

# SPECIFICATION

APPROVED

14 / 06 / 13

Consent No.

## HOUSE ALTERATIONS AND ADDITIONS

for

**MR & MRS M TUNNICLIFFE**

149 Karaka Street, Wanganui

### The Building Design Company Ltd

51 Taupo Quay, Wanganui  
Ph: (06) 281 3706 Mob: (027) 434 6788  
Email: noel.wrl@xtra.co.nz

**Noel Mouldey**

Licensed Building Practitioner



**12/11/2014**

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### Attachments:

Kitchen Cross Sectional Detail  
Exterior Joinery Schedule & Installation Details  
LBP Certificate of Design Works  
Engineer's Producer Statement - PS1  
Engineer's Structural Details Specifications, and  
Calculations  
Property Title (as at 1/9/2014)

### Accompanying Documents

"Quin" Garage Drawings, Specifications &  
Calculations  
Working Drawings

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## 1.0 PRELIMINARY & GENERAL

### 1.1 DOCUMENTS

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This Specification and the accompanying Drawings have been prepared for the purposes of both Building Consent and a building contract between the property "Owner" and the Building Contractor (the Builder) for alterations and additions to the Owner's residence at 149 Karaka Street, Wanganui.

This Specification together with the accompanying Drawings and Building Contract/Agreement shall form the Contract Documents.

These documents, including all conditions in this Preliminary & General section of the Specification, shall be equally binding on all Contractors and Subcontractors employed by the Owner and/or the Building Contractor for the purposes of erection and completion of the works described in this Specification and detailed on the Drawings.

The Drawings and Specification are to be read together and the works completed according to the true intent of the documents. Any items shown on the drawings and not specified or vice versa shall be deemed to be included in both.

### 1.2 CONTRACT WORKS

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The contract works shall include the supply of all materials (unless otherwise specified as being supplied by the Owner), plant, labour and cartage for the erection and completion in every respect of the buildings and associated works detailed in the accompanying drawings and described in this Specification.

### 1.3 TRADE SECTIONS

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This Specification has been divided into trade sections for convenience and reference only and it shall not be construed that each trade section is a complete and separate contract.

While care has been taken to clarify relevant items under each trade, no claims will be accepted from Contractors for work not specifically mentioned in a trade section, but which is provided for, expressed or implied elsewhere in the Specification or on the drawings.

Each trade shall collaborate, wait on and render all necessary and reasonable assistance to other trades.

### 1.4 MEASUREMENTS AND SETTING-OUT

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Figured dimensions from the drawings are to be taken in preference to dimensions scaled from the drawings. However where necessary, all dimensions are to be checked on site by the Builder who shall be responsible for the correct and accurate setting-out of the building in accordance with the Drawings.

### 1.5 BUILDING CONSENTS AND FEES

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Contractors shall comply with and carry out all works in accordance with the Regulations and Bylaws of the District's Local Authority. The Owner will apply for, obtain all Building Consents and pay all fees as applicable for Building Consents, Inspections, BRANZ and any other Levies as required.

The Contractor's responsibility for payment of all Building, Plumbing and Drainage and other Inspection Fees shall be extended to no more than the minimum as required by the Local Authority at time of issue of Building Consent. Any Local Authority fees or charges for additional inspections and other services incurred during the currency of the works shall remain the responsibility of the respective Contractor/Subcontractor.

Any portion of any Bond paid by the Owner to the Local Authority and subsequently retained by the Local Authority as a result of damage or other circumstances caused by the Contractor or any Subcontractor shall be deducted from the Contractor's Final Account on completion of the works.

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## 1.6 CONTRACT SUPERVISION

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Supervision of the building construction and associated works shall, if required, be carried out by the Owner's appointed Licensed Building Practitioner who shall, at all times, be granted reasonable access to the site and contract works. Structural engineering works shall be supervised by the Owner's appointed Structural Engineer, Hamish Peters of Geocivil Engineering, who shall at all time have similar access to the site and contract works.

## 1.7 BYLAWS AND STANDARDS

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All work to all Trades must comply with all relevant Local Authority Bylaws, the NZ Building Code including NZS 3604 (2011), whether mentioned specifically or not. All work must be executed in accordance with good trade practice and all materials must be the best of their respective kinds.

## 1.8 PROTECTION OF THE WORKS & ADJACENT PROPERTY

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All works must be covered and suitably protected from weather or other Trades until the contract is completed and handed over to the Owner. All Contractors will be responsible for protecting the existing residence, adjoining properties, footpaths, roading, existing driveways, etc. from any damage resulting from their respective works.

Any remedial costs incurred by the Owner as a result of damage caused to any Council or other property (including the existing residence) by Contractors or Subcontractors shall remain the liability of the respective Contractor or Subcontractor.

## 1.9 CLEANING UP

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Each Contractor or Subcontractor shall be responsible for cleaning up the building and property during and after completion of their respective works. On completion the Builder shall remove all surplus materials and debris from the site. Floors are to be vacuum cleaned and all windows and fittings are to be suitably cleaned. The Plumber will be responsible for the satisfactory cleaning of all sanitary and other fittings installed under the Plumber's contract.

## 1.10 MAINTENANCE

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The Maintenance Period for this contract shall extend for a period of 90 days from the date of Practical Completion of the contract works. The Owner shall notify the Contractor during and/or at the end of Maintenance Period of any items or defects requiring completion or remedial works. Any such works must be attended to by the Contractor within 5 working days of being given notice of required Completion, Maintenance and/ or Remedial works.



## 1.11 INSURANCES

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The Insurances required under this Contract shall include;

- a) All contract works (permanent and temporary including all materials to be incorporated) will be insured by the Contractor at his expense, in the names of both the Contractor and the Owner, for the full Contract Price.

This Insurance to apply from the time of commencement until the works are taken over by the Owner. The perils insured against are to be in terms of a Contractor's All Risks Policy with any excess or deduction being borne by the Contractor/Subcontractor responsible for any claim.

- b) Accident Compensation Act: All Contractors/Subcontractors employed shall pay their respective required levies under the current Act and shall be deemed to be conversant with the provisions and requirements of the Act.
- c) The Builder shall take out and keep current for the duration of the contract, a comprehensive Public Liability Insurance with an insured value of no less than \$1,000,000.00

## 1.12 EXISTING & TEMPORARY SERVICES

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It shall be each Contractor's/Subcontractor's responsibility to ascertain the location of any and all existing services on or within the site. The Contractor will be responsible for any remedial costs incurred by damage to any existing services or other property by contract works or other causes within the Contractor's control.

The Owner shall provide and pay for all temporary services as may be required by all trades for building purposes, including, temporary power, water, toilet, and storage facilities.

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## 2.0 EXCAVATION & BACKFILLING

### 2.1. PRELIMINARY:

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

### 2.2. SCOPE OF WORK:

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This section of the Specification describes the materials, methods, plant, standard's and finishes required for all the excavation and backfill necessary for the completion of this contract.

In particular, this section covers the following:-

- 2.2.1. General excavation for foundations and any other excavations necessary to complete the contract.
- 2.2.2. The provision of all hardfill and backfill necessary, and its compaction to the standards required by this specification.
- 2.2.3. The Contractor shall be responsible for the stability of the excavations.

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### 2.3. REFERENCE SPECIFICATIONS:

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Attention is drawn to the following New Zealand Standards, the relevant clauses including amendments of which shall be deemed to be part of this Specification unless otherwise specified herein.

- NZS 4402 Methods of Testing Soils for Civil Engineering purposes.
- NZS 4403 Code of Practice for the Storage, Handling, and use of Explosives.
- NZS 4431 Code of Practice for Earth Fill for residential development.

### 2.4. SITE INSPECTION:

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The Contractor shall satisfy himself as to the nature of the ground through which the works have to be constructed, and no claim will be recognised which results from any alleged misinterpretation of site information or conditions.

### 2.5. BACKFILL MATERIAL:

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Backfill shall be granular material of 75 mm maximum size, free of deleterious matter and able to be placed to the required standard of compaction.

### 2.6. EXCAVATIONS:

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- 2.6.1. Excavate for all foundations and drains to the extent and depth as indicated or as required. All site levels shall be confirmed before commencing excavation.

- 2.6.2. Ground water level shall be confirmed on the site before commencing excavations and dewatering shall be allowed for where necessary.
- 2.6.3. All topsoil shall be removed from under concrete work and kept separate from excavated subsoil.
- 2.6.4. If the excavation is carried down deeper or wider than required, either by accident or to remove material loosened by machinery moving on the surface, the ground shall be filled to the correct profile with concrete, having a minimum specified strength of 10 megapascals at 28 days.
- 2.6.5. The bottom of all excavations shall be solid, and shall be compacted if necessary before concrete is poured.
- 2.6.6. Any unsuitable foundation material shall be excavated and backfilled with compacted hardfill.
- 2.6.7. Probe below all excavations before backfilling or placing concrete to ensure no soft spots exist. Notify the Engineer immediately if soft spots are discovered and halt work until further instructions are received.

## 2.7. PLACING AND COMPACTION:

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- 2.7.1. Hardfill and backfill shall be placed in layers not exceeding 150 mm loose depth, in such a way as not to disturb the subgrade. Filter material shall be similarly placed.
- 2.7.2. After compaction all surfaces shall be true to the grades and levels shown. The least disturbance possible shall be made during shaping and compaction and the laying procedure shall be such as to minimise segregation.
- 2.7.3. The surface of fill shall be trimmed, both during placing and on completion, to final levels to provide run off and guard against saturation.
- 2.7.4. Fill that has been detrimentally softened by failure to provide for run off shall be removed and replaced.
- 2.7.5. Sufficient notice shall be given to the Territorial Authority to permit inspection of the following stages of work:-
  - Completion of excavation work before any concrete is poured or backfilling done.
  - Compaction of filling in stages not greater than 1 metre in depth.

## 2.8. BACKFILLING DRAINS:

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Particular care shall be taken to ensure that all drainage, plumbing and other cuts are compacted in accordance with clause 2.7 above.

Before compacting a drainage trench, the Contractor shall ensure that all pipework has been properly bedded and backfilled.

Trenches shall not be backfilled until all services have been tested and approved.

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### 3. CONCRETE

#### 3.1. PRELIMINARY:

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

#### 3.2. SCOPE:

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This trade section covers the preparation of formwork, the supply, laying and curing, finishing etc. of insitu concrete where specified. Base course preparation is covered under Excavation and Backfilling but such surfaces shall be inspected and approved by the concreter before work on this sub-trade commences.

Also included is the casting in of holding down bolts, conduits, and the like as may be required.

In particular this sub trade comprises reinforced concrete footings below floor slab perimeters and Reinforced concrete floor slabs.

#### 3.3. REFERENCE SPECIFICATIONS:

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Attention is drawn NZS Building Code, specifically clause B1 structure, and to AS/NZS 4671:200 Steel Reinforcing, the relevant clauses, including amendments of which shall be deemed to be part of this Specification unless otherwise specified herein.

#### 3.4. MATERIALS AND WORKMANSHIP:

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All materials and workmanship shall comply strictly with the requirements of NZS 3109 and with the specific requirements below.

#### 3.5. REINFORCEMENT:

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Refer Section 3, NZS 3109.

Reinforcing bars shall conform to AS/NZS 4671 SEISMIC 300 AND SEISMIC 500E MA Class E as manufactured by Pacific Steel. Grade 500 Class E QTR **MUST NOT** be re-bent, straightened or heated in any way.

#### 3.6. FORMWORK:

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Refer Clauses 5.1 to 5.4, NZS 3109.

#### 3.7. EMBEDDED PIPES ETC:

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Refer Clause 5.5 NZS 3109.

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3.8. CONCRETE SUPPLY:

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Refer Section 6 NZS 3109.

3.8.1. Concrete strength at 28 days shall be minimums as follows:

- Foundations and floor slabs 20 MPa

3.8.2. Concrete shall be High production grade

3.8.3. Maximum aggregate size 19mm

3.8.4. Nominal slump 100mm

3.8.5. The concrete may be placed by pump.

3.9. HANDLING, PLACING AND CURING:

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Refer Section 7 NZS 3109.

3.10. VAPOUR BARRIER:

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Under concrete floor slabs and perimeter foundations as detailed or required, lay "Permathene Dampstop", or equal approved reinforced damp proof membrane in strict accordance with the manufacturer's specifications.

3.11. CONCRETE FINISHES:

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All concrete slabs shall be steel trowel finished.

3.12. FLOOR SLABS:

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3.12.1. Floor slab reinforcing shall have a minimum cover of 35mm from the top surface.

3.12.2. Slabs on ground poured in one operation shall be saw cut at maximum of 3.00 metres apart in each direction. Saw cuts must not be centred under timber partition walls, must be straight and of maximum depth of 25mm to avoid cutting any reinforcing.

3.12.3. Cutting shall be carried out as soon as possible after pouring, but not later than 48 hours. Avoid edge fretting.

3.12.4. The filling of the saw cuts shall not be required

3.12.6 Concrete slabs shall be steel trowel finished.

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3.13. COMPLETION:

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On completion remove all boxing and other rubbish etc. associated with this trade from site. Concrete work shall be left tidy and to the minimum finishes specified above.

#### 4. STRUCTURAL STEELWORK:

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

Refer to the attached Engineer's documents for Structural Steel Specification

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## 5.0 CARPENTRY

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### 5.1 GENERAL

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All timbers shall comply with relevant NZ Standards for specification and grade. All framing timbers shall be gauged and shall be preservative treated to the requirements of NZS 3602:2003. Frame up, erect and fit all Carpentry works as required by the drawings and this specification. Attend upon all other trades as required.

Separate contact between concrete/timber and steel/timber with 2 ply malthoid DPC. Leave all moving parts in good working order and erect/install all proprietary products in strict accordance with the respective manufacturer's recommendations.

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### 5.2 WORKMANSHIP

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All Carpentry works are to be carried out in the best possible manner and be properly secured with nails, bolts, screws, etc as required. All timbers are to be accurately sawn and neatly fitted and all members are to be full lengths where possible and be selected for straightness.

All exposed timber faces are to be sanded smooth before fixing and all sharp edges are to be sandpaper arised.

### 5.3 FRAMING GENERALLY

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Wall framing generally may be supplied to the site, precut and prenailed by a nominated Prefabricated Timber Frame Contractor. Frames are to be supplied true to dimension in suitably dried timbers, complete with 3 studs to all corners, dwangs at 800mm max, centres and all joints well spiked. Studs to all new walls shall be at max. 400mm centres with additional studs as may be required to suit linings.

Carpenter shall erect all wall frames plumb, square and true to line. Install additional dwangs and nogs as necessary to provide continuous backing support to all lining sheet edges, fittings and fixings for other trades. Exterior wall bottom plates to be secured to concrete floor slab with D10 min. bolts (or reinf. rod bent over drilled plate and secured by nailing) set in slab at 900 min. crs. Unless otherwise required, interior wall plates may be secured to the floor with 'Ramset' nails at max. 1200 crs.

### 5.4 PRIMING

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All exterior timbers which are to be finished with paint, stain or oil are to be prepared before fixing by applying first coat primer, stain or oil. Arrange with Painter for these works to be carried out in sufficient time for drying prior to erection.

### 5.5 FINISH

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All final finishing works, final sanding, filling, stopping, etc is the responsibility of the Painter. Carpenter is to leave all nail heads to timberwork punched below the timber surface.

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## 5.6 TIMBERS

All timbers shall comply with the requirements of all relevant New Zealand Standards as referenced in NZS 3604 : 2011 including:

|          |   |                                                              |
|----------|---|--------------------------------------------------------------|
| NZS 3604 | - | Timber Framed Buildings                                      |
| NZS 3602 | - | Specifying timber & wood-based products for use in buildings |
| NZS 3631 | - | NZ National Timber Grading Rules                             |
| NZS 3640 | - | Chemical preservation of round and sawn timber               |

All framing timbers shall, unless otherwise specified, shall be SG8 Grade dry framing timbers with a maximum moisture content of 16%.

Timber sizes shall be as detailed on the drawings. Finishing timbers; skirtings, architraves, reveals, etc shall be dry dressed finger jointed clear radiata. MDF/customwood is NOT permitted.

## 5.7 BUILDING WRAP &amp; INSULATION

To the whole of all new exterior timber framed walls, overlay and fix "Greenwrap H/W" or equal approved breather - type wall wrap and roofing underlay.

Fix all underlay commencing at the lower end of each and wall area with each consecutive sheet adequately overlapping the lower adjacent sheet.

To all new exterior timber framed wall cavities fit R.2.8 90mm "Ultra" fibreglass insulation wall batts.

To all new ceiling spaces fit R.3.2 140mm "Classic" fibreglass insulation ceiling batts.

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## 5.8 EXTERIOR WALL CLADDING

Refer to the various drawings. Fix "Ecoply" or similar approved rigid air barrier to all new exterior timber framed walls in strict accordance with the manufacturer's recommendations.

All new exterior timber framed walls to the house (not the garage) are to be clad with H3.1 radiata pine bevelback weatherboards of profile to match and fixed to line with existing weatherboards. Fix weatherboards in as long lengths over building wrap in as long lengths as practicable with all running joints staggered. Mitre all joints at corners and at running joints ensuring all surfaces are well primed prior to fixing.

## 5.9 PLASTERBOARD WALL &amp; CEILING LININGS

All new interior timber framed walls and ceilings are to be lined with 10mm Gibraltar plasterboard (Gib) set out and fixed in strict accordance with the Manufacturer's specification and details. Gib linings are to be supplied and fixed in as large sheets as practicable and full height of the particular wall to be lined, i.e. horizontal joints are to be avoided on large main walls wherever possible.

All Gib sheets are to be glued with approved wallboard adhesive and by screwing around sheet edges only. Screws are NOT to be fixed through the adhesive.

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## 5.10 GIB STOPPING

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The Carpenter/Main Contractor shall arrange for the all Gib Stopping/Interior Plastering as required.



All Gib linings are to be taped, stopped and finished by an accredited interior plasterer. All Gib stopping is to be carried out in accordance with good trade practice to be smooth and even surface with all joints taped and finished smooth to Level 5 finish ready for sealing and painting. All joints and interior angles shall have tape embedded in joint compound plus a minimum of two separate coats of joint compound applied over all joints, angles, fastener heads and accessories.

## 5.11 EXTERIOR JOINERY

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The Carpenter/Main Contractor shall arrange for the manufacture, supply and installation of all Exterior Joinery as required.

All exterior Joinery units shall be approved manufacture as detailed with powder coat finish of colour to match the joinery on the existing house.

All joinery units are to be preglaed to NZS 4223, Parts 3 & 4 and any relevant amendments, and, unless otherwise specified, are to be supplied complete with all hardware and accessories as may be required.

All aluminium sections shall be of sizes or be fitted with necessary additional support members as may be required to suit the application and span of the various units.

All opening and trim sizes for all exterior joinery are to be checked on site prior to cutting and assembly of units. All units are to be supplied and installed plumb and square by the Aluminium Joiner.

Joiner shall supply a written copy of the Manufacturer's standard guarantee covering all workmanship, materials, operation and watertightness of all joinery.

## 5.12 FINISHING TIMBERS

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All interior finishing timbers, skirtings, architraves, reveals, cover beads, facings, etc, are to be paint quality FJ Radiata or equal. MDF is not acceptable. Ensure all timbers are arised and sanded smooth prior to installation and that all nail holes are appropriately filled and sanded smooth after primer coat has been applied.

## 5.13 KITCHEN AND LAUNDRY FLOOR COVERINGS

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All floor areas to the new kitchen and laundry areas are to receive selected new vinyl flooring to be laid by an approved floor laying contractor of the Owner's choice.

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## 6.0 ROOFING

### 6.1 IRON ROOFING

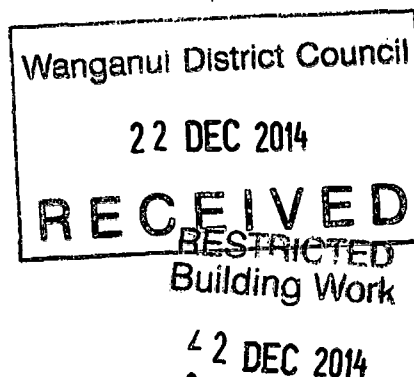
Refer to the relevant drawings. Roof areas to the new covered way are to be clad with .55mm galvanised corrugated "Coloursteel MAXX" or similar approved roofing iron. Roofing iron is to be supplied and installed using approved methods and all necessary accessories including "Coloursteel Maxx" flashings, barge covers etc.

Roofing iron to garage door entry roof at lower end of the covered way is to be similar "Coloursteel MAXX" roofing iron of trapezoidal asymmetrical profile with rib height no less than 20mm, fixed with a minimum 3 degree pitch and in strict accordance with the manufacturer's recommendations.

Roofing iron is to be fixed in full lengths from front eaves to changes in roof pitch with a minimum 70mm overhang to spouting and minimum of 200mm at changes in roof pitch.

All reasonable care must be taken to ensure the roofing iron is kept clean and free of any and all damage and defects until the works are handed over the Owner. On completion, the Contractor shall wash down all roof areas and leave the roof completely weatherproof, bird proof, clean and free from any defects or damage.

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**7.0 PLUMBING & DRAINAGE**

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**7.1 GENERAL**

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All work is to be carried out by certificated craftsman Plumber and in strict accordance with the best trade practice and techniques, all relevant and current NZ Standards, Local Authority By-Laws and Public Health Regulations.

All materials are to be the best of their respective kinds, all piping is to be set out with straight runs and even gradients with easy bends and water supplies are to be installed in accordance with G12 of the NZ Building Code.

**7.2 INSTALLATION**

Locate existing water supply from <sup>Karaka</sup> Wilson Street. Check condition of existing main, toby box and isolating valve and replace if necessary. Install an approved back-flow preventer to main feed if required. Run branches to individual fittings in sizes as required.

Allow for installation and connection of all fittings as shown and as specified and leave all complete and in perfect working order. All pipework is to be run concealed.

Run all necessary hot and cold feeds from existing services to all fittings to be served. Hot water pipes are to be in copper or pvc piping approved for hot water use. Cold water pipes may be in pvc approved pipe.

**7.3 FITTINGS**

All sanitary fittings shall be supplied by the Owner unless otherwise indicated. Plumber shall include all cartage, labour, plant and equipment, pipework, fixings, sealants, lubricants and connection materials and any other sundry items as required to complete the works in all respects.

Fit and connect up all items and accessories in strict accordance with the Manufacturer's specifications. Install all sanitary and other fittings and leave in perfect working order on completion of contract.

**7.4 DRAINAGE**

All work must comply in all respects with the provisions of current relevant NZ Building Codes, NZ Plumbing & Drainage Regulations and Local Authority requirements. All work is to be carried out by certificated Drainlayers.

Upon completion, Drainlayer is to supply the local Authority with an accurate 'as laid' plan of all drainage, stormwater and foul drains, showing locations, depths and dimensions of all underground pipework and fittings.

All pipework and associated fittings are to be pvc of soil drain quality for all foul drains and approved pvc stormwater quality for all stormwater drains. Execute all work to the complete drainage system, stormwater and foul drains, including any work which is not specifically shown or specified but is required by regulation.

Excavate to the various depths, grades and levels as required for all drainage works. Set out drains and provide all gulley traps, inspection pipes and junctions, etc. as required. Provide inspection fittings at all junctions and changes of direction.

Solidly bed all drains throughout, all true to line, concentric with adjoining pipes and carefully cleaned out as work proceeds.

The Drainlayer must ensure that all drains are free from soil, debris, etc before sealing of inspection openings and will remain responsible for the clearing of any subsequent blockage, and associated remedial works, caused by any materials left in the drains.

Before backfilling of trenches, the Drainlayer must give adequate notice to the Local Authority for inspection and testing by or with the Drainage Inspector. After approval is given, the trenches are to be backfilled with clean excavated fill, well compacted.

