

MOORE architecture

your home your vision



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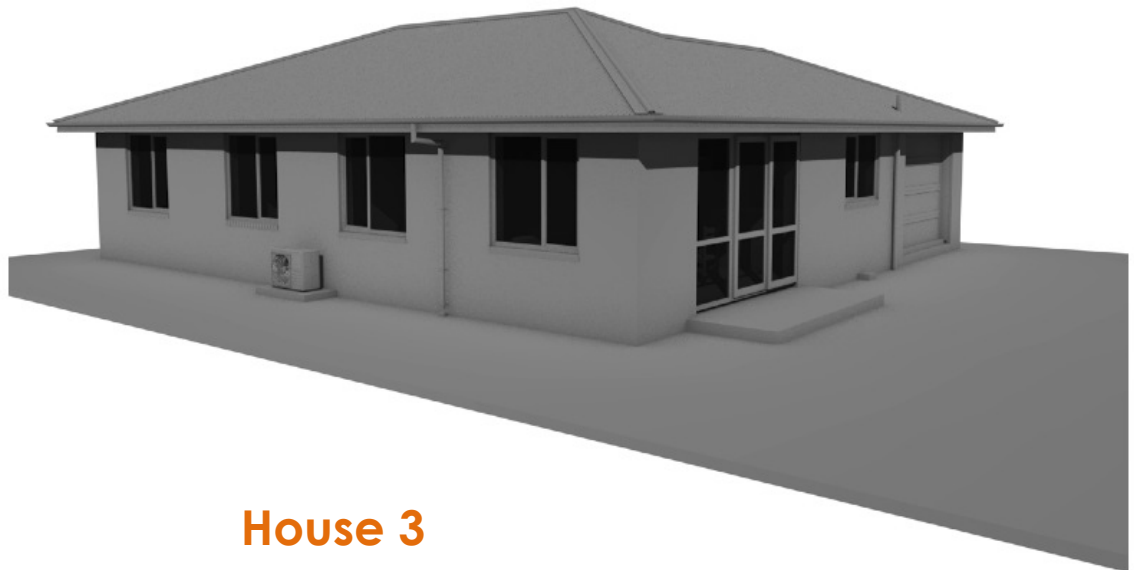


60 allens road, Ashburton.

Phone:- 03 308 0299 email:- info@moorearch.co.nz

SPECIFICATIONS

Of work to be done and materials to be used in carrying out the works shown on the accompanying drawings.



House 3

32 Willow Street
Ashburton

Project Number:- **1350**



CONTACT DETAILS

Client: Jeff Shanks

Contact Address: 9 Country Place
Ashburton

Phone: 027 493 3267

Email:

SITE DETAILS

Lot Number: 3

DP number: 21400

Site area: 360m²

Exposure Zone: B

Wind Zone: Medium

Earthquake Zone: 1

Snow Zone: N4 91m

Building Zone: Residential C

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PRELIMINARY & GENERAL

DIMENSIONS:

Figured dimensions on drawings shall take preference to scaled dimensions and larger scale drawings given preference to smaller. Unless expressly stated otherwise, dimensions shall be taken to define bare surface of concrete, timber frames and the like. All dimensions shall be verified on site before commencing any work.

All dimensions that relate to site boundaries & easements are to be verified by a site survey. Ground heights shall be re-checked onsite by the builder before starting any work to confirm working levels.

BUILDER (main contractor):

The builder shall have total responsibility of this project with the client once started.

The builder is fully responsible for the work on site and other aspects of the project to ensure a good level of workmanship can be attained.

The builder shall notify the designer in writing in respect of any aspect of the project that is not clear prior to starting construction.

No inspections have been allowed for by Moore Architecture Ltd.

All inspections required are to be carried out by the BCA or their nominated contractors, missed or failed inspections may lead to a consent completion certificate (CCC) not being issued.

VARIATIONS & AMENDMENTS:

Any changes shall be submitted to the BCA with appropriate revised drawings and specifications for approval prior to the change-taking place. All changes are to be supported by written approval of the owner to the BCA.

DOCUMENTATION:

The full building consent and resource consent (where applicable) documentation shall be on site at all times. Documentation includes but is not limited to the following; plans, specification, calculations, PS1s, PIMs, SINs and inspection records.

CONSTRUCTION & DEMOLITION HAZARDS:

Construction and demolition work on buildings shall be performed in a manner that avoids the likelihood of:

- a) Objects falling onto people on or off the site,
- b) Objects falling on property off the site,
- c) Other hazards arising on the site affecting people off the site and other property, and
- d) Unauthorised entry of children to hazards on the site.

Refer to compliance document for acceptable means of compliance.

GENERALLY:

All design work in this project has been designed to NZS3604: 2011 Timber framed Buildings. The building shall be constructed to comply with all relevant parts of the New Zealand building code and current relevant standards.

All paths & patios shown are indicative only, allow 1:40 cross-falls away from buildings. Any deck under 1.50m high does not need a building consent, but must comply with the building code.

Site measure all work before construction and ordering materials.

DURABILITY

TIMBER:

Unless stated otherwise all structural timber to be verified grade SG8 in accordance with AS/NZS 1748: 1997, NZS 3603: 1993 Amendment: 1, 2, 4 and the species will be Radiata Pine or Douglas Fir and treated to H1.2 level in accordance with NZS 3602: 2004.



EXCAVATOR

CLEAR SITE:

Remove vegetation, trees and roots and 150mm of topsoil within the area to be covered by the works.

Stock pile all soil on site out of the way, check with owner for location.

FOUNDATION TRENCHES:

As per plans min 240mm wide for heavy cladding, keep free of water and loose material. Concrete shall not be placed until excavations have been inspected and approved by the building inspector. Foundation depths are minimums only; all foundations shall extend to solid bearing.

CONCRETE AND REINFORCING

GENERAL:

Refer to working plans for all details regarding this section.

DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC B1/AS1	Structure
NZS 3604	Timber framed buildings
AS/NZS 4671	Steel Reinforcing Materials

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

CONCRETE:

Allow minimum 28 day compressive strength of 20Mpa concrete to foundations and 20Mpa to slabs. Slabs shall be a minimum of 100mm thick.

STEEL:

Where designated 'D' reinforcement shall be deformed bars. Where designated 'R' reinforcement shall be plain bars. All reinforcing steel, including welded mesh, shall be Ductility Class E in accordance with NZS 4671:2001.

All slab on ground reinforcing shall extend to within 75mm of the outside edge of the slab (including the foundation wall) and shall consist of a minimum 2.27kg/m² welded reinforcing mesh sheets (1.15kg/m² in each direction), or in accordance with the manufacturer's requirements, whichever is greater. Slabs shall have a maximum dimension of 24 metres between free joints.

COVER:

- Against ground 75mm minimum.
- Against formwork 50mm minimum.
- Top cover to mesh 30mm minimum.

BEARING:

Granular fill material complying with 7.5.3.2 shall be placed and compacted in layers of 150mm maximum thickness, over the area beneath the proposed ground slab, so that the total thickness of granular base is not less than 75mm nor more than 600mm.

The top surface of the granular base shall be a material that will not puncture the DPM.

Compact each layer until the material is tightly bound together and does not deform under the weight of a pressed adult heel.



Granular fill material shall be composed of rounded gravel, crushed rock, scoria or approved material.

- a) Not more than 5% shall pass through a 2.2mm sieve.
- b) 100% shall pass either:
 - i. A 19mm sieve for any fill thickness: or
 - ii. A 37.5mm sieve for a fill thickness exceeding 100mm.

If hardfill is in excess of 600mm deep then specific design is required by the builder's engineer, is required.

DAMP-PROOF MEMBRANE:

The DPM shall consist of 2 sheets of polyethylene not less than 0.25mm thick, joints shall be lapped 150mm and sealed with adhesive tape not less than 50mm wide.

SHRINKAGE CONTROL JOINTS:

Shrinkage control joints shall be formed by casting in a crack inducer or by saw cutting the slab after it has hardened. Inducer or saw cuts shall extend to a quarter of the depth of the slab. Saw cutting shall take place no later than 24 hours after initial set for average ambient temperatures above 20°C, and 48 hours for average ambient temperatures below 20°C. Shrinkage control joints should be positioned where possible on the line of walls ensuring that the joint is positioned so that the edge distance required for the bottom plate fixings is maintained.

EXTERIOR CLADDING

GENERAL:

Comply with E2/AS1 External Moisture

Wall framing to be 90x45 mm SG8 at max 600mm centres with nogs at 800mm centres.

Double studs at internal corners and extra packers at external corners.

Note studs at 400mm centres and 800mm centre nogs for tiled areas.

BRICK:

All work shall be in accordance with the requirements of NZS 3604: 2011 and NZS 4210: 2001 "Code of Practice for Masonry Construction", as appropriate.

70 series brick with weep holes at 800crs top & bottom, allow three coats of mulseal to foundation.

Brick ties shall be to every third course and every stud.

DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture, 9.0 Wall claddings
AS/NZS 1170.2	Structural design actions - Wind actions
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings
NZS 1170	Structural Design Actions

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

FLASHINGS:

All flashings to comply with NZBC B2 & E2.

Allow for all flashings and accessories, made from 0.55 BMT COLOUR STEEL, colour to match cladding, in as long lengths as possible, as required to complete and make the building weather tight.

All joints in flashings made with blind aluminium rivets and a neutral cure silicone rubber sealant.

Note that flashings around the windows and doors should not be pre-measured and cut, as they may need to take into account variation in peaks and troughs in the exterior claddings.

Any pipe flashings shall be made with standard Aquaseal units or approved equivalents.



CARPENTER

GENERAL:

Refer to working plans for all details regarding this section.

All framing and structural members have been designed using SG8 timber using the tables in NZS3604 where appropriate; in some cases sizes are taken from Design IT software package, MITEK truss designers' producer statements and engineers' producer statements, these are clearly identified if it is the case. All parts of the building shall be securely fastened in accordance with NZS 3604: 2011 to resist all forces likely to be encountered on it.

DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC B2/AS1	Durability
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber Structures Standard
NZS 3604	Timber framed buildings

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

BRACING:

REFER TO APPENDIX SECTION FOR BRACING DETAILS

Refer to working plans

All bracing to comply with NZBC B1 structure and B2 Durability. All wall bracing designed in accordance with NZS3604: 2011 unless stated otherwise. Bracing values for wall board are taken from GIB EZY Brace system 2011. All hold-downs referred to are GIB HandiBrac to be fixed to resist 15kN uplift (use Screw Bolt or similar approved). All GIB wallboards to be fixed to GIB instructions contained with the GIB Site Guide. Do not place adhesive under sheet edges or under screw fixings. Do not fix interior linings until timber moisture content is less than 18%. All walls to be lined with 10mm Standard GIB board (except where alternative board for bracing is specified) screw fixed to timber frame unless note otherwise. Refer to appendix for fixing details.

13mm GIB board ceiling lining fixed to 70x35mm timber ceiling battens treated to H1.2.

HAZARDOUS AGENTS:

Comply with F1/AS1 hazardous agents on site.

F2/AS1 hazardous building materials (NZS4223 glazing in buildings)

F3/AS1 hazardous substances and processes.

WALL UNDERLAY:

To comply with NZBC E2/AS1 and AS/NZS 4200.1.

Provide Tekton synthetic breather type building wrap (Branz Appraisal No. 548 2013) and sealing of windows with self-adhesive flashing tape, as per E2/AS1.

LINTEL FIXINGS:

The lintel fixings used are Lumberlok type which are an alternative to NZS3604: 2011, refer to appendix for fixing details. The frame manufacturer may substitute lintel sizes or use and engineered wood product providing a producer statement is provided to the BCA.

TRUSSES:

REFER TO APPENDIX SECTION FOR TRUSS LAYOUT AND CERTIFICATION

Trusses to be designed by MITEK or similar approved timber engineering company, and to be supported by producer statement. Buildable layout to be provided to builder with copies made available to the BCA. (This may include a change in lintel sizes which is acceptable if supported by a PS1).



Roof structure to be treated to H1.2
All roof bracing to comply with NZS3604:2011 section 10.4.
13mm GIB board ceiling lining over 70x35mm timber H1.2 treated ceiling battens at 600c/s.
Allow manhole of minimum 800x800mm giving unobstructed access to roof with min. 600mm height from top of joists to other roof members.
As the roof is lightweight hip and valley no additional bracing is required.

SOFFIT:

Install 4.5mm fibre cement sheet linings to soffits with pvc joiners to receive a painted finish.

INSULATION

DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC H1/AS1	Energy Efficiency
NZS 4218:2004	Energy Efficiency: Small Building Envelope
NZS 4246	Installing Insulation in Residential Buildings

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

WALLS:

Provide Pink Batts or similar approved wall insulation providing and R value of $2.8\text{m}^2\text{C/W}$ that is non-combustible, non-flammable and has a current Branz appraisal.
Insulation to be retained where studs exceed 450mm c/s with polypropylene tape at 300mm c/s fixed horizontally and drawn taut. Vertical tape is not E2/AS1 compliant.

CEILING:

Provide Pink Batts or similar approved wall insulation providing and R value of $3.6\text{m}^2\text{C/W}$ that is non-combustible, non-flammable and has a current Branz appraisal.
Install insulation without gaps and squashing the batts, maintain a min. 25 mm gap to the underside of the roofing paper.

JOINER

GENERAL:

Refer to working plans for all details regarding this section. All measurements to be checked on site.
Windows to be aluminium to receive IGU. Windows to comply with NZS4211:2008 and NZS 3604.
Provide all necessary head and sill flashings, all flashings to be site measured.
Liners to be in finger jointed pine treated to H3.1 and rebated for the wall linings.
Kitchen fittings shall be melamine coated or similar approved with laminate or similar approved bench tops. Ensure the surface is sealed where it abuts the wall in all high moisture areas with silicone suitable for the use. Final design and layout to be confirmed with client.

GLAZIER

GENERAL:

Glazing to comply with NZS 4221 , NZS 4223: 2008 (Parts 1, 2, 3 and 4) and NZBC B1/AS1 7.0.



WET AREAS

REFER TO APPENDIX SECTION FOR SPECIFIC WATERPROOFING DETAILS

Bathroom to be lined with 10mm GIB Aqualine. Studs at 600mm max. c/s with nogs at 1350mm max. Fixing of Aqualine board to be with 25mm x 6g GIB Grabber Drywall screws, fix at 100mm c/s to all studs and plates. Where wet areas are to be tiled internal corners shall be reinforced with a minimum 32 x 32 x 0.55mm galvanised metal angle. Each side of the angle shall be fastened to the framing with 30mm galvanised clouts at 300mm centres.

Preformed acrylic shower liner and tray to bathroom. Walls to be lined with 10mm GIB Aqualine.

WALL & FLOOR TILING

QUALIFICATIONS

Tilers to be experienced, competent trades people familiar with the materials and techniques specified.

NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

ADHESIVES COMPATIBILITY

Adhesives selected for use on proprietary substrates or waterproof membranes to have documented compatibility approval from the respective manufacturers.

GROUT

Cement based, compressible and to suit particular location/use. To AS ISO 13007.3.

TILE ADHESIVE

To AS ISO 13007.1.

MOVEMENT JOINT SEALANT

To BRANZ Good practice guide: Tiling, section 5.0.

Neutral cured sealant for areas where waterproof membranes are used or where used against aluminium. Acid cured sealant except for areas where waterproof membranes are used or where used against aluminium.

Note: Check compatibility of membrane and sealant, use bond breaking tape to separate them if required.

SLIP RESISTANCE FOR ACCESS ROUTES

Slip resistance for tiles to comply with NZBC D1/AS1.

- when in place on a level access route, to have a mean coefficient of friction (μ) not less than 0.4 when tested in accordance with AS/NZS 3661.1.
- when in place on a sloping access route, to have a coefficient of friction (μ) not less than 0.4 + 0.0125S (S = slope of surface expressed as a percentage).

EXECUTION

DELIVERY, STORAGE AND HANDLING

Take delivery of materials and goods and store on site and protect from damage.

Protect finished surfaces, edges and corners from damage.

Move/handle goods in accordance with manufacturer's requirements.

Reject and replace goods that are damaged or will not provide the required finish.



CONFIRM LAYOUT

Before commencing work confirm the proposed layout of tiles and expansion joints and other visual considerations of the finished work.

SETTING OUT

Before commencing the setting out confirm the number and location of cut tiles. Minimise in number with no cut tiles less than half size and only at the perimeter of the work.

