bracing Sheet Types)

Gib® Bracing Elements may have intersecting walls with a minimum length of 200mm. Bracing element sheets shall be fixed and jointed as given on pages 14 and 15. Fasteners are required around the perimeter of the bracing element. Vertical joints at T-junctions (illustrated below) shall be fixed and jointed as specified for intermediate sheet joints. **The bracing element length must be no less than 900mm.**



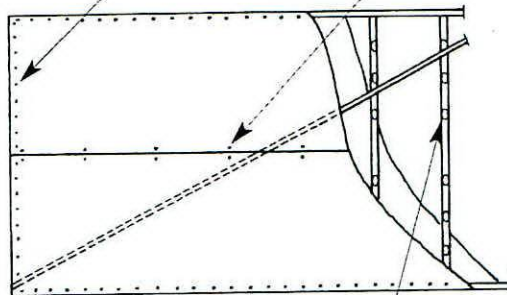
Where Wall Bracing Elements are interrupted by T or L junctions (as illustrated in the 900mm example above) they should be considered as follows:

The bracing element has been cut to accommodate the junction. Nevertheless, in respect of calculating Bracing Units, the Bracing Element is deemed to be continuous for the whole length (900mm in this particular case).

Fastener Layouts

32mm x 6g Gib® Grabber screws or 30mm Gib® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or Gib® Nails where sheets cross studs

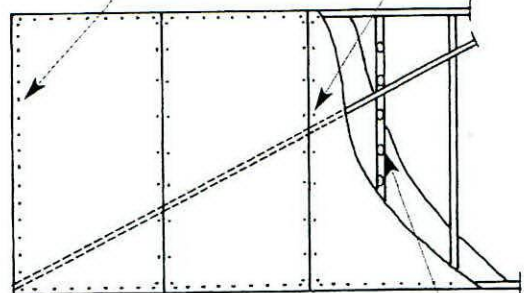


**Gib® 1 (lined one side)
Gib® 2 (lined both sides)
(Horizontal Fixing)**

Daub of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm x 6g Gib® Grabber or 30mm Gib® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or Gib® Nails at 300mm centres

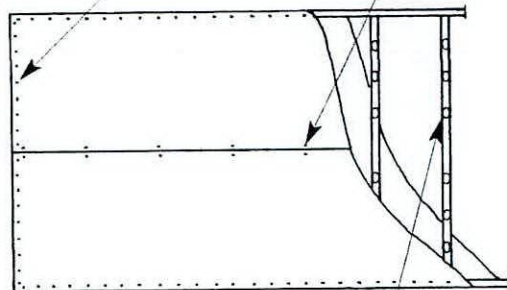


**Gib® 1 (lined one side)
Gib® 2 (lined both sides)
(Vertical Fixing)**

Daub of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm x 6g Gib® Grabber screws or 30mm Gib® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or Gib® Nails where sheets cross studs

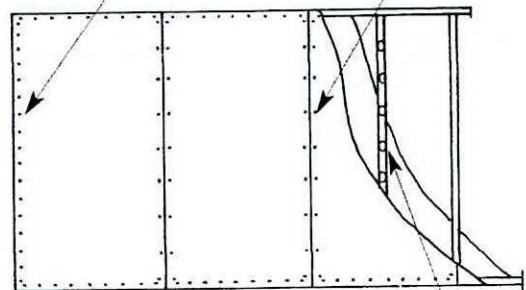


**Gib® 3 (lined both sides)
Gib® 10 (lined one side)
Gib® 11 (lined both sides)
(Horizontal Fixing)**

Daub of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm x 6g Gib® Grabber screws or 30mm Gib® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or Gib® Nails at 300mm centres

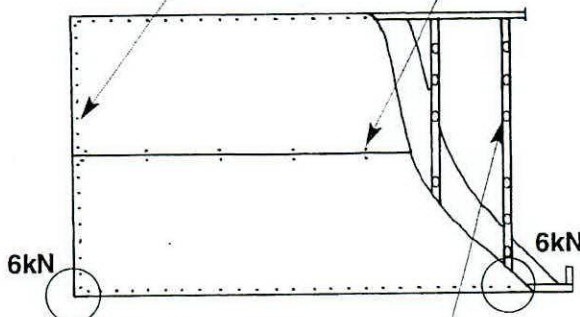


**Gib® 3 (lined both sides)
Gib® 10 (lined one side)
Gib® 11 (lined both sides)
(Vertical Fixing)**

Daub of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm x 6g Gib® Grabber screws or 30mm Gib® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or Gib® Nails where sheets cross studs

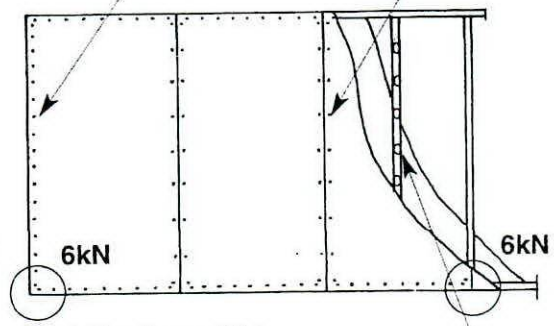


**UL1 (lined one side)
UL2 (lined both sides)
(Horizontal Fixing)**

Daub of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm x 6g Gib® Grabber screws or 30mm Gib® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or Gib® Nails at 300mm centres



**UL1 (lined one side)
UL2 (lined both sides)
(Vertical Fixing)**

Daub of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

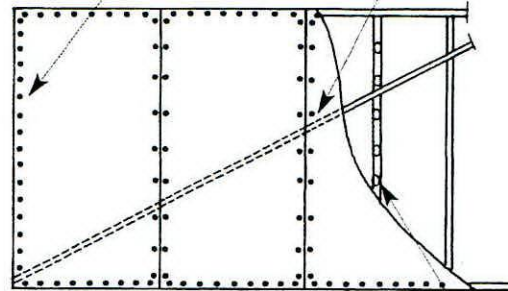
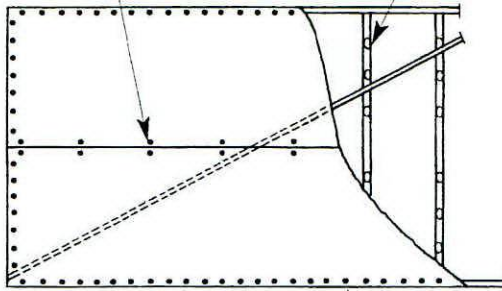
Fastener Layouts – continued