## 7.5 P & G and FEES

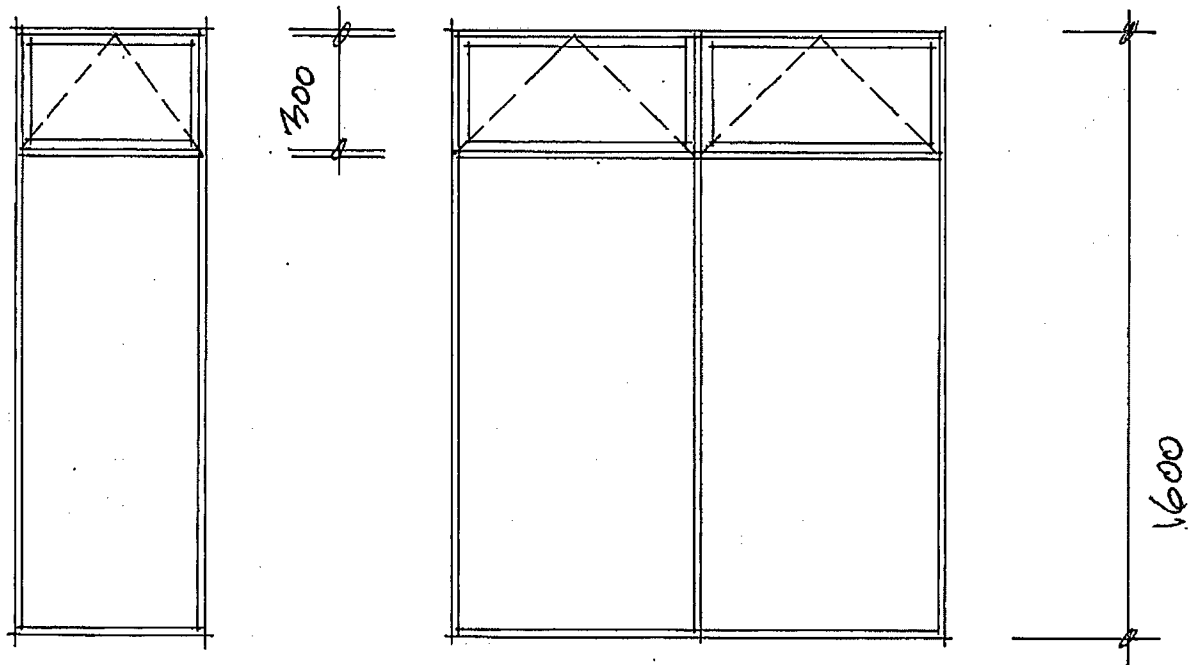
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The Plumber's attention is drawn to of the Preliminary and General section of this Specification.

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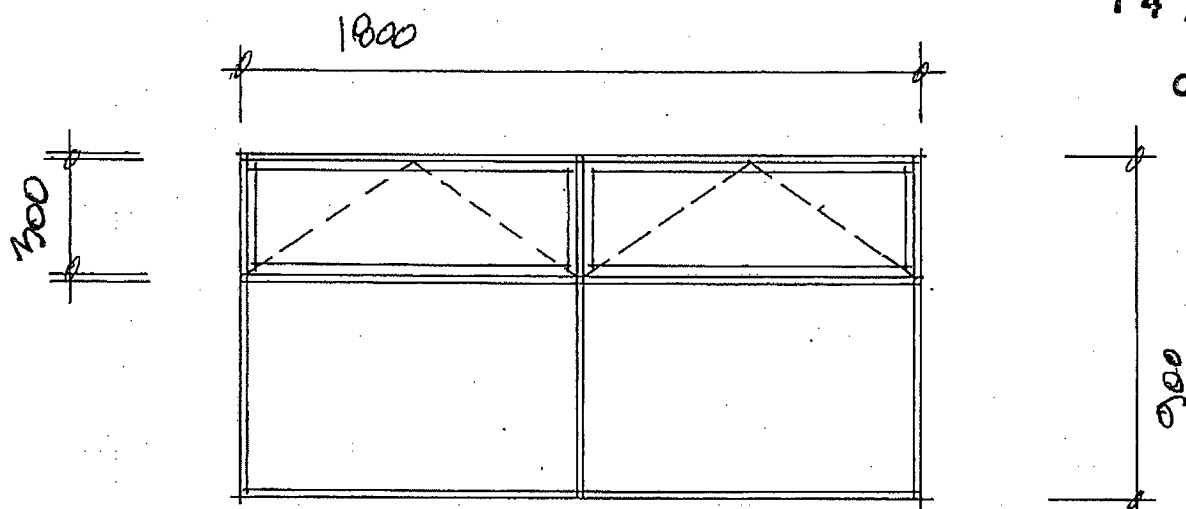


NEW WINDOWS TO BEDROOM 3 (1:20)

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NEW KITCHEN WINDOW (1:20)

ALL UNITS TO BE SELECTED POWDER COATED ALUMINIUM OF APPROVED MANUFACTURE ALL DOUBLE GLAZED GLAZING TO COMPLY WITH NZ STANDARDS AS SPECIFIED

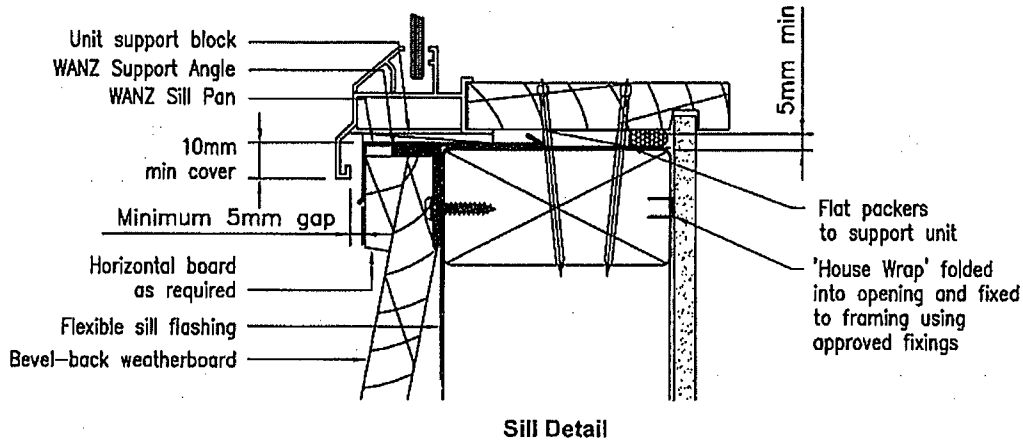
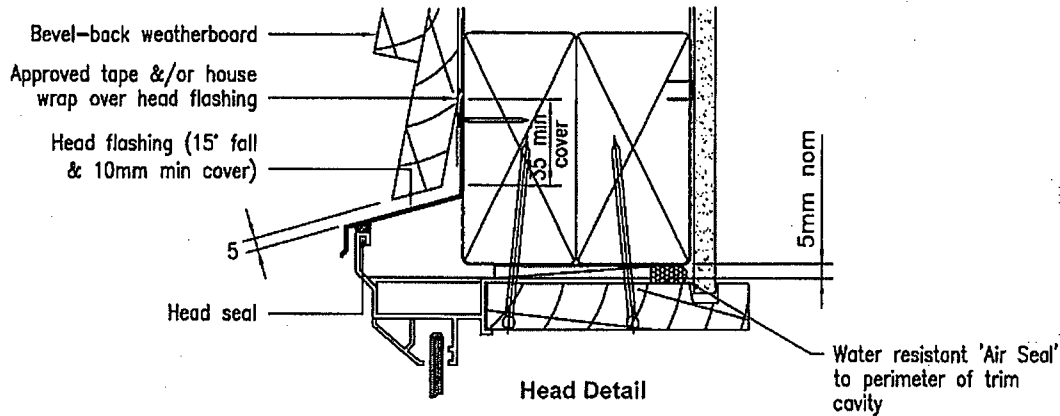
WINDOW SCHEDULE  
140 KARAKA ST. WANGANUI.



**WANZ WIS**  
**WANZ WINDOW INSTALLATION SYSTEM**  
 Direct Fix – Bevel Back Weatherboards

Date  
 1 July 2005

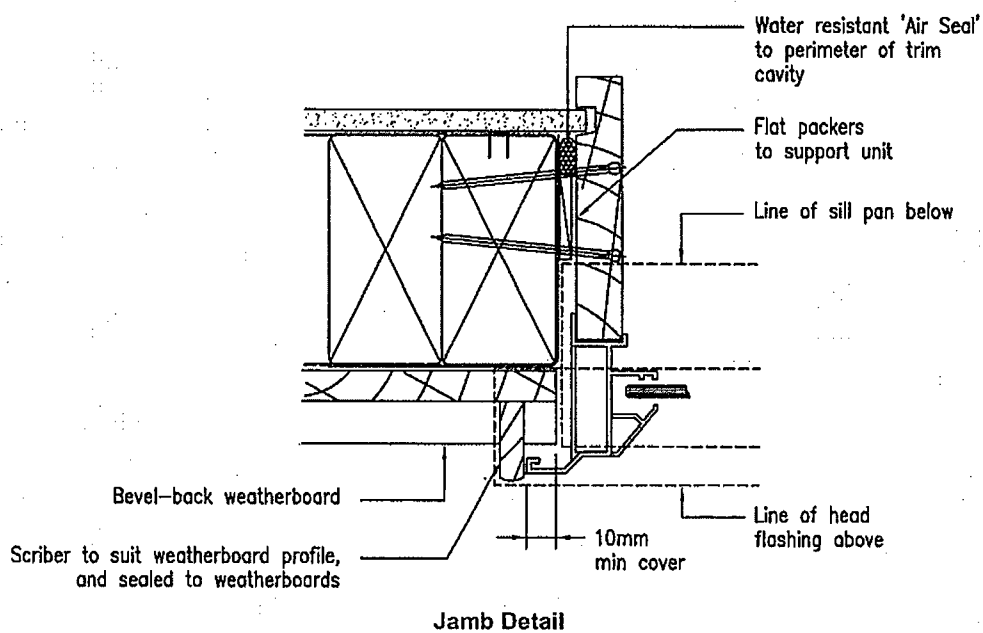
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--- THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL AND ONLY WITH PRIOR WRITTEN PERMISSION ---



**Freephone**  
**0800 GARAGE**  
**(0800 427 243)**

20 Coventry Street  
PO Box 1087  
Levin 5540, New Zealand

Phone: Sales Direct 06 368 7401  
Fax: 06 368 1326

Email: sales@quinbuildings.co.nz  
Website: quinbuildings.co.nz

To Whom It May Concern:  
Re: 149 Karaka Street, Castlecliff

**Job Specifics**

Importance Level 1 Garage / Workshop  
2.410m Frame Height  
Very High Wind Zone  
Exposure Zone D  
All timber minimum treatment and grade SG8 H1.2  
Roof to have netting and ThermoKraft 213 Heavy Weight Type Paper  
Coloursteel ZM8 Corrugated Roofing Iron  
Coloursteel ZM8 Q-Clad exterior cladding  
Purlins to be 90 x 45 SG8 H1.2 at no greater than 800mm centres  
Studs to be 90 x 45 SG8 H1.2 @ 600mm centres  
Marley 65mm Downpipes connected to 90mm Storm water grade piping to storm water disposal at a gradient no less than 1:9  
Building is constructed for non - habitable use

**Means of compliance**

B1: Producer Statement  
B2: B2/AS1  
E1: E1/AS1  
E2: E2/AS1

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**14 / 06 / 10**

**Consent No**

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cnr Walding & Rangitikei Streets  
PO Box 1048, Palmerston North 4440  
New Zealand  
64 6 356 1088  
pnoffice@silvesterclark.co.nz  
www.silvesterclark.co.nz

PRODUCER STATEMENT - DESIGN

Job No: 16700

ISSUED BY: Silvester Clark Ltd  
TO BE SUPPLIED TO: Wanganui District Council  
IN RESPECT OF: Quin Buildings  
Quin Bracing System 10107

AT: 149 Karaka Street  
Castlecliff

Lot DP

Silvester Clark Ltd has been engaged by Quin Buildings to provide structural engineering design and documentation services in respect of the requirements of clauses B1 of the Building Code for the garage bracing system. The design has been prepared in accordance with acceptable solution B1/AS1- NZS 3604:2011 and verification method B1/VM1 of the compliance documents issued by the Department of Building & Housing. The proposed work covered by this producer statement is described on the spreadsheet calculations titled Quin Bracing System 10107:Feb 2012, volumes 2.4m Stud, 2.7m Stud and 3.0m Stud.

On behalf of Silvester Clark Ltd, and subject to all proprietary products meeting their performance specification requirements, **I believe that on reasonable grounds** the bracing system, if constructed in accordance with the design tables, will comply with the relevant provisions of the Building Code.

I Peter F. Clark CPEng (# 30218) am a member of IPENZ and hold the following qualifications BE, MIPENZ, CPEng. Silvester Clark Ltd holds a current policy of Professional Indemnity Insurance no less than \$200,000. Silvester Clark Ltd is also a member of ACENZ.

Signed by: Peter F. Clark on behalf of: SILVESTER CLARK LTD

Date: 2 December 2013

APPD

14 / 06 18

Consent No.

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the design firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000.

12/11/2014



# Wanganui District Council RESTRICTED BUILDING WORK

## Bracing Report

Building Type

Building Type 43 6 x 6

Bracing Demand Along

346

Bracing Demand Across

291

EQ Bracing Demand

324

Wind Speed

Very High

Roof Pitch

15°

### Brace Line A (across front)

BU per Brace

QTY

Total

600mm Quin Brace

86

2

172

Sub total

172

### Brace Line B (across back)

600mm Quin Brace

86

2

172

Sub total

172

Total Required

324

Total Across

Pass

344

### Brace Line 1 (along left)

1 x Angle Brace

59

1

59

600mm Quin Brace

86

2

172

Sub Total

231

### Brace Line 2 (along right)

600mm Quin Brace

86

2

172

Sub Total

172

Total Required

346

Total Along

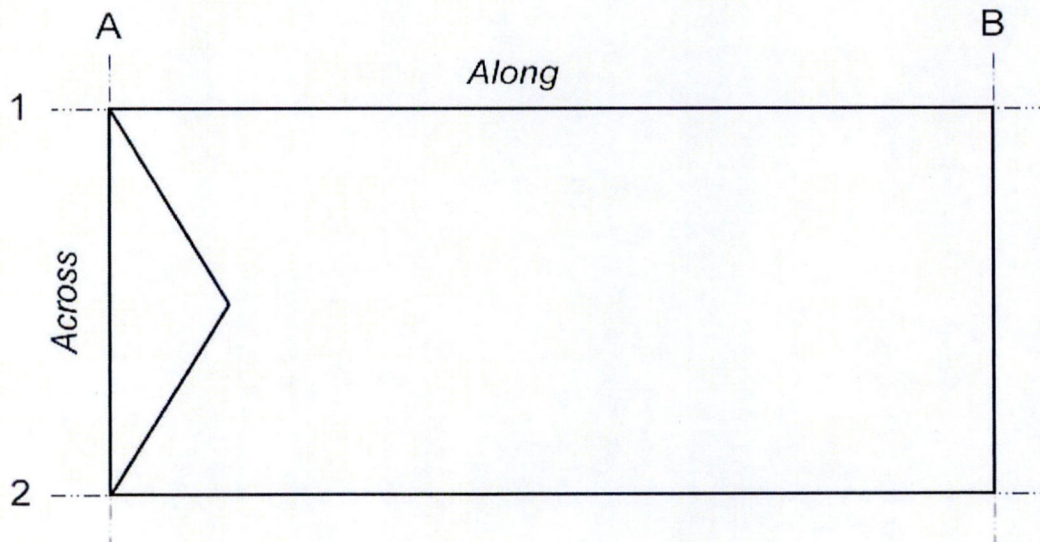
Pass

403

Approved

14/06/18

Consent No.



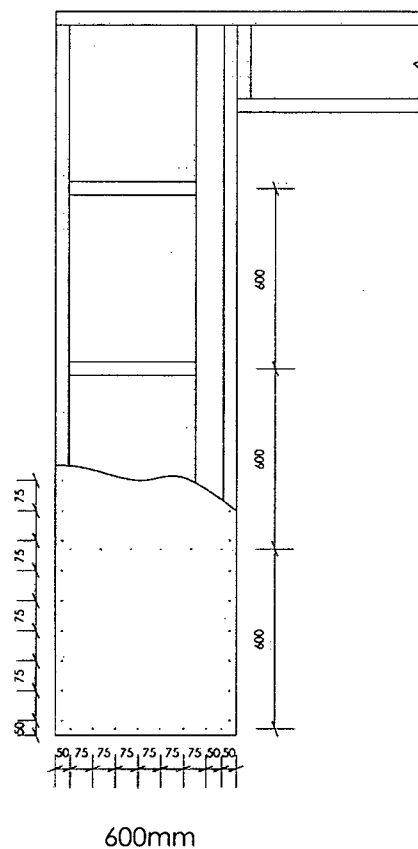
Installation notes:

Nogs to be setout at MAX 600mm centres

Corners are to be nailed 50mm from the edge

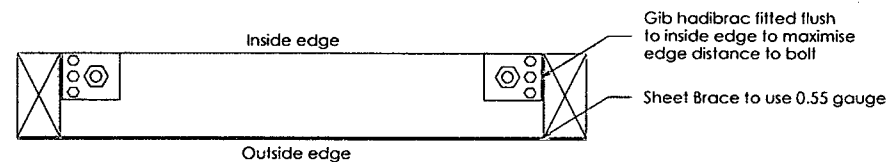
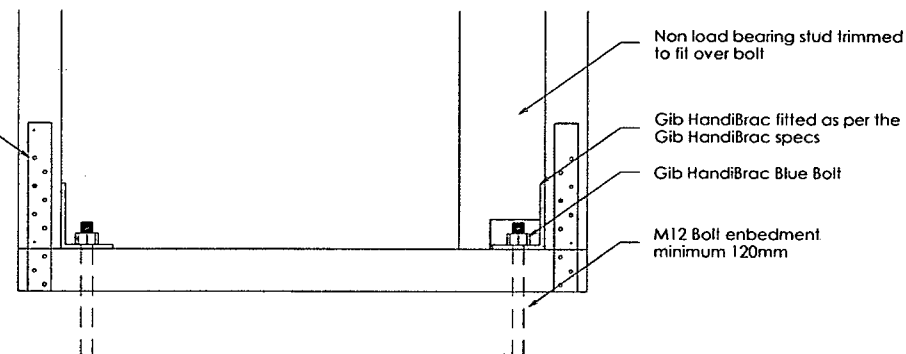
Nogs and sides to be nailed  
at no greater than 100mm centres

Top and bottom plates to be nailed at  
no greater than 75mm centres



Sheet Brace Straps  
6 Nails to each side of stud  
3 nails to bottom plate  
12kN

400 / 600mm Panel Brace  
Bottom Plate Fixing Detail



14/00  
AP000

Quin Sheet Brace

12/11/2014



20 Coventry Street  
PO Box 1087  
LEVIN 5540, NEW ZEALAND  
0800 QUIN BUILDINGS  
(0800 7 54 628)

Job Title :

Quin Sheet Brace

Sheet Title :

QB600 Installation Details

Drawing Number :

|         |            |             |
|---------|------------|-------------|
| Date :  | Designed : | Checked :   |
| Scale : | Drawn :    | Certified : |



# Wanganui District Council RESTRICTED BUILDING WORK

APPROVED

Job No.:

16700

Job

Quin Bracing System 10107

Date:

Feb-12

14/06/18

## BRACING DEMANDS FOR VERY HIGH WIND (Importance level 2 Structures)

| design no. | width | depth | door width | door units | space available |
|------------|-------|-------|------------|------------|-----------------|
| 1          | 3     | 4.8   | 2.4        | 1          | 0.3             |
| 2          | 3     | 5.4   | 2.4        | 1          | 0.3             |
| 3          | 3     | 6     | 2.4        | 1          | 0.3             |
| 4          | 3     | 6.6   | 2.4        | 1          | 0.3             |
| 5          | 3     | 7.2   | 2.4        | 1          | 0.3             |
| 6          | 3     | 7.8   | 2.4        | 1          | 0.3             |
| 7          | 3     | 8.4   | 2.4        | 1          | 0.3             |
| 8          | 3     | 9     | 2.4        | 1          | 0.3             |
| 9          | 3.6   | 4.8   | 2.4        | 1          | 0.6             |
| 10         | 3.6   | 5.4   | 2.4        | 1          | 0.6             |
| 11         | 3.6   | 6     | 2.4        | 1          | 0.6             |
| 12         | 3.6   | 6.6   | 2.4        | 1          | 0.6             |
| 13         | 3.6   | 7.2   | 2.4        | 1          | 0.6             |
| 14         | 3.6   | 7.8   | 2.4        | 1          | 0.6             |
| 15         | 3.6   | 8.4   | 2.4        | 1          | 0.6             |
| 16         | 3.6   | 9     | 2.4        | 1          | 0.6             |
| 17         | 4.2   | 4.8   | 2.4        | 1          | 0.9             |
| 18         | 4.2   | 5.4   | 2.4        | 1          | 0.9             |
| 19         | 4.2   | 6     | 2.4        | 1          | 0.9             |
| 20         | 4.2   | 6.6   | 2.4        | 1          | 0.9             |
| 21         | 4.2   | 7.2   | 2.4        | 1          | 0.9             |
| 22         | 4.2   | 7.8   | 2.4        | 1          | 0.9             |
| 23         | 4.2   | 8.4   | 2.4        | 1          | 0.9             |
| 24         | 4.2   | 9     | 2.4        | 1          | 0.9             |
| 25         | 4.8   | 4.8   | 2.4        | 1          | 1.2             |
| 26         | 4.8   | 5.4   | 2.4        | 1          | 1.2             |
| 27         | 4.8   | 6     | 2.4        | 1          | 1.2             |
| 28         | 4.8   | 6.6   | 2.4        | 1          | 1.2             |
| 29         | 4.8   | 7.2   | 2.4        | 1          | 1.2             |
| 30         | 4.8   | 7.8   | 2.4        | 1          | 1.2             |
| 31         | 4.8   | 8.4   | 2.4        | 1          | 1.2             |
| 32         | 4.8   | 9     | 2.4        | 1          | 1.2             |
| 33         | 5.4   | 4.8   | 2.4        | 1          | 1.5             |
| 34         | 5.4   | 5.4   | 2.4        | 1          | 1.5             |
| 35         | 5.4   | 6     | 2.4        | 1          | 1.5             |
| 36         | 5.4   | 6.6   | 2.4        | 1          | 1.5             |
| 37         | 5.4   | 7.2   | 2.4        | 1          | 1.5             |
| 38         | 5.4   | 7.8   | 2.4        | 1          | 1.5             |
| 39         | 5.4   | 8.4   | 2.4        | 1          | 1.5             |
| 40         | 5.4   | 9     | 2.4        | 1          | 1.5             |
| 41         | 6     | 4.8   | 2.4        | 1          | 1.8             |
| 42         | 6     | 5.4   | 2.4        | 1          | 1.8             |
| 43         | 6     | 6     | 2.4        | 1          | 1.8             |
| 44         | 6     | 6.6   | 2.4        | 1          | 1.8             |
| 45         | 6     | 7.2   | 2.4        | 1          | 1.8             |
| 46         | 6     | 7.8   | 2.4        | 1          | 1.8             |
| 47         | 6     | 8.4   | 2.4        | 1          | 1.8             |
| 48         | 6     | 9     | 2.4        | 1          | 1.8             |
| 49         | 6.6   | 5.4   | 2.4        | 2          | 0.6             |
| 50         | 6.6   | 6     | 2.4        | 2          | 0.6             |
| 51         | 6.6   | 6.6   | 2.4        | 2          | 0.6             |
| 52         | 6.6   | 7.2   | 2.4        | 2          | 0.6             |
| 53         | 6.6   | 7.8   | 2.4        | 2          | 0.6             |
| 54         | 6.6   | 8.4   | 2.4        | 2          | 0.6             |
| 55         | 6.6   | 9     | 2.4        | 2          | 0.6             |
| 56         | 7.2   | 6     | 2.4        | 2          | 0.8             |
| 57         | 7.2   | 6.6   | 2.4        | 2          | 0.8             |
| 58         | 7.2   | 7.2   | 2.4        | 2          | 0.8             |
| 59         | 7.2   | 7.8   | 2.4        | 2          | 0.8             |
| 60         | 7.2   | 8.4   | 2.4        | 2          | 0.8             |
| 61         | 7.2   | 9     | 2.4        | 2          | 0.8             |
| 61a        | 7.2   | 10    | 2.4        | 2          | 0.8             |
| 62         | 9     | 6     | 2.4        | 2          | 1.4             |
| 63         | 9     | 7.2   | 2.4        | 2          | 1.4             |
| 64         | 9     | 9     | 2.4        | 2          | 1.4             |
| 65         | 9     | 9.6   | 2.4        | 2          | 1.4             |
| 66         | 9     | 10.2  | 2.4        | 2          | 1.4             |
| 67         | 9     | 10.8  | 2.4        | 2          | 1.4             |
| 68         | 9     | 11.4  | 2.4        | 2          | 1.4             |
| 69         | 9     | 12    | 2.4        | 2          | 1.4             |