CONDITIONS

SERVICES AND ACCESSORIES

Ensure that all services and accessories are in place and located to suit the tile layout, and that the substrate, background and adjoining surfaces (with the preparation called for in this section) are of the quality necessary to allow tiling of the required standard.

SUBSTRATE TEMPERATURE

Do not carry out tiling where the substrate temperature is below 5°C or above 40°C.

ROOFER

GENERAL:

Refer to working plans for all details regarding this section.

Roof cladding to be lightweight colour steel cladding on 70x45mm purlins at 900mm c/s on bituminous self supporting roofing underlay or similar approved.

MATERIALS AND WORKMANSHIP:

Metal cladding materials shall comply with the requirements of NZS3441 and NZS3403. Skilled tradesmen in accordance with the best trade practice and to the manufacturer's written instructions shall carry out all work. It shall be the responsibility of the roofing contractor to consult with the manufacturers of the roofing materials before and during the course of the work to ensure that the work is carried out to the manufacturer's entire satisfaction. Roofing sub-contract work shall be carried out by a firm of roofing experts, specialists in the fixing of the respective form of roof.

COMPLETION:

At the completion of all roofing and cladding work, sweep down the entire surface of the roof and walls with a soft bristle broom to remove all iron filings. Clean up and remove all nails, screws, off-cuts and other material from the roof surface and out of gutters.

FIXINGS, WIND:

Design and use the fixings appropriate for the design loads of this site; refer to CONSENT PLANS for details of wind zone. Allow for specific loadings at corners and the periphery of the roof, where localised pressure factors apply.

FASTENERS GENERALLY:

Minimum Class 4 and durability not less than the roofing material being fixed. Screw fasteners to be head stamped identifying the manufacturer and class.

FIXINGS CLIPS:

Galvanized steel (powder coated for aluminium) to suit the material and profile of the rigid sheet and location as required by the roofing manufacturer. Fix to steel with 16mm x 10 gauge galvanized wafer head self-drilling screws and to timber with 30mm x 10 gauge galvanized wafer head screws to NZBC E2/AS1, 8.4.9.



FIXINGS SCREWS:

To AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by the roofing manufacturer and with a minimum Class 4 durability and not less than the material being fixed. Screws into timber to penetrate by minimum 30mm.

RIVETS:

Sealed aluminium, minimum diameter 4mm, for use with zinc coated, zinc/aluminium coated or aluminium roofing.

FLASHING:

Provide EPDM flexible boot flashing to any roof penetration fixed diagonally, as per figure 53 E2/AS1.

SAFETY MESH:

Fix safety mesh over exposed roof areas to AS/NZS 4389 and the manufacturer's requirements.

PLUMBER

GENERAL:

Plumbing to be carried out using certifying plumber. All work to comply with NZBC E1/AS1, G1/AS1, G10/AS1, G12/VM1, G12/AS1 and G13/AS1

Refer to working plans for all details regarding this section. Plumber and drain layer are to review plans to check they are buildable prior to starting work. The layouts shown can be changed to ease installation providing an as built plan is submitted to the BCA. Plumber is to confirm the locations of water taps and waste pipes on site with the client.

All pipes encased in concrete shall be wrapped in denso tape or polythene DPM well taped. Provide pipe supports as per table 7 of G13.

DURABILITY

All elements to be used in the plumbing of this building i.e. sanitary fixtures and piping materials shall meet the performance standard of NZBC B2 Durability. All copper pipes & fittings to comply with NZS3501/AS 1589. Polybutylene to comply with AS/NZS 2642: parts 1, 2 and 3. PVC pipes and fittings to comply with AS/NZS 1260, installed to AS/NZS 2032 traps to comply with 2887. PE pipe and fittings to comply with AS/NZS 4401.

COLD WATER SUPPLY

- (a) Tap off from mains service pipe in 20mm UPVC. Run pipe not less than 450mm below finished ground level to the building.
- (b) Building Supply:
Provide 15mm polybutylene cold & hot water supply to all fittings and outlets, including hose taps. Where supply pipe is encased in concrete or under concrete structures or in ground 400mm deep shall be in copper piping.
- (c) Backflow protection:
Protection shall be provided where it is possible for water to become contaminated, allow a limiting stop valve with filter/non-return
- (d) Polybutylene pipes:
15-20mm size shall have a maximum distance between supports vertical 1.5m and horizontal 750mm



HOT WATER SUPPLY:

Supply mains pressure electrical hot water cylinder of 300 litres capacity and of approved make and type and install with restraints as detailed below. Also the cylinder shall be fitted with an anti-scald device as clause 6:14:1-2 & fig 16 of G12 water supply for mains pressure.

The HWC control thermostat shall be set at a temperature of not less than 60°C to prevent the growth of Legionella bacteria.

Hot water 15mm polybutylene pipes shall have supports at maximum distances of 1.0m vertical and 600mm horizontal.

All pipe work in ceiling space to be lagged to comply with G12/AS1 i.e., centurylon 15mm lagging or centurylon 22mm. The TPR valve shall be insulated along with the pipe work to the hwc. The vent pipe shall be insulated to 300mm above the maximum standing water level. Pipe work to be clipped and supported to comply with G12 table 7

PENETRATIONS:

Pipes and service penetrations shall be made weather tight by using flashings and where necessary, sealant. Acceptable Solution E2/AS1 method shown in figure 68.

GUTTERS AND DOWNPIPES:

Colour steel gutters 125mm wide quarter round profile sized to give min. 6700mm² csa. Downpipes to be min 75mm diameter unless stated otherwise. Colour to match roof colour, check with client.

DRAINLAYER

GENERAL:

Refer to working plans for all details regarding this section.

Drainage to be carried out using certifying drainlayer. All work to comply with NZBC G13 unless otherwise stated.

PVC pipes and fittings to comply with AS/NZS 1260, installed to AS/NZS 2032.

Copper to comply with NZS 3501.

SEWER DRAINAGE:

The new sewer drain shall connect into existing sewer pipe system.

SURFACE WATER:

All surface water shall be taken away from the building in accordance with NZBC E1 and drained to soak holes.

ELECTRICIAN

GENERAL:

Refer to working plans for all details regarding this section. Extend existing supply to serve new accommodation.

To comply with G8/AS1 Artificial Light, NZS6703 code of practice for interior lighting and G9/AS1 Electricity

AS/NZS 3000:2002 (wiring rules) NZECP 34, (electrical safety distances) NZECP 36 (harmonic levels) NZECP 51 (acceptable solution for electrical installations within domestic dwellings) & NZECP 54 (installation of recessed luminaries and auxiliary equipment) NZECP 51.

The electrical contractor is to supply the owner with a Certificate of Compliance on completion and Electrical Safety Certificate prior to occupation.



CONNECTION TO ELECTRICITY SUPPLIER:

It is the responsibility of the Electrical Contractor to arrange all connections to the Electrical Supplier and to allow for and pay all fees for the connection of the supply to the building.

POWER OUTLETS:

All sockets shall be 500mm above the floor or 225mm above bench tops. Points to washer/drier space and refrigerator to be 1050mm from the floor. Switches to be at 1100 above finished floor level. The exact position of power outlets shall be determined on the job by the Owner.

LIGHT SWITCHES:

Light switches shall be fixed 1100mm above the floor.

LIGHTING:

Provide min. 20 lux at floor level. As a guide; a 60w incandescent bulb with a diffuser will provide 20 lux to 4m² of floor area.

DOWNLIGHTS:

Shall comply with the requirements of AS/NZS 6059 8 2.2 Luminaries - Particular requirements - Recessed Luminaries.

Down lights shall be CA 80 or CA 135 rated.

IC or IC-F rated down lights can be used if the insulation complies with AS/NZS 60598 2.2 clause 11.5 (needle flame test). Pink Batts glass wool does pass this test. No alternative down lights are to be used. Refer to electrical plan for layout.

SMOKE DETECTORS:

Smoke detectors shall comply with one of the following standards: AS3786, ISO 12239 or BS EN 14604: 2005. They may be battery operated and are not required to be interconnected; they shall provide a hush facility having a minimum duration of 60 seconds. The alarms shall have an alarm test facility readily accessible by the building occupants. The smoke alarms shall be located on the escape routes on all levels within the household unit. On levels containing sleeping spaces the alarms shall be located either:

- a) In every sleeping space, or
- b) Within 3.0m of every sleeping space door. In this case the alarms must be audible to sleeping occupants on the other side of the closed doors.
- c) In all cases, so that the sound pressure level complies with that specified in NZS 4514.

Smoke alarms shall be installed on or near the ceiling in accordance with NZS 4514 and the manufacturers instructions.

PAINTER

GENERAL:

Refer to working plans for all details regarding this section.

PAINTING OF INTERIOR SURFACES:

Wallboard and ceilings as required are to be given one coat of sealer and finished with two coats of approved paint finishing flat or semi-gloss as required. Where full gloss is required with wet wall areas such as bathrooms the finishing coat shall be full gloss enamel.

Garage wall linings	Seal coat, 2 coats acrylic semi gloss
Gibraltar board walls	1 oil based sealer coat, 2 coats acrylic low sheen paint
Gibraltar board ceilings.	1 oil based sealer coat, 2 coats acrylic flat paint
Wet areas	1 oil based sealer coat, 2 coats enamel low sheen paint



FLOOR COVERINGS

WET AREAS:

Floor coverings shall be integrally waterproof sheet with sealed / welded joints eg: vinyl or ceramic or stone tiles with a maximum 6% water absorption, waterproof grouted joints, and bedded with an adhesive specified by the tile manufacturer as being suitable for the tiles, substrate material and the environment of use.

HABITABLE AREAS:

Floor coverings shall be carpet on underlay unless specified otherwise.

PLASTERER

SOLID PLASTER:

Touch up defects in concrete foundation and ensure all exposed concrete work is left without construction defects such as exposed aggregate and significant air holes and the like.

GIBRALTAR BOARD FINISHES:

The plasterer shall stop flush the nail holes with an approved gibraltar board-stopping compound. Junctions of sheets are to be stopped and reinforced with tape and trawled flush.

All fixing and finishing work SHALL STRICTLY COMPLY with Winstones Gib-fixing and stopping instructions, and all plasterboard wall and ceiling areas shall be stopped suitable for a paint finish. (Grade 4)

Only such fixings, glues, and plaster products approved by the wallboard manufacturer shall be used, and there shall be no substitution from these for any reason.



Appendix 1

ROOF TRUSSES



Date: 14 December 2016
Fabricator: VIP Frames & Trusses
Job Name: Moore Architecture
House 3 32 Willow Street
Ashburton 41538B

Building Consent No: _____
(Provided by relevant Consenting Authority at time of Consent application)

Attn: City/District Council

We have been engaged to provide the trusses and frames for the above project.
To allow completion of the consent application we have supplied the following information.

- (a) Truss Layout and Producer Statement.
- (b) Any slab thickening requirements detailed.
- (c) All truss loaded lintels that are either inside or outside the requirements of NZS3604:2011.
- (d) All roof bracing details as required by NZS3604:2011.

On advice from the building project owner, the structure will be designed under the following parameters:

Wind Zone	<u>Medium</u>	Altitude	<u>100m</u>
		Snow (Open Ground Load)	<u>0.900 kPa</u>
Roof Material	<u>Longrun iron</u>	Snow (Basic Roof Load)	<u>0.479kPa</u>

Treatment Definition:

External Walls -	H1.2 Treated
Internals Walls -	H1.2 Treated
Trusses -	H1.2 Treated

We can advise that the following will be provided at the time of truss manufacture to both the the building owner and your office:

- (1) A full 'as-built' layout and Producer Statement.
- (2) Specific Truss/Truss fixings done as per NZS3604:2011, Clause 10.2.2.6.1
- (3) Specific top plate to stud fixings that comply with NZS3604:2011, Table 8.18
- (4) Specific lintel Fixings outside NZS3604:2011.

It should be noted that the details provided have been designed to comply with the Building Code and the relevant standards. Any increase above these standards is only at the preference and request of the building owner.

Acknowledgement of this letter, along with the Building Consent number, is required by our company as soon as possible.

Council Contacts:

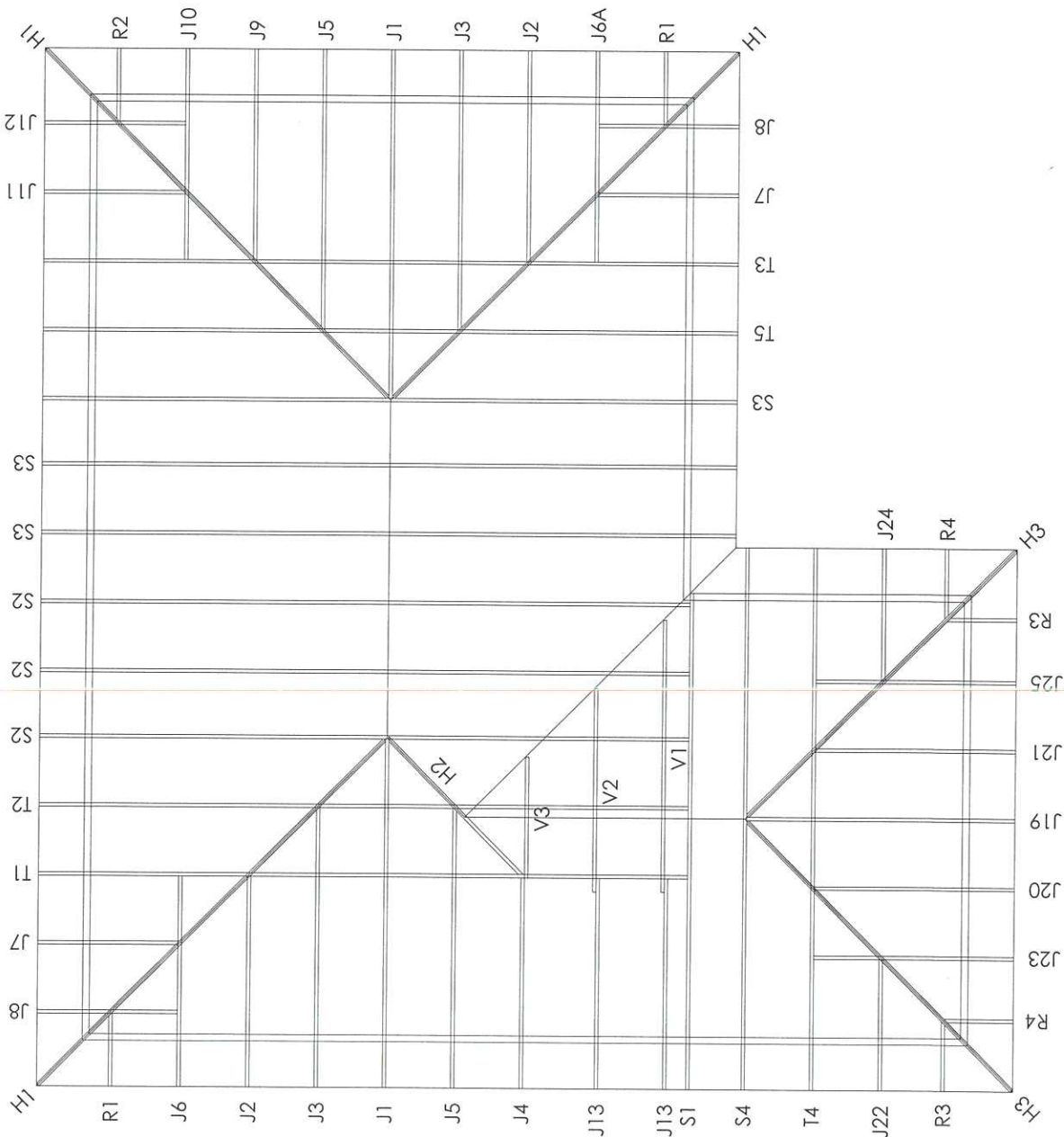
Consents Officer: _____

Fax #: _____

Phone: _____

Please forward to:

Bruce Ramsay
Dyers Road ITM
Ph (03) 373 6049
Fax (03) 376 6049



No Additional Roof Bracing Required



65 Wickham St
PO Box 19-765 Christchurch
Ph (03) 389 8200

JOB No **41538B**

Client: Moore Architecture
Job Name: House 3
Address: 32 Willow Street
Ashburton

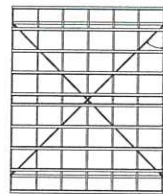
Pitch: 22.000
Roof Material: Galv Iron .5mm
Soffit Overhang: 600mm
Wind Area: High
Snow Load: 0.479