32mm single screws or Gib® Nails where sheets cross studs

Daub of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm Gib® Braceline screws or 30mm Gib® Braceline clouts and washers at 150mm centres to perimeter of braced element

Single 32mm screws or Gib® Nails at 300mm centres



**BR1 (lined one side)
(Horizontal Fixing)**

32mm Gib® Braceline screws or 30mm Gib® Braceline clouts and washers at 150mm centres to perimeter of braced element

**BR1 (lined one side)
(Vertical Fixing)**

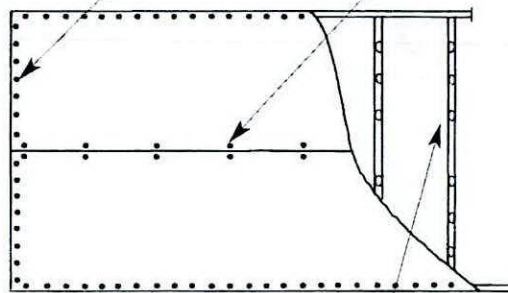
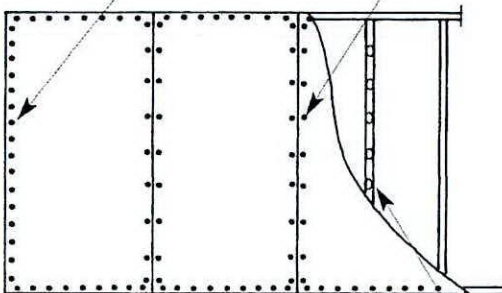
Daub of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm Gib® Braceline screws or 30mm Gib® Braceline clouts and washers at 150mm centres to perimeter of braced element

Single 32mm screws or Gib® Nails at 300mm centres

32mm Gib® Braceline screws or 30mm Gib® Braceline clouts and washers at 150mm centres to perimeter of braced element

Single 32mm screws or Gib® Nails where sheets cross studs



**BR2 (lined one side)
(Vertical Fixing Only)**

Daub of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

**BR3 (lined one side)
(Horizontal Fixing Only)**

Daub of Gib® Fix Wood Bond adhesive only at 300mm centres to intermediate studs

32mm Gib® Braceline screws or 30mm Gib® Braceline clouts and washers at 150mm centres to perimeter of braced element

32mm Gib® Braceline screws or 30mm Gib® Braceline clouts and washers at 150mm centres to perimeter of braced element

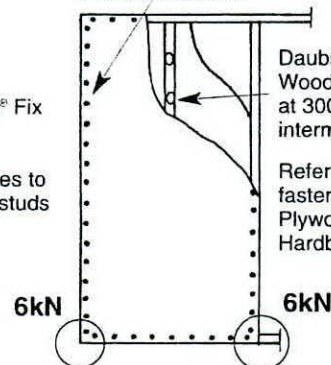
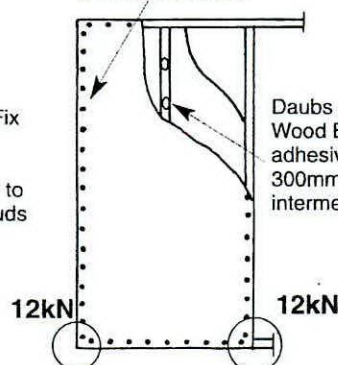
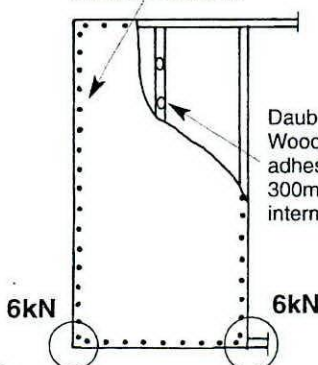
32mm Gib® Braceline screws or 30mm Gib® Braceline clouts and washers at 150mm centres to perimeter of braced element

Daubs of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

Daubs of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

Daubs of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

Refer page 12 re fastener details for Plywood (BR7) Hardboard (BR8)



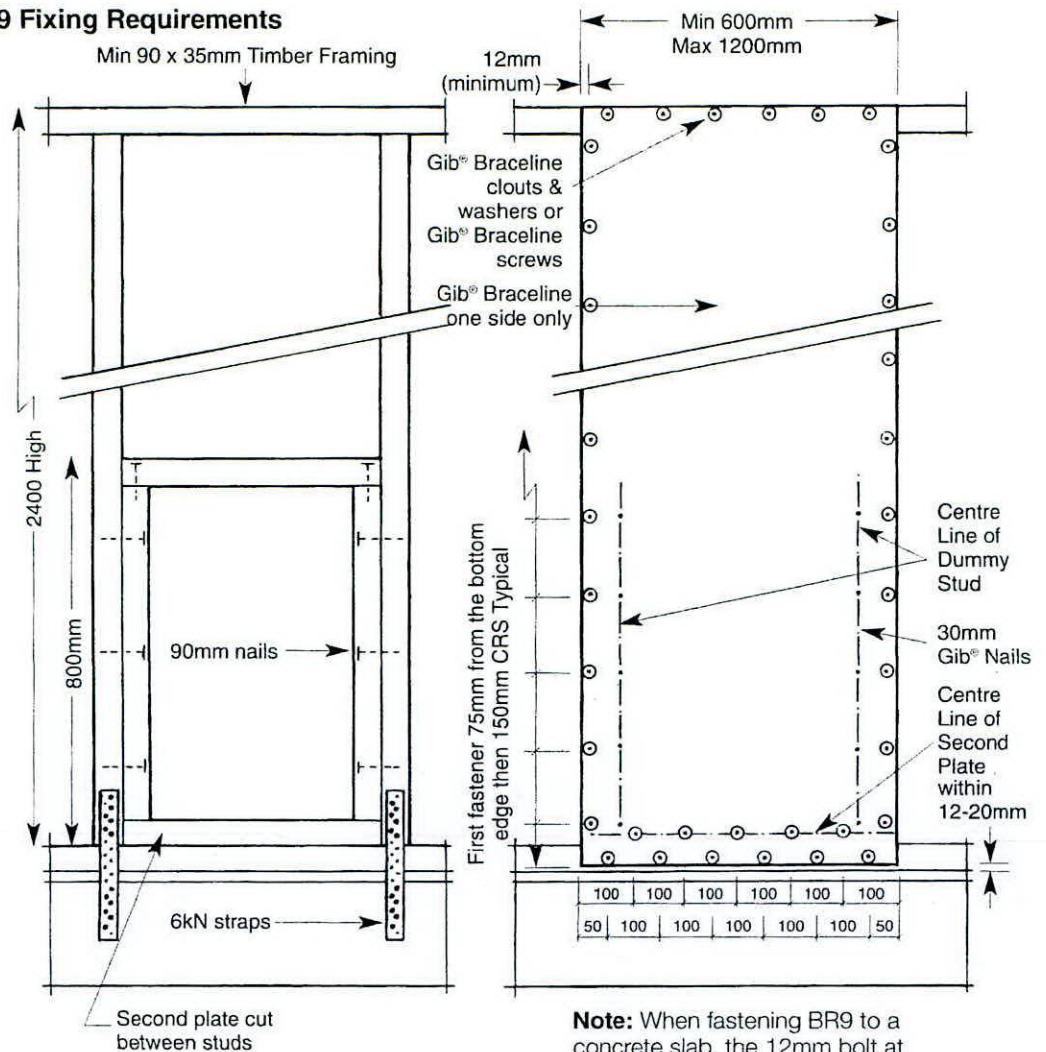
**BR4 (lined one side)
BR5 (lined one side)**