| wind     | EQ            |
|----------|---------------|
| ACROSS   | ALONG/ across |
| 2.4 stud |               |
| 214      | 151           |
| 241      | 151           |
| 268      | 151           |
| 295      | 151           |
| 321      | 151           |
| 348      | 151           |
| 375      | 151           |
| 402      | 151           |
| 218      | 187           |
| 245      | 187           |
| 272      | 187           |
| 299      | 187           |
| 326      | 187           |
| 354      | 187           |
| 381      | 187           |
| 408      | 187           |
| 221      | 224           |
| 249      | 224           |
| 276      | 224           |
| 304      | 224           |
| 331      | 224           |
| 359      | 224           |
| 387      | 224           |
| 414      | 224           |
| 224      | 263           |
| 252      | 263           |
| 280      | 263           |
| 308      | 263           |
| 336      | 263           |
| 364      | 263           |
| 392      | 263           |
| 420      | 263           |
| 228      | 304           |
| 256      | 304           |
| 284      | 304           |
| 313      | 304           |
| 341      | 304           |
| 370      | 304           |
| 398      | 304           |
| 427      | 304           |
| 233      | 346           |
| 262      | 346           |
| 291      | 346           |
| 320      | 346           |
| 349      | 346           |
| 378      | 346           |
| 407      | 346           |
| 436      | 346           |
| 271      | 346           |
| 301      | 346           |
| 332      | 346           |
| 362      | 346           |
| 392      | 346           |
| 422      | 346           |
| 452      | 346           |
| 312      | 436           |
| 343      | 436           |
| 374      | 436           |
| 405      | 436           |
| 437      | 436           |
| 468      | 436           |
| 343      | 584           |
| 412      | 584           |
| 515      | 584           |
| 549      | 584           |
| 583      | 584           |
| 617      | 584           |
| 652      | 584           |
| 686      | 584           |
| 489      | 584           |

| wind     | EQ            |
|----------|---------------|
| ACROSS   | ALONG/ across |
| 2.7 stud |               |
| 239      | 168           |
| 269      | 168           |
| 299      | 168           |
| 329      | 168           |
| 359      | 168           |
| 388      | 168           |
| 418      | 168           |
| 448      | 168           |
| 242      | 206           |
| 273      | 206           |
| 303      | 206           |
| 333      | 206           |
| 364      | 206           |
| 394      | 206           |
| 424      | 206           |
| 454      | 206           |
| 246      | 247           |
| 276      | 247           |
| 307      | 247           |
| 338      | 247           |
| 369      | 247           |
| 399      | 247           |
| 430      | 247           |
| 461      | 247           |
| 249      | 289           |
| 280      | 289           |
| 311      | 289           |
| 342      | 289           |
| 374      | 289           |
| 405      | 289           |
| 436      | 289           |
| 467      | 289           |
| 252      | 333           |
| 284      | 333           |
| 315      | 333           |
| 347      | 333           |
| 379      | 333           |
| 410      | 333           |
| 442      | 333           |
| 473      | 333           |
| 256      | 378           |
| 288      | 378           |
| 320      | 378           |
| 352      | 378           |
| 383      | 378           |
| 415      | 378           |
| 447      | 378           |
| 479      | 378           |
| 293      | 378           |
| 325      | 378           |
| 358      | 378           |
| 390      | 378           |
| 423      | 378           |
| 455      | 378           |
| 488      | 378           |
| 336      | 475           |
| 369      | 475           |
| 403      | 475           |
| 436      | 475           |
| 470      | 475           |
| 503      | 475           |
| 367      | 633           |
| 440      | 633           |
| 550      | 633           |
| 587      | 633           |
| 623      | 633           |
| 660      | 633           |
| 697      | 633           |
| 734      | 633           |
| 543      | 633           |

| wind     | EQ            |
|----------|---------------|
| ACROSS   | ALONG/ across |
| 3.0 stud |               |
| 288      | 189           |
| 324      | 189           |
| 360      | 189           |
| 396      | 189           |
| 432      | 189           |
| 468      | 189           |
| 504      | 189           |
| 540      | 189           |
| 294      | 233           |
| 331      | 233           |
| 367      | 233           |
| 404      | 233           |
| 441      | 233           |
| 478      | 233           |
| 514      | 233           |
| 551      | 233           |
| 300      | 280           |
| 337      | 280           |
| 375      | 280           |
| 412      | 280           |
| 450      | 280           |
| 487      | 280           |
| 524      | 280           |
| 562      | 280           |
| 306      | 329           |
| 344      | 329           |
| 382      | 329           |
| 420      | 329           |
| 458      | 329           |
| 496      | 329           |
| 535      | 329           |
| 473      | 329           |
| 311      | 380           |
| 350      | 380           |
| 389      | 380           |
| 428      | 380           |
| 467      | 380           |
| 506      | 380           |
| 545      | 380           |
| 584      | 380           |
| 317      | 433           |
| 357      | 433           |
| 396      | 433           |
| 436      | 433           |
| 476      | 433           |
| 515      | 433           |
| 555      | 433           |
| 595      | 433           |
| 363      | 433           |
| 404      | 433           |
| 444      | 433           |
| 484      | 433           |
| 525      | 433           |
| 565      | 433           |
| 605      | 433           |
| 411      | 545           |
| 452      | 545           |
| 493      | 545           |
| 534      | 545           |
| 575      | 545           |
| 616      | 545           |
| 433      | 730           |
| 519      | 730           |
| 649      | 730           |
| 692      | 730           |
| 735      | 730           |
| 779      | 730           |
| 822      | 730           |
| 865      | 730           |
| 622      | 730           |

12/11/2014



14/06/18

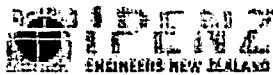
12/11/2014

| design no. | width | depth | door width | door units | space available |
|------------|-------|-------|------------|------------|-----------------|
| design no. | width | depth | door width | door units | space available |
| 41         | 6     | 4.8   | 2.4        | 1          | 1.8             |
| 42         | 6     | 5.4   | 2.4        | 1          | 1.8             |
| 43         | 6     | 6     | 2.4        | 1          | 1.8             |
| 44         | 6     | 6.6   | 2.4        | 1          | 1.8             |
| 45         | 6     | 7.2   | 2.4        | 1          | 1.8             |
| 46         | 6     | 7.8   | 2.4        | 1          | 1.8             |
| 47         | 6     | 8.4   | 2.4        | 1          | 1.8             |
| 48         | 6     | 9     | 2.4        | 1          | 1.8             |
| 56         | 6.6   | 5.4   | 2.4        | 2          | 0.6             |
| 57         | 6.6   | 6     | 2.4        | 2          | 0.6             |
| 58         | 6.6   | 6.6   | 2.4        | 2          | 0.6             |
| 59         | 6.6   | 7.2   | 2.4        | 2          | 0.6             |
| 60         | 6.6   | 7.8   | 2.4        | 2          | 0.6             |
| 61         | 6.6   | 8.4   | 2.4        | 2          | 0.6             |
| 62         | 6.6   | 9     | 2.4        | 2          | 0.6             |
| 63         | 7.2   | 6     | 2.4        | 2          | 0.8             |
| 64         | 7.2   | 6.6   | 2.4        | 2          | 0.8             |
| 65         | 7.2   | 7.2   | 2.4        | 2          | 0.8             |
| 66         | 7.2   | 7.8   | 2.4        | 2          | 0.8             |
| 67         | 7.2   | 8.4   | 2.4        | 2          | 0.8             |
| 68         | 7.2   | 9     | 2.4        | 2          | 0.8             |
| 69         | 9     | 6     | 2.4        | 2          | 1.4             |
| 70         | 9     | 7.2   | 2.4        | 2          | 1.4             |
| 71         | 9     | 9     | 2.4        | 2          | 1.4             |
| 72         | 9     | 9.6   | 2.4        | 2          | 1.4             |
| 73         | 9     | 10.2  | 2.4        | 2          | 1.4             |
| 74         | 9     | 10.8  | 2.4        | 2          | 1.4             |
| 75         | 9     | 11.4  | 2.4        | 2          | 1.4             |
| 76         | 9     | 12    | 2.4        | 2          | 1.4             |

## 2.4m stud Roof Bracing Schedule

| Low                              | Medium                            | High                                | Very High                           | Extra High                         |
|----------------------------------|-----------------------------------|-------------------------------------|-------------------------------------|------------------------------------|
| Low                              | Medium                            | High                                | Very High                           | Extra High                         |
| Dragon Ties                      | Dragon Ties                       | Dragon Ties                         | Dragon Ties                         | Dragon Ties                        |
| Strip Brace - 5 x 3.15 dia nails | Multi Brace - 8 x 3.15 dia nails  | Multi Brace - 8 x 3.15 dia nails    | Multi Brace - 11 x 3.15 dia nails   | 2 Strip Brace - 5 x 3.15 dia nails |
| Strip Brace - 5 x 3.15 dia nails | Multi Brace - 8 x 3.15 dia nails  | Multi Brace - 11 x 3.15 dia nails   | 2 Strip Brace - 5 x 3.15 dia nails  | 2 Strip Brace - 5 x 3.15 dia nails |
| Multi Brace - 8 x 3.15 dia nails | Multi Brace - 8 x 3.15 dia nails  | Multi Brace - 11 x 3.15 dia nails   | 2 Strip Brace - 5 x 3.15 dia nails  | 2 Multi Brace - 8 x 3.15 dia nails |
| Dragon Ties                      | Dragon Ties                       | Dragon Ties                         | Dragon Ties                         | Dragon Ties                        |
| Strip Brace - 5 x 3.15 dia nails | Multi Brace - 8 x 3.15 dia nails  | Multi Brace - 8 x 3.15 dia nails    | Multi Brace - 11 x 3.15 dia nails   | 2 Strip Brace - 5 x 3.15 dia nails |
| Strip Brace - 5 x 3.15 dia nails | Multi Brace - 8 x 3.15 dia nails  | Multi Brace - 11 x 3.15 dia nails   | 2 Strip Brace - 5 x 3.15 dia nails  | 2 Strip Brace - 5 x 3.15 dia nails |
| Multi Brace - 8 x 3.15 dia nails | Multi Brace - 8 x 3.15 dia nails  | Multi Brace - 11 x 3.15 dia nails   | 2 Strip Brace - 5 x 3.15 dia nails  | 2 Multi Brace - 8 x 3.15 dia nails |
| Dragon Ties                      | Dragon Ties                       | Dragon Ties                         | Dragon Ties                         | Dragon Ties                        |
| Strip Brace - 5 x 3.15 dia nails | Multi Brace - 8 x 3.15 dia nails  | Multi Brace - 8 x 3.15 dia nails    | Multi Brace - 11 x 3.15 dia nails   | 2 Strip Brace - 5 x 3.15 dia nails |
| Strip Brace - 5 x 3.15 dia nails | Multi Brace - 8 x 3.15 dia nails  | Multi Brace - 11 x 3.15 dia nails   | 2 Strip Brace - 5 x 3.15 dia nails  | 2 Multi Brace - 8 x 3.15 dia nails |
| Multi Brace - 8 x 3.15 dia nails | Multi Brace - 8 x 3.15 dia nails  | Multi Brace - 11 x 3.15 dia nails   | 2 Strip Brace - 5 x 3.15 dia nails  | 2 Multi Brace - 8 x 3.15 dia nails |
| Multi Brace - 8 x 3.15 dia nails | Multi Brace - 11 x 3.15 dia nails | 4 Strip Brace - 5 x 3.15 dia nails  | 4 Strip Brace - 5 x 3.15 dia nails  | 4 Multi Brace - 8 x 3.15 dia nails |
| Multi Brace - 8 x 3.15 dia nails | Multi Brace - 11 x 3.15 dia nails | 2 Multi Brace - 11 x 3.15 dia nails | 4 Strip Brace - 5 x 3.15 dia nails  | 4 Strip Brace - 5 x 3.15 dia nails |
| Multi Brace - 8 x 3.15 dia nails | Multi Brace - 8 x 3.15 dia nails  | Multi Brace - 11 x 3.15 dia nails   | 4 Strip Brace - 5 x 3.15 dia nails  | 4 Strip Brace - 5 x 3.15 dia nails |
| Multi Brace - 8 x 3.15 dia nails | Multi Brace - 8 x 3.15 dia nails  | Multi Brace - 11 x 3.15 dia nails   | 4 Strip Brace - 5 x 3.15 dia nails  | 4 Strip Brace - 5 x 3.15 dia nails |
| Multi Brace - 8 x 3.15 dia nails | Multi Brace - 8 x 3.15 dia nails  | 2 Multi Brace - 8 x 3.15 dia nails  | 4 Strip Brace - 5 x 3.15 dia nails  | 4 Strip Brace - 5 x 3.15 dia nails |
| Multi Brace - 8 x 3.15 dia nails | Multi Brace - 11 x 3.15 dia nails | 2 Multi Brace - 8 x 3.15 dia nails  | 4 Strip Brace - 5 x 3.15 dia nails  | 4 Strip Brace - 5 x 3.15 dia nails |
| Multi Brace - 8 x 3.15 dia nails | Multi Brace - 11 x 3.15 dia nails | 2 Multi Brace - 8 x 3.15 dia nails  | 2 Multi Brace - 11 x 3.15 dia nails | 4 Multi Brace - 8 x 3.15 dia nails |
| Multi Brace - 8 x 3.15 dia nails | Multi Brace - 11 x 3.15 dia nails | 2 Multi Brace - 8 x 3.15 dia nails  | 4 Strip Brace - 5 x 3.15 dia nails  | 4 Multi Brace - 8 x 3.15 dia nails |

residential | commercial | industrial



NEW ZEALAND INSTITUTE OF  
ARCHITECTS  
INCORPORATED



Building Code Clause(s) ..... B1

APPROVED

14 / 06 / 18

## PRODUCER STATEMENT – PS1 – DESIGN

(Guidance notes on the use of this form are printed on the reverse side\*)

ISSUED BY: PRYOR CONSULTANTS  
(Design Firm)

TO: QUIN BUILDINGS  
(Owner/Developer)

TO BE SUPPLIED TO: Wanganui District Council  
(Building Consent Authority)

IN RESPECT OF: STD FOOTING / SLAB DETAILS FOR NON HABITABLE BUILDINGS  
(Description of Building Work)

AT: 149 Karaka Street, Castlecliff  
(Address)

..... LOT ..... DP ..... SO .....

We have been engaged by the owner/developer referred to above to provide STRUCTURAL DESIGN .....  
..... services in respect of the requirements of

Clause(s) B1 / VM4 ..... of the Building Code for  
☐ All or ☒ Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

- ☐ Compliance Documents issued by Department of Building & Housing CALCULATIONS REF: 02-602  
(verification method / acceptable solution) or
- ☐ Alternative solution as per the attached schedule .....

The proposed building work covered by this producer statement is described on the drawings titled STANDARD .....  
FOOTING / SLAB DETAILS FOR ..... and numbered 02-602 SHTS 51 & 52 .....  
QUIN BUILDING ..... together with the specification, and other documents set out in the schedule attached to this statement.

behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions CLEARED NATURAL GROUND WITH SOIL BEARING .....  
CAPACITY GREATER THAN 150 kPa .....
- (ii) All proprietary products meeting their performance specification requirements: (12.75 kPa ULS .....  
OR 50 kPa WSD.) .....

I believe on reasonable grounds the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code.

I, ANTHONY PRYOR ..... am: ☒ CPEng 252145 ..... #  
(Name of Design Professional)

I am a Member of: ☒ IPENZ ☐ NZIA and hold the following qualifications: RE (HONS), IPENZ, CPENG ..... #

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000\*.  
The Design Firm is a member of ACENZ ☐ YES ☒ NO

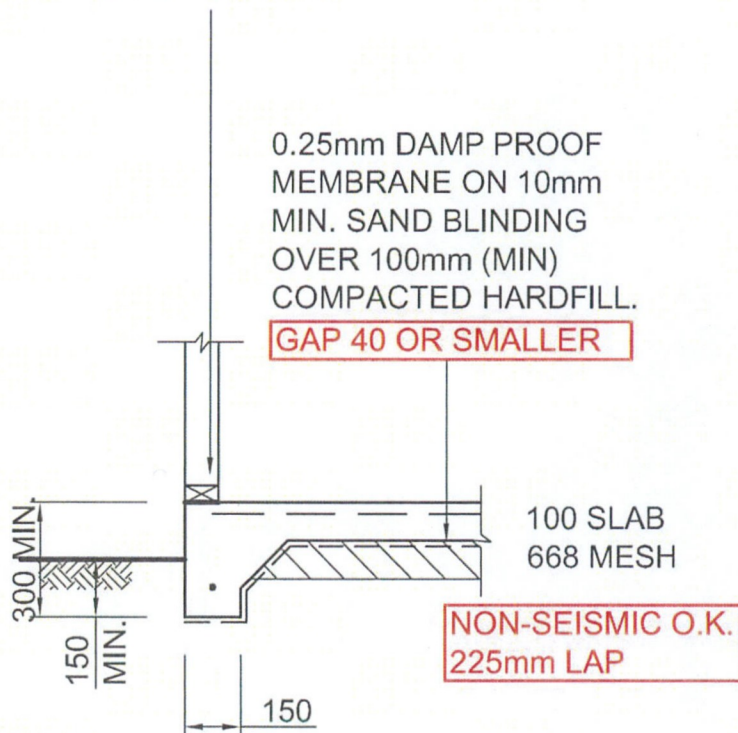
SIGNED BY ANTHONY PRYOR ..... ON BEHALF OF PRYOR CONSULTANTS .....  
(Design Firm)

Date 15/05/13 ..... (signature) [Signature] .....

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000\*.



MALTHOID UNDER BOTTOM PLATE  
WITH WALL FRAMING AND FIXING  
DETAILS BY OTHERS.



D12 WITH 75mm  
BTM / SIDE COVER

**LAP D12 BARS MIN  
32 x DIAMETER**



STANDARD FOOTING AND SLAB  
DETAILS FOR QUIN GARAGES.  
(NON-HABITABLE)

DESIGN ASSUMPTIONS

1) DESIGN APPLIES TO UNINHABITED LIGHT  
WEIGHT BUILDINGS (IMPORTANCE LEVEL 1 AS  
PER AS/NZS 1170). MAXIMUM ROOF SPAN 9m.  
MAXIMUM STUD HEIGHT 2.7m.

2) FOOTINGS ARE TO PENETRATE CLEARED  
NATURAL GROUND WITH A SOIL BEARING  
CAPACITY GREATER THAN 150kPa (75kPa ULS  
OR 50 kPa WORKING STRESS). REFER TO  
ENGINEER FOR SPECIFIC DESIGN OF  
FOUNDATIONS FOR OTHER SOIL CONDITIONS.

3) COMPACTED HARDFILL TO BE PLACED ON  
CLEARED NATURAL GROUND AS ABOVE  
(CLEARED GROUND TO BE AS DEFINED BY  
NZS3604).

4) REQUIREMENTS FOR SLABS:  
- 100mm THICK (MINIMUM)  
- 18m MAXIMUM PLAN DIMENSION  
- 668 MESH REINFORCING (30mm TOP COVER)  
- SAWCUTS AT 5m CRS MAX.

5) DESIGN APPLIES FOR EXPANSIVE SOIL SITE  
CLASSIFICATION 'S' ONLY. REFER TO  
ENGINEER FOR SPECIFIC DESIGN OF  
FOUNDATIONS AND SLAB FOR ALL OTHER  
SITE CLASSIFICATIONS.

6) MINIMUM CONCRETE STRENGTHS AT 28  
DAYS IS DEPENDANT ON EXPOSURE ZONE AS  
CLASSIFIED IN NZS3604:2011:

- ZONE B 17.5 MPa
- ZONE C 20.0 MPa
- ZONE D 25.0 MPa

Approved

14/06/12

Consent No

REVISION B  
(06/11/2012)

STANDARD FOOTING / SLAB DETAILS FOR  
(2.7m MAX. STUD HEIGHT)  
QUIN BUILDINGS

REF: 07-602

SHEET: S1A

p 09 5333 600 | f 09 5333 601  
po box 38 144 . howick | auckland  
level 1/87 picton st . howick | auckland  
w pryor.co.nz | e enquiry@pryor.co.nz



12/11/2014



# MiTek New Zealand Limited

Correspondence from: **AUCKLAND**  
 40 Neales Road, East Tamaki 2013  
 PO Box 58-014, Botany 2163  
 Phone: 09-274 7109  
 Fax: 09-274 7100

www.mitek.nz.co.nz

**CHRISTCHURCH**  
 14 Pilkington Way, Wigram 8042  
 PO Box 8387, Riccarton 8440  
 Phone: 03-348 8691  
 Fax: 03-348 0314

**GANG-NAIL® LUMBERLOK® BOWMAC®**

## Producer Statement PS1- Design

ISSUED BY: MiTek New Zealand Limited  
 TO: Quin Buildings Ltd  
 TO BE SUPPLIED TO: Building Consent Authorities in New Zealand  
 IN RESPECT OF: Standard Roof Truss Design with Cantilever for Roof Pitch 15°  
 AT: Various Locations in NZ

MiTek New Zealand Limited has been engaged by Quin Buildings Ltd to provide engineering design services in respect of the requirements of Clause(s) B1, of the NZ Building Code for

☐ All

☒ Part only as specified – Standard Roof Truss Design with Cantilever for Roof Pitch 15°

of the proposed building work.

The design has been prepared in accordance with Compliance Documents and Verification Method B1/VM1 of the NZ Building Code and in accordance with sound and widely accepted engineering principles. The proposed building work covered by this producer statement is described on MiTek New Zealand Limited Standard Truss Design with Cantilever 20711 (15 degree Pitch) shop drawings numbered 20711P15, Truss Selection Table and Cantilever Detail 20711C15.

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

1. The verification of the following design assumptions:
  - i) See attached design assumptions listed on document 20711, Truss Selection Table
2. All proprietary products meeting their performance specification requirements;

**I believe on reasonable grounds** that the use these roof trusses in the proposed building, if constructed in accordance with the drawings, specifications, and other documents provided, will comply with the relevant provisions of the Building Code.

MiTek New Zealand Limited holds a current policy of Professional Indemnity Insurance of not less than \$500,000.