Trusses And Rafters At 900 Centres
Unless Stated Otherwise

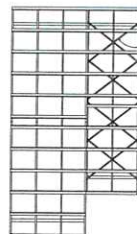
DRAWN BY Ben Ferguson

DATE 14 Dec.2016 PAGE

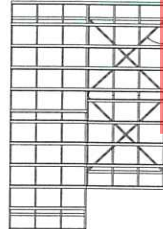
Roof Bracing Details



Single Cross @ 45°



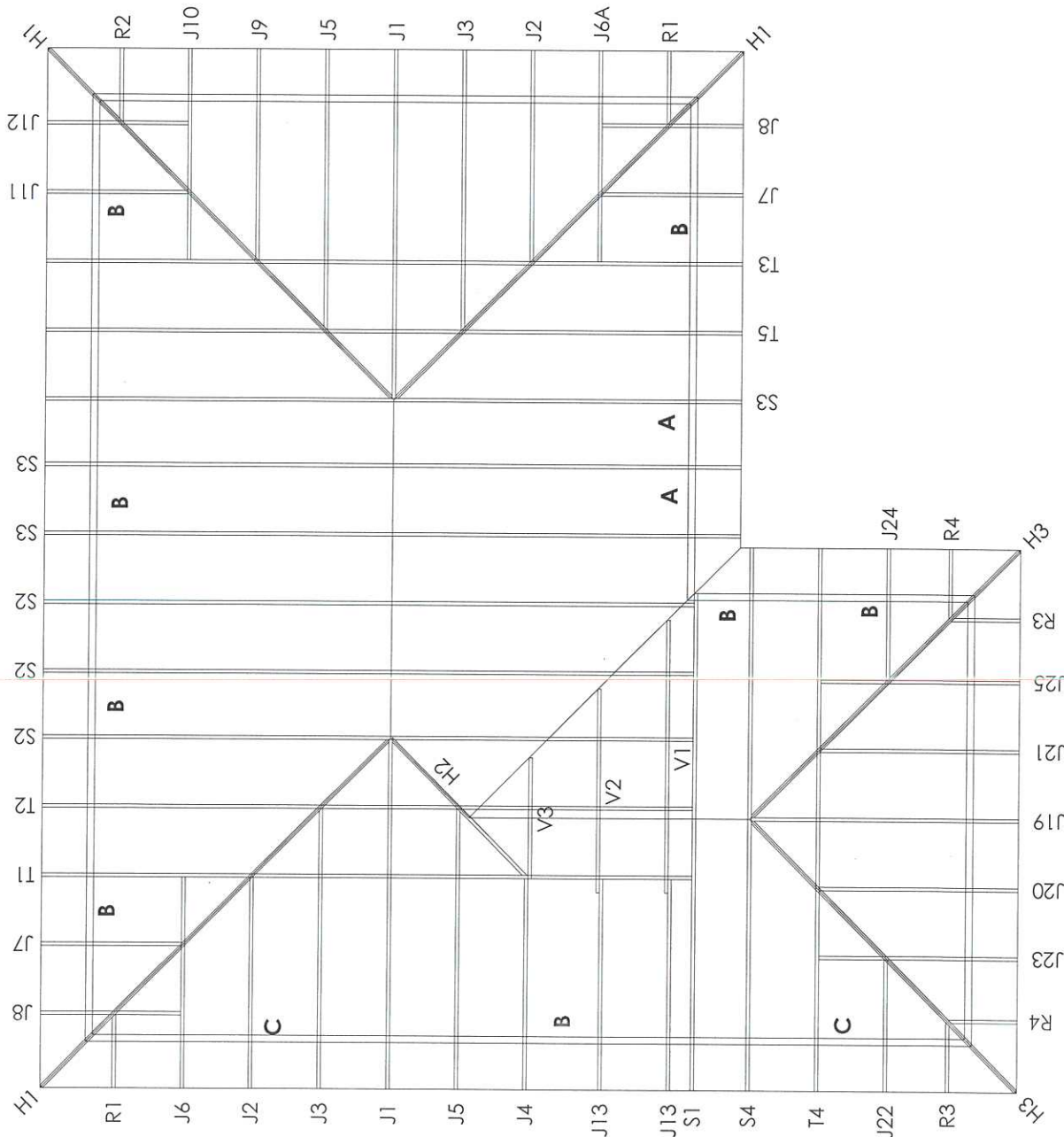
Quadruple Cross @ 45°



Double Cross @ 45°

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Consent Documents
BC0006/17
Ashburton District Council

NOTES:
Refer to:
Lumberlok roof bracing brochure
07/2006



No Internal Truss Loads



65 Wickham St
PO Box 19-765 Christchurch
Ph (03) 389 8200

JOB No **41538B**

Client: Moore Architecture
Job Name: House 3
Address: 32 Willow Street
Ashburton

Pitch: 22.000
Roof Material: Galv Iron .5mm
Soffit Overhang: 600mm
Wind Area: High
Snow Load: 0.479

Trusses And Rafters At 900 Centres
Unless Stated Otherwise

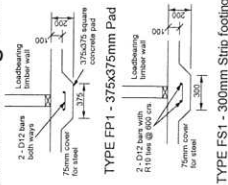
DRAWN BY Ben Ferguson
DATE 14 Dec, 2016 PAGE

These lintels have been sized as per
the GANGLAM and FLITCH BEAM
selection manuals as provided by
Mitek NZ Ltd.

HYSPAN lintels have been sized as per
the HYSPAN selection charts.
Unless otherwise stated all lintels are
as per NZS3604 2011

LINTEL	SIZE	
A	2/190x45	MSG8
B	2/140x45	MSG8
C	2/190x45	MSG8
D	2/240x45	MSG8
E	2/290x45	MSG8
F		

Slab Thickening Details



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Consent Documents

BC0006/17

Ashburton District Council

TYPE FS2 - 450mm Strip footing

Correspondence from : **AUCKLAND**

40 Neales Road, East Tamaki 2013

PO Box 58-014, Botany 2163

Phone: 09 274 7109

Fax: 09 274 7100

CHRISTCHURCH

14 Pilkington Way, Wigram 8042

PO Box 8387, Riccarton 8440

Phone: 03 348 8691

Fax: 03 348 0314

www.mitek.nz.co.nz

MiTek 20/20 Engineering 4.6.6.299

Printed: 05:51:42 14 Dec 2016

PRODUCER STATEMENT for MiTek 20/20® TRUSS DESIGN - Version 4.6

ISSUED BY: **MiTek New Zealand Limited**TO: **VIP Frames & Trusses**IN RESPECT OF: **MiTek® Truss Designs**

This producer statement covers the MiTek 20/20® truss design and the structural performance of the GANG-NAIL® connector plate for the job reference **41538B** and may be used by a Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

The MiTek 20/20® truss design program has been developed by MiTek New Zealand Limited for the design of MiTek® timber roof, floor and attic trusses in New Zealand. The truss designs computed by MiTek 20/20® are prepared using sound and widely accepted engineering principles, and in accordance with compliance documents of the New Zealand Building Code and Verification Method B1/VM1; and internationally accepted standard ANSI/TPI 1 - 2002 as an alternative solution to satisfy the requirements of Clause B1 of the New Zealand Building Code.

On behalf of MiTek New Zealand Limited, and subject to:

- i) All proprietary products meeting their performance specification requirements
- ii) The provision of adequate roof bracing and overall building stability
- iii) Correct selection and placement of GANG-NAIL connector plates
- iv) Correct input of Truss Design Data as shown in the Fabricator Design Statement for this job
- v) The design being undertaken by the accredited fabricator under the terms of the software licence

I believe on reasonable grounds that the trusses, if constructed in accordance with the MiTek 20/20® truss design and shop drawings, will comply with the relevant provisions of the New Zealand Building Code.

MiTek New Zealand Limited holds a current policy of Professional Indemnity Insurance no less than \$500,000.

On behalf of MiTek New Zealand Limited,

Date: Wednesday, 14 December 2016

In Ling Ng, BE (Hons), CPEng, IntPE, MIPENZ (ID: 146585)

TECHNICAL SERVICES MANAGER, MiTek New Zealand Limited

VIP Frames & Trusses

Fabricator Design Statement : Page 1

Job: 41538B

Client: Moore Architecture
Phone:

Site: House 3
32 Willow Street
Ashburton

Description:
Building Consent No.:
MiTek 20/20 Engineering 4.6.6.259

MiTek New Zealand Limited

Phone: **BC0006/17**
Ashburton District Council

Approved Building
Consent Documents

MITEK FABRICATOR DESIGN STATEMENT

This statement is issued by MiTek accredited fabricator **VIP Frames & Trusses**, being licensed to use the MiTek 20/20® software, to the client listed above and may be used by the Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

MiTek 20/20® TRUSS DESIGN DATA

The MiTek 20/20® computer design for this job is based on the following design parameters entered into the program. The Fabricator shall ensure that these job details are current and relevant to the project for the design of the MiTek® trusses.

Job Details

Importance Level : 2

Design Working Life : 50 years

Roof Truss

Timber Group: ~MSGx45 H1.2

Pitch: 22.000 deg

Nominal Overhang: 600 mm

Roof

Material: Galv Iron .5mm
Dead Load: 0.210 kPa
Restraints: 900 mm centres
Live Load: Q_{ur} = 0.250 kPa
Q_c = 1.100 kN

Ceiling

Material: Gib Board 12mm
Dead Load: 0.200 kPa
Restraints: 600 mm centres
Live Load: Q_c = 1.400 kN

Wind

Area: High (44.0 m/s)
Pressure Coeff: C_{pe} = varies; C_{pi} = -0.30, 0.20

Snow

Location: Christchurch (N4) at 100 m
Open Ground Load: 0.900 kPa
Basic Roof Load: 0.630 kPa

The timber for these MiTek® trusses shall be treated to the requirements of NZS 3602:2003 and shall be graded to the requirements of NZS 3603:1993. Unless otherwise noted, this design assumes that the steel fixings and timber connectors proposed are located in a "closed environment", as defined by NZS3604:2011 Section 4.

MiTek® Truss List

Legend: * = detail only, ? = input only, ~~xxx~~ = failed design, Ø = non certified, Unmarked trusses = designed successfully, LB = lateral bracing required
GB = gable brace required

Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)
S2	3	7950	22.000	900	J1	2	2152	22.000	900	J25	1	2017	22.000	900
S3	3	7950	22.000	900	J2	2	2152	22.000	900	V3	1	1576	22.000	900
T1	1	7950	22.000	900	J3	2	2152	22.000	900	J7	2	1252	22.000	900
T2	1	7950	22.000	900	J4	1	2152	22.000	900	J8	2	1252	22.000	900
T3	1	7950	22.000	900	J5	2	2152	22.000	900	J11	1	1252	22.000	900
T5	1	7950	22.000	900	J6	1	2152	22.000	900	J12	1	1252	22.000	900
*H1	3	6416	15.944	900	J6A	1	2152	22.000	900	J22	1	1117	22.000	900
S1	1	5880	22.000	900	J9	1	2152	22.000	900	J24	1	1117	22.000	900
S4	1	5880	22.000	900	J10	1	2152	22.000	900	*R1	2	965	22.000	900
T4	1	5880	22.000	900	J13	2	2152	22.000	900	*R2	1	965	22.000	900
*H3	2	4952	15.944	900	J19	1	2017	22.000	900	*R3	2	913	22.000	900
V1	1	3556	22.000	900	J20	1	2017	22.000	900	*R4	2	913	22.000	900
V2	1	2656	22.000	900	J21	1	2017	22.000	900					
*H2	1	2528	15.944	900	J23	1	2017	22.000	900					

Total quantity : 57

The computer design input has been carried out by:

Signed: 

Date: ...Wednesday, 14 December 2016....

Name of Detailer: Lloyd Harwood

Qualifications and Title: Detailer

On behalf of: VIP Frames & Trusses

Document Set ID: 733452

Version: 1, Version Date: 06/11/2023

VIP Frames & Trusses

Job: 41538B

Client: Moore Architecture
Phone:

Site: House 3
32 Willow Street
Ashburton

Description:
Building Consent No.:
MITek 20/20 Engineering 4.6.6.299

MITek New Zealand Limited

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Approved Building
Consent Documents
Phone: **BC0006/17**
Printed: 05:11:45 14 Dec 2019
Ashburton District Council

TRUSS FIXING SELECTION REPORT - Characteristic Loads

Fixings are selected from the LUMBERLOK Brochure 08/2014 (Timber Connectors Characteristic Loadings Data)

MITek® Truss List

Legend: * = detail only, ? = input only, Txx = failed design, Ø = non certified, Unmarked trusses = designed successfully

Truss	Qty	Span (mm)	Joint	Down (kN)	Uplift (kN)	Bearing	----- Fixing ----- Qty Selected
S2	3	7950	B	7.366	4.059	Cross	3 CT400
			F	6.500	3.994	Butt	3 JH 47x90
S3	3	7950	B	7.338	4.056	Cross	3 CT400
			F	7.338	4.056	Cross	3 CT400
T1	1	7950	B	12.484	7.329	Cross	1 CT400
			G	13.029	7.996	Butt	1 JH 47x120
T2	1	7950	B	7.281	4.059	Cross	1 CT400
			G	6.428	3.994	Butt	1 JH 47x90
T3	1	7950	B	12.434	7.301	Cross	1 CT400
			G	12.536	7.301	Cross	1 CT400
T5	1	7950	B	7.252	4.056	Cross	1 CT400
			G	7.252	4.056	Cross	1 CT400
*H1	3	6416					
S1	1	5880	B	19.227	11.321	Cross	1 CT400
			F	26.650	16.322	Cross	No fixing selected
S4	1	5880	B	5.639	3.015	Cross	1 Pair of Wire Dog Staples
			F	5.639	3.015	Cross	1 Pair of Wire Dog Staples
T4	1	5880	B	8.537	4.960	Cross	1 CT400
			G	8.537	4.960	Cross	1 CT400
*H3	2	4952					
V1	1	3556	A			Wide	No fixing selected
V2	1	2656	A			Wide	No fixing selected
*H2	1	2528					
J1	2	2152	B	3.299	0.559	Cross	2 Pair of Wire Dog Staples
			H	1.330	0.774	Butt	2 JH 47x90
			F	0.578	0.379	Butt	2 Pair of 3.15d Nails
			D	1.765	1.080	Cross	2 Pair of Wire Dog Staples
			E	1.663	1.135	Cross	2 Pair of Wire Dog Staples
J2	2	2152	B	3.363	0.946	Cross	2 Pair of Wire Dog Staples
			F	1.479	0.827	Butt	2 JH 47x90
			D	0.706	0.419	Butt	2 Pair of 3.15d Nails
J3	2	2152	B	3.309	0.743	Cross	2 Pair of Wire Dog Staples
			G	1.312	0.781	Butt	2 JH 47x90
			E	0.484	0.341	Butt	2 Pair of 3.15d Nails
			D	1.901	1.180	Cross	2 Pair of Wire Dog Staples
J4	1	2152	B	3.374	0.947	Cross	1 Pair of Wire Dog Staples
			F	1.483	0.838	Butt	1 JH 47x90
			D	0.730	0.438	Butt	1 Pair of 3.15d Nails
J5	2	2152	B	3.309	0.743	Cross	2 Pair of Wire Dog Staples
			G	1.312	0.781	Butt	2 JH 47x90
			E	0.484	0.341	Butt	2 Pair of 3.15d Nails
			D	1.901	1.180	Cross	2 Pair of Wire Dog Staples
J6	1	2152	B	3.404	1.346	Cross	1 Pair of Wire Dog Staples
			F	1.353	0.908	Butt	1 JH 47x90
J6A	1	2152	B	3.404	1.346	Cross	1 Pair of Wire Dog Staples
			F	1.353	0.908	Butt	1 JH 47x90
J9	1	2152	B	3.363	0.946	Cross	1 Pair of Wire Dog Staples
			F	1.479	0.827	Butt	1 JH 47x90
			D	0.706	0.419	Butt	1 Pair of 3.15d Nails
J10	1	2152	B	3.404	1.346	Cross	1 Pair of Wire Dog Staples
			F	1.353	0.908	Butt	1 JH 47x90
J13	2	2152	B	3.374	0.947	Cross	2 Pair of Wire Dog Staples
			F	2.061	1.276	Butt	2 JH 47x90
J19	1	2017	B	3.170	0.676	Cross	1 Pair of Wire Dog Staples
			G	1.192	0.672	Butt	1 Pair of 3.15d Nails
			E	0.506	0.353	Butt	1 Pair of 3.15d Nails
			D	1.979	1.239	Cross	1 Pair of Wire Dog Staples
J20	1	2017	B	3.233	0.891	Cross	1 Pair of Wire Dog Staples
			F	1.362	0.722	Butt	1 JH 47x90
			D	0.737	0.443	Butt	1 Pair of 3.15d Nails
J21	1	2017	B	3.233	0.891	Cross	1 Pair of Wire Dog Staples
			F	1.362	0.722	Butt	1 JH 47x90
			D	0.737	0.443	Butt	1 Pair of 3.15d Nails
J23	1	2017	B	3.215	1.104	Cross	1 Pair of Wire Dog Staples
			F	1.138	0.742	Butt	1 Pair of 3.15d Nails
J25	1	2017	B	3.215	1.104	Cross	1 Pair of Wire Dog Staples
			F	1.138	0.742	Butt	1 Pair of 3.15d Nails
V3	1	1576	A			Wide	No fixing selected
J7	2	1252	B	2.530	0.577	Cross	2 Pair of Wire Dog Staples
			D	0.365	0.036	Butt	2 Pair of 3.15d Nails
			C	0.792	0.673	Butt	2 Pair of 3.15d Nails
J8	2	1252	B	2.374	0.652	Cross	2 Pair of Wire Dog Staples
			D	0.554	0.216	Butt	2 Pair of 3.15d Nails