BR6 (lined both sides)

**BR7 (lined both sides)
BR8 (lined both sides)**

Note: If the length of the braced element using systems BR4, BR5, BR6, BR7 and BR8 exceeds 1.2m, then the sheet edges within the element are secured with single screws or nails at 300mm centres.

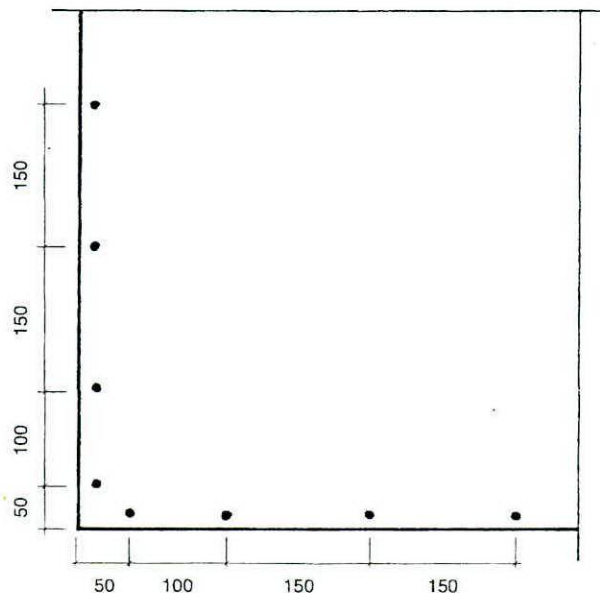
BR9 Fixing Requirements



IMPORTANT

Corner Fastening Details

This pattern applies to ceiling diaphragms and to all wall bracing elements except BR9.



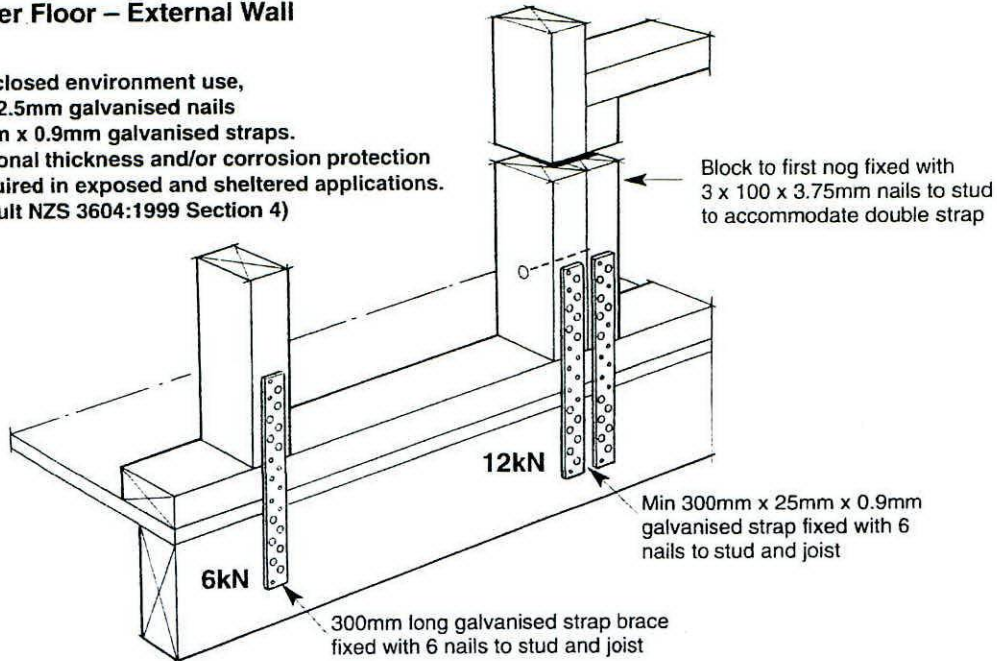
Hold-Down Straps

Timber Floor – External Wall

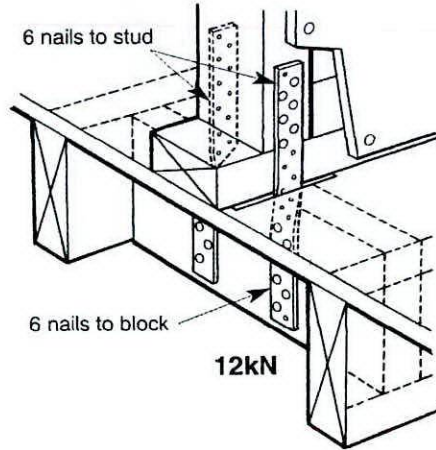
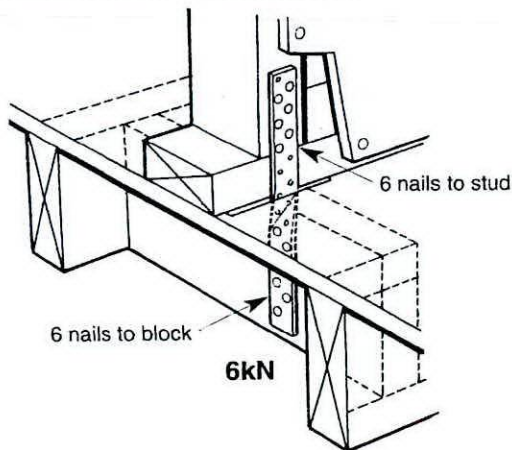
For a closed environment use,