Signature

Date: 24/4/2012

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

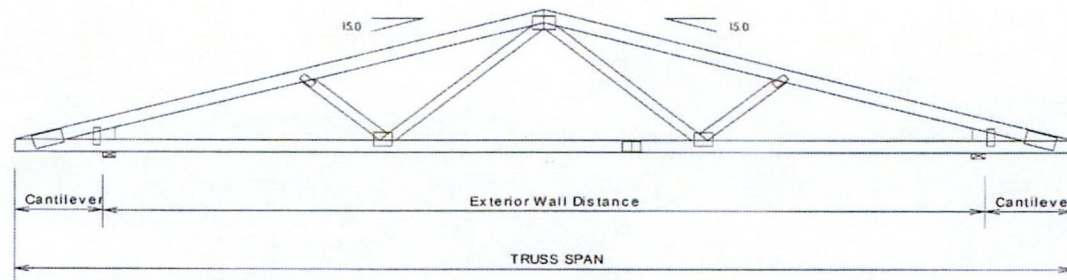
APPROVED

14 / 06

GANG-NAIL



## TRUSS SELECTION TABLE FOR 15-degree Pitch Roof



APP  
14/06/10  
Consulting

12/11/2014

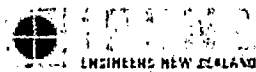
| TRUSS SPAN (mm) =<br>Distance between Exterior Walls<br>+ Cantilever on each side |             |                      | Maximum<br>Cantilever<br>on each side<br>(mm) | CRITICAL LOAD CASE |                      |             |                           |                |                    |      |                           |               |                    |      |                             |
|-----------------------------------------------------------------------------------|-------------|----------------------|-----------------------------------------------|--------------------|----------------------|-------------|---------------------------|----------------|--------------------|------|---------------------------|---------------|--------------------|------|-----------------------------|
|                                                                                   |             |                      |                                               | High Wind          |                      |             |                           | Very High Wind |                    |      | 0.5 KPa Snow + Ceiling    |               |                    |      |                             |
|                                                                                   |             |                      |                                               | Truss<br>Code      | Truss Spacing (mm)   |             | Bottom Chord<br>Restraint | Truss<br>Code  | Truss Spacing (mm) |      | Bottom Chord<br>Restraint | Truss<br>Code | Truss Spacing (mm) |      | Bottom Chord<br>Restraint** |
| Cantilever = 0 - 300                                                              | 400* - 600* | Cantilever = 0 - 300 | 400* - 600*                                   |                    | Cantilever = 0 - 300 | 400* - 600* |                           |                |                    |      |                           |               |                    |      |                             |
| From                                                                              | -           | Up to                | 600                                           | H30-42             | 2000                 | 2000        | 1                         | VH30-42        | 2000               | 2000 | 1                         | S30-42        | 1200               | 1200 | 1                           |
| 3000                                                                              | -           | 4200                 | 600                                           | H42-54             | 2000                 | 1800        | 1                         | VH42-54        | 2000               | 1800 | 1                         | S42-54        | 1200               | 900  | 1                           |
| 4210                                                                              | -           | 5400                 | 600                                           | H54-66             | 2000                 | 1500        | 2                         | VH54-66        | 2000               | 1500 | 2                         | S54-66        | 1200               | 900  | 2                           |
| 5410                                                                              | -           | 6600                 | 600                                           | H66-78             | 1800                 | 1200        | 2                         | VH66-78        | 1800               | 1200 | 2                         | S66-78        | 1200               | 900  | 2                           |
| 6610                                                                              | -           | 7800                 | 600                                           | H78-90             | 1800                 | 1200        | 2                         | VH78-90        | 1800               | 1200 | 3                         | S78-90        | 1200               | 900  | 3                           |
| 7810                                                                              | -           | 9000                 | 600                                           | H90-102            | 1200                 | 1200        | 3                         | VH90-102       | 1200               | 1200 | 4                         | S90-102       | 900                | 900  | 3                           |
| 9010                                                                              | -           | 10200                | 600                                           |                    |                      |             |                           |                |                    |      |                           |               |                    |      |                             |

### DESIGN ASSUMPTIONS

- Galvanised iron roofing (0.21 kPa Dead load)
- Ceilings where applicable are 10mm Gib board (0.2 kPa Dead load)
- For Critical Load Case: 0.5 KPa Snow + Ceiling, trusses are designed for Importance Level 2 buildings for wind (38.6 m/s) and snow load (0.5 kPa)
- All other trusses with spacings 1200mm and greater are designed for Importance Level 1 buildings for wind load
- Specific design site wind speeds - for Importance Level 1 buildings: Very High = 34.7 m/s; High = 30.6 m/s
- Specific design site wind speeds - for Importance Level 2 buildings: Very High = 38.6 m/s
- Truss chords to be MSG8 or MSG10 dry timber, webs to be MSG8 dry timber (dry = less than 16% moisture content)
- Bottom chord restraints evenly spaced as per table
- All standard trusses have been designed to cantilever up to 300mm without additional detailing
- \*For 400 to 600mm cantilevers, wedge strengthening at supports are required. See attached wedge detail Drawing 20711C15
- \*\*Bottom Chord Restraints are not required if ceiling battens are fixed directly to bottom chords
- Designs are for trusses only. Building stability and roof bracing to be designed by others



residential | commercial | industrial



Building Code Clause(s) **APB 14/0618**

## PRODUCER STATEMENT – PS1 – DESIGN

(Guidance notes on the use of this form are printed on the reverse side\*)

ISSUED BY: PRYOR CONSULTANTS  
(Design Firm)

TO: \* Seven Oaks Ltd  
(Owner/Developer)

TO BE SUPPLIED TO: \* Wanganui District Council  
(Building Consent Authority)

IN RESPECT OF: \* Proposed new shed  
(Description of Building Work)

AT: \* 149 Karaka Street, Castlecliff  
(Address)

LOT# DPV SO

We have been engaged by the owner/developer referred to above to provide STRUCTURAL DESIGN  
OF WALL STUDS ONLY services in respect of the requirements of

Clause(s) B1 of the Building Code for  
☐ All or ☒ Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

☒ Compliance Documents issued by Department of Building & Housing CALCULATIONS REF: 08-667  
(verification method / acceptable solution)

☐ Alternative solution as per the attached schedule

The proposed building work covered by this producer statement is described on the drawings titled STUD SIZE  
2 SPANNE FOR QUIN BUILDINGS and numbered 08-667 (DATED APR-14)  
together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions IMPORTANCE LEVEL 1 BUILDING & AS NOTED UNDER STUD TABLE FOR  
(ii) All proprietary products meeting their performance specification requirements; JOB NO 08-667

I believe on reasonable grounds the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code.

I, ANTHONY PRYOR am: ☒ CPEng 252145 #  
(Name of Design Professional)

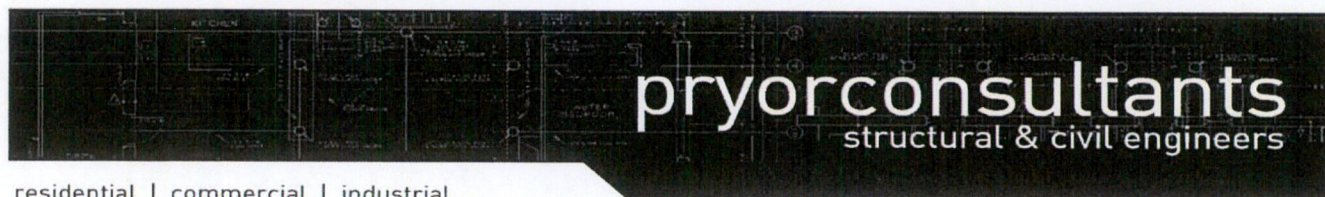
I am a Member of: ☒ IPENZ ☐ NZIA and hold the following qualifications: BE (HONS), IPENZ, CPENG

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000\*.  
The Design Firm is a member of ACENZ ☐ YES ☒ NO

SIGNED BY ANTHONY PRYOR ON BEHALF OF PRYOR CONSULTANTS  
(Design Firm)

Date 29/04/14 (signature) [Signature]

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000\*.



Job No. 08-667  
Date: Apr. 14

## Stud Size & Spacing for Quin Buildings

| Wind Zone | Stud Ht.<br>(m) | Stud Size | Spacing<br>(mm) | M*<br>(kNm) | <=ØMn | Δsls<br>(mm) | > L/150 | ØMn<br>(kNm) |
|-----------|-----------------|-----------|-----------------|-------------|-------|--------------|---------|--------------|
| Low       | 2.4             | 90x45     | 600             | 0.21        | O.K.  | 4.0          | O.K.    | 0.68         |
|           | 2.7             | 90x45     | 600             | 0.27        | O.K.  | 6.4          | O.K.    | 0.68         |
|           | 3               | 90x45     | 600             | 0.34        | O.K.  | 9.8          | O.K.    | 0.68         |
| Medium    | 2.4             | 90x45     | 600             | 0.29        | O.K.  | 5.4          | O.K.    | 0.68         |
|           | 2.7             | 90x45     | 600             | 0.36        | O.K.  | 8.6          | O.K.    | 0.68         |
|           | 3               | 90x45     | 600             | 0.45        | O.K.  | 13.1         | O.K.    | 0.68         |
| High      | 2.4             | 90x45     | 600             | 0.41        | O.K.  | 7.6          | O.K.    | 0.68         |
|           | 2.7             | 90x45     | 600             | 0.51        | O.K.  | 12.1         | O.K.    | 0.68         |
|           | 3               | 90x45     | 400             | 0.42        | O.K.  | 12.3         | O.K.    | 0.68         |
|           | 3               | 90x45*    | 600             | 0.64        | O.K.  | 14.8         | O.K.    | 0.97         |
| V. High   | 2.4             | 90x45     | 600             | 0.52        | O.K.  | 9.8          | O.K.    | 0.68         |
|           | 2.7             | 90x45     | 400             | 0.44        | O.K.  | 10.5         | O.K.    | 0.68         |
|           | 2.7             | 90x45*    | 600             | 0.66        | O.K.  | 12.5         | O.K.    | 0.97         |
|           | 3               | 90x45     | 400             | 0.55        | O.K.  | 15.9         | O.K.    | 0.68         |
|           | 3               | 90x45*    | 600             | 0.82        | O.K.  | 19.1         | O.K.    | 0.97         |

**Note:**

- 1) Table applies for Importance Level 1 buildings only, as defined by AS/NZS1170 i.e. secondary or minor building
- 2) Wind zones are as defined by NZS3604
- 3) Lightweight roof assumed i.e. vertical loads are not significant
- 4) \* indicates SG10 timber - all other timber SG8

| Wind Region | V <sub>site</sub> (IL2)<br>(m/sec) | q <sub>u</sub> (IL2)<br>(kPa) | q <sub>u</sub> (IL1)<br>(kPa) | q <sub>s</sub> (IL1)<br>(kPa) |
|-------------|------------------------------------|-------------------------------|-------------------------------|-------------------------------|
| L           | 32                                 | 0.61                          | 0.50                          | 0.34                          |
| M           | 37                                 | 0.82                          | 0.67                          | 0.45                          |
| H           | 44                                 | 1.16                          | 0.94                          | 0.64                          |
| VH          | 50                                 | 1.5                           | 1.22                          | 0.83                          |

APPROVED  
14/06/14  
Consent



ENGINEERS NEW ZEALAND



ARCHITECTS



ACENZ

14/06/14

Building Code Clause(s) B1/VM 1

## PRODUCER STATEMENT – PS1 – DESIGN

(Guidance notes on the use of this form are printed on page 2)

ISSUED BY: Geocivil Consulting Engineers  
(Design Firm)

TO: Wanfield Trust  
(Owner/Developer)

TO BE SUPPLIED TO: Wanganui District Council  
(Building Consent Authority)

IN RESPECT OF: Beam, lintel & bracing design  
(Description of Building Work)

AT: 249 Karaka Street, Wanganui  
(Address)

LOT 455 DP 3060 SO 50

We have been engaged by the owner/developer referred to above to provide design services in respect of the requirements of

Clause(s) B1/VM 1 of the Building Code for  
All ☐ or Part only ☒ (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

☒ Compliance Documents issued by the Ministry of Business, Innovation & Employment B1/VM 4 or  
(verification method / acceptable solution)

☐ Alternative solution as per the attached schedule.

The proposed building work covered by this producer statement is described on the drawings titled Lounge beam,  
Lounge Rafter Slider Lintels & Foundation Details and numbered 1-7  
together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions Ground Conditions beneath new foundation.  
(ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:

☐ CM1 ☒ CM2 ☐ CM3 ☐ CM4 ☐ CM5 (Engineering Categories) or ☐ as per agreement with owner/developer (Architectural)

I, Hamish Peters am:  
(Name of Design Professional)

☒ CPEng 240025 #

☐ Reg Arch ..... #

I am a Member of: ☐ IPENZ ☐ NZIA and hold the following qualifications: BE (Hons), NZCE (Civl)  
The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000\*.

The Design Firm is a member of ACENZ: ☐

SIGNED BY Hamish Peters ON BEHALF OF Geocivil Consulting Engineers  
(Design Firm)

Date: 28/10/2014 (signature) Hamish Peters

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000\*.

This form is to accompany Form 2 of the Building (Forms) Regulations 2004 for the application of a Building Consent.

THIS FORM AND ITS CONDITIONS ARE COPYRIGHT TO ACENZ, IPENZ AND NZIA

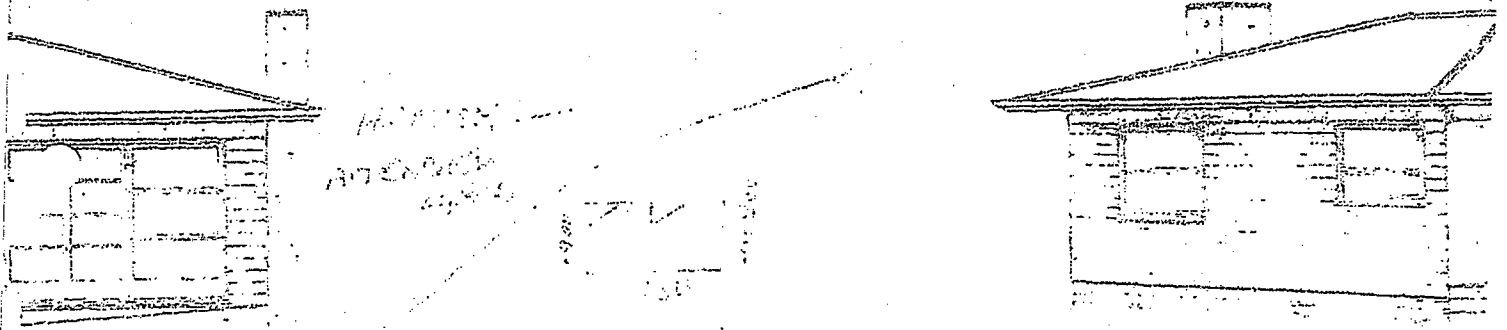


DESIGNED BY BEAZLEYS OF TAURANGA

APR 2013

14/06/13

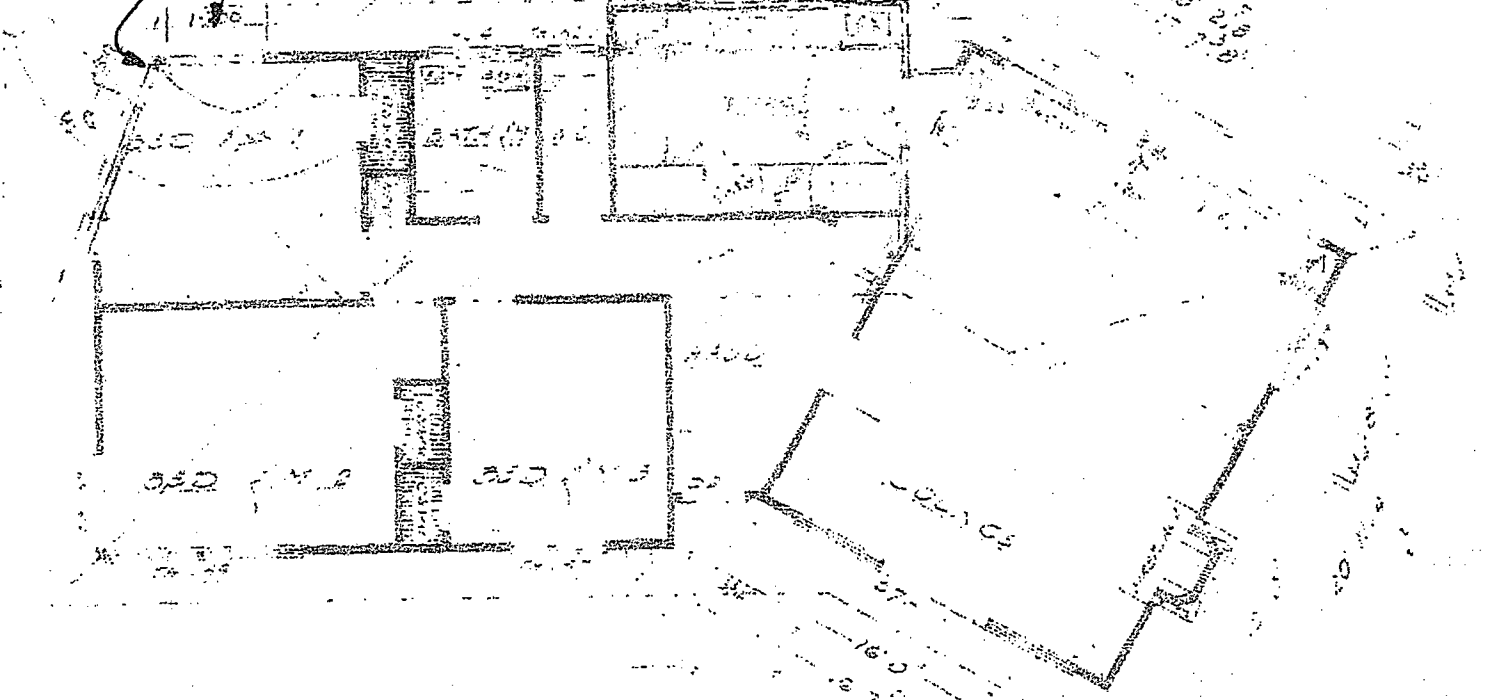
See also B



1:500

1:300

160 x 70 (SGB) with double studs both sides  
Lintel 6kw 6kw Pryda Brace strap 600 top & double stud  
190 x 70 (SGB) LINTEL  
Pryda Brace strap 600 bottom of double studs  
Paper to ENS. Sketches for details.



12/11/2014



Consent of \_\_\_\_\_

Check:                    /     /

**GEOCIVIL**  
CONSULTING ENGINEERS LTD

A

B

C

200 UB 22.0

DETAIL D

DOUBLE STUDS BENEATH

REFER CROSS SECTION C FOR DETAILS

Diagram illustrating the structural details of a roof truss system, showing the connection between the lounge beam and the roof structure.

**Labels and Dimensions:**

- LOUNGE BEAM 1:20
- WELD 7mm THICK FLANGE ONTO BEAM
- 600
- 90
- ROOF PITCH
- I-BEAM
- CEILING JOIST TO PACKER WITH 6kN HANGER
- 170x50 PACKERS BOTH SIDES
- M10 BOLT AT 300mm CRS
- FIX STRUT TO PACKER WITH 10kN CONNECTOR SPLIT JOIST HANGER
- NAIL UNDER PULLING STRUT & CEILING JOIST TO PACKERS
- REFER CROSS SECTION A FOR DETAILS

CROSS SECTION B  
1:10

12/11/2014

14/06/14



## CALCULATION SHEET

Project No: 14-047

Sheet No: 2

Consent No: 107

Project Description: LOUNGE BEAM

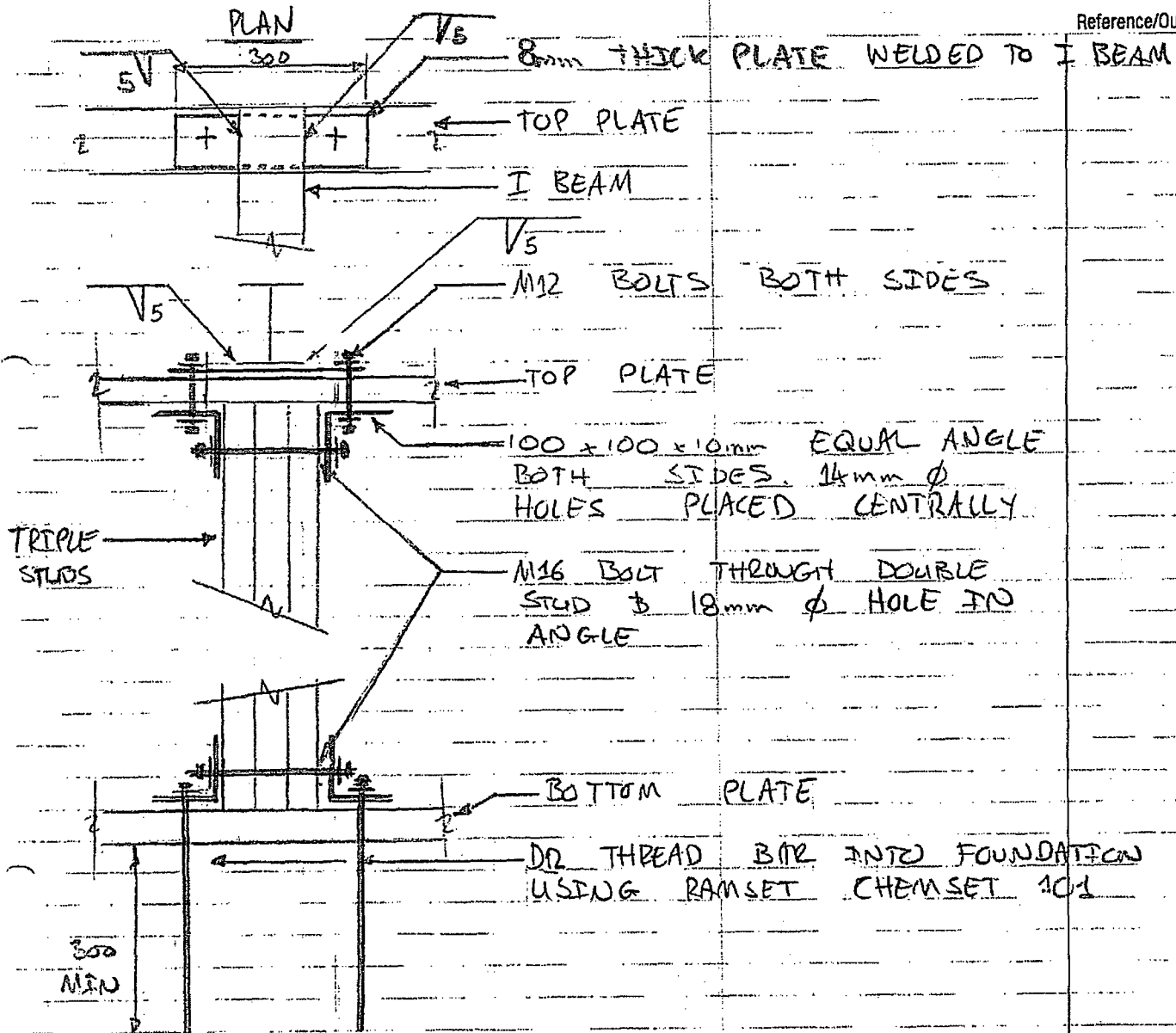
Computed: HP 18/10/14

REVISION 1

Check: 1/1

GEOCIVIL  
CONSULTING ENGINEERS LTD

Reference/Output



CROSS SECTION A

1:10

12/11/2014

14/06

## CALCULATION SHEET

Project No: 14-047

Consent: NO

Sheet No: 3 of 7

Project Description:

LOUNGE BEAM

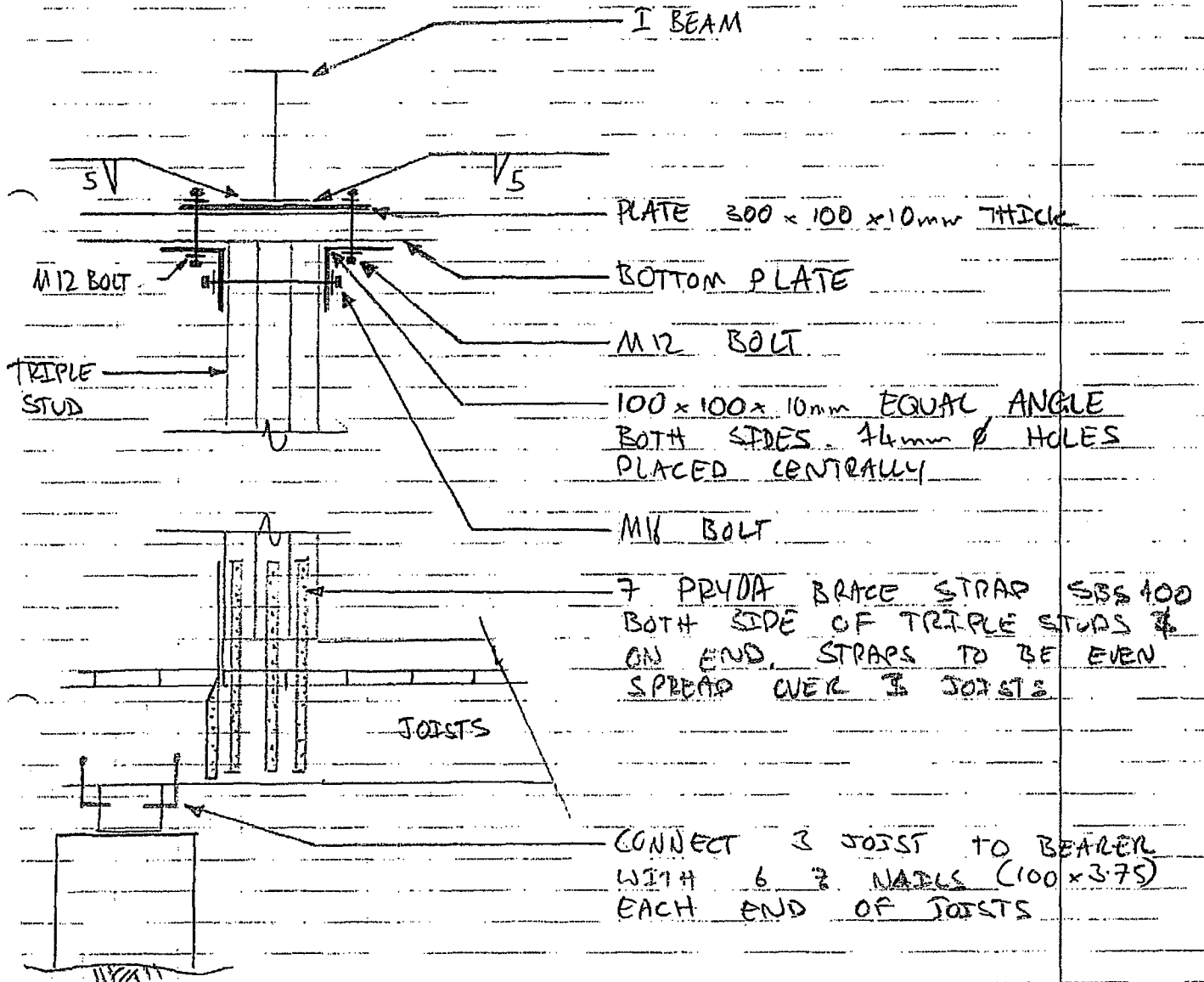
Computed: HP 28/10/14

REVISION 1

Check: / /


**GEOCIVIL**  
 CONSULTING ENGINEERS LTD

Reference/Output



CROSS SECTION C

1:10

NOTES.

1. ALL BOLTS HAVE 50mm SQ 5mm THICK WASHERS

12/11/2014

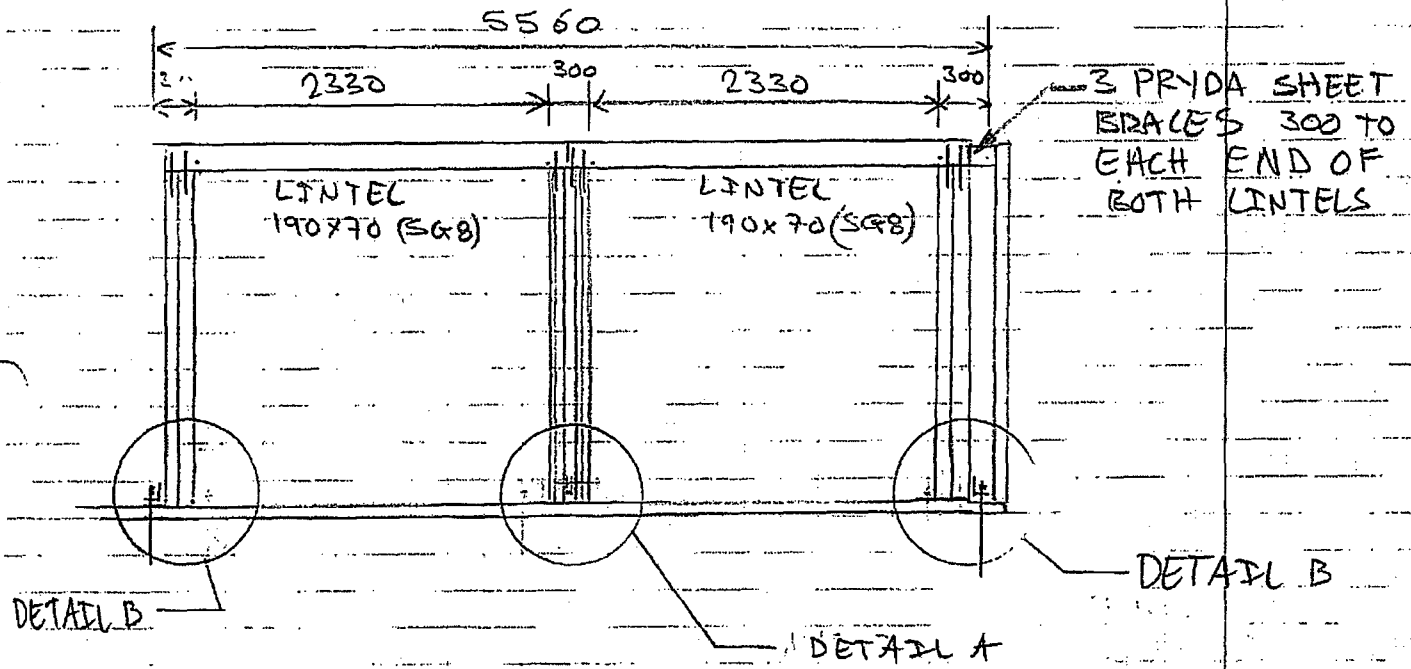
## CALCULATION SHEET

Project No: 14-047 Sheet No: 4 of 7  
 Project Description: LOUNGE RANCH SLIDER Computed: HP 28/10/14  
 LINTELS Check: / /  
 REVISION 1



**GEOCIVIL**  
 CONSULTING ENGINEERS LTD

Reference/Output



LOUNGE LINTELS  
 1:50

NOTES

- 1 DOUBLE STUDS BENEATH LINTEL (100x50)
- 2 ALL BOLTS TO BE GRADE 8.8

APPROVED

14/06/14

Consent No.

12/11/2014



CALCULATION SHEET

Project No: 14-047

Sheet No: 5 of 7

Project Description: LOUNGE RANCH SLIDER  
LINTELS

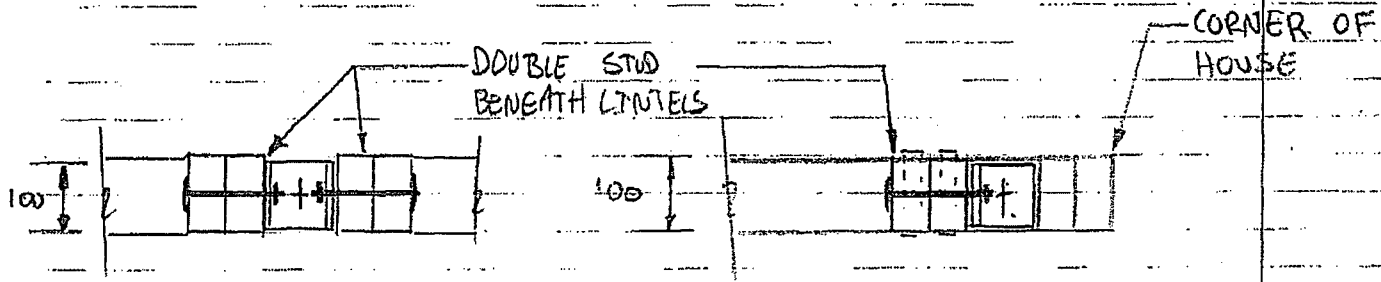
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Check: / /



**GEOCIVIL**  
CONSULTING ENGINEERS LTD

Reference/Output

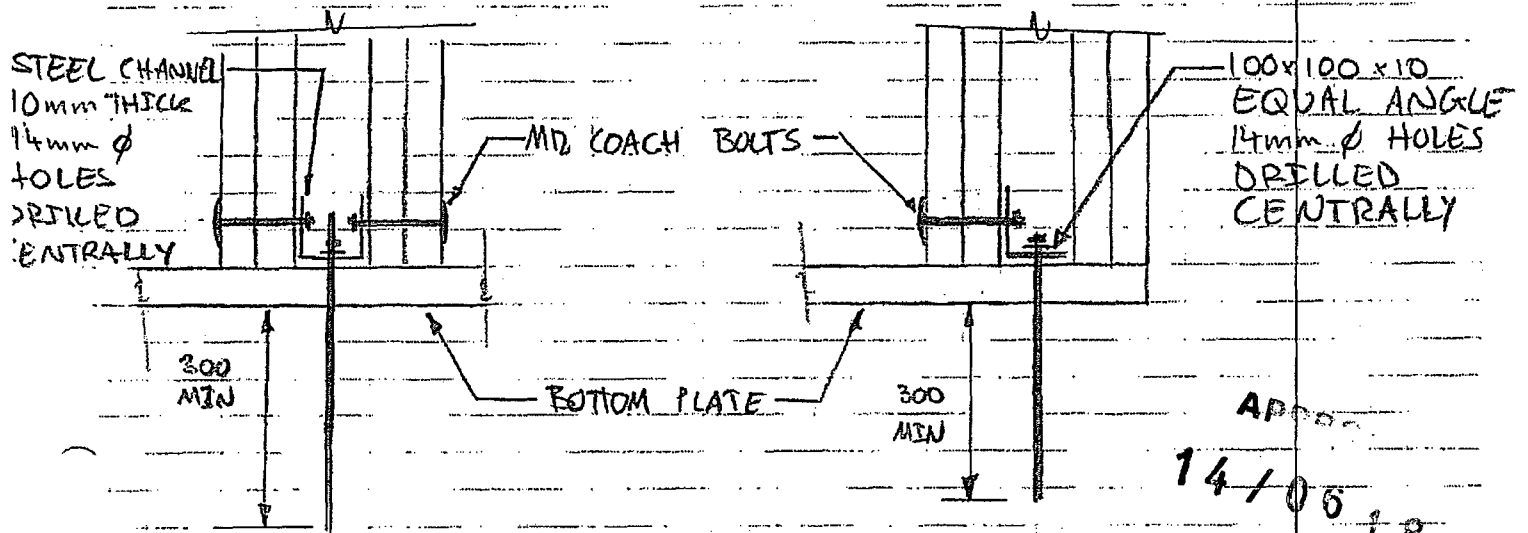


DETAIL B PLAN

1:10

DETAIL A PLAN

1:10

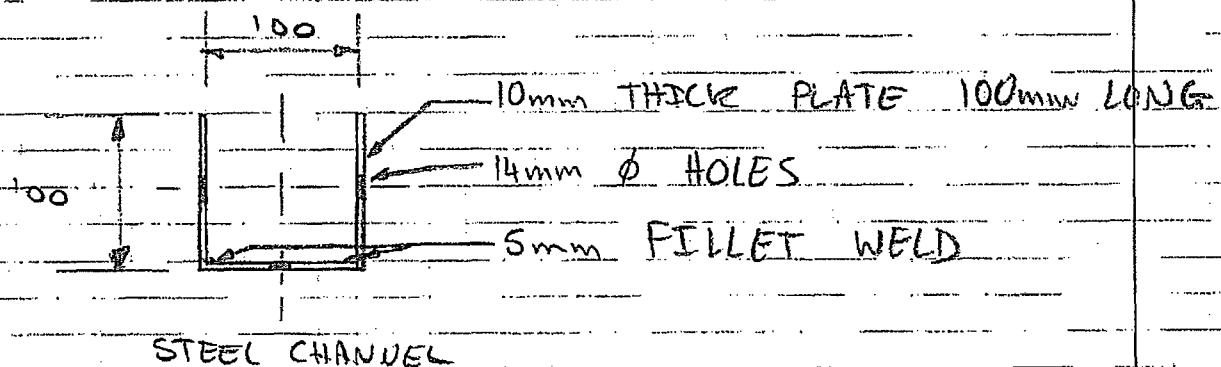


DETAIL A ELEVATION

1:10

DETAIL B ELEVATION

1:10



APPROVED  
14/06/18  
Consent No:

CALCULATION SHEET

Project No: 14-047

Sheet No: 6 of 7

Project Description: FOUNDATION

Computed: HP 28/10/14

Check: 1 1



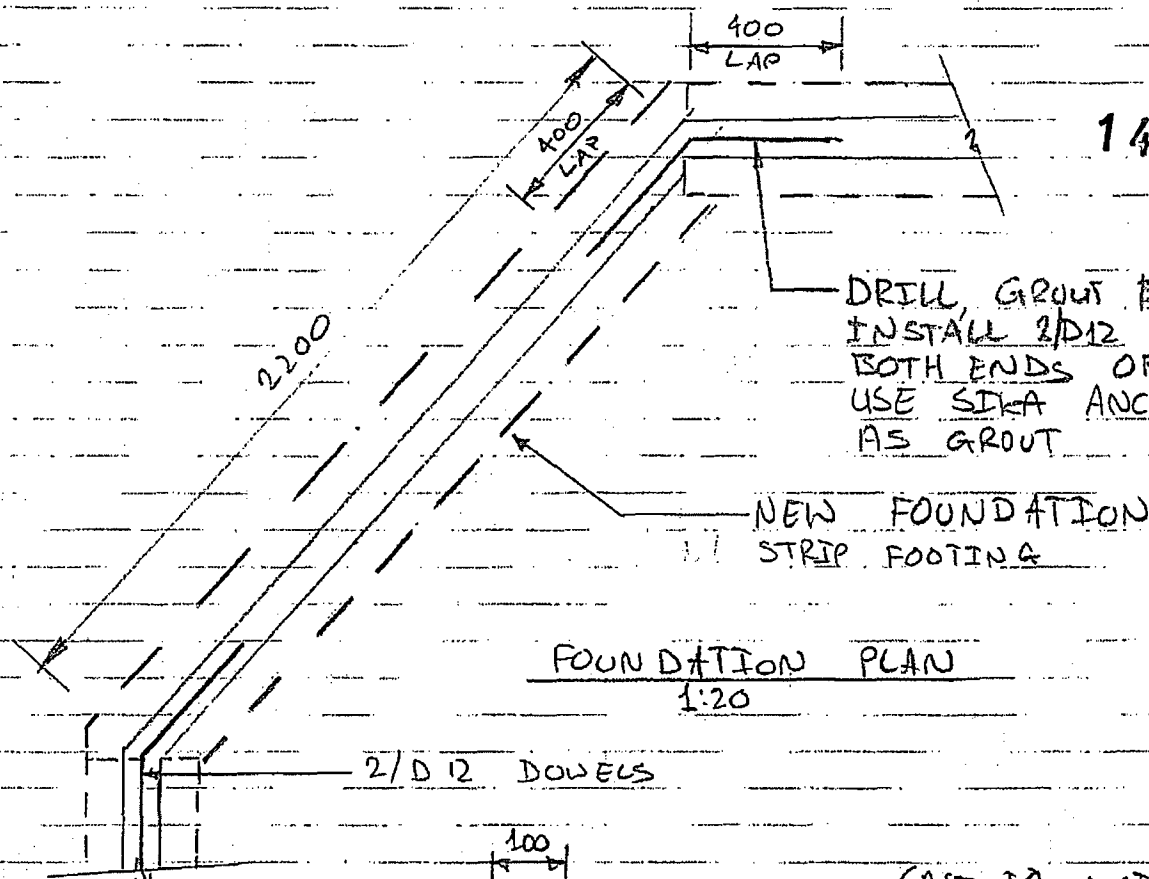
**GEOCIVIL**  
CONSULTING ENGINEERS LTD

Reference/Output

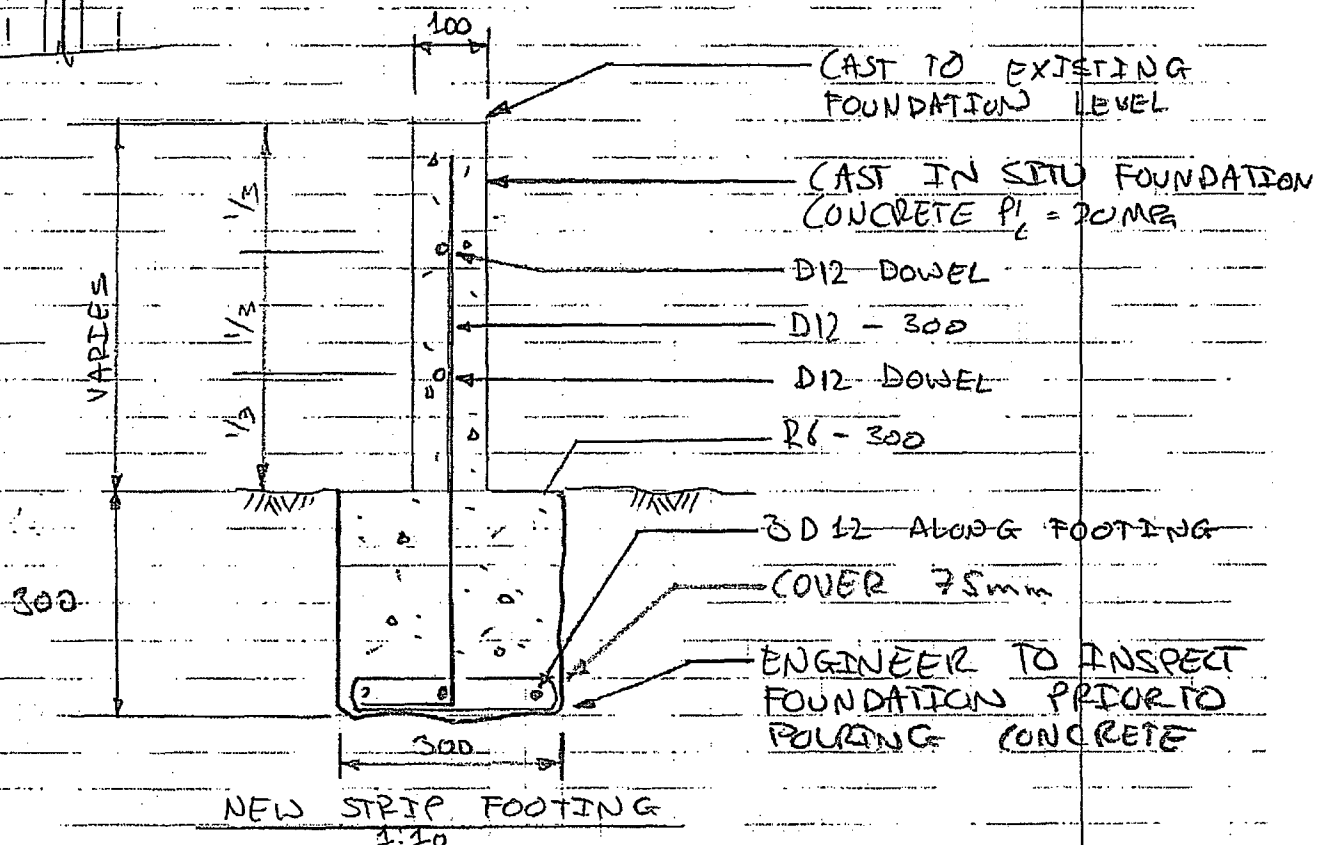
APPROVED

14/06/18

Consent No.