VIP Frames & Trusses

Job: 41538B

Client: Moore Architecture
Phone:

Site: House 3
32 Willow Street
Ashburton

Description:
Building Consent No.:
MiTek 20/20 Engineering 4.6.6.299

MiTek New Zealand Limited

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Phone: **BC0006/17**
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Ashburton District Council

Truss	Qty	Span (mm)	Joint	Down (kN)	Uplift (kN)	Bearing	----- Fixing ----- Qty Selected	
J11	1	1252	B	2.530	0.577	Cross	1	Pair of Wire Dog Staples
			D	0.365	0.036	Butt	1	Pair of 3.15d Nails
			C	0.792	0.673	Butt	1	Pair of 3.15d Nails
J12	1	1252	B	2.374	0.652	Cross	1	Pair of Wire Dog Staples
			D	0.554	0.216	Butt	1	Pair of 3.15d Nails
J22	1	1117	B	2.423	0.525	Cross	1	Pair of Wire Dog Staples
			D	0.325	0.032	Butt	1	Pair of 3.15d Nails
			C	0.658	0.593	Butt	1	Pair of 3.15d Nails
J24	1	1117	B	2.423	0.525	Cross	1	Pair of Wire Dog Staples
			D	0.325	0.032	Butt	1	Pair of 3.15d Nails
			C	0.658	0.593	Butt	1	Pair of 3.15d Nails
*R1	2	965						Refer NZS3604:2011 Tables 15.6
*R2	1	965						Refer NZS3604:2011 Tables 15.6
*R3	2	913						Refer NZS3604:2011 Tables 15.6
*R4	2	913						Refer NZS3604:2011 Tables 15.6

Fixing List

Qty	Selected Fixing
18	CT400
21	JH 47x90
1	JH 47x120
39	Pair of Wire Dog Staples
29	Pair of 3.15d Nails
4	No fixing selected

Note:

- 1) Fixings have been selected based on loading only. Please check that selected fixings are practical for each situation and that appropriate nailing can be applied on site.
- 2) Fixings are selected from the LUMBERLOK Brochure 08/2014 (Timber Connectors Characteristic Loadings Data) with down and uplift characteristic loads of at least the values shown for each joint.

Appendix 2

FIXING SCHEDULE



| Meets NZS 3604:2011 Requirements | 90 x 45 Bottom Plate |

Bottom Plate Durability

Fixing Requirements				Installation		
Bottom Plate Location	Bottom Plate Fixing Requirement	Concrete Strength (min.)	Floor Edge Type	Max Spacing	Fastener	Min Edge Distance (FROM OUTERFACE)
External Wall	NZS3604:2011	17.5 MPa	Concrete	900 mm	12120BPAG* ¹ OR T12140GH* ¹	55 mm
			Masonry Block	600 mm		
	Proprietary Bracing Systems (15 kN)	17.5 MPa	Concrete	900 mm	AS12150GH + RPBA	
			Masonry Block	600 mm		
Internal Wall	NZS3604:2011	17.5 MPa	N/A	900 mm	12120BPAG* ¹ OR T12140GH* ¹	N/A
				600 mm	8x75 Drive Pin & Washer	N/A
	Proprietary Bracing Systems (15 kN)	17.5 MPa	N/A	900 mm	12120BPAG* ¹ + RPBA OR T12140GH* ¹ + RPBA	N/A



HD875 DRIVE PIN



AS12150GH ANCHOR



12120BPAG ANCHOR

Ramset Bracing Anchor (RPBA)

Advantages

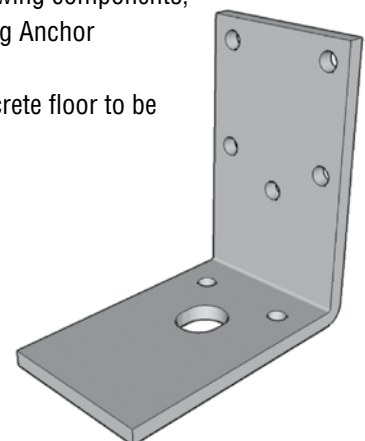
- Ease and speed of installation
- No checking of timber frame to ensure flush fitting of board
- The RPBA is a one piece anchor for either side of stud
- Slotted hole on bottom of bracket provides some flexibility in bolt & bracket position
- Installed prior to fixing of gypsum wallboard
- Easy inspection

The Ramset Bracing Anchor is sold as a set of 2.

Each set includes the following components;

- 2 Each Ramset Bracing Anchor
- 14 Each Tek screws

Fixings into timber or concrete floor to be purchased separately

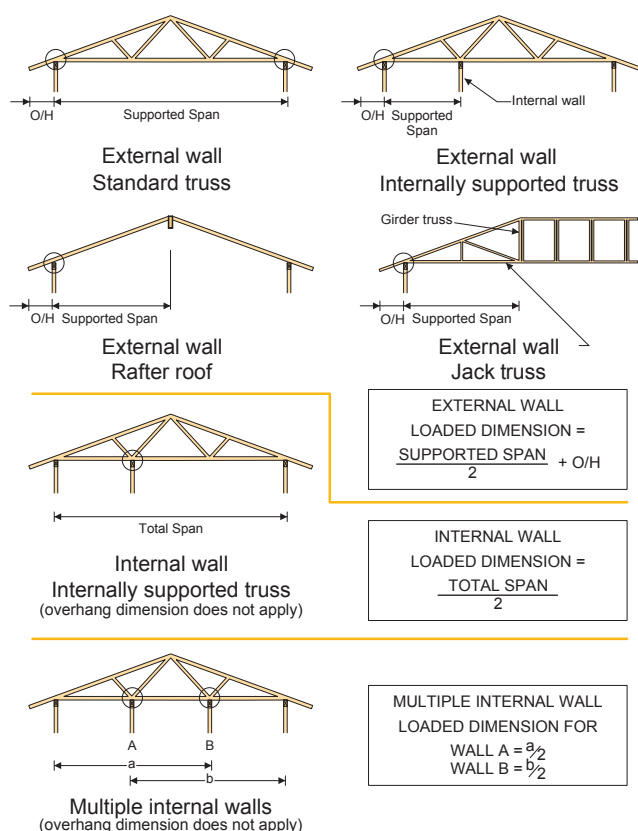


STUD TO TOP PLATE FIXING SCHEDULE ALTERNATIVE TO TABLE 8.18 NZS 3604:2011

NOTE:

- ★ All fixings are designed to resist vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20 kPa.
- ★ Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist lateral loads.
- ★ These fixings assume the correct choice of rafter/truss to top plate connections have been made.
- ★ Gable end wall top plate/stud connections where the adjacent rafter/truss is located within 1200mm of gable end wall with a maximum verge overhang of 750mm, requires fixing type A as shown below.
- ★ All fixings assume top plate thickness of 45mm maximum.
- ★ Wall framing arrangements under girder trusses are not covered in this schedule.
- ★ All timber selections are as per NZS 3604:2011.

LOADED DIMENSION DEFINITION



FIXING SELECTION CHART

(Suitable for walls supporting roof members at 600, 900 or 1200mm crs.)

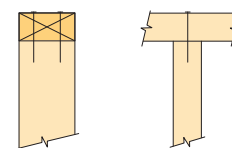
Wind Zones L, M, H, VH, EH, as per NZS 3604:2011

Loaded Dimension (m)			Light Roof Wind Zone					Heavy Roof Wind Zone				
Stud Centres			L	M	H	VH	EH	L	M	H	VH	EH
300mm	400mm	600mm										
3.0	2.3	1.5	A	A	B	B	B	A	A	B	B	B
4.0	3.0	2.0	A	A	B	B	B	A	A	B	B	B
5.0	3.8	2.5	A	B	B	B	B	A	A	B	B	B
6.0	4.5	3.0	A	B	B	B	B	A	A	B	B	B
7.0	5.3	3.5	A	B	B	B	B	A	A	B	B	B
8.0	6.0	4.0	A	B	B	B	B	A	A	B	B	B
9.0	6.8	4.5	B	B	B	B	B	A	A	B	B	B
10.0	7.5	5.0	B	B	B	B	B	A	A	B	B	B
11.0	8.3	5.5	B	B	B	B	B	A	A	B	B	B
12.0	9.0	6.0	B	B	B	B	B	A	A	B	B	B

FIXING OPTIONS

FIXING TYPE A 0.7 kN

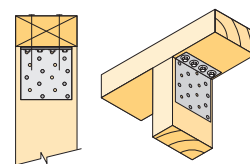
2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



FIXING TYPE B 4.7 kN

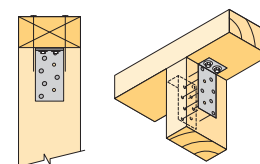
CHOOSE ANY OF THE 3 OPTIONS BELOW

2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



Plus LUMBERLOK 6kN Stud Anchor (CPC80)

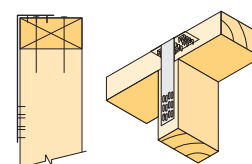
2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



Plus 2 x LUMBERLOK CPC40

Recommended for internal wall options to avoid lining issues

2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



Plus LUMBERLOK Stud Strap (one face only)

Note:

To calculate the number of B type fixings required, divide the wall length by the stud centres, add 1 to this figure and locate this number of fixings as evenly as possible along the wall length. This figure includes the start and end studs in each wall length.

Appendix 3

BRACING

GIB EzyBrace® Systems specification GS1-N

Specification code	Minimum length (m)	Lining requirement
GS1-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard to one side only

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and 600mm centres thereafter.

External Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for external wall bottom plate fixing.

WALL LINING

- Any 10mm or 13mm GIB® plasterboard lining.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

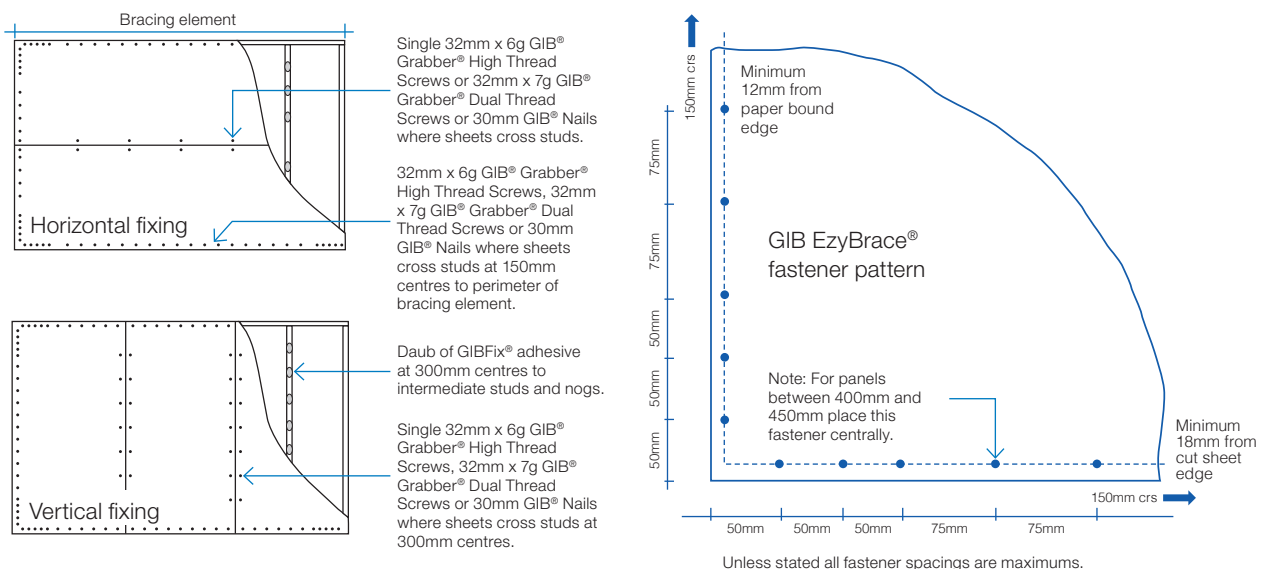
32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



ECOPLY® BRACING SPECIFICATIONS: EPI



Information contained in this document is specific to the CHH Woodproducts range of plywood products and cannot be used with any other plywood products no matter how similar they may appear.

For further information contact customer services or visit www.chhwoodproducts.co.nz

0800 326 759
www.chhwoodproducts.co.nz



SINGLE SIDED STRUCTURAL PLYWOOD BRACE

Specification No.	Minimum Wall Length	Lining Requirements	BU's/m Wind	BU's/m Earthquake
EPI_0.4	0.4 m	Ecoply® one side	80	95
EPI_0.6	0.6 m		95	105
EPI_1.2	1.2 m		120	135

FRAMING

Wall framing must comply with:

- NZBC B1 - Structure: AS1 Clause 3 Timber (NZS 3604:2011)
- NZBC B2 - Durability: AS1 Clause 3.2 Timber (NZS 3602)

Framing dimensions and height are as determined by the NZS 3604 stud and top plate tables for load bearing and non load bearing walls. Kiln dried verified structural grade timber must be used. Machine stress graded timber, such as Laserframe® of SG8 stress grade minimum, is recommended.

BOTTOM PLATE FIXING

Use GIB Handibrac® hold-down connections at each end of the bracing element. Refer to manufacturer installation instructions supplied with the connectors for correct installation instructions and bolt types to be used for either concrete or timber floors. Within the length of the bracing element, bottom plates are fixed in accordance with the requirements of NZS 3604.

LINING

One layer of 7 mm, 9 mm or 12 mm Ecoply® plywood fixed directly to framing or over cavity battens. If part sheets are used, ensure nailing at required centres is carried out around the perimeter of each sheet or part sheet. A 2-3 mm expansion gap should be left between sheets.

FASTENING THE ECOPLY®

Fasteners

Fasten with 50 x 2.8 mm galvanised or stainless steel flat head nails for direct fix, or 60 x 2.8 mm over cavity battens. Place fasteners no less than 7 mm from sheet edges. Screws cannot be used. Power driven nails are suitable. Do not overdrive, nails must be full round head.

Fasteners for H3.2 CCA treated Ecoply

Where fasteners are in contact with H3.2 CCA treated timber or plywood, fasteners shall be a minimum of hot dip galvanised.

In certain circumstances stainless steel fasteners may be required. Refer to table 8 of the Ecoply Specification and Installation Guide for these circumstances and further fastener selection advice. Where stainless steel nails are required, annular grooved nails must be used.