- 30 x 2.5mm galvanised nails
- 25mm x 0.9mm galvanised straps.

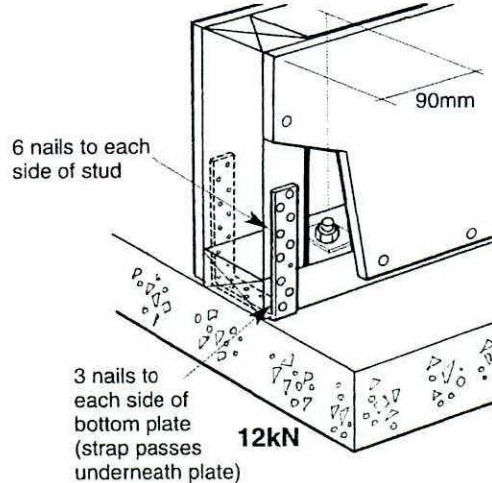
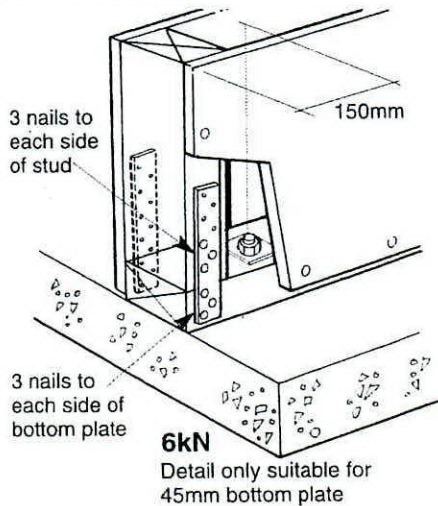
Additional thickness and/or corrosion protection is required in exposed and sheltered applications.
(Consult NZS 3604:1999 Section 4)



Timber Floor – Internal Wall

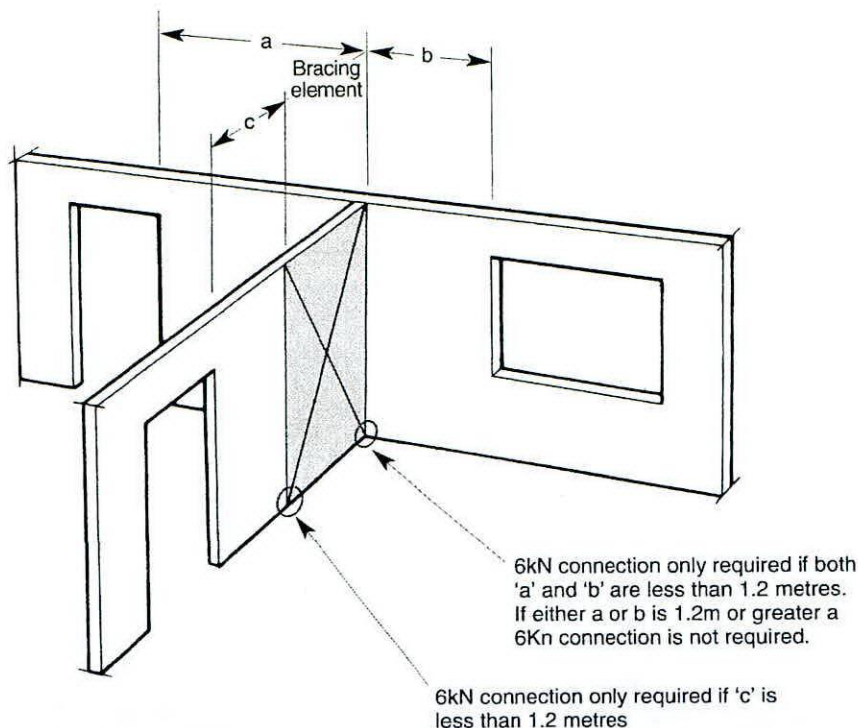


Concrete Floor



6kN Connections – UL1, UL2, BR4, BR5, BR7, BR8 & BR9
12kN Connections – BR6

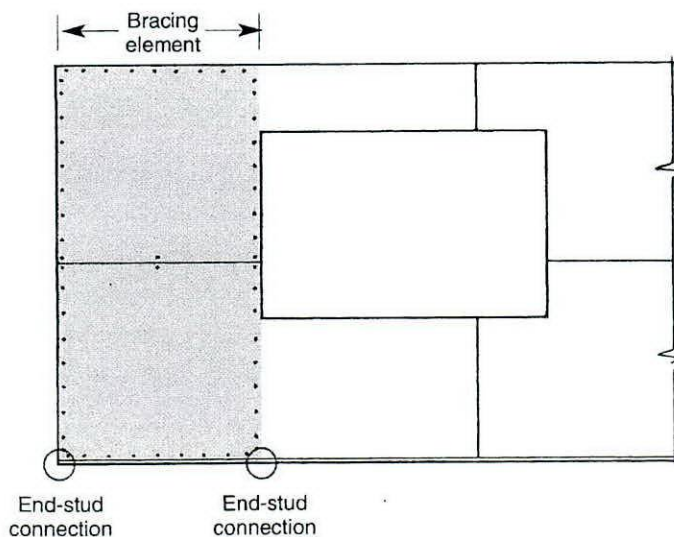
Hold-Down Strap Placement



Note: Where 12kN connections are specified (BR6) they must be installed at both ends of the bracing element in all cases.