DRILL GROUT & INSTALL 2/D 12 DOWELS BOTH ENDS OF FOUNDATION USE SIKA ANCHOR FIX AS GROUT



12/11/2014

CALCULATION SHEET

Project No: 14-047

Sheet No: 7 of 7

Project Description: KITCHEN BEAM

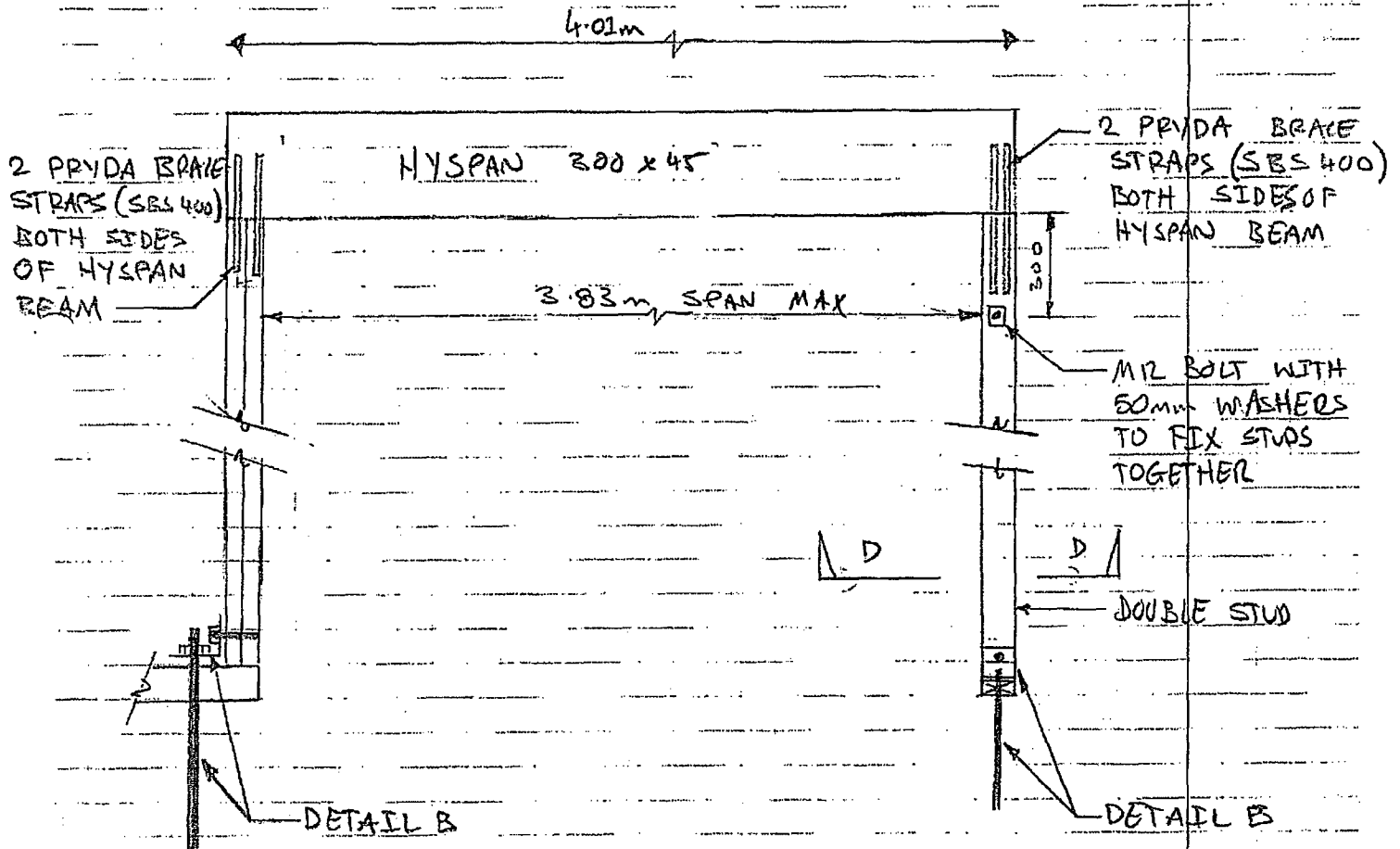
Computed: HP 30/10/14

Check: / /

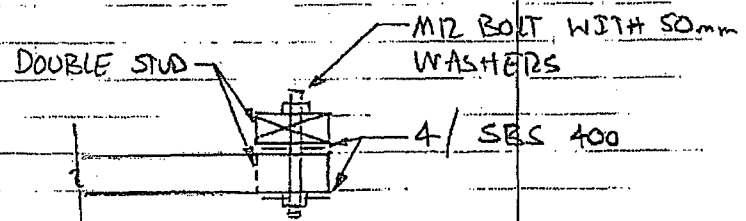


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Reference/Output



KITCHEN BEAM  
1:20



CROSS SECTION D  
1:10

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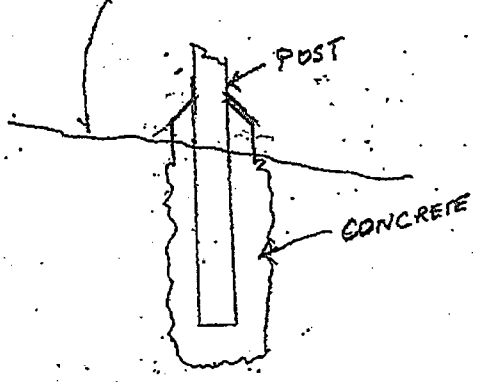
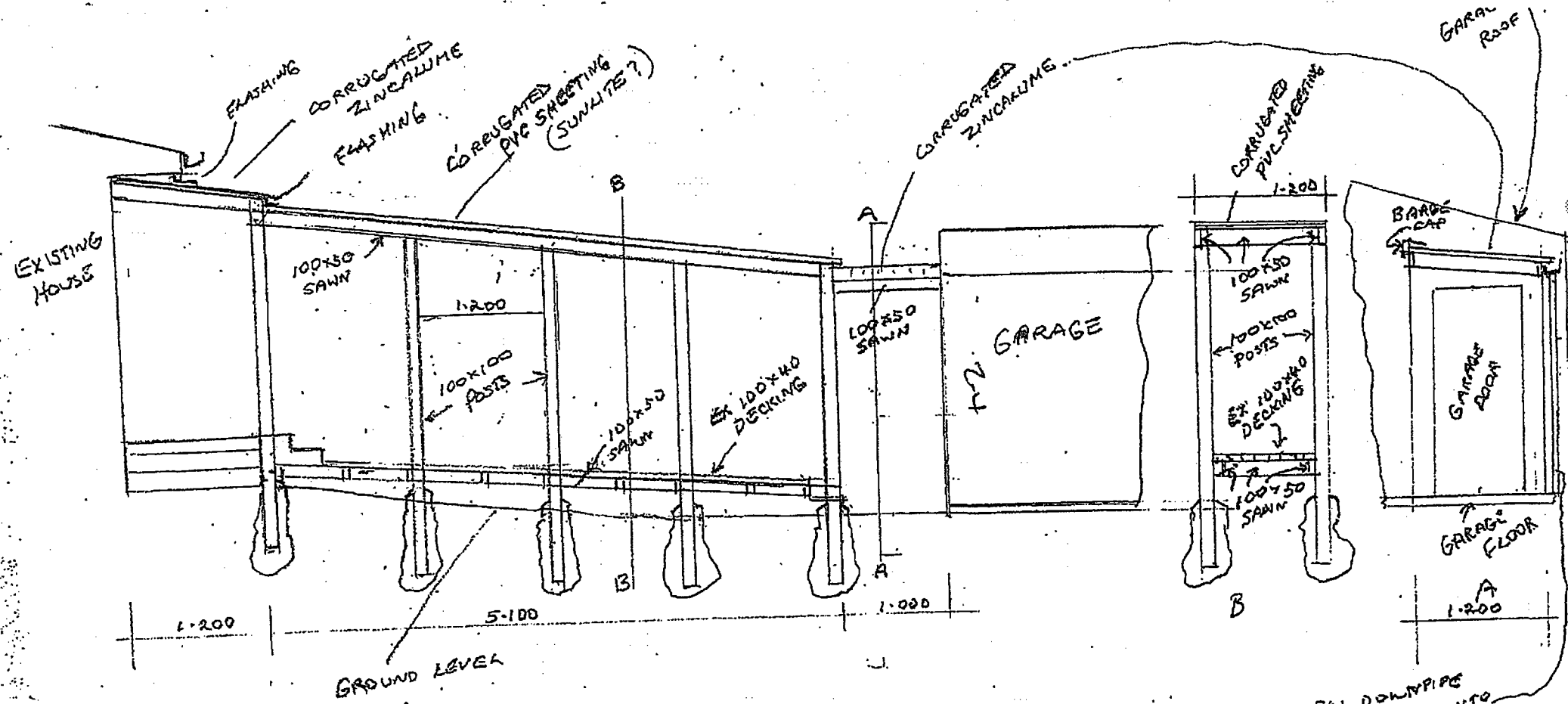
14/00

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WALKWAY DETAIL

12/11/2014



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14/06/18  
Consent No

Wanganui District Council RESTRICTED BUILDING WORK

## CALCULATION SHEET



Project No: 14-047

Sheet No: 1 of 3

Project Description: Check wind uplift  
on Walkway

Computed: HP 31/10/14

Check: / /

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Check uplift on downward slope of  
walkway.

$$P = (0.5 \rho_{air}) [V_{des, \theta}]^2 C_{fig} C_{dyn}$$

$$\rho_{air} = 1.2 \text{ kg/m}^3$$

$$V_{des, \theta} = 73.1 \text{ m/sec}$$

$$C_{fig} = C_{pn} K_a K_e$$

C<sub>pn</sub>

Pg 3

NZS 1170.2  
Eqn D3NZS 1170.2  
Table 5.4

$$h/d = 2.5 / 7.3 = 0.342$$

Use Table D4(A)

$$\theta = 0 \text{ degrees}$$

$$\text{Roof pitch} = 7^\circ \text{ (Interpolate between values)}$$

$$C_{p,w} = -0.65$$

$$C_{p,e} = -0.5$$

K<sub>a</sub>

$$\text{roof area} = 7.3 \times 1.2 = 8.76 \text{ m}^2$$

$$b_a = 1.0$$

$$K_e = 1.0$$

$$C_{pn} = -0.65 \times 1 \times 1 = -0.65 \text{ windward}$$

$$C_{pn} = -0.5 \times 1 \times 1 = 0.5 \text{ leeward}$$

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## CALCULATION SHEET

Project No: 14-047

Sheet No: 2 of 2

Project Description: Check wind uplift on walkway

Computed: HP 31/10/14

Check: / /


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Reference/Output

$$C_{dyn} = 1.0$$

$$P = 0.5 \times 1.2 \times 73.1^2 \times -0.65 \times 1.0 = -2.08 \text{ kPa}$$

$$P = -0.5 = -1.6 \text{ kPa}$$

Calculate uplift on piles

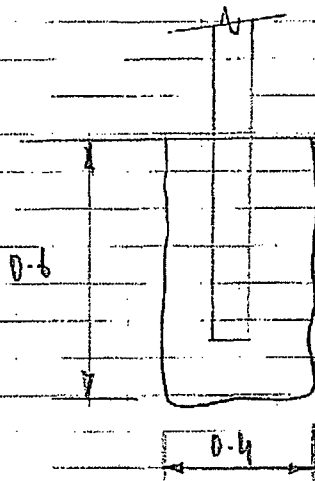
$$2.08 \text{ kPa} \times 12 \text{ m} \text{ HS} \times \frac{1.2 \text{ m wide}}{2} = 15 \text{ kN}$$

calculate the weight of the concrete foundation

$$24 \times 0.6 \times 0.3 \times 0.3 = 1.296 \text{ kN} < 1.5 \text{ kN Fail}$$

Make the footings 0.4 m sq

$$24 \times 0.6 \times 0.4 \times 0.4 = 2.3 \text{ kN} > 1.5 \text{ kN uplift Ok}$$



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**Site Wind Speed**

Based on the code: NZS 1170.2:2002

Version 1: 11/12/7

**Assumptions**

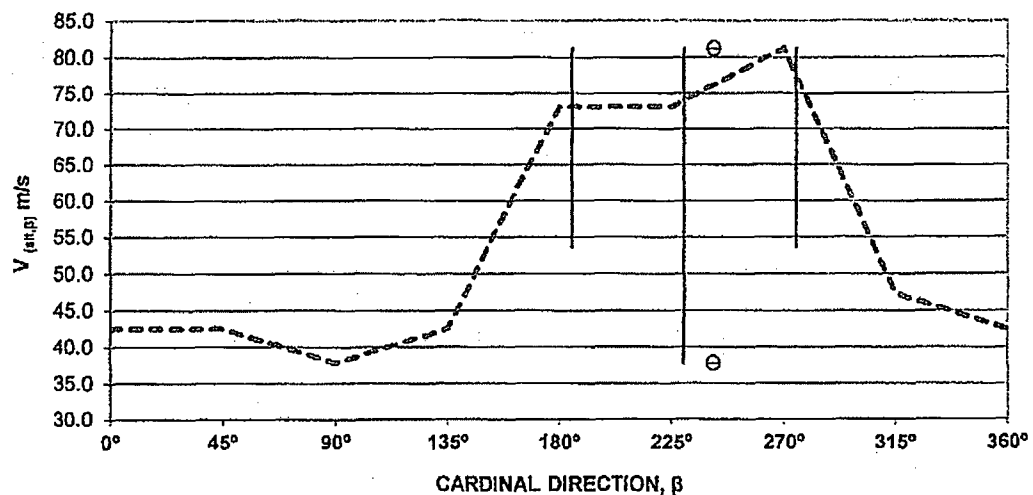
1. Wind loads simulate a 3 sec gust of wind

Project No: 14-047  
 Client: Wanfield Trust  
 Location: 149 Karaka Street, Wanganui

Importance Level 2 Table 3.1, NZS1170.2:2002  
 Design Life 50 years  
 Annual Probability of exceedance 1/500 Table 3.3, NZS1170.2:2002 ULS  
 Structure direction ( $\beta$ ) 230°

$$V_{(sit,\beta)} = V_R \cdot M_d \cdot (M_{Z,cat} \cdot M_s \cdot M_t)$$

|                         | N    | NE   | E    | SE   | S    | (SW) | W    | NW   | N    |
|-------------------------|------|------|------|------|------|------|------|------|------|
| $\beta$ (Cardinal dir°) | 0°   | 45°  | 90°  | 135° | 180° | 225° | 270° | 315° | 360° |
| $V_R$                   | 45   | 45   | 45   | 45   | 45   | 45   | 45   | 45   | 45   |
| $M_d$                   | 0.9  | 0.9  | 0.8  | 0.9  | 0.9  | 0.9  | 1.0  | 1.0  | 0.9  |
| $M_{Z,cat}$             | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 |
| $M_s$                   | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1    |
| $M_t$                   | 1.0  | 1.0  | 1.0  | 1.0  | 1.7  | 1.7  | 1.7  | 1.0  | 1    |
| $V_{(sit,\beta)}$       | 42.5 | 42.5 | 37.8 | 42.5 | 73.1 | 73.1 | 81.3 | 47.3 | 42.5 |



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## CALCULATION SHEET

Project No: 14-047

Sheet No: 1 of 1

Project Description: Pile bracing

Computed: HP 3/10/14

Check: / /

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Reference/Output

check bracing on walkway

Table 5.2(c)

$$P = 0.5 \times 12 \times 73.12 \times -0.5 \times 1.0 = -160 \text{ kPa}$$

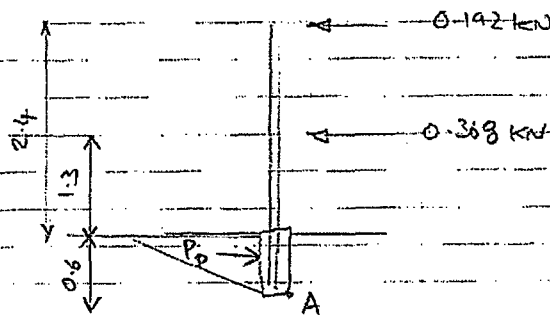
Calculate load on roof &amp; post for bracing

roof

$$1.6 \times 0.1 \times 1.2 = 0.192 \text{ kN at 2.4m height}$$

Posts

$$1.6 \times 0.1 \times 2.3 = 0.368 \text{ kN at 1.3m height}$$



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$$P_{pp} = \frac{1}{2} k_p \gamma H^2 \times \phi$$

$$\phi_{pp} = 0.5$$

NZBC B1, Table 1

$$\phi = 35^\circ \text{ Sand}$$

$$k_p = 7.2$$

$$\gamma = 18 \text{ kN/m}^3$$

$$H = 0.6 \text{ m}$$

$$\phi = 0.4 \text{ m}$$

$$= \frac{1}{2} \times 7.2 \times 18 \times 0.6^2 \times 0.4$$

$$= 4.66 \text{ kN}$$

$$\sum M_A = 0$$

$$4.66 \times 0.6 \times \frac{2}{3} = 0.368 \times (1.3 + 0.6) + 0.192 \times (2.4 + 0.6)$$

$$1.864 \text{ kN} = 0.97 \text{ kN.m OK to resist overturning}$$

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#### 4. STRUCTURAL STEELWORK:

##### 4.1. PRELIMINARY:

---

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

##### 4.2. SCOPE:

---

The work included in this section is for the supply of all plant, labour and materials for the fabrication and erection of all structural steelwork. Holding down bolts, cleats and bolts connecting structural members are also included in this section.

##### 4.3. REFERENCE SPECIFICATIONS:

---

4.3.1 Attention is drawn to the following standard specifications, the relevant clauses including amendments of which shall be deemed to be part of this specification unless otherwise specified herein.

|                 |                                           |
|-----------------|-------------------------------------------|
| • AS/NZS 3678   | Structural Steel – Hot-rolled plates etc  |
| • AS/NZS 3679   | Structural Steel - Parts 1 & 2            |
| • AS 1163       | Structural steel hollow sections          |
| • NZS/BS 1387   | Steel tubes & tubulars                    |
| • AS/NZS 1252   | High strength steel bolts                 |
| • NZS 3404      | Steel Structures standard                 |
| • AS/NZS 4600   | Cold-formed steel structures              |
| • AS/NZS 1554.1 | Structural Steel Welding                  |
| • NZS 4711      | Qualification tests for metal-arc welders |

4.3.2 The Contractor may be required to report the origin of all steel and provide test certificates if required.

##### 4.4. MATERIALS:

---

- 4.4.1 All structural steel sections shall comply with NZS 3679.
- 4.4.2 All steel shall comply with NZS 3678 grade 300.
- 4.4.3 All rectangular and square hollow sections shall comply with AS 1163 Grades C350 and C450.
- 4.4.4 All bolts shall be galvanised ISO Metric Grade 8.8 structural bolts to AS1252.
- 4.4.5 All tubes shall comply with BS3602 Grade 250 or better.

##### 4.5. WORKMANSHIP:

---

Carry out all necessary workmanship as shown on the drawings, cut, drill and assemble by means of welding, bolting or other suitable methods, all in accordance with the best of current trade practice. All welding shall be done to radiographic standards by qualified welders.

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#### 4.6. TOLERANCES AND CLEARANCES:

---

- 4.6.1 All dimensions shall be verified by actual measurement on the job. Tolerances and clearances shown on the drawings are to be taken in preference to tolerances and clearances specified in the standard specifications given in clause 8.3 above. All lengths shall be cut to tolerances of within plus or minus 1mm. However, this tolerance shall not be in addition to the tolerance or clearance given on the drawing. Column positions shall be within plus or minus 3mm of the correct position as dimensioned on the plan. All steel shall be straight and shall not deviate from straightness by more than 3mm in 3 metres.
- 4.6.2 In all cases allowance shall be made for dead load deflections and if these are not detailed on the plan, the Contractor shall obtain from the Engineer a list of critical deadload deflections before commencing the work.
- 4.6.3 All purlin and girt cleat dimensions and all others that are required by the carpentry and other trades shall be checked for position with the Main Contractor. Before starting shop fabrication all holding down bolts shall be checked on site.

#### 4.7 INSPECTIONS:

---

The Contractor shall notify the Engineer when fabrication is being commenced. The Engineer shall inspect the connections and fixings to the beam during installation. The Engineer must be provided with no less than 24 hours notice prior to inspection.

#### 4.8 CUTTING AND DRILLING:

---

Sheared and cropped edges shall be dressed to a neat finish free from distortion. Where flame cutting is to be used, the torch shall be moved mechanically or shall be guided by a template moved at a uniform speed. The edge shall be dressed to a neat finish. Bolt holes shall be drilled and have the burr removed. **Cutting holes or enlarging holes by flame cutting is prohibited.**

#### 4.9 WELDING GAUGES:

---

The Contractor shall hold available on the site at all times during the progress of the work, an approved set of welding gauges.

#### 4.10 WELDING:

---

- 4.10.1 The Contractor shall satisfy the Engineer that the welding operators are suitable for the work upon which they are employed.
- 4.10.2 All welders shall hold current Certificates of Competency as manual metal-arc welders in the downhand, and other positions as required, for the applicable steel and electrode types in accordance with NZS:4711.
- 4.10.3 The employment of any particular welder on the work will be subject to the approval of the Engineer.
- 4.10.4 Welding shall be done in the down hand position where ever possible. Field welding is to be of the same standard as welding in the shop and the Contractor must satisfy the Engineer that his equipment is such that this standard can be achieved.
- 4.10.5 Where not otherwise specified on the drawings, all welded joints shall be properly sealed from the atmosphere by continuous 3mm fillet welds.

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# Wanganui District Council RESTRICTED BUILDING WORK

- 4.10.6 Welding shall not be done under weather or other conditions, which, in the opinion of the Engineer, might adversely affect the efficiency of the weld.
- 4.10.7 At all times during the welding, the contractor shall have on the site a competent supervisor who is responsible for the welding operations.

## 4.11 ERECTION:

---

The erection of all structural steelwork shall be carried out by skilled riggers and the work shall comply in all respects with the provisions of NZS: 3404. Ensure that at all time during erection steelwork is maintained in a safe condition, and that no steel members are overstressed.

## 4.12 PAINTING & GALVANISING:

---

- 4.12.1 General: All steelwork not encased in concrete shall be cleaned and painted as specified below.
- 4.12.2 Cleaning: Before painting, all surfaces shall be degreased with either turpentine or petrol and, after removal of all weld spatter and all sharp edges, shall be blast cleaned to Swedish Standard SIS:05 59 00-1967 grade Sa 2½ minimum. The protective coating should only be applied after the surface has been approved by the Engineer as complying with the above standards.
- 4.12.3 Conditions for Painting: No painting shall be done until the surface has been passed by the Engineer. No paint shall be applied to any surface that is not perfectly dry and dust free, nor shall it be applied in weather conditions, which, in the opinion of the Engineer, are likely to be harmful to the paint. Sufficient time must be allowed between coats for the paint to harden and this time shall not be less than twenty-four hours. All shop painting shall be done under cover and shall be kept protected from dust, sand and moisture. Spreading rates shall not exceed the paint manufacturer's recommendations, and the final finishing coat shall not be applied while there is a danger of it being damaged by other works.
- 4.12.4 Application: After fabrication and before leaving the shop, the steel shall be cleaned as specified above, and coated with an inorganic zinc silicate primer @ 75 µm d.f.t. in accordance with manufacturer's specifications.
- 4.12.5 Where surfaces are so placed that after fabrication they will be inaccessible for painting, all coats shall be applied before assembly.
- 4.12.6 After erection all damaged paint shall be made good by spot blasting and painting as above.
- 4.12.7 Alternative Coating: Degrease, wire brush clean steel and apply an acceptable primer suitable for interior use.

## 4.13 COMPLETION:

---

Deliver all structural steel to site in a clean and finished condition, primed or otherwise coated as specified and ready for assembly and/or erection.