Ecoply® Bracing Systems are designed to meet the requirements of the New Zealand Building Code and have been tested and analysed using the P21 method referenced in NZS 3604:2011 listed as an acceptable solution B1/AS1 Structure. Testing was carried out using Ecoply manufactured by Carter Holt Harvey and

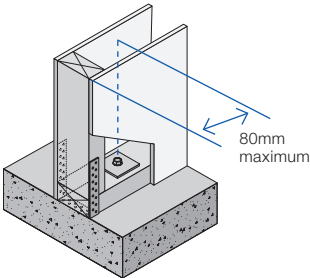
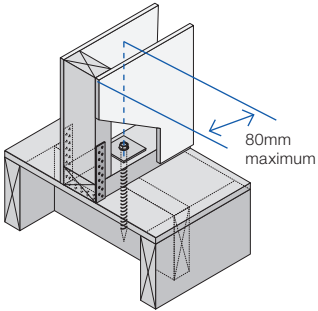
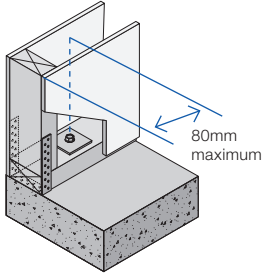
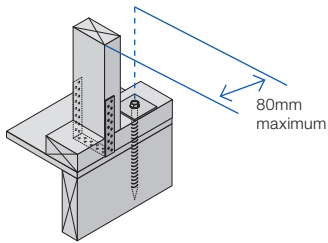
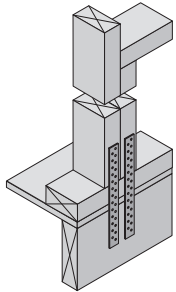
SG8 timber framing, and GIB® products manufactured by Winstone Wallboards Ltd. Substituting materials may compromise performance of the system. GIB® and GIB Handibrac® are registered trade marks of Fletcher Building Holdings Ltd.

MARCH 2014

Bracing strap installation

Care needs to be taken with the installation of the bracing strap. It should be checked in to be flush with the face of the stud providing a flat substrate for the plasterboard and

positioned in such a way that the corner fastenings of the bracing element are not affected by it. Keeping the strap to the edge of the end stud as shown will allow the corner fastenings to be installed without having to penetrate the bracing strap.

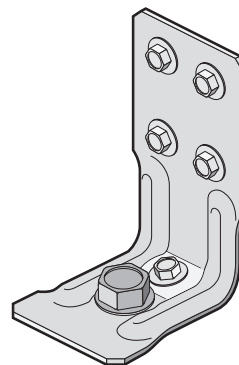
Concrete floor	Timber floor
400 x 25 x 0.9mm galvanised strap to pass under the plate and up the other side of the stud. Six 30 x 2.5mm flat head galvanised nails to each side of the stud. Three 30 x 2.5mm flat head galvanised nails to each side of the plate. Hold down bolt with 50 x 50 x 3mm washer to be fitted within 80mm of the end of the element.	
Internal wall	
 GEB004	 GEB005
External wall	
 GEB006	 GEB007
Note: Where applicable drawings have been produced for CAD design. These are identified by a unique number in the bottom corner of each detail box that can be found at gib.co.nz/library.	
2/300 x 25 x 0.9mm galvanised straps with six 30 x 2.5mm flat head galvanised nails to each stud and into the floor joist and three nails to the plate. Block to nog fixed with 3/100 x 3.75mm nails to stud.	
 GEB008	
Hold-down fastener requirements	
Concrete floor	Timber floor
A mechanical fastening with a minimum characteristic uplift capacity of 15kN fitted with a 50 x 50 x 3mm square washer within 80mm of the ends of the bracing element.	12 x 150mm galvanised coach screw fitted with a 50 x 50 x 3mm square washer within 80mm of the ends of the bracing element

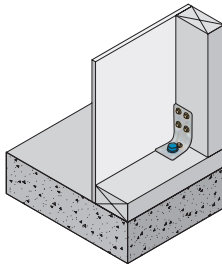
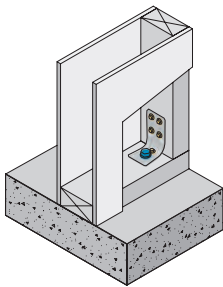
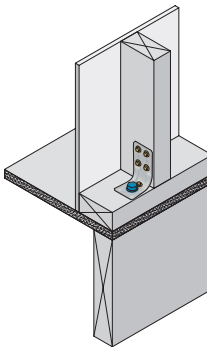
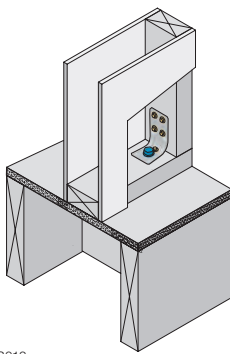
GIB HandiBrac® installation

Developed in conjunction with MiTek™, the GIB HandiBrac® has been designed and tested by Winstone Wallboards for use in GIB EzyBrace® elements that require hold-downs. The GIB HandiBrac® is a substitute for bottom plate hold-down straps.

- Quick and easy to fit.
- May be fitted at any stage before lining.
- Framing face is clear to allow flush lining.
- Easily inspected.

The GIB HandiBrac® with BOWMAC® blue head screw bolt is suitable for timber and concrete floors constructed in accordance with NZS 3604:2011.



Concrete floor		Timber floor	
External walls	Internal walls	External walls	Internal walls
			
GEB009	GEB010	GEB011	GEB012
Position GIB HandiBrac® as close as practicable to the internal edge of the bottom plate.	Position GIB HandiBrac® at the stud/plate junction and at mid-width of plate.	Position GIB HandiBrac® flush with the outside stud face, as close as practicable to the centre of the boundary joist.	Position GIB HandiBrac® in the centre of floor joist or full depth solid block.
Hold-down fastener requirements			
A mechanical fastening with a minimum characteristic uplift capacity of 15kN or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.		12 x 150mm galvanised coach screw or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.	

GIB HandiBrac® placement with GIBFix® Framing System for concrete floors

Figure 18 shows the preferred positioning of the GIB HandiBrac® panel hold-down brackets within the GIBFix® Framing System layout and where they are required by bracing systems with an 'H' in the specification code.

Note that, in corners and at wall junctions, a single GIB HandiBrac® can serve 'H' type bracing elements in both directions, but additional intermediate concrete anchors may need to be installed to meet the minimum requirements of NZS 3604:2011 for bottom plate fixing.

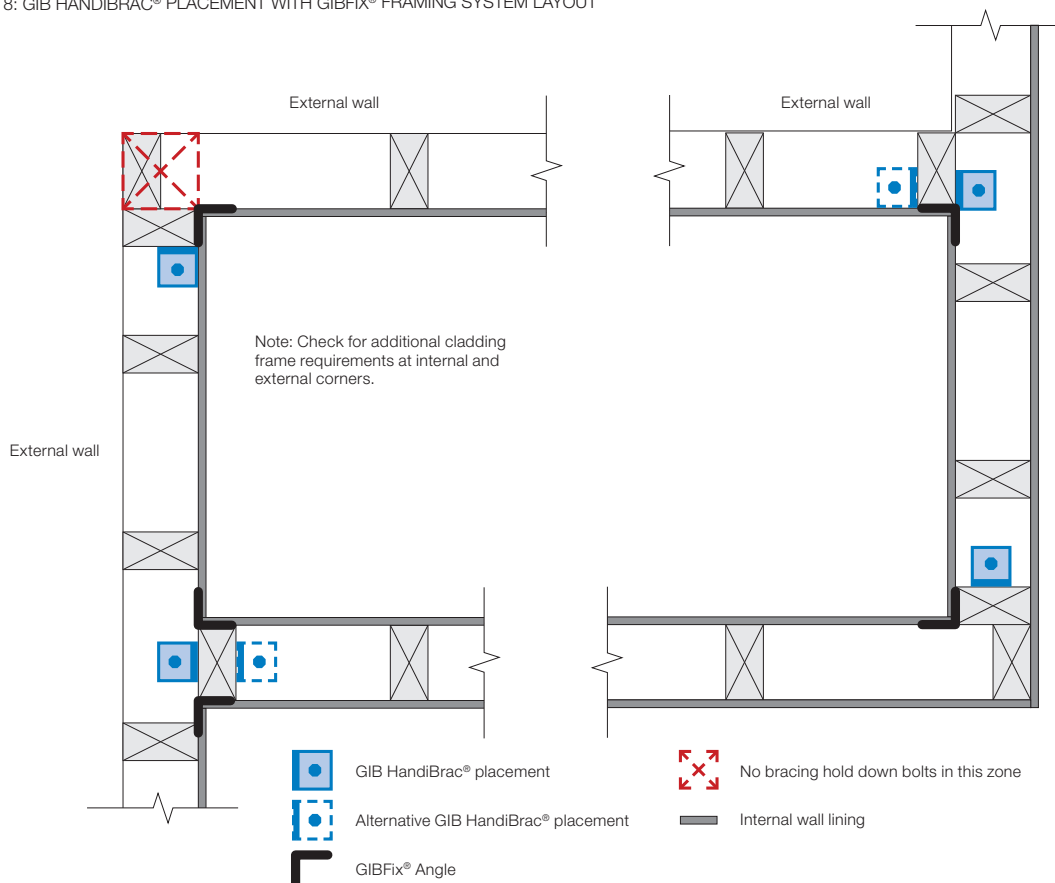
The GIB HandiBrac® is fixed to the stud which has the GIBFix® Angle.

For bracing elements with sheet material both sides of the wall connect corner studs using 8/90mm gun nails as shown in figure 19.

TIMBER FLOORS

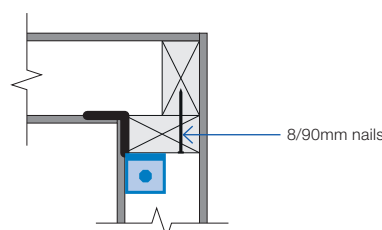
For timber floors bolt fixing in to solid joist or block is required, as shown on p 15.

FIGURE 18: GIB HANDIBRAC® PLACEMENT WITH GIBFIX® FRAMING SYSTEM LAYOUT



GEB013

FIGURE 19: STUD CONNECTION FOR 'H' TYPE BRACING ELEMENTS WITH SHEET MATERIAL BOTH SIDES



GEB014

Appendix 4

WET AREAS

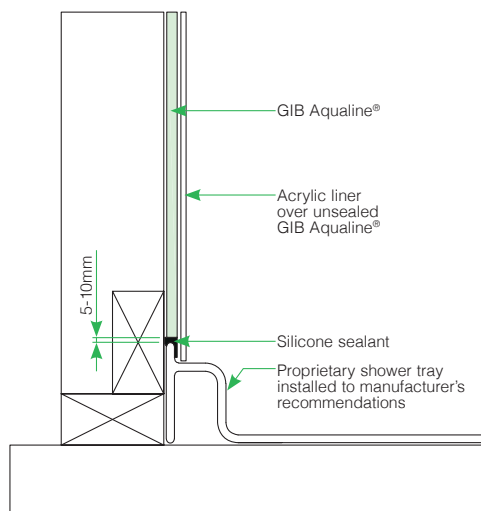
GIB AQUALINE® WET AREA SYSTEMS – TYPICAL DETAILS



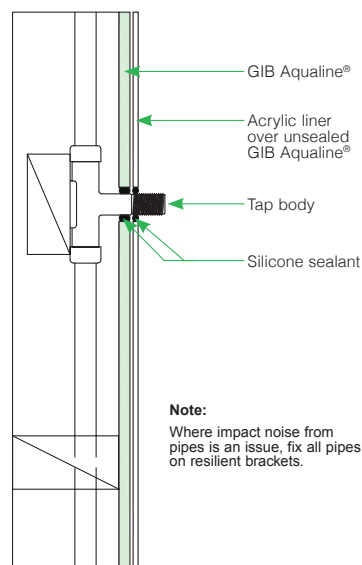
Shower – Acrylic Liner and Base

MARCH 2007

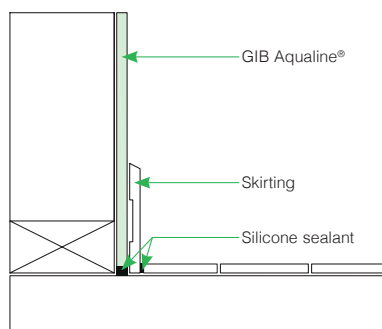
A
GAW-D027



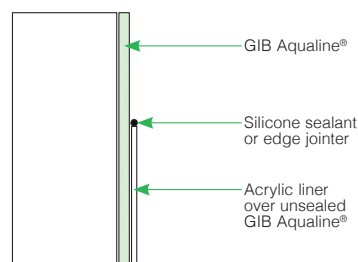
B
GAW-D028



C
GAW-D029



D
GAW-D030

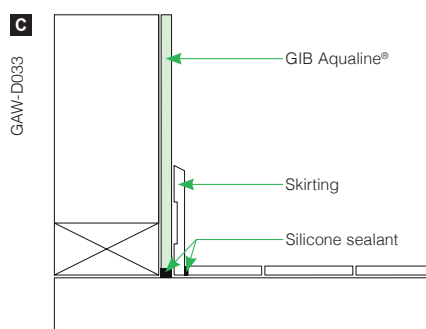
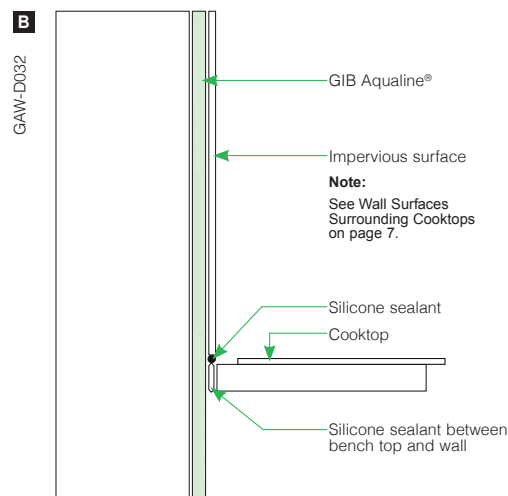
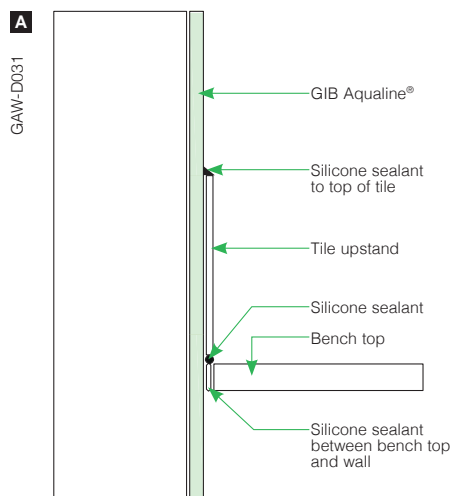


GIB AQUALINE® WET AREA SYSTEMS – TYPICAL DETAILS



Kitchen and Laundry

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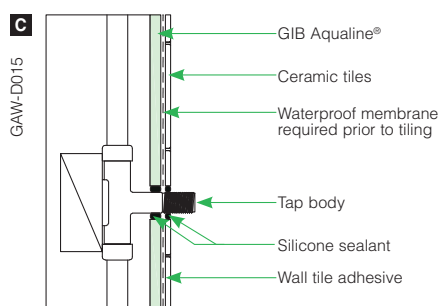
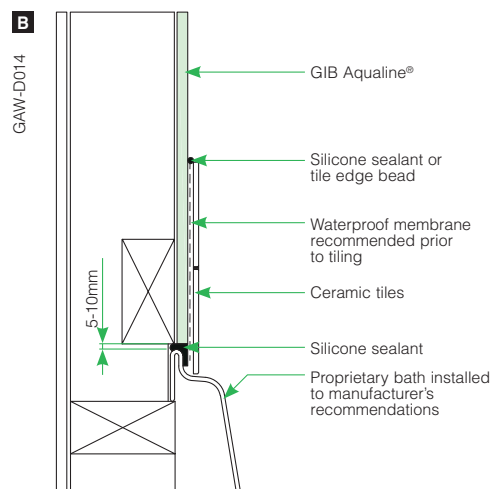
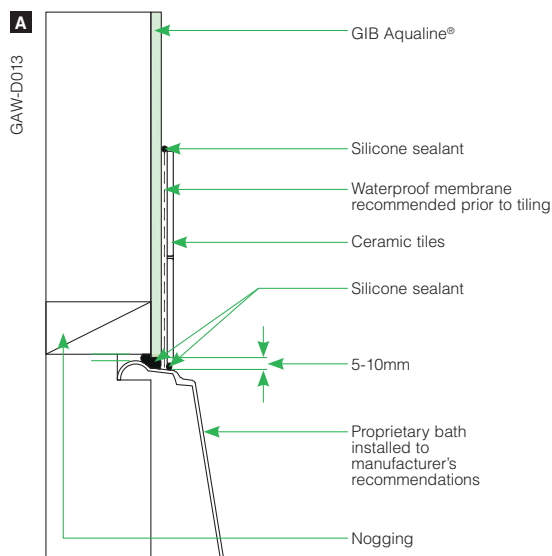