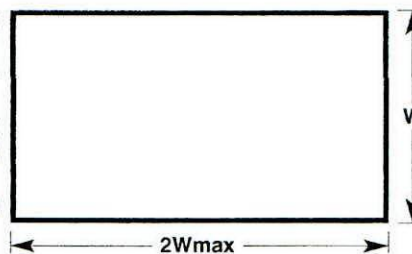
Horizontal Fixing (BR4, 5, 6, 7, 8, 9)

Gib® Braceline linings in systems BR4, 5, 6, 7, 8, 9 may be fixed horizontally when linings extend under/over door or window openings. Gib® Braceline fasteners are provided around the perimeter of the bracing element.



Ceiling Diaphragms

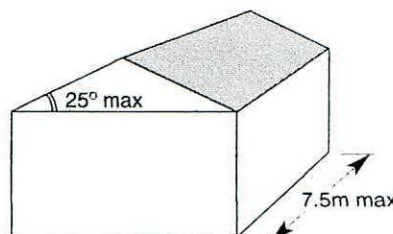
Gib® ceiling diaphragms are strong and stiff horizontal bracing elements which effectively transfer loads over large distances. They may be used to space bracing lines further apart than 5 metres (single top plate), or 6 metres (double top plate). A ceiling diaphragm may be square or rectangular. Its length shall not exceed twice its width. The width being measured horizontally between supporting walls. Ceiling diaphragms under light and heavy roofs are required to comply with NZS3604:1999.



Limitations for Standard 9.5mm or 12.5mm Gib® plasterboard Ceiling Diaphragms

- Diaphragms not steeper than 25 degrees to the horizontal shall not exceed 7.5 metres in length.
- Standard 9.5mm or 12.5mm Gib® plasterboard is fastened at 150mm centres to the boundary members around the entire perimeter of the diaphragm.

Fasteners - 32mm x 6g Gib® Grabber drywall screws or 30mm x 2.8mm Gib® Nails.

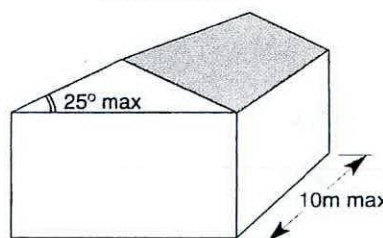


Standard Gib® plasterboard Diaphragms

Limitations for 9.5mm Gib® Ultraline Ceiling Diaphragms

- Diaphragms not steeper than 25 degrees to the horizontal shall not exceed 10 metres in length.
- Gib® Ultraline is fastened at 150mm centres to the boundary members around the entire perimeter of the diaphragm.

Fasteners - 32mm x 6g Gib® Grabber drywall screws or 30mm x 2.8mm Gib® Nails.

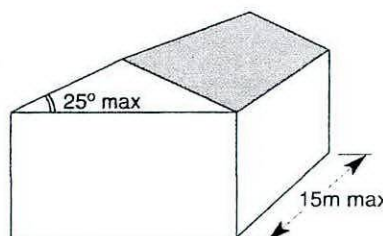


Gib® Ultraline Diaphragms

Gib® Braceline Ceiling Diaphragms

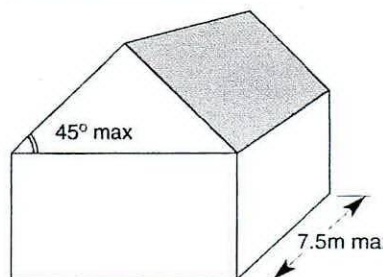
- Diaphragms not steeper than 25 degrees to the horizontal shall not exceed 15 metres in length.
- Diaphragms not steeper than 45 degrees to the horizontal shall not exceed 7.5 metres in length.
- Gib® Braceline is fastened at 150mm centres to the boundary members around the entire perimeter of the diaphragm.

Fasteners - 32mm Gib® Grabber Braceline screws or 30mm Gib® Braceline nails and washers.



General Fixing Requirements for Gib® Ceiling Diaphragms

- Linings shall be installed over the entire area of the diaphragm.
- Fastening shall be no less than 12mm from sheet edges.
- Sheets shall be supported by framing members (e.g., ceiling battens) spaced at no more than 450mm centres for standard 9.5mm Gib® plasterboard and Gib® Braceline and at no more than 600mm centres for 12.5mm Gib® plasterboard and Gib® Ultraline.
- Sheets within the diaphragm area may be fastened and finished conventionally in accordance with the publication entitled, "Gib Living Solutions Site Guide" 1999. All joints shall be paper tape reinforced and stopped. It is recommended that sheet butt joints are formed off framing using Gib® back-blocking.
- Full width sheets with a length not less than 1800mm shall be used at the ends of the diaphragm. In the middle third of the diaphragm the sheet width may be reduced.
- Openings are allowed within the middle third of the diaphragm's length and width. Fixing of sheet material to opening trimmers shall be at 150mm centres. Neither opening dimension shall exceed a third of the diaphragm width. Larger openings, or openings in other locations, require specific engineering design.



Gib® Braceline Ceiling Diaphragms

Note: See Corner Fastening Detail, page 16.