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## CALCULATION SHEET

Project No: 14-047

Sheet No: 1 of 2022

Project Description: 149 Kameka Street

Computed: AP 30/9/14

Wanganui

Check: 1/1


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Reference/Output

## Content

Page

1. Scope of work

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2. Design guide/Standards

2

3. Ground Model

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4. Stability assessment

4-10

5. Beam design - Kitchen Lunge

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6. Beams design - Lounge Lounge side

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7. Bracing check

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## CALCULATION SHEET


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Project No:

Sheet No:

2

of

2022

Project Description:

Computed:

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Reference/Output

1. Scope of work

Check the stability of the slope the  
 house is being constructed on

Design two beams in the house

check the bracing of the house with

the proposed foundations

2. Design guides / standards

NZS 3604: 2011

NZS 3602: 1993

Soil Mechanics in Eng. Practice (Terzaghi & Peck)

Slope Stability & Stabilization Methods (SSSM)

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## CALCULATION SHEET

Project No:

Sheet No: 13 of 3022

Project Description:

Computed: / /

Check: / /

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Reference/Output

Beam design in lounge

- wind pressure on beam

$$M_t = M_h M_{lee} (1 + 0.00015 E)$$

$$\frac{H}{2L_h} = \frac{15}{2 \times 14} = 0.53$$

$$M_h = 1 + 0.71 \left[ 1 - \frac{\alpha}{L_h} \right]$$

$$= 1 + 0.71 \left[ 1 - \frac{0}{14} \right]$$

$$M_h = 1.71$$

$$M_{lee} = 1.0 \quad (\text{no lee zone})$$

$$E = 15 \text{ m}$$

$$M_t = 1.71 \times 1.0 \times (1 + 0.00015 \times 15)$$

$$M_t = 172$$

From SE - NW

$$M_h = 1.0$$

$$M_t = 1.0 \times 1.0 \times (1 + 0.00015 \times 15)$$

$$= 1.00225$$

$$\text{Say } 1.0$$

$$P = (0.5 P_{air}) [V_{des,0}]^2 C_{f,s} C_{d,m}$$

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12/11/2014

30/09/2014

## Site Wind Speed

Based on the code: NZS 1170.2:2002

Version 1: 11/12/7

### Assumptions

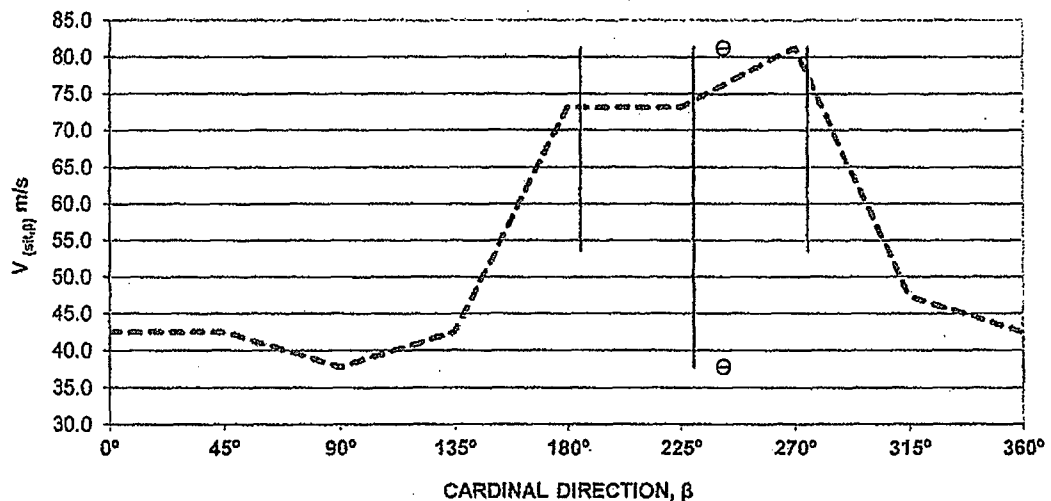
1. Wind loads simulate a 3 sec gust of wind

Project No: 14-047  
 Client: Wanfield Trust  
 Location: 149 Karaka Street, Wanganui

Importance Level 2 Table 3.1, NZS1170.2:2002  
 Design Life 50 years  
 Annual Probability of exceedance 1/500 Table 3.3, NZS1170.2:2002 ULS  
 Structure direction ( $\beta$ ) 230°

$$V_{(sit,\beta)} = V_R \cdot M_d \cdot (M_{Z,cat} \cdot M_s \cdot M_t)$$

|                         | N    | NE   | E    | SE   | S    | SW   | W    | NW   | N    |
|-------------------------|------|------|------|------|------|------|------|------|------|
| $\beta$ (Cardinal dir°) | 0°   | 45°  | 90°  | 135° | 180° | 225° | 270° | 315° | 360° |
| $V_R$                   | 45   | 45   | 45   | 45   | 45   | 45   | 45   | 45   | 45   |
| $M_d$                   | 0.9  | 0.9  | 0.8  | 0.9  | 0.9  | 0.9  | 1.0  | 1.0  | 0.9  |
| $M_{Z,cat}$             | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 |
| $M_s$                   | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1    |
| $M_t$                   | 1.0  | 1.0  | 1.0  | 1.0  | 1.7  | 1.7  | 1.7  | 1.0  | 1    |
| $V_{(sit,\beta)}$       | 42.5 | 42.5 | 37.8 | 42.5 | 73.1 | 73.1 | 81.3 | 47.3 | 42.5 |



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## CALCULATION SHEET


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Project No:

Sheet No: 135 of 2022

Project Description:

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Check: / /

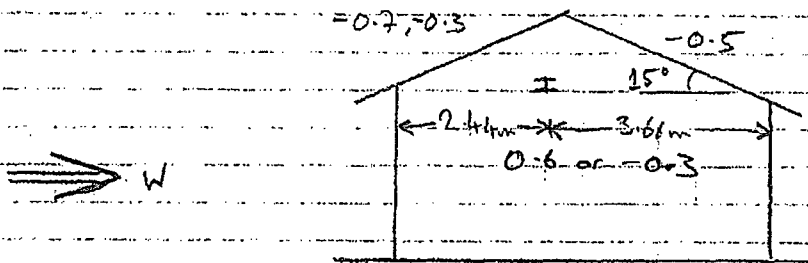
Reference/Output

$$P = (0.5 P_{air}) [V_{des, 0}]^2 C_{fig} C_{dyn}$$

$$P = (0.5 \times 1.2) [81.3]^2 \times C_{fig} \quad 1.0$$

$$P = 3965.8 C_{fig}$$

$$h/d = 4/6 = 0.66$$



$$P_u = 3965.8 \times (0.7 + 0.6) = 5155 P_a \quad (5.2 kPa)$$

$$P_D = 3965.8 \times (0.6 + 0.5) = 4362.4 P_a \quad (4.4 kPa)$$

$$W = 5.2 \times \frac{2.44}{2} + 5.2 \times 0.61 + 4.4 \times \frac{3.66}{2} = 17.57 kN/m$$

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Project No: 14-047  
Project Description: 149 Karaka Street, Wanganui  
Date: 30/09/2014  
Unfactored Loads *Kitchen / Lounge beam*

Sheet No: of  
Designed: HJP  
Reviewed:

Design Life 50 Years NZS 1170.0, Table 3.1  
Importance level 2 NZS 1170.0, Table 3.2

|   | Loads                               | Dead Units       | Live Load Units | Wind Units          | Snow Units | Earthquake Units | Reference |
|---|-------------------------------------|------------------|-----------------|---------------------|------------|------------------|-----------|
| 1 | Roof                                | 1.4 kN/m         |                 |                     |            |                  |           |
| 2 | Ceiling - Gypsum plaster board (131 | 0.4 kN/m         |                 |                     |            |                  |           |
| 3 | Live load on roof                   |                  | 0.8 kN/m        |                     |            |                  |           |
| 4 | Wind load                           |                  |                 | -17.6 kN/m          |            |                  |           |
| 5 |                                     |                  |                 |                     |            |                  |           |
| 6 |                                     |                  |                 |                     |            |                  |           |
| 7 |                                     |                  |                 |                     |            |                  |           |
| 8 |                                     |                  |                 |                     |            |                  |           |
| 9 |                                     |                  |                 |                     |            |                  |           |
|   | <b>Total</b>                        | <b>1.80 kN/m</b> | <b>0.78</b>     | <b>- 17.57 kN/m</b> | <b>-</b>   | <b>-</b>         |           |

Short term factor = 0.7 NZS 1170.0, Table 4.1  
Long term factor = 0.4 NZS 1170.0, Table 4.1  
Combination factor = 0.4 NZS 1170.0, Table 4.1

#### Factored Loads

| Ultimate                        | Units        | Serviceability | Units        |
|---------------------------------|--------------|----------------|--------------|
| 1.35G =                         | 2.70 kN/m    | G              | 1.80 kN/m    |
| 1.2G + 1.5Q =                   | 3.32 kN/m    | $\psi_s Q$     | 0.54 kN/m    |
| 1.2G + 1.5 $\psi_L Q$ =         | 2.62 kN/m    | $\psi_L Q$     | 0.31 kN/m    |
| 1.2G + $W_u$ + 1.5 $\psi_c Q$ = | - 14.95 kN/m | Ws             | - 17.57 kN/m |
| 0.9G + $W_u$ =                  | - 15.95 kN/m | Es             | - kN/m       |
| G + $E_u$ + $\psi_c Q$ =        | 2.11 kN/m    |                |              |
| 1.2G + $S_u$ + $\psi_c Q$ =     | 2.47 kN/m    |                |              |

Worse Case

Worse Case

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14/06/18  
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Wanganui District Council RESTRICTED BUILDING WORK

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## CALCULATION SHEET

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Reference/Output

Beam Span 4.8m

Bending &amp; Shear - wind load

$$M^* = \frac{WL^2}{8} = \frac{17.6 \times 4.8^2}{8} = 50.69 \text{ kJ.m}$$

$$V^* = \frac{WL}{2} = \frac{17.6 \times 4.8}{2} = 42.24 \text{ kN}$$

- Dead load

$$M^* = \frac{3.68 \times 4.8^2}{8} = 10.57 \text{ kJ.m}$$

$$V^* = \frac{3.68 \times 4.8}{2} = 8.83 \text{ kN}$$

APPRO.

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## CALCULATION SHEET

Project No:

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Project Description:

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Check: / /


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Reference/Output

 Check I-beam for kitem / Lunge  
 beam option

Simplified method

Sesoc, 1999

$$M^* \leq \phi M_{sx}$$

$$\phi M_{sx} = 52 \text{ kN.m (200UB18.2)}$$

$$\lambda_m = 1.0$$

$$L_e = 0.6 \text{ m restrained by ceiling joist}$$

Sesoc 1999  
App A

$$\lambda_s = 1.0$$

$$50.69 \text{ kN.m} \leq 52 \text{ kN.m}$$

$$50.69 \text{ kN.m} \leq 52 \text{ kN.m} \quad \text{OK}$$

Check shear

$$V^* \leq \phi V_v$$

$$V^* = 42.24 \text{ kN}$$

$$\phi = 0.9$$

$$V_v = 0.6 \times 300,000 \times 0.09 \times 0.0065$$

$$= 72.9 \text{ kN}$$

$$42.24 \text{ kN} \leq 0.9 \times 72.9$$

$$42.24 \text{ kN} \leq 65.61 \text{ kN} \quad \text{OK}$$

Use a 200UB18.2 Grade 300

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## CALCULATION SHEET

Project No:

Sheet No:

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Project Description:

Computed:

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Check:

/ /


**GEOCIVIL**  
 CONSULTING ENGINEERS LTD

Reference/Output

Check deflection of beam

$$\Delta = \frac{5}{384} \frac{WL^4}{EI}$$

$$= \frac{5}{384} \frac{17.6 \times 4.8^2}{200 \times 10^6 \times 21.0 \times 10^{-8}} \times 1000$$

12.6 mm

$$\frac{12.6}{4800} = \frac{1}{385} < \frac{1}{240} \quad \text{OK}$$

Use a 200 UB 22.0

APPRO

14 / 06

Consent No

12/11/2014

## CALCULATION SHEET

Project No:

Sheet No: 1810 of 3022

Project Description:

Computed: / /

Check: / /

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Reference/Output

Design tie down

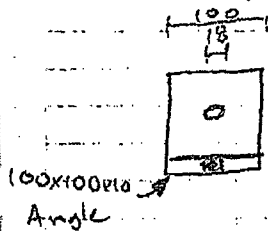
$$V^* = 42.24 \text{ kN}$$

Use M12 bolts

$$\phi V_A = 0.9 \times 830 \times 10^3 \times \frac{\pi \times 0.012^2}{4} \times 2$$

$$= 169 \text{ kN} > 42.24 \text{ kN OK}$$

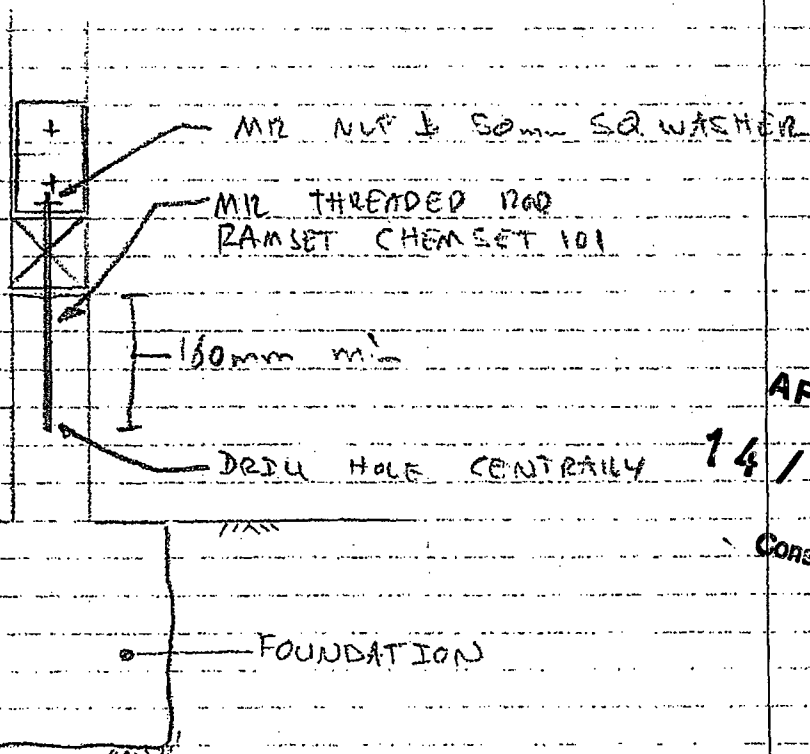
Check plate bearing.



$$\phi V_b = 0.9 \times 380 \times 10^3 \times 0.01 \times 0.082$$

$$\phi V_b = 221.4 \text{ kN} > 42.24 \text{ kN OK}$$

Use 100x100x10 mm Angle

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## CALCULATION SHEET

Project No:

Sheet No:

1/11 of 2022

Project Description:

Computed:

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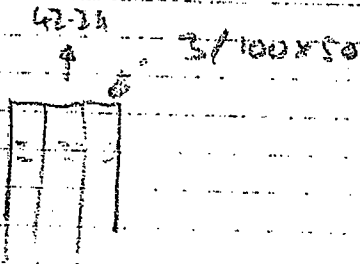
Check:

/ /


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Reference/Output

Check triple stud capacity.



$$N_t^* \leq \phi F_t k_d f_t A$$

$$\phi = 0.8$$

$$k_d = 1.0$$

$$k_d = 1.2$$

$$f_t = 4.0$$

$$A = 0.1 \times 0.05 \times 3$$

$$= 0.015 \times 0.15$$

$$= 0.00225 \text{ m}^2$$

$$42.24 \leq 0.8 \times 1.0 \times 1.2 \times 4000 \times 0.00225$$

$$42.24 \text{ kN} \leq 49.5 \text{ kN}$$

OK

Base of studs. Use 7 plyda strips.

$$\text{GWS capacity} \times 7 = 42 \text{ kN} \geq 42.24 \text{ kN} \quad \text{OK}$$

Check joint &amp; bearing in shear to

resist uplift in next two pages.

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Project: 149 Karaka Street, Wanganui  
 Project No. 14-047  
 Beam Location Existing beam Joist.

**Timber beam design**

**Planks**

b 150 mm  
 d 140 mm  
 Actual b 147 mm  
 Actual d 135 mm  
 Length 1850 mm  
 $\Phi$  0.8 NZS 3603:1993  
 $K_1$  1  
 $K_4$  1  
 $K_5$  1  
 d/b 0.9  
 Lay/b 12  
 $K_8$  1 Fig 3.2, NZS 3604:1993  
 fb 11.7 Mpa  
 fs 3.8 Mpa  
 Z 0.000447 m<sup>3</sup>  
 $\Phi M_n$  4.18 KN.m  
 $M^*$  0.00 KN.m  
 Bending   
 $\Phi V_n$  60.33 KN  
 $V^*$  42.00 KN  
 Shear 

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Project: 149 Karaka Street, Wanganui  
 Project No. 14-047  
 Beam Location Existing bearer

**Timber beam design**

**Planks**

|            |                                   |
|------------|-----------------------------------|
| b          | 70 mm                             |
| d          | 100 mm                            |
| Actual b   | 67 mm                             |
| Actual d   | 95 mm                             |
| Length     | 1450 mm                           |
| $\Phi$     | 0.8 NZS 3603:1993                 |
| $K_1$      | 1                                 |
| $K_4$      | 1                                 |
| $K_5$      | 1                                 |
| d/b        | 1.4                               |
| Lay/b      | 21                                |
| $K_a$      | 1 Fig 3.2, NZS 3604:1993          |
| fb         | 11.7 Mpa                          |
| fs         | 3.8 Mpa                           |
| Z          | 0.000101 m <sup>3</sup>           |
| $\Phi M_n$ | 0.94 KN.m                         |
| $M^*$      | 0.00 KN.m                         |
| Bending    | <input type="text" value="7.76"/> |
| $\Phi V_n$ | 58.05 KN                          |
| $V^*$      | 42.00 KN                          |
| Shear      | <input type="text" value="1.15"/> |



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## CALCULATION SHEET


**GEOCIVIL**  
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Project No:

Sheet No:

14  
22 of 30 22

Project Description:

Computed:

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Check:

/ /

Reference/Output

6 Beam for kitchen

$$\text{Span} = 6.3 - 0.3 \times 3 = 2.2 \text{ m}$$

$$\text{loaded dimension} = \frac{2.2}{2} + 0.6 = 1.8 \text{ m}$$

Wind zone - NZS 3604:2011

 Wind region - A  
 Topo class - T4  
 Wind zone - EH

Fig 5.1

From Table 8.9 Load is 190 x 70 (S&amp;B)

For both windows

Design tie down connections (outside 3604)

$$13.72 \text{ kN/m} \times \frac{2.2}{2} = 15.09 \text{ kN}$$

Use a Pryda rail-on plate 2/190 x 100 x 10mm thick

Approved

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GEO

12/11/2014



**GEO**  
CONSULTING ENGINEERS LTD

Project No: 14-047  
Project Description: 149 Karaka Street, Wanganui  
Date: 30/09/2014  
Unfactored Loads: Kitchen window

Sheet No: of  
Designed: HJP  
Reviewed:

Design Life: 50 Years NZS 1170.0, Table 3.1  
Importance level: 2 NZS 1170.0, Table 3.2

|   | Loads                               | Dead Units       | Live Load Units | Wind Units       | Snow Units | Earthquake Units | Reference |
|---|-------------------------------------|------------------|-----------------|------------------|------------|------------------|-----------|
| 1 | Roof                                | 3.2 kN/m         |                 |                  |            |                  |           |
| 2 | Ceiling - Gypsum plaster board (13) | 0.2 kN/m         |                 |                  |            |                  |           |
| 3 | Live load on roof                   |                  | 0.5 kN/m        |                  |            |                  |           |
| 4 | Wind load                           |                  |                 | 9.3 kN/m         |            |                  |           |
| 5 |                                     |                  |                 |                  |            |                  |           |
| 6 |                                     |                  |                 |                  |            |                  |           |
| 7 |                                     |                  |                 |                  |            |                  |           |
| 8 |                                     |                  |                 |                  |            |                  |           |
| 9 |                                     |                  |                 |                  |            |                  |           |
|   | <b>Total</b>                        | <b>3.47 kN/m</b> | <b>0.45</b>     | <b>9.28 kN/m</b> | <b>-</b>   | <b>-</b>         |           |

Short term factor = 0.7 NZS 1170.0, Table 4.1  
Long term factor = 0.4 NZS 1170.0, Table 4.1  
Combination factor = 0.4 NZS 1170.0, Table 4.1

#### Factored Loads

| Ultimate                                 | Units      | Serviceability | Units     |
|------------------------------------------|------------|----------------|-----------|
| 1.35G =                                  | 5.21 kN/m  | G              | 3.47 kN/m |
| 1.2G + 1.5Q =                            | 4.84 kN/m  | $\psi_s Q$     | 0.32 kN/m |
| 1.2G + 1.5 $\psi_L Q$ =                  | 4.44 kN/m  | $\psi_L Q$     | 0.18 kN/m |
| 1.2G + W <sub>u</sub> + 1.5 $\psi_c Q$ = | 13.72 kN/m | Ws             | 9.28 kN/m |
| 0.9G + W <sub>u</sub> =                  | 12.41 kN/m | Es             | - kN/m    |
| G + E <sub>u</sub> + $\psi_c Q$ =        | 3.65 kN/m  |                |           |
| 1.2G + S <sub>u</sub> + $\psi_c Q$ =     | 4.35 kN/m  |                |           |

Worse Case

14/06/18  
APPENDIX  
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12/11/2014

Wanganui District Council RESTRICTED BUILDING WORKS 23/12

## CALCULATION SHEET

Project No:

Sheet No:

24<sup>16</sup> of 30<sup>22</sup>

Project Description:

Computed:

/ /

Check:

/ /


**GEOCIVIL**  
 CONSULTING ENGINEERS LTD

Reference/Output

### 7. Bracing check

The house had 10mm thick plaster board in kitchen

#### Assumption

1. House had 10mm thick plaster board throughout house.

2. New wall will be load with Grib GSI-N

From bracing calculator there is adequate bracing in the modified house.

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## GIB EzyBrace® 2011 Software



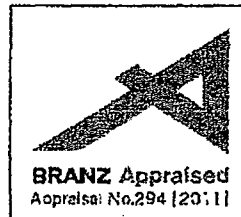
## Demand Calculation Sheet

single storey

V06/11

## Job Details

Name Beam and bracing design  
 Street and Number 149 Karaka Street, Wanganui  
 Lot and DP Number Lot 455 DP 3060  
 City/Town/District Wanganui  
 Designer Hamish Peters  
 Company Name Geocivil Consulting Engineers  
 Date 1/04/2009



Select Lining Option

10 or 13 mm GIB® Plasterboard

## Building Specification

| Number of storeys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | single      |                       |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------|--------------|--|-----------------------|--|--|-------------|-----------------|--------|--|-------------|-------|--|--------------------|-------------|--|----------------------|----|----|-----------------------------|-----|-----|-----------------------------|-----|--|---------------------------------|-----|--|-----------------|-----|-----|---------------------|-----|------|--------------------|-----|------|-------------------------|----|-----|
| Floor Loading                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2kPa        |                       |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Foundation Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | subfloor    |                       |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Cladding Weight (subfloor)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | medium      |                       |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| <table border="1"> <tr> <th colspan="2">Single Floor</th> <th>Complete Single Floor</th> </tr> <tr> <td></td> <td></td> <th>Column only</th> </tr> <tr> <td>Cladding Weight</td> <td>medium</td> <td></td> </tr> <tr> <td>Roof Weight</td> <td>light</td> <td></td> </tr> <tr> <td>Room in Roof Space</td> <td>up to 12.5%</td> <td></td> </tr> <tr> <td>Roof Pitch (degrees)</td> <td>15</td> <td>25</td> </tr> <tr> <td>Roof height above eaves (m)</td> <td>1.0</td> <td>1.0</td> </tr> <tr> <td>Building height to apex (m)</td> <td>3.8</td> <td></td> </tr> <tr> <td>Ground to lower-floor level (m)</td> <td>0.3</td> <td></td> </tr> <tr> <td>Stud Height (m)</td> <td>2.4</td> <td>3.0</td> </tr> <tr> <td>Building Length (m)</td> <td>9.1</td> <td>20.0</td> </tr> <tr> <td>Building Width (m)</td> <td>6.1</td> <td>10.0</td> </tr> <tr> <td>Building Plan Area (m2)</td> <td>91</td> <td>200</td> </tr> </table> |             |                       | Single Floor |  | Complete Single Floor |  |  | Column only | Cladding Weight | medium |  | Roof Weight | light |  | Room in Roof Space | up to 12.5% |  | Roof Pitch (degrees) | 15 | 25 | Roof height above eaves (m) | 1.0 | 1.0 | Building height to apex (m) | 3.8 |  | Ground to lower-floor level (m) | 0.3 |  | Stud Height (m) | 2.4 | 3.0 | Building Length (m) | 9.1 | 20.0 | Building Width (m) | 6.1 | 10.0 | Building Plan Area (m2) | 91 | 200 |
| Single Floor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |             | Complete Single Floor |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             | Column only           |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Cladding Weight                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | medium      |                       |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Roof Weight                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | light       |                       |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Room in Roof Space                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | up to 12.5% |                       |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Roof Pitch (degrees)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 15          | 25                    |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Roof height above eaves (m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1.0         | 1.0                   |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Building height to apex (m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3.8         |                       |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Ground to lower-floor level (m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.3         |                       |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Stud Height (m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2.4         | 3.0                   |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Building Length (m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 9.1         | 20.0                  |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Building Width (m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6.1         | 10.0                  |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |
| Building Plan Area (m2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 91          | 200                   |              |  |                       |  |  |             |                 |        |  |             |       |  |                    |             |  |                      |    |    |                             |     |     |                             |     |  |                                 |     |  |                 |     |     |                     |     |      |                    |     |      |                         |    |     |

## Building Location

|                                          |                     |                               |             |
|------------------------------------------|---------------------|-------------------------------|-------------|
| Wind Zone                                | Extra High          | Earthquake Zone               | Soil Type   |
| Select by Building Consent Authority Map |                     | 2                             | C (shallow) |
| or Preference                            | Extra High          | Annual exceedance probability |             |
| Wind Region                              | Preference selected | 1/500 (NZS3604:2011 default)  |             |
| Lee Zone                                 | Preference selected |                               |             |
| Ground Roughness                         | Preference selected |                               |             |
| Site Exposure                            | Preference selected |                               |             |
| Topographic Class                        | Preference selected |                               |             |

## Bracing Units required for Wind

| Demand W (BU) |          |              |
|---------------|----------|--------------|
|               | subfloor | Walls single |
| along         | 672      | 370          |
| across        | 915      | 463          |

## Bracing Units required for Earthquake

| Demand along / across E (BU) |        |
|------------------------------|--------|
|                              | Walls  |
| subfloor                     | single |
| 871                          | 761    |

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**Hamish Peters**



## V06/11

|                                        |   |      |    |      |          |         |
|----------------------------------------|---|------|----|------|----------|---------|
|                                        |   |      |    |      | Wind     | Earthq. |
| Totals Achieved                        | W | 301% | EQ | 130% | 1115     | 992     |
| Timber Floor, design limit of 120 BU/m |   |      |    |      | accepted | OK      |
| Totals Required (from Demand)          |   |      |    |      | 370      | 761     |

12/11/2014

**Hamish Peters**



## V06/11

## APPENDIX

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Consent No.