GIB AQUALINE® WET AREA SYSTEMS – TYPICAL DETAILS

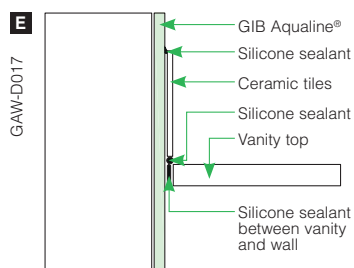
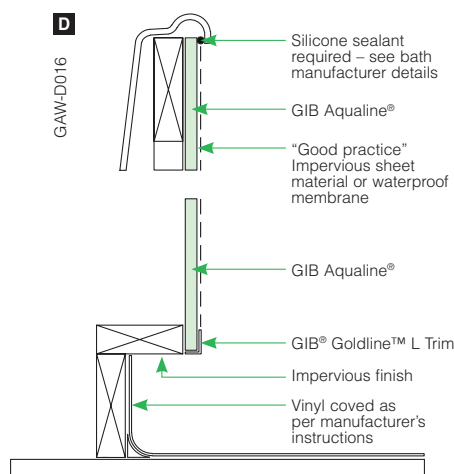


Bath – Tiled Upstand

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**Note:**

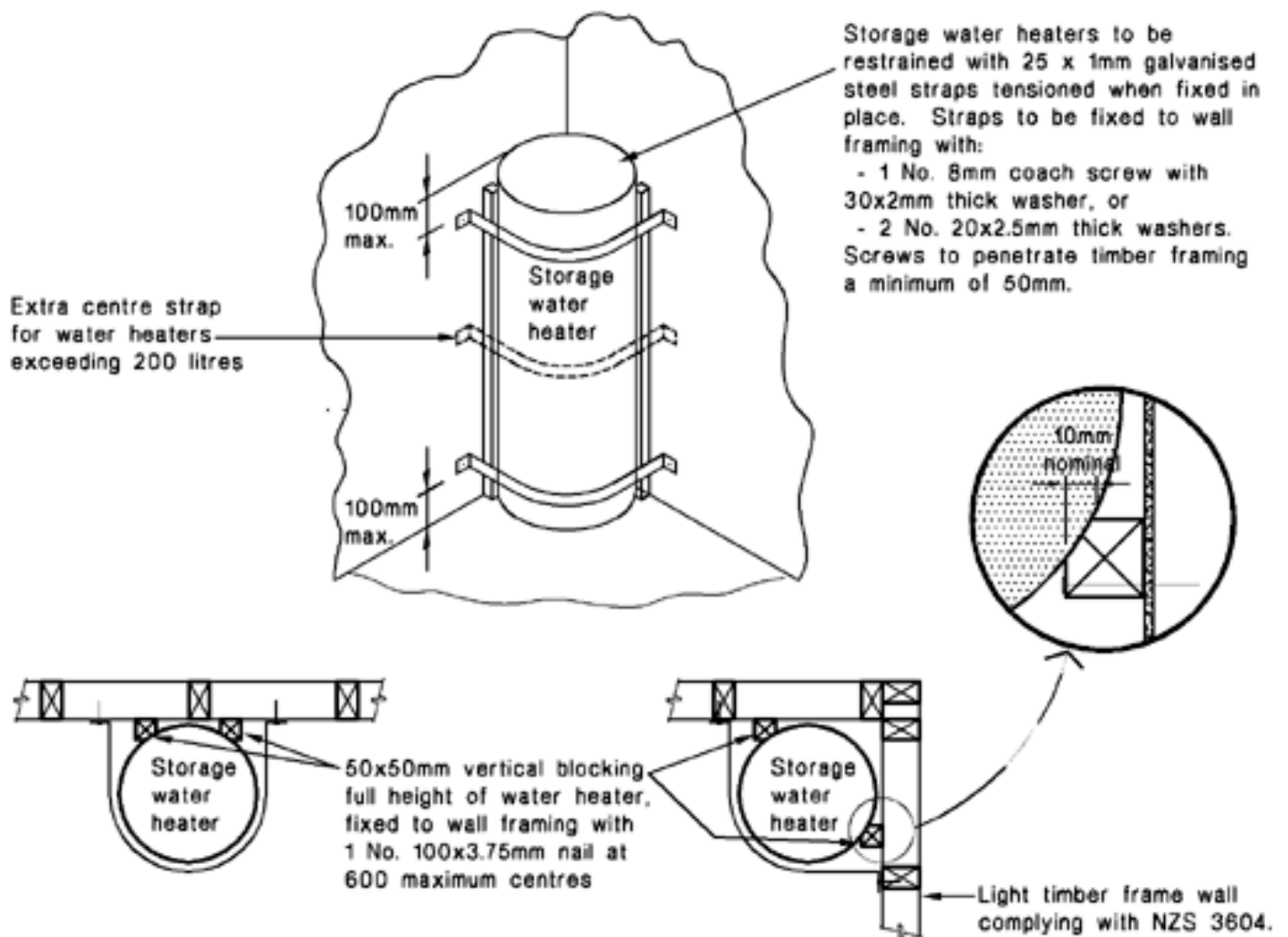
Where impact noise from pipes is an issue, fix all pipes on resilient brackets.



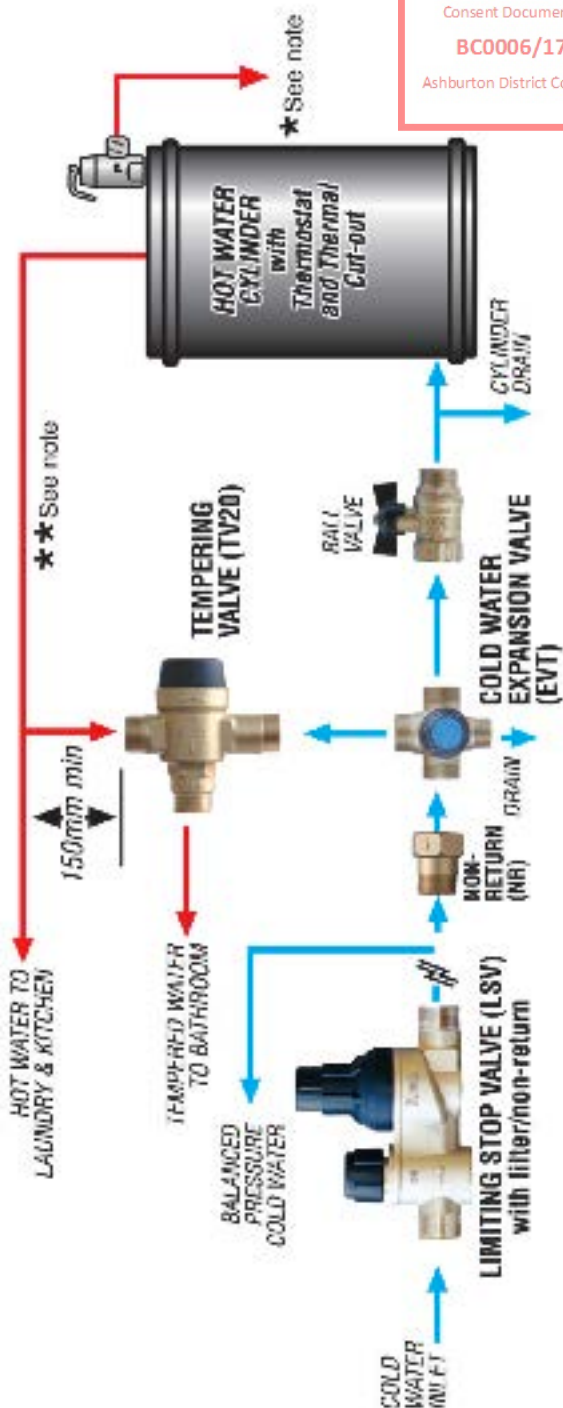
Appendix 5

PLUMBING

Hotwater cylinder fixing requirements



HIGH PRESSURE - Valve Vented



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Consent Documents

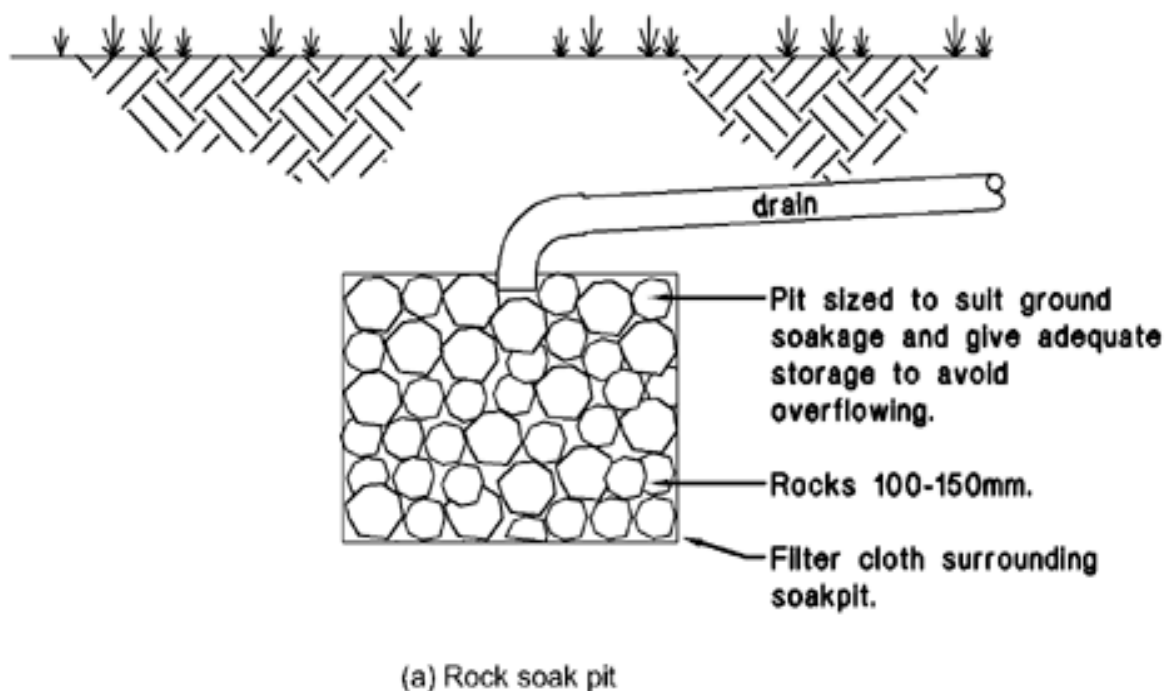
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Ashburton District Council

Appendix 6

STORM WATER

Soakhole requirements



REQUIREMENT FOR FILTER CLOTH SURROUNDING SOAKHOLE

Provide soak holes minimum 3m from building line.
Drain pipe being 90mm dia. UPVC off 1:90 min gradient to soak hole.

SIZING OF SOAK HOLES

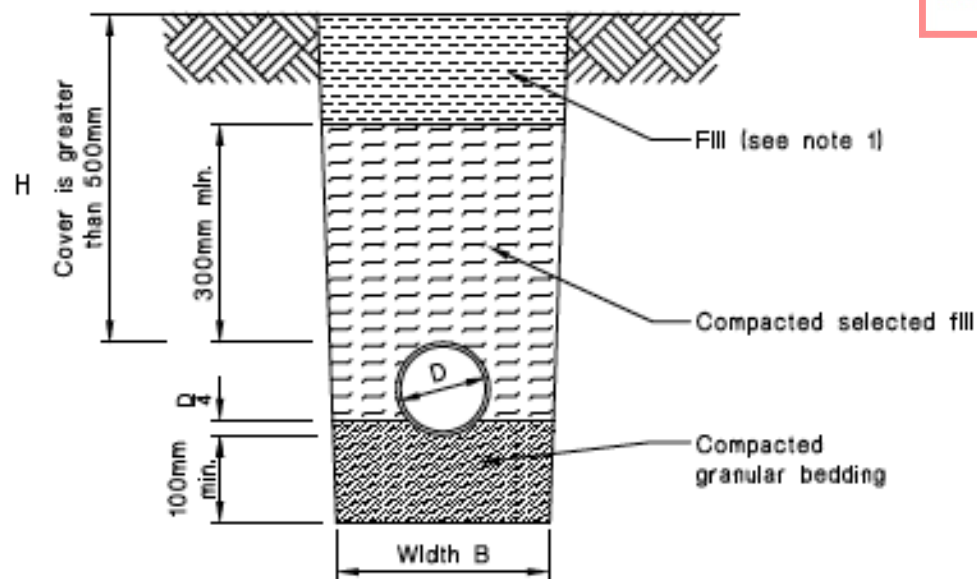
Generally in loose pumice country the following charts can be used to ascertain the size and number of soak holes required for a particular situation.

Chamber Soak Pit

Diameter of hole	Depth of hole in metres	Area m ² of discharge to hole
600mm	One	8.3
	Two	16.7
	Three	25
	Four	33.3
	Five	41.7
	Six	50
900mm	One	18.7
	Two	37.5
	Three	56.3
	Four	75
	Five	93.7
	Six	112.5

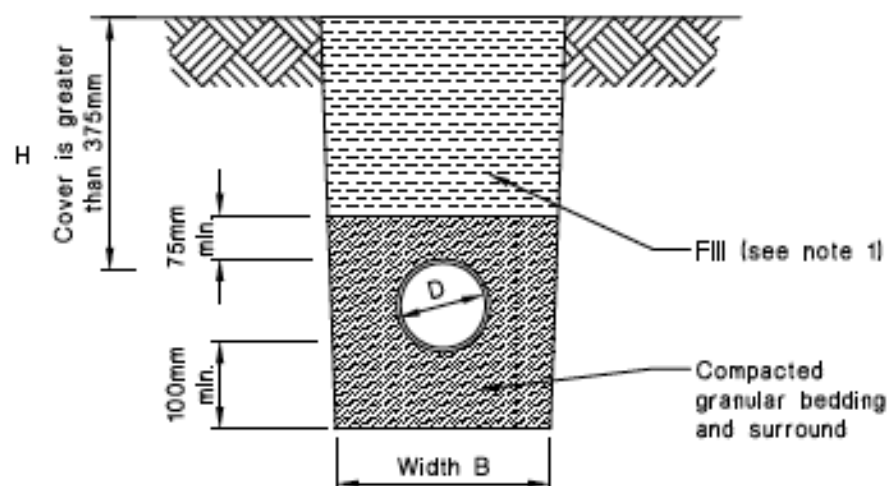
Appendix 7

WASTE WATER



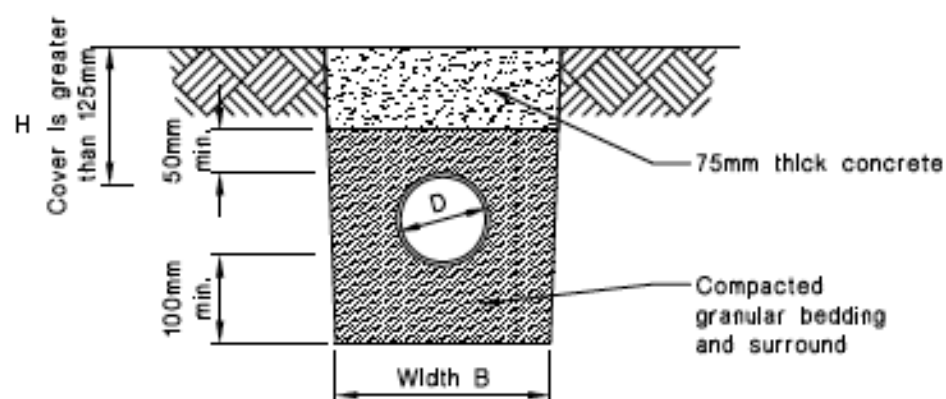
(a) Bedding type 'B' of NZS 7843

Cover greater than 500mm



(b) Bedding type 'D' of NZS 7843

Cover greater than 375mm



(c) Cover between 125mm and 375mm

NOTE:

1. Fill shall be:

- Ordinary fill where drains are located below gardens and open country.
- Compacted selected fill where the drains are located below residential driveways and similar areas subject to light traffic.