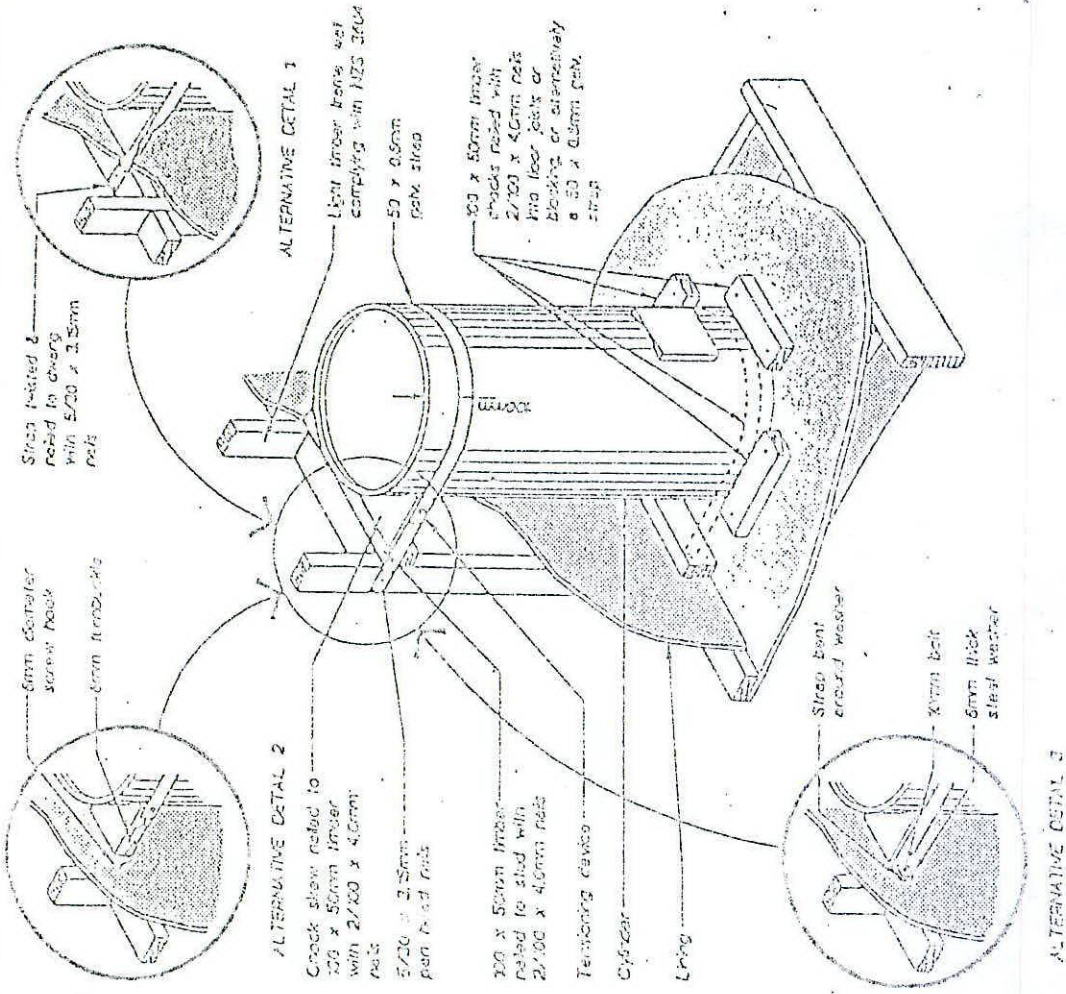
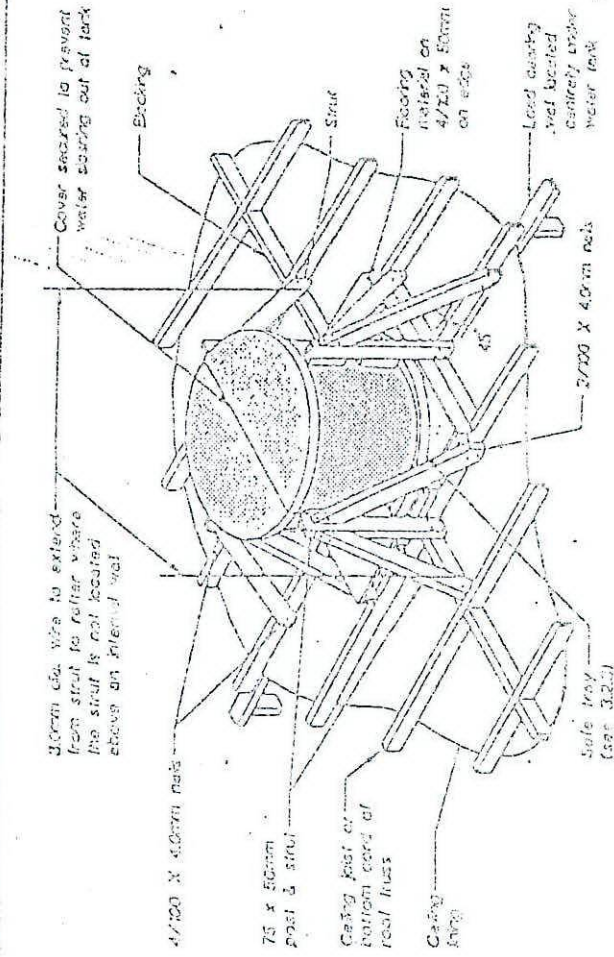


Figure 6: Structural support for water tanks
(200 litre maximum capacity)
Paragraph 3.2.6



TASMAN DISTRICT COUNCIL
APPROVED CONSENT DOCUMENT

- THIS DOCUMENT MUST STAY ON JOB UNTIL COMPLETION
- GIVE 24 HOURS NOTICE before any work is covered up
- Council inspection are required BEFORE any:
 - * concrete, masonry work, grouting, placement
 - * lining, slabbing, roof lining
 - * structural frame enclosure
 - * trim lining, lining stopping
 - * plumbing, drainlaying, covering
- Deviations from this Document require further approval
- Consent holder is responsible and liable for any damage as a result of this work being carried out.

Date: 10/7/00 Building Consent No. 000927

Property owners have a legal obligation under the Plumbers Gasfitters and Drainlayers Act 1976 to have a craftsman plumber and registered drainlayer carry out their appropriate trade. Failure to do so could lead to legal action.

To: TDCAttention: Linda/Graeme

Fax: _____

Date: 29/6/2000 Time: 3:15pmNo of pages: 2Ph(03) 543 9111 Fax (03) 543 9112
186 Queen St Richmond, Nelson

Sent by Scott MacKay

Please find following truss layout for
Ackroyd Residence, Moutere Highway.
Trusses are cantilevered over deck
so 250x50 beam to posts is supporting
ceiling joists only, thanks.
Give me a call if there is anything
else holding this consent up, cheers
Scotty.