Appendix 8

ROOFING

THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY

APPLICATION AND INSTALLATION

Product Description	THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY is specifically designed for use in Domestic and Commercial type buildings. THERMAKRAFT 215 is a breathable, absorbent bituminous wall and roofing underlay. THERMAKRAFT 215 will provide the following functions: • Reduce wind entry into the cavity, thereby assisting the performance of thermal insulation. • Highly water vapour permeable, thereby allowing excess water vapour which might otherwise condense in the structure, to escape. • Provides a temporary protection against wind, dust, rain and other weathering elements until the external cladding is applied.						
Applications	THERMAKRAFT 215 is suitable as a wall and roofing underlay where Fire Retardancy is NOT required, and with all cladding types. THERMAKRAFT 215 is self supporting to 1200mm rafter/purlin spacing. THERMAKRAFT 215 can be used as an Air Barrier. THERMAKRAFT 215 must not be left exposed to the elements for more than 7 days. Cladding on the same day is recommended. If Fire Retardancy (FI <5) is required, use Thermakraft COVERTEK407.						
Installation Roofing	THERMAKRAFT 215 may be run vertically over purlins with a 150mm lap if roof pitch >8 degrees. Fix securely to purlins with 8mm staples or 20mm clouts. The membrane should be firmly laid to avoid excessive dishing between purlins. THERMAKRAFT 215 may be run horizontally across rafter/trusses with a 150mm lap for roof pitches above 3 degrees. Fix securely with 8mm staples or 20mm clouts.						
Control of Condensation	In climatic regions where condensation risks are high, such as cold or high humidity areas, care needs to be taken in specifying the correct design and installation to prevent moisture build-up in the roof cavities. Factors which adversely affect the condensation risk in roofing systems include; • Humid, and/or cold climatic regions • Warm/Skillion roof construction • Low roof cavity air volume and restricted air movement • Omitting Vapour Control Layers • Ceiling penetrations and entry of warm air into roof cavities • Occupancy activities which have high moisture loading on conditioned spaces • Low pitched roof • Bulk insulation • Building structures ability to naturally dry Construction Moisture Skillion and Warm Roof Construction are particularly sensitive to moisture accumulation and the design and installation of roof construction needs to take into account the higher condensation risks. Refer MRM Code of Practice for details.						
Storage	THERMAKRAFT 215 should be stored on end in dry conditions. Protect from the weather and direct sunlight.						
Roll Dimensions	<table> <tr> <td>1250mm x 40.0m = 50m²</td> <td>20kg</td> </tr> <tr> <td>1250mm x 20.0m = 25m²</td> <td>10kg (2 per pack)</td> </tr> <tr> <td>1450mm x 34.5m = 50m²</td> <td>20kg</td> </tr> </table>	1250mm x 40.0m = 50m ²	20kg	1250mm x 20.0m = 25m ²	10kg (2 per pack)	1450mm x 34.5m = 50m ²	20kg
1250mm x 40.0m = 50m ²	20kg						
1250mm x 20.0m = 25m ²	10kg (2 per pack)						
1450mm x 34.5m = 50m ²	20kg						

For more information regarding **Thermakraft COVERTEK407 FIRE RETARDANT SELF SUPPORTING ABSORBENT BREATHABLE SYNTHETIC NON WOVEN ROOFING UNDERLAY** refer to the "DESIGNER and USER GUIDELINES" - Direct and Cavity Fix, or contact **Thermakraft Customer Services** on **0800 806 595**.

THERMAKRAFT 215

BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY

TECHNICAL SPECIFICATIONS

Technical Data

THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY complies with the requirements of NZBC E2/AS1 Table 23.

Nominal Grammage 400g/m²

NZBC E2/AS1 TABLE 23 AS A WALL UNDERLAY REQUIREMENTS

NZBC E2/AS1 TABLE 23 WALL UNDERLAY PROPERTIES	PROPERTY PERFORMANCE REQUIREMENTS	PROPERTY PERFORMANCE
Absorbency	≥100 gsm	Pass
Vapour Resistance	≤7 MN.s/g	Pass
pH of Extract	≥6 and ≤9	Pass
Shrinkage	≤0.5%	Pass
Water Resistance	≥100mm	Pass
Air Barrier	≥0.1 MN.s/m ³	Pass
Duty		Heavy

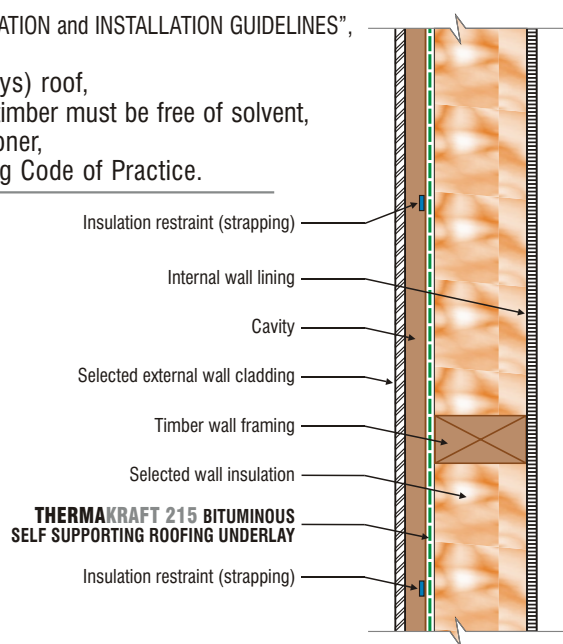
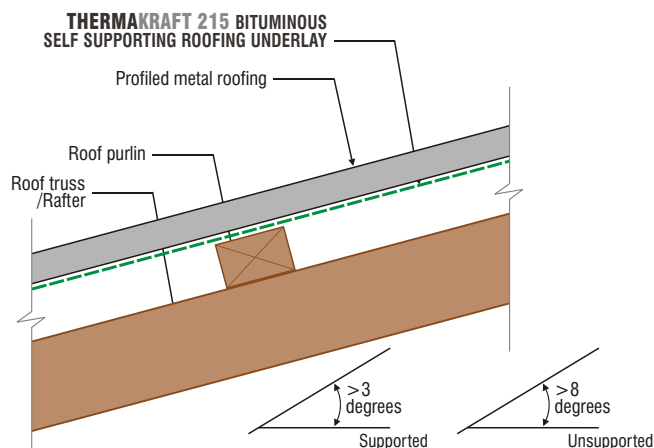
NZS2295:2006 Classification

Flammability Index		Non Fire Retardant
Wind Zone	R2	Up to Very High
NZS2295:2006 Classification	R2	Self Supporting

Durability/Limitations

For **THERMAKRAFT 215** to meet the Performance Requirements of NZBC Clause B2, Durability B2.3.1(a) 50 years and B2.3.1(b) 15 years, E2 External Moisture, **THERMAKRAFT 215**:

- must be installed in accordance to the "APPLICATION and INSTALLATION GUIDELINES",
- run length no greater than 10 metres,
- is not left exposed for more than (7 days) roof,
- when used on LOSP treated timber, the timber must be free of solvent,
- installed by a licensed building practitioner,
- installed in accordance with the Roofing Code of Practice.



The recommendations contained in Thermakraft's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to any conditions contained in the Warranty. All product dimensions and performance claims are subject to any variation caused by normal manufacturing process and tolerances. Furthermore, as the successful performance of the relevant system depends on numerous factors outside the control of Thermakraft (for example quality of workmanship and design), Thermakraft shall not be liable for the recommendations in that literature and the performance of the Product, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code, regulations and standards.



Flexible Cone Sleeve

Dektite cone shape eliminates seal breakdown due to vibration or expansion and contraction, while isolation of pipe from sheeting dampens noise levels.

Stress Isolation Points

Unique to Dektite, two flexible shoulders absorb distortion and stop transfer of stresses from base to cone, as unit is formed over roofing profile.

Bonded Aluminium Flange

Corrosion-resistant, malleable flange, evenly distributes fastening pressure and allows ease of hand-shaping on most sheet profiles.

Integrity of Flashing Shape

Minimal distortion after installation, maintains natural flashing shape and seal around pipe, while water run-off is improved.

UV Protection

Dektite products are resistant to ultraviolet light damage and will remain fully flexible under all conditions.

Easily Identified Sizing

Pipe diameter rings are clearly marked on the cone sleeve (metric and imperial) for cutting to match the appropriate pipe diameter.

Low Profile Design

Sleek, unobtrusive shape is designed to minimise silhouette on roofline, while managing to provide generous internal clearance for steep, angular installations.

Improved Waterproofing

Designed to strengthen sealant bond and improve waterproofing, the ribbed base also has a tapered edge to improve runoff and contribute to a superior waterproof seal.

Perfect for approved flues!

Dektite EPDM polymer flashings have been officially tested and conform to all Australian and New Zealand Standards on approved flue systems. EPDM withstands temperatures from -50°C - 115°C and up to 150°C intermittently. withstands temperatures from -60°C - 200°C and up to 250°C intermittently.

Dektite Premium

The versatile solution

Approved Building

Consent Documents

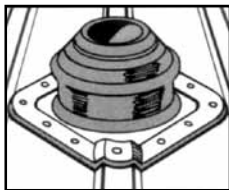
BC0006/17

Ashburton District Council

- ✓ Most extensive range of Dektites 0 – 510mm penetrations, available in black and grey EPDM and silicone red for high temperatures.
- ✓ Designed to enable practically any pipe flashing operation to be carried out within minutes, simple to install and very effective.
- ✓ The low profile cone not only looks good but provides a generous internal clearance, so even the steepest roofs are handled with ease.
- ✓ Around the base of the cone a flexible bead reduces stress on the flashing membrane.
- ✓ Suitable for flashing pipes that penetrate wall claddings.
- ✓ For a maintenance free seal on pipes from 0 – 510mm diameter, it's much more than a flexible solution to pipe flashing, it's a means of saving time and money.
- ✓ Can also be used to flash square penetrations. Just add 30% to the pipe diameter and trim the cone to suit.
- ✓ EPDM withstands temperatures from -50°C – 115°C and up to 150°C intermittently.
- ✓ Silicone withstands temperatures from -60°C – 200°C and up to 250°C intermittently.

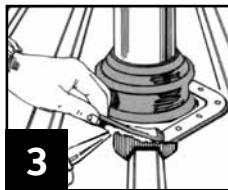


Installation Instructions:

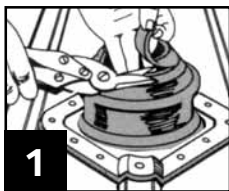


NOTE:

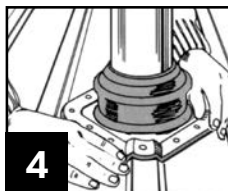
For more effective drainage, always fit the Dektite on the diamond or bias.
Dektites are suitable for flashing pipes that penetrate wall claddings.



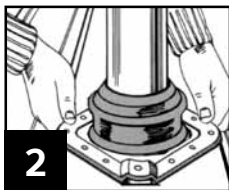
Apply a neutral-cure silicone sealant by turning back the flexible flange (refer to page 13 for silicone types).



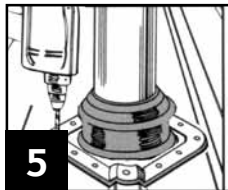
Cut a neat hole in roofing sheet with minimum clearance for pipe and insert pipe through hole. Trim the cone to suit pipe size using sharp tin snips. Where required, support cut sections of sheet with additional framing.



Press base to the roof profile by hand, smooth out any awkward creases. Don't fully extend to allow for vibration.



Slide Dektite flashing down over pipe. Lubricating the pipe with water allows the pipe to slide snugly into position.



Fasten using self-drilling washered screws. Fit fasteners progressively outward in opposing pairs to avoid gaps.

Code: Black EPDM	Code: Grey EPDM	Code: Red Silicone	Base (mm)	Pipe (mm)	Pitch
DFE10MB			71 x 71	0-20	0-60
DFE100B	DFE100MG		100 x 100	0-35	0-60
DFE100BS		DFE200RES	100 x 100	0-35	0-60
DFE101B	DFE101G		139 x 139	5-55	0-45
DFE101BS		DFE201RES	139 x 139	5-55	0-45
DFE102BA	DFE102GA	DFE202REA	181 x 181	50-70	0-45
DFE103B	DFE103G	DFE203RE	218 x 218	5-127	0-45
DFE104B	DFE104G	DFE204RE	279 x 279	75-175	0-45
DFE105B	DFE105G	DFE205RE	309 x 309	100-200	0-45
DFE106B	DFE106G	DFE206RE	363 x 363	125-230	0-45
DFE107B	DFE107G	DFE207RE	456 x 456	150-300	0-45
DFE108B	DFE108G	DFE208RE	495 x 495	170-355	0-45
DFE109B	DFE109G	DFE209RE	680 x 680	230-508	0-45



DFE201RES



DFE100BS

Appendix 9

ENERGY EFFICIENCY

H1 Report created by:

Moore Architecture Ltd

Project Name:

House 2 (House 3 identical), 32 Willow Street

Client:

Lot No:

Comment:

Project Id:

96469

Report Date:

12/01/2017

This building complies with H1 via the following methods :

- the Schedule Method in NZS4218:2004 (Sept 2008 R-values)
- the Calculation Method in NZS4218:2004 (Sept 2008 R-values)
- the BPI Method

Note that in order to comply with H1 the building needs to comply with only one of the four compliance paths. However, it must always comply with the R-value requirements of Clause E3.

H1 Compliance Details

[Terms and Conditions](#) · [Contact](#) · [Home](#)

NZS4218:2004 Schedule Method Compliance

In order to comply the R-values for all the construction elements must be the same or larger than the permitted minimum R-values. This design complies with the NZS4218:2004 Schedule Method.

Non-Solid Construction		
	Permitted Minimum	Proposed Minimum
Floor:	1.3	1.41
Non-solid Walls:	2	2.6
Glazing in Non-solid Walls:	0.26	0.26
Roof:	3.3	3.6
Skylights:	0.31	

If multiple solid wall types levels are used the table shows the requirements for the corresponding walls and windows in them. For solid timber and for other solid constructions two options are shown for each. But the components of these options can not be mixed.

R-value from option 2.

H1 Compliance Details

Design Details

Building Dimensions

Floor Area	126
Gross Wall Area	94.1
Net Wall Area	75.5
Wall (North) Area	11.5
Wall (East, South and West) Area	64
Gross Roof Area	126
Net Roof Area	126
Glazing Area	18.6
Window (North) Area	7.6
Window (East, South and West) Area	11
Skylight Area	0

Glazing Area Percentages

Total Vertical Glazing Percentage	19.8%
East, South and West Window Percentage	14.7%
Total over 30%	no
East, South and West over 30%	no
Total over 50%	no

Information required for BPI calculation

Living Floor Area126Note: This includes also internal floors.

Average Room Height2.4

Thermal Mass LevelMedium weightSlab floor with some carpeting or direct glued timber, timber framed walls.

Climate

LocationAshburton

Climate Zone3

Heat Loss Details

	ID	Orient.	Width	Height	Gross Area	Net Area	R-value*	Heat Loss	Shad. Coeff.**	Solid Wall***
<u>Floors</u>										
Floor 1	House2 (House				126.0	126.0	1.41	89.4		
<u>Walls</u>										
Wall 1	House 2	N	8.0	2.4	19.1	11.5	2.60	4.4		C
Window 1-1	D02		2.8	2.1		5.9	0.26	22.6	0.00	
Window 1-2	W01		1.4	1.2		1.7	0.26	6.5	0.00	
Wall 2	House 2	E	12.4	2.4	29.7	21.8	2.60	8.4		C
Window 2-1	W02		1.4	1.4		2.0	0.26	7.5	0.00	
Window 2-2	W03		1.4	1.4		2.0	0.26	7.5	0.00	
Window 2-3	W04		1.4	1.4		2.0	0.26	7.5	0.00	
Window 2-4	W05		1.4	1.4		2.0	0.26	7.5	0.00	
Wall 3	House 2	S	8.0	2.4	19.1	19.1	2.60	7.3		C
Wall 4	House 2	W	10.9	2.4	26.3	23.1	2.60	8.9		C
Window 4-1	W06		1.4	1.4		2.0	0.26	7.5	0.00	
Window 4-2	W07		0.7	0.8		0.6	0.26	2.2	0.00	
Window 4-3	W08		0.8	0.8		0.6	0.26	2.5	0.00	
<u>Roofs</u>										
Roof 1	House 2 (Hous				126.0	126.0	3.60	35.0		
<u>Total Heat Loss</u>								224.8		

* Any concrete slab-on-ground floor regardless of its dimensions can be assumed to have an R-value of at least R-1.3 (H1/VM1 and H1/AS1, Replacement Table 1, Note (4)).

** The Shading Coefficient is only required for BPI calculations.

*** C: Cavity Construction (any construction that is not solid), T: Solid Timber, S: Other Solid Construction (Note that the use of solid timber and other solid construction types is discretionary, i.e. solid timber is not required for solid construction types).

Floor Construction Details

Name: House 2 (House 3 identical)

1.43 m²K/W

Type: Floor: Slab floor

internal surface 0.09

Flooring : none (Example: polished surface of a concrete floor)

R-value: 0.00

Slab Insulation

Slab floor area [m²]: 126

Perimeter length [m]: 48.6

External wall thickness [mm]: 90

Soil conductivity [W/m °C]: 1.2

Underslab insulation: none Insulation : i

Piles Footings: Number: Penetration Diameter:

Slab edge insulation: none Insulation : i

Name:

External Walls

2.30

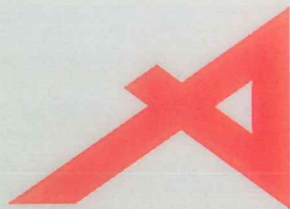
m²K/W

Type: Wall: Timber frame with vented cavity

external surface 0.03	
Cladding : 70mm brick	R-value: 0.06
Air Barrier : Building paper	R-value: 0.01
Timber Frame & Cavity : 90mm, studs @ 600mm, dwangs @ 800mm	
Wall Frame Area: 14.4% Cavity Area: 85.6%	
15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08	15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08
Framing : R-value: 0.75	Insulation : 2.6
	still Airgap: 20-90mm airgap (non-reflective) R-value: 0.16
Wall Lining : Gypsum plasterboard 10mm	
R-value: 0.04	
internal surface 0.09	

Appendix 10

CLADDING



BRANZ Appraised

Appraisal No.548 [2013]

BRANZ Appraisals

Technical Assessments of products
for building and construction

**BRANZ
APPRAISAL
No. 548 (2013)**

This Appraisal replaces BRANZ
Appraisal No. 548 (2007) dated
27 July 2007.

Amended 17 December 2013

**TEKTON® BUILDING
WRAP**

Marshall Innovations Limited
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Greerton
Tauranga

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BRANZ Limited
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New Zealand
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www.branz.co.nz



Approved Building

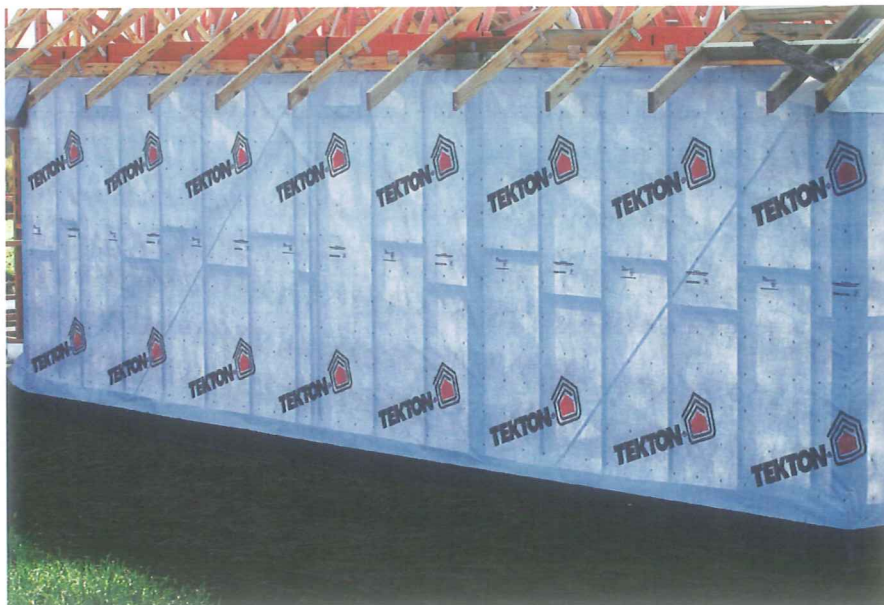
Consent Documents

BC0006/17

Ashburton District Council

Product

1.1 Tekton® Building Wrap is a synthetic breather-type flexible wall underlay and air barrier for use under direct and non-direct fixed wall cladding on timber and steel framed buildings. The product is manufactured of a coated spun-bonded polypropylene.



Scope

2.1 Tekton® Building Wrap has been appraised for use as a flexible wall underlay on timber framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with absorbent wall claddings directly fixed to framing; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1; and,
- situated in NZS 3604 Wind Zones up to, and including 'Very High'.

2.2 Tekton® Building Wrap has been appraised for use as a flexible wall underlay on steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer subject to specific design; and,
- situated in NZS 3604 Wind Zones up to, and including 'Very High'.

2.3 Tekton® Building Wrap has been appraised for use as a flexible wall underlay over rigid wall underlays on timber and steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1 for timber framed buildings or specific design for steel framed buildings; and,
- situated in NZS 3604 Wind Zones up to and including 'Extra High'.

2.4 Tekton® Building Wrap has also been appraised for use on buildings subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of Tekton® Building Wrap into their design in accordance with the declared properties and the instructions of Marshall Innovations Limited.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Tekton® Building Wrap, if used, designed, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet, or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1(a), not less than 50 years, B2.3.1(b), 15 years and B2.3.2. Tekton® Building Wrap meets these requirements. See Paragraphs 9.1 and 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the cladding system, Tekton® Building Wrap will contribute to meeting this requirement. See Paragraphs 12.1 – 12.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Tekton® Building Wrap meets this requirement and will not present a health hazard to people.

3.2 This is an Appraisal of an **Alternative Solution** in terms of the New Zealand Building Code compliance.

Technical Specification

4.1 Tekton® Building Wrap is a 100 g/m² light grey sheet polypropylene membrane material approximately 0.6 mm thick.

4.2 The product is supplied in rolls 1.370 m x 74 m and 2.743 m x 37 m. The product is printed with the Tekton® logo repeated along the length of the roll. The rolls are wrapped with an instruction sticker.

Accessories

4.3 Accessories used with Tekton® Building Wrap which are supplied by the installer are:

- Fixings – staples, clouts, screws or proprietary wrap fixings, or other temporary fixings to attach the wall wrap to the framing.
- Wall underlay support – polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to support the wall wrap in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

Handling and Storage

5.1 Handling and storage of the product, whether on or off site, is under the control of the installer. The rolls must be protected from damage and weather. They must be stored on end, under cover, in clean, dry conditions and must not be crushed.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Tekton® Building Wrap. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Timber and Steel Framing

7.1 Studs must be provided at maximum 600 mm centres. Dwangs must be fitted flush between the studs at maximum 1200 mm centres.

General

7.2 Tekton® Building Wrap is intended for use as an alternative to conventional building papers which are fixed over timber and steel framed walls in order to limit the entry of wind into building cavities, and to act as a secondary barrier to wind-driven rain.

7.3 The material also provides a degree of temporary weather protection during early construction. However, the product will not make the building weathertight and some wetting of the underlying structure is always possible before the building is closed in. Hence, the building must be closed-in and made weatherproof before moisture sensitive materials such as wall or ceiling linings and insulation materials are installed.

7.4 Tekton® Building Wrap must not be exposed to the weather or ultra violet light for a total of more than 60 days before being covered by the wall cladding.

7.5 Tekton® Building Wrap is suitable for use under wall claddings as a wall underlay as called up in NZBC Acceptable Solution E2/AS1, Table 23, except that it must not be used with non-absorbent wall claddings such as vinyl or metal based sidings or weatherboards in direct fixed installations. Tekton® is suitable for use under cavity based wall claddings as a non-absorbent synthetic wall underlay as called up in NZS 2295, Table 2.4 on steel framed buildings. Refer to Table 1.

7.6 Tekton® Building Wrap is also suitable for use as an air barrier to walls that are not lined, such as attic spaces at gable ends, as called up in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.4 (c). Refer to Table 1.

Table 1: NZBC E2/AS1 Table 23 Requirements

NZBC E2/AS1 Table 23 Wall Wrap Properties	Property Performance Requirement	Actual Property Performance
Absorbency	≥ 100 g/m ²	Classified as non-absorbent (see paragraph 7.4)
Vapour Resistance	≤ 7 MN s/g	Pass
Water Resistance	≥ 20 mm	Pass
pH of Extract	≥ 5.5 and ≤ 8	9.78 (Note 1)
Shrinkage	≤ 0.5%	Pass
Mechanical	Edge tear and tensile strength	Edge tear: Machine direction = 228 N Cross direction = 186 N Tensile strength: Machine direction = 4.4 kN/m Cross direction = 3.9 kN/m
Air Barrier	Air resistance: ≥ 0.1 MN s/m ³	Pass

Note 1: Further testing of Tekton® Building Wrap was completed to determine the effect of the high pH level on the wall underlay and materials it is likely to come into contact with during its serviceable life. The testing confirmed that the high pH had no adverse effects on the wall underlay performance, or the performance of other materials.

7.6 In cavity installations where the cavity battens are installed at greater than 450 mm centres, the wall underlay must be supported between the battens to prevent the wall underlay bulging into the cavity space when bulk insulation is installed in the wall frame cavity in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

Stucco Plaster

7.7 Tekton® Building Wrap is suitable for use as a non-rigid backing material for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.1. The wall underlay must be supported with 75 mm galvanised mesh or plastic tape or wire at 150 mm centres run across the cavity battens to limit deflection to a maximum of 5 mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.2.

7.8 Tekton® Building Wrap may also be used as a slip layer over rigid backings for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.3(b).

Structure

8.1 Tekton® Building Wrap is suitable for use in all Wind Zones of NZS 3604 up to, and including, 'Very High' when used as a flexible building underlay, and all Wind Zones of NZS 3604 up to, and including, 'Extra High' when used as an overlay for rigid building underlays.

Durability

9.1 Tekton® Building Wrap meets code compliance with NZBC Clause B2.3.1 (a), not less than 50 years for building wraps used where the cladding durability requirement or expected serviceable life is not less than 50 years, and code compliance with NZBC Clause B2.3.1 (b), 15 years for building wraps used where the cladding durability requirement is 15 years.

Serviceable Life

9.2 Provided it is not exposed to the weather or ultra-violet light for a total of more than 60 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, Tekton® Building Wrap is expected to have a serviceable life equal to that of the cladding.

Control of Internal Fire and Smoke Spread

10.1 Tekton® Building Wrap has an AS 1530 Part 2 flammability index of not greater than 5 and therefore meets the requirements of NZBC Acceptable Solutions C/AS2 to C/AS6, Paragraph 4.17.8 b), for the surface finish requirements of suspended flexible fabric used as an underlay to exterior cladding that is exposed to view in occupied spaces. It may therefore be used with no restrictions in all buildings.

Prevention of Fire Occurring

11.1 Separation or protection must be provided to Tekton® Building Wrap from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

12.1 Tekton® Building Wrap must be used behind claddings that meet the requirements of the NZBC, e.g. SUSHANT Design Council or claddings covered by a valid BRANZ Appraisal.

12.2 Tekton® Building Wrap, when installed in accordance with the Technical Literature and this Appraisal, will assist in the total cladding systems compliance with NZBC Clause E2.

12.3 When used as an air barrier, particular care must be taken to ensure an air tight barrier is achieved, and weather sealing at all openings and penetrations through the cladding meets the requirements of the NZBC.

Installation Information

Installation Skill Level Requirements

13.1 Installation must always be carried out in accordance with the Technical Literature and this Appraisal, by competent tradespersons with an understanding of wall wrap installation.

Wrap Installation

14.1 Tekton® Building Wrap must be fixed to all framing members at maximum 300 mm centres with hot-dip galvanised, large-head clouts 20 mm long, zinc plated 6-8 mm staples, self-drilling screws, or proprietary wrap fixings. The membrane must be pulled taut over the framing before fixing.

14.2 Tekton® Building Wrap must be run horizontally and must extend from the upper-side of the top plate to the under-side of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs. Horizontal laps must be no less than 75 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the membrane. End laps must be made over framing and be no less than 150 mm wide.

14.3 The wall underlay should be run over openings and these left covered until windows and doors are ready to be installed. Openings are formed in the membrane by cutting on a 45 degree diagonal from each corner of the penetration. The flaps of the cut membrane must be folded inside the opening and stapled to the penetration framing. Excess wall underlay may be cut off flush with the internal face of the wall frame.

14.4 Tekton® Building Wrap can be added as a second layer over head flashings in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10.3.

14.5 When fixing the product in windy conditions, care must be taken due to the large sail area created by wide roll widths.

14.6 Any damaged areas of Tekton® Building Wrap, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150 mm and taping, or by taping small tears.

Inspections

14.7 The Technical Literature must be referred to during the inspection of Tekton® Building Wrap installations.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

15.1 The following tests have been carried out on Tekton® Building Wrap by Scion: Folding strength of paper in accordance with AS/NZS 1301.423; edge tear resistance and tensile strength in accordance with AS/NZS 4200.1 and air resistance in accordance with BS 6538-3.

15.2 The following tests have been carried out on Tekton® Building Wrap by BRANZ: Absorbency in accordance with AS/NZS 4201.6, Vapour transmission in accordance with ASTM E 96B, Shrinkage in accordance with AS/NZS 4201.3, Water barrier in accordance with AS/NZS 4201.4 and pH of extract in accordance with AS/NZS 1301.421. A range of these tests were completed before and after Tekton® Building Wrap was exposed to ultra-violet light.

15.3 The Flammability Index of Tekton® Building Wrap has been evaluated in accordance with AS 1530.2.

Other Investigations

16.1 A durability opinion was given by BRANZ technical experts.

16.2 Site inspections were carried out by BRANZ to assess methods used for the installation of Tekton® Building Wrap, and to examine completed installations.

16.3 The marketer's Technical Literature, including installation instructions, have been examined by BRANZ and found to be satisfactory.

Quality

17.1 The manufacture of Tekton® Building Wrap has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. BRANZ has taken note of product certification by ICC-ES and CCMC covering quality aspects associated with the product.

17.2 The quality of supply to the market is the responsibility of Marshall Innovations Limited.

17.3 Building designers are responsible for the design of the building, and for the incorporation of the wall wrap into their design in accordance with the instructions of Marshall Innovations Limited.

17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Marshall Innovations Limited.

Sources of Information

- AS 1530.2 – 1993 Test for flammability of materials.
- AS/NZS 1301.421s: 1988 Determination of the pH value of aqueous extracts of paper, board and pulp – cold extraction method.
- AS/NZS 4200.1: 1994 Pliable building membranes and underlays – materials.
- AS/NZS 4201.1: 1994 Pliable building membranes and underlays – Methods of test – Resistance to dry delamination.
- AS/NZS 4201.2: 1994 Pliable building membranes and underlays – Methods of test – Resistance to wet delamination.
- AS/NZS 4201.3: 1994 Pliable building membranes and underlays – Methods of test – Shrinkage.
- AS/NZS 4201.4: 1994 Pliable building membranes and underlays – Methods of test – Resistance to water penetration.
- AS/NZS 4201.6: 1994 Pliable building membranes and underlays – Methods of test – Surface water absorbency.
- BS 6538.3: 1987 Method for determination of air permeance using the Garley apparatus.
- NZS 2295: 2006 Pliable, Permeable Building Underlays.
- NZS 3604: 2011 Timber-framed buildings.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (Amendment 5, 1 August 2011).
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.


BRANZ

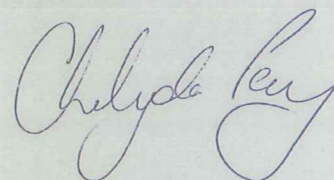
In the opinion of BRANZ, **Tekton® Building Wrap** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Marshall Innovations Limited**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the technical literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Marshall Innovations Limited**:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Marshall Innovations Limited**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Marshall Innovations Limited** or any third party.

For BRANZ



C Percy
Chief Executive

Date of issue: 16 December 2013

Amendment No. 1, dated 17 December 2013.

This Appraisal has been amended to fix an editorial error.