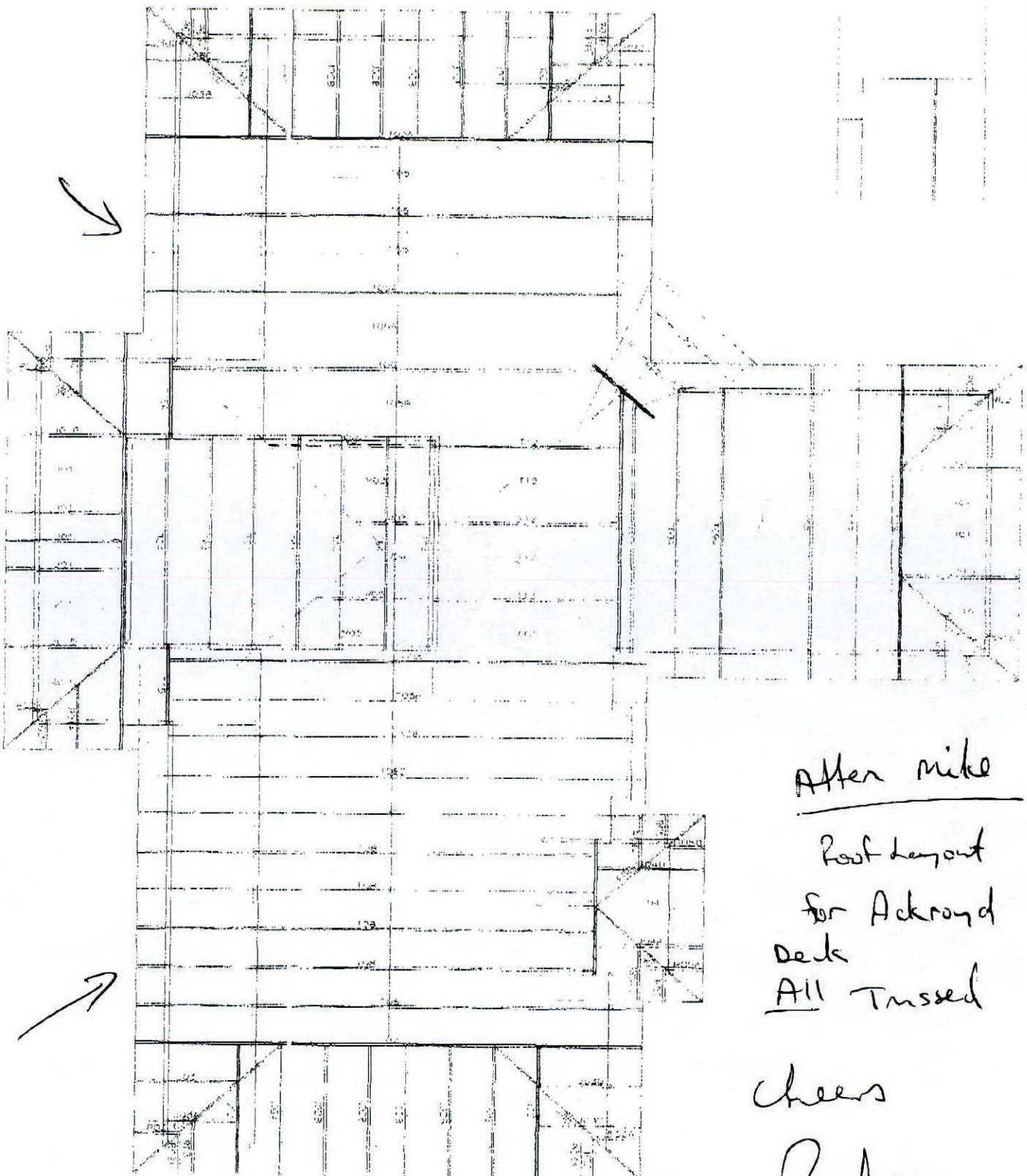
Statement of Confidentiality

The information on this fax is intended for the addressee named above. If you are not the addressee note that any disclosure, photocopying, distribution or use of the contents of this faxed information is prohibited. If you have received this fax in error please call us on 544 0000 so that we may redirect.

From: Trevor Rees 64 3 5430456 To: Rodley

Date: 22/06/00 Time: 18:13:50

Page 1 of 1



After Mike

Roof Layout
for Ackroyd
Docks
All Trussed

Cheers

Rodley

**TASMAN DISTRICT COUNCIL
APPROVED CONSENT DOCUMENT**

THIS DOCUMENT MUST STAY ON JOB UNTIL COMPLETION
GIVE 24 HOURS NOTICE before any work is covered up

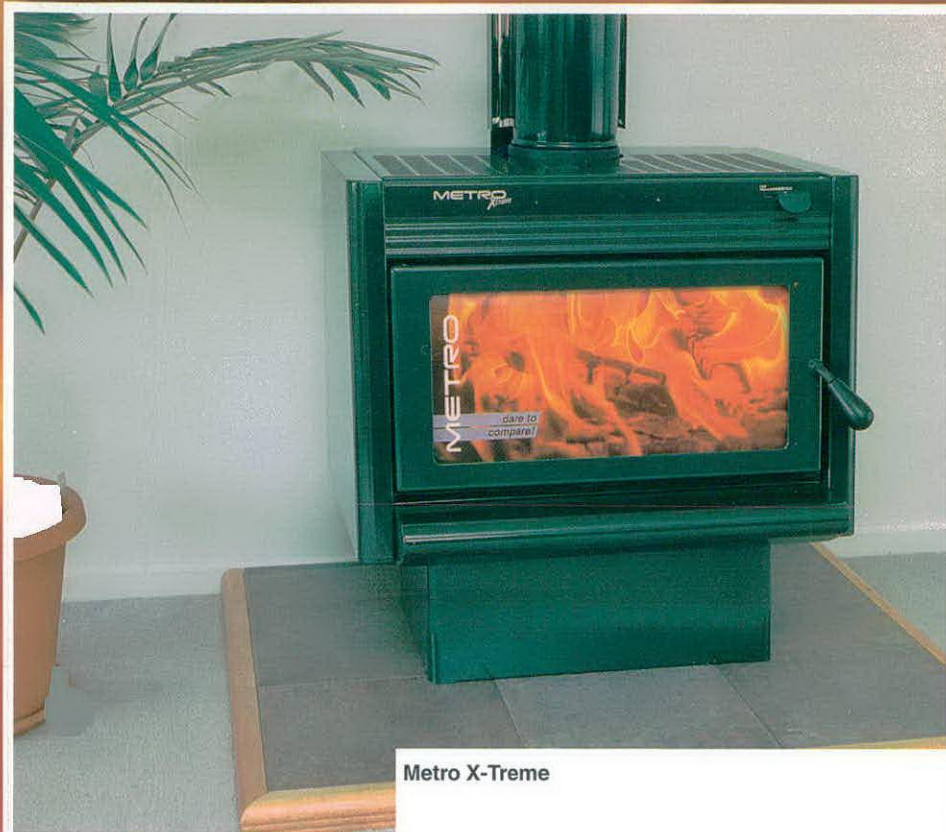
Council inspection are required BEFORE any:

- * concrete, masonry, brick, grouting, placement
- * lining, cladding, roof fixing
- * structural frame enclosure
- * trim fixing, lining stopping
- * plumbing, drainlaying, covering

Deviations from this Document require further approval
Consent holder is responsible and liable for any damage as a
result of this work being carried out.

Date: 10/7/00 Building Consent No: 000927

Property owners have a legal obligation under the Plumbers Gasfitters and Drainlayers Act 1976 to have a craftsman plumber and registered drainlayer carry out their appropriate trade. Failure to do so could lead to legal action.



Metro X-Treme

METRO X-TREME extends the Metro family to accommodate the larger home with output to perform in the coldest climates. While retaining the style of the Metro family, subtle visual differences assist in the free convection of air enabling minimal clearances from walls and furnishings. The extreme output of the X-Treme required a totally new firebox design. The conventional rectangular firebox shape has been replaced with a more complex form combining firebrick and ceramic lining inside an offset firebox.

Colour options in vitreous enamel:- **matt black, matt brown, forest green & dark charcoal**

Illustrated in dark charcoal installed on a Pioneer rimu trim multi coloured wall hearth.

METRO ASPIRE, output and style clearly place the Aspire as the flagship of the Metro range. Metro's Euro door is standard on the Aspire and is complemented with curved panels and soft radiuses to achieve a visual effect that is truly stunning.

Performance of the Aspire is equal to its styling, with a unique primary air supply which draws incoming air across the glass and delivers it direct to the base of the fire. This coupled with the optional 3 speed fan has resulted in output tested to an impressive 19.8kW's. Colour options in vitreous enamel:- **matt black, matt brown, dark charcoal, forest green and jasmine.**

Illustrated in forest green installed on a Pioneer rimu trim terracotta tile corner hearth.

Metro Aspire



All Metro woodfires are tested to NZS 7421:1990 with full specifications detailed in the installation and operation manual supplied with every Metro. As research and development is

ongoing, specifications may alter and those detailed below should be used as a guide only. Consult your local Metro retailer if in doubt.

SPECIFICATIONS

	METRO PIONEER'S & CHAMELEON	METRO X-TREME	METRO ASPIRE	METRO INSERTS	
				COMPACT	HIGH OUTPUT
Tested = *, Estimated = () PEAK OUTPUT	14.6kw *	17.7kw *	19.8kw *	(13kw)	(16kw)
WIDTH	590mm	670mm	670mm	560mm	560mm ⁽²⁾
DEPTH	530mm	575mm	575mm	410mm	500mm ⁽²⁾
HEIGHT	640mm ⁽¹⁾	690mm	715mm	550mm ⁽²⁾	550mm ⁽²⁾
FASCIA DIMENSION	N.A.	N.A.	N.A.	650 high x 810 wide	
WETBACK INLET CENTRE HEIGHT	270mm ⁽¹⁾	315mm	340mm	170mm	170mm
WETBACK RETURN CENTRE HEIGHT	460mm ⁽¹⁾	505mm	530mm	360mm	360mm
FLUE CENTRE HEIGHT (Rear O/Let)	550mm ⁽¹⁾	N.A.	N.A.	N.A.	N.A.
WARRANTY - ALL MODELS	5 YEARS ON FIREBOX, 1 YEAR OTHER PARTS				
FLUE SIZE - ALL MODELS	150mm DIAMETER, MINIMUM 3.6m LONG				
WETBACK - ALL MODELS	OPTIONAL - 3kw and 4kw WETBACK AVAILABLE				
FIREBOX - ALL MODELS	6mm STEEL, FIREBRICK/CERAMIC LINING				
BOILER	N/A	X-TREME & ASPIRE ONLY	N/A	N/A	

Note (1) A reduced height pedestal is available, but an insulating hearth is required when fitted. See manual.

Note (2) These insert measurements exclude insulation supplied with and fitted to the cabinet.

CLEARANCES

		TOP FLUED PIONEER & METRO CHAMELEON	METRO PIONEER REAR OUTLET	METRO ASPIRE & METRO X-TREME
WITH PIONEER DOUBLE FLUESHIELD	REAR CLEARANCE	50mm	N/A	80mm
	SIDE CLEARANCE	300mm ⁽³⁾	N/A	240mm
	CORNER CLEARANCE	85mm	N/A	110mm
	MINIMUM HEARTH SIZE	680 Deep x 830 W	N/A	755 Deep x 910 W
WITHOUT FLUESHIELD	REAR CLEARANCE	430mm	60mm	650
	SIDE CLEARANCE	300mm	270mm	240
	CORNER CLEARANCE	280mm	100mm	250
	MINIMUM HEARTH SIZE	1,060 Deep x 830 W	690 Deep x 830 W	1,325 Deep x 910 W

Clearances specified are minimum allowable from combustible surfaces tested to NZS7421 : 1990.

Note (3) By fitting the optional flueshield side extension panel, min side clearances reduce to 270mm or 220mm if in an alcove not projecting forward of the Metro.

HEARTH All Metro free standing woodfires comply with NZS 7421 when installed on an ash hearth, which must extend 200mm forward, to each side and rear of the door opening. Refer to the installation and operation manual for full specifications.

Metro inserts must be installed on an insulated base of 12mm minimum thickness. If the insert is raised above the combustible floor a 200mm ash hearth projection applies, the compact insert must be raised a minimum of 50mm and high output model 40mm. Refer to manual for full details.

1999

P & M FIREPLACES
80 VANGUARD ST.,
NELSON.
PH. 548 0515

METRO

Pioneer Manufacturing Limited

MAMAKU STREET, PO BOX 11, INGLEWOOD
TELEPHONE 06 756 6520
FAX 06 756 6540
NEW ZEALAND