**12/11/2014**

**Hamish Peters**



## V06/11

|                                        |   |      |    |      |      |         |
|----------------------------------------|---|------|----|------|------|---------|
|                                        |   |      |    |      | Wind | Earthq. |
| Totals Achieved                        | W | 264% | EQ | 114% | 976  | 871     |
| Timber Floor, design limit of 120 BU/m |   |      |    |      | OK   | OK      |
| accepted                               |   |      |    |      |      |         |
| Totals Required (from Demand)          |   |      |    |      | 370  | 761     |

**APPENDIX**

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**Consent No.**

**12/11/2014**

**Hamish Peters**



## V08/11

APPROX.

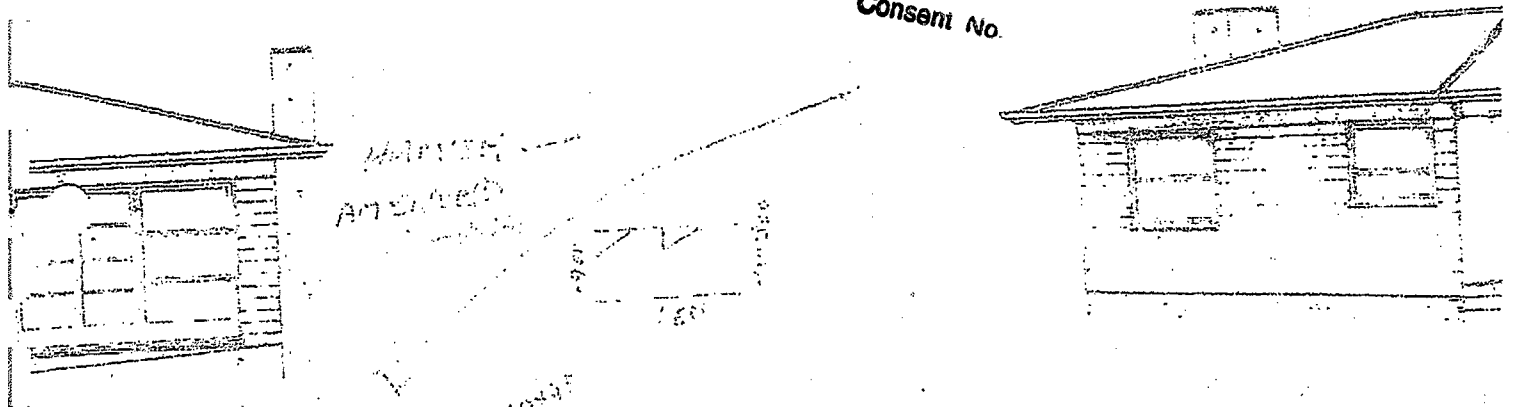
**Consent No.**

**12/11/2014**

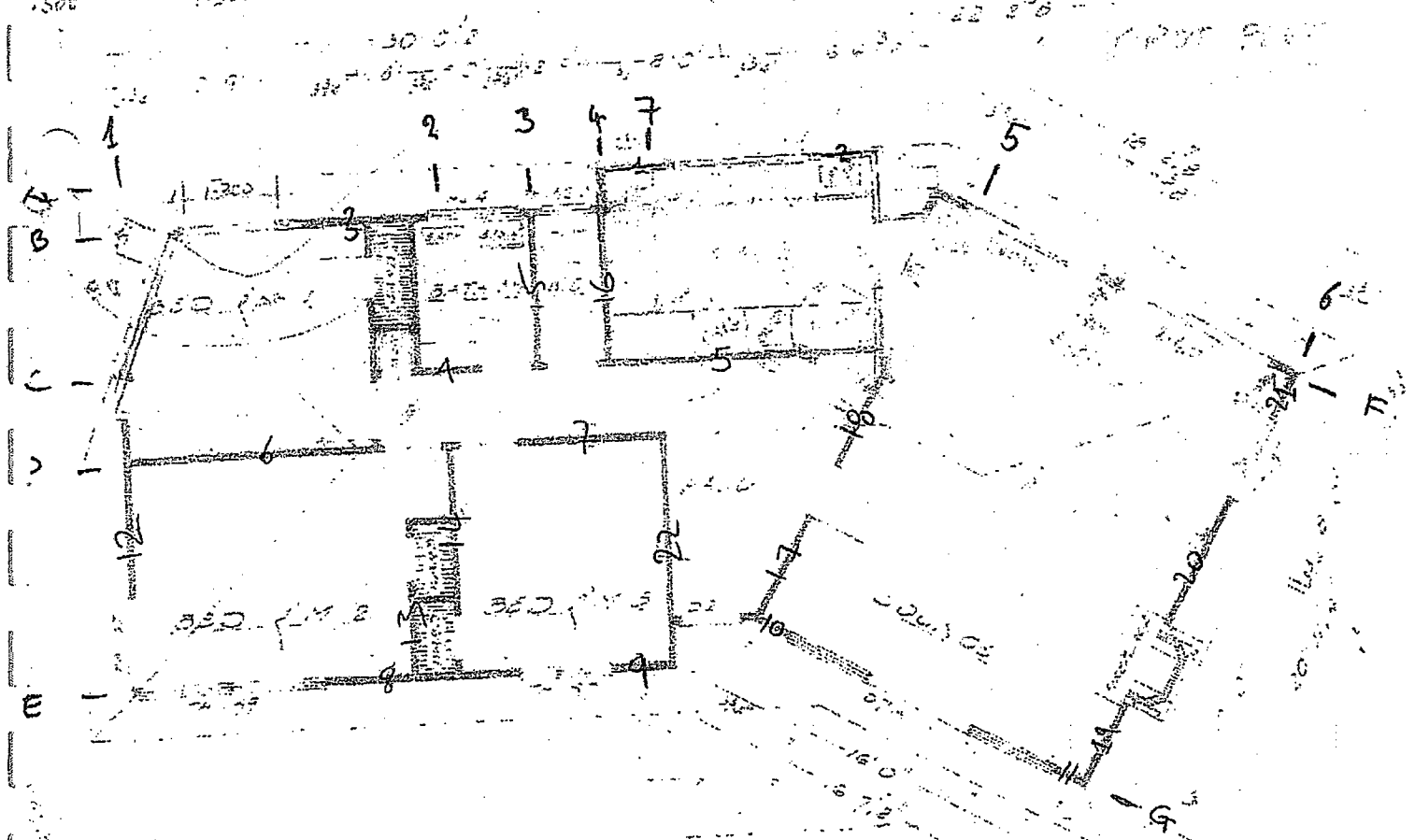
MEMS BY BEAZLEYS OF TAURANGA

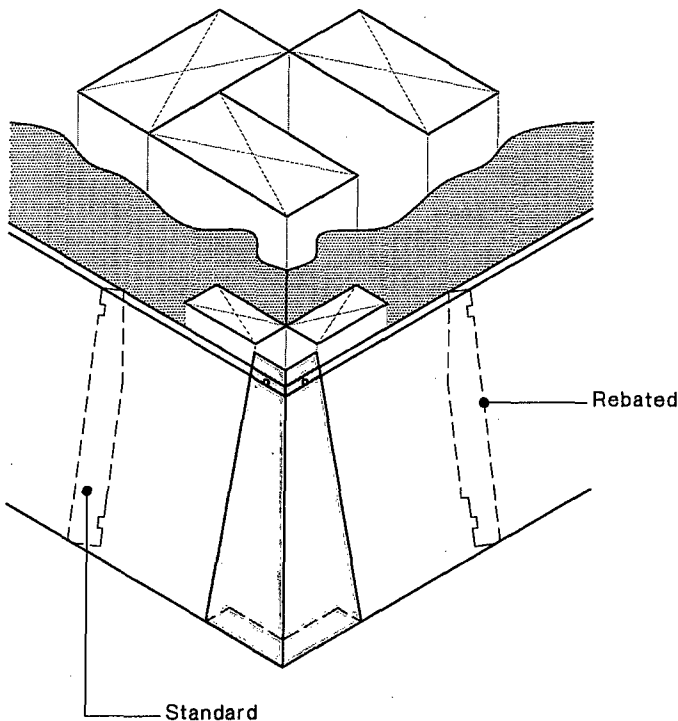
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14/06/18

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Bracing plan





Appo.  
14/06/14

Consent No

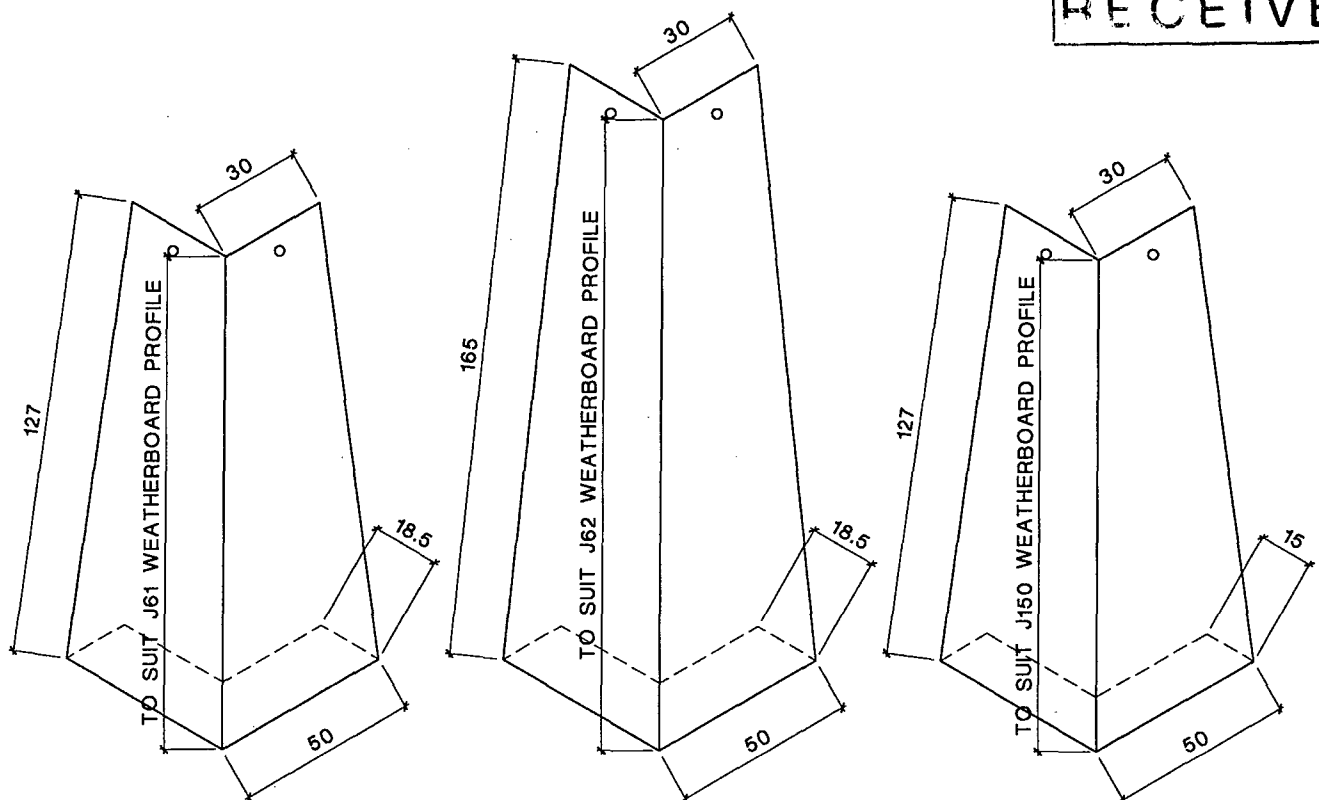
RESTRICTED  
Building Work

11 DEC 2014

Wanganui District Council

11 DEC 2014

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JSC Timber

Corner Soakers Detail - Copper or Stainless Steel

## Weatherboards

Corner Soakers for Bevel Back Weatherboards

102 Main Road, Kumeu, Auckland, New Zealand  
PO Box 285 Kumeu, Auckland 0841, New Zealand

# JSC Timber

T.09 412-7722  
F.09 412-7723  
www.jsctimber.co.nz

Scale: 1:2

Date: 02/2009

Dwg:

JB CS

# JSC BevelClad

## Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All products to be pre-coated & cut edges to be sealed as per Branz Bulletin 411.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- Provide PVC tape bond break between H3.2 battens and any flashing.
- Ensure bevelback weathergrooves to be in line with 32mm lap. Specific rebated bevelback profiles to be fitted with a minimum gap of 2mm at the overlap between boards.

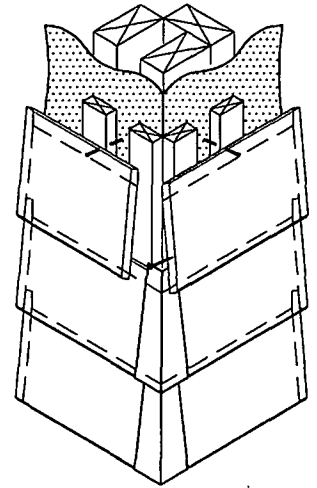
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Wanganui District Council

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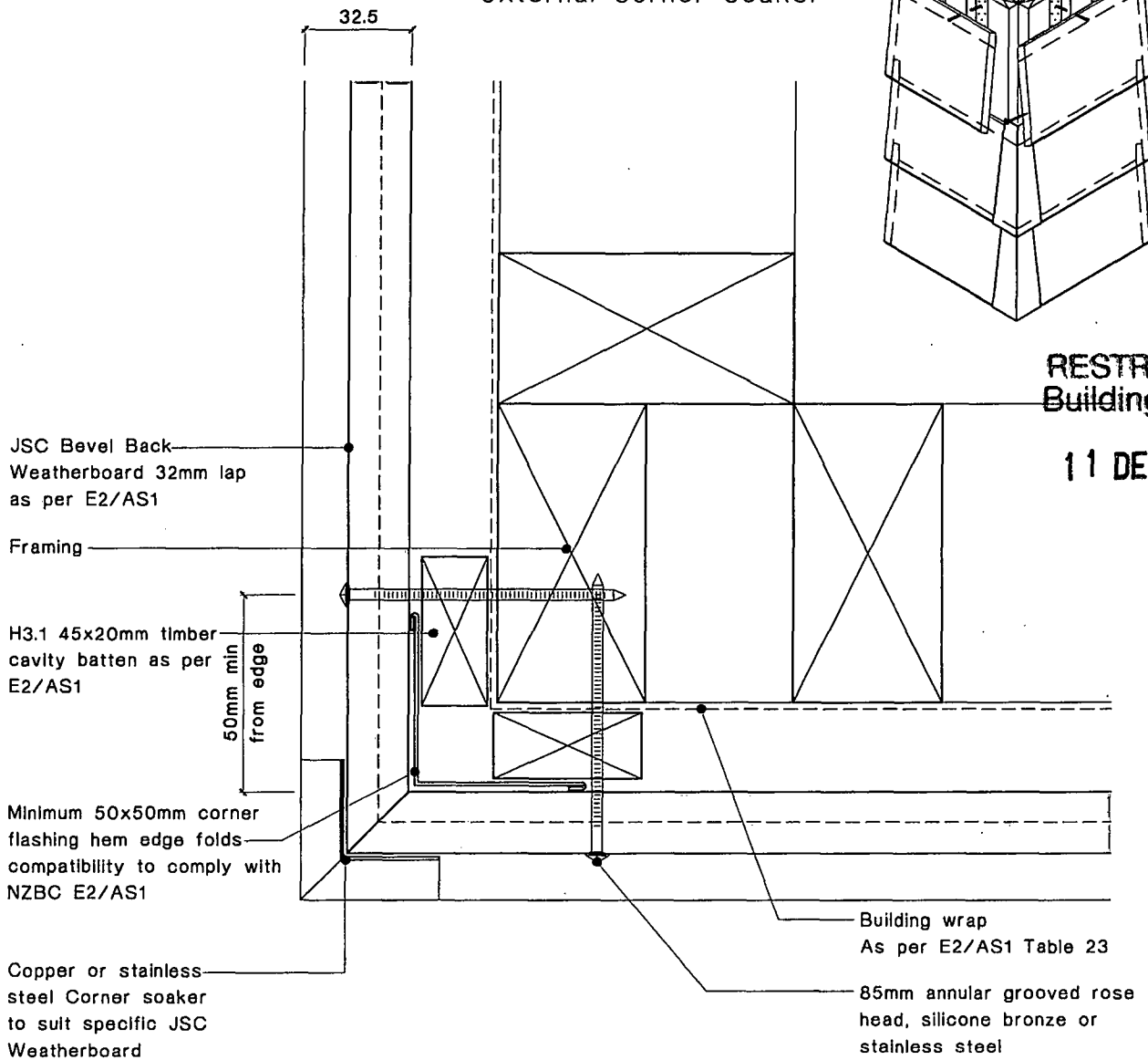
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Isometric pictorial view  
external corner soaker



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Building Work

11 DEC 2014



## External corner detail

Bevel Back Weatherboards Architectural Profile

# JSC Timber

102 Main Road, Kumeu, Auckland, New Zealand  
PO Box 285 Kumeu, Auckland 0841, New Zealand  
Note: Details may be subject to change without notification

T.09 412-7722  
F.09 412-7723  
www.jsctimber.co.nz

Scale: 1:2

Date: 06/08/09

Dwg:

JB-C-06



**Notes:**

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All products to be pre-coated & cut edges to be sealed as per Branz Bulletin 411.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
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# JSC BevelClad

APPD

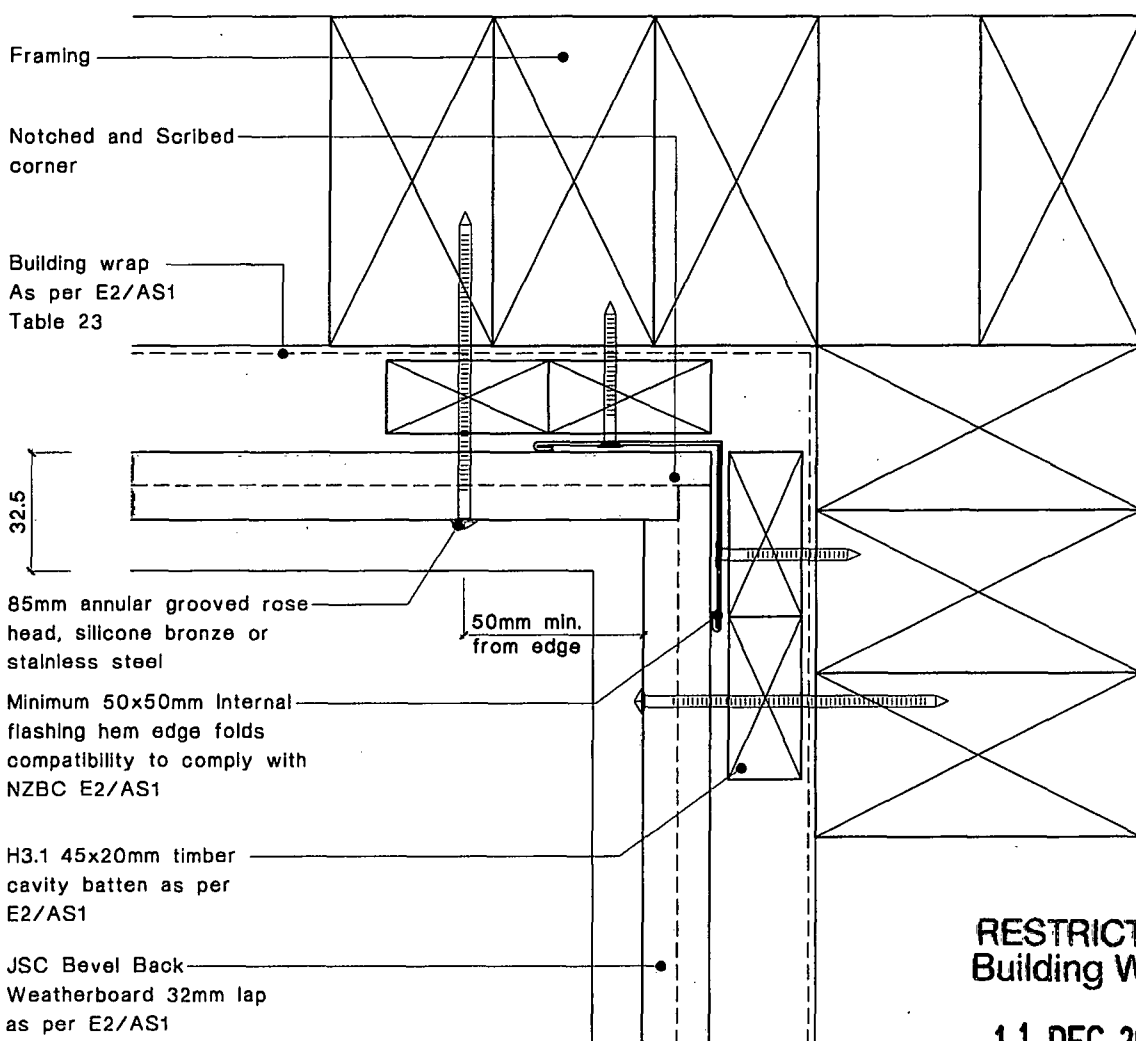
14 / 06

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## Internal corner detail

Bevel Back Weatherboards Architectural Profile

# JSC Timber

102 Main Road, Kumeu, Auckland, New Zealand  
PO Box 285 Kumeu, Auckland 0841, New Zealand  
Note: Details may be subject to change without notification

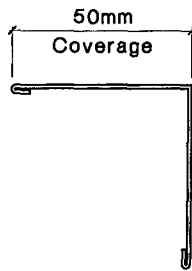
T.09 412-7722  
F.09 412-7723  
[www.jsctimber.co.nz](http://www.jsctimber.co.nz)

Scale: 1:2

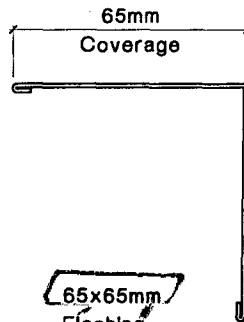
Date: 06/08/09

Dwg:

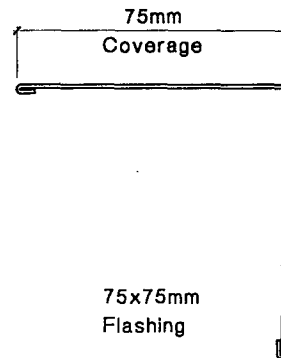
JB-C-01



50x50mm  
Flashing

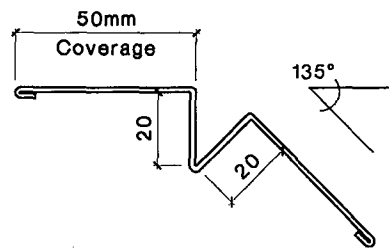
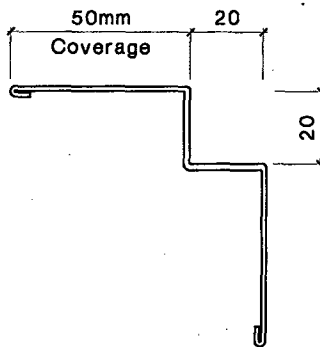


65x65mm  
Flashing



75x75mm  
Flashing

Selected corner flashing hem edge folds compatibility to comply with NZBC E2/AS1



Internal corner 'W' mould extrusion  
50x20x20x50mm min hem edge folds  
compatibility to comply with NZBC E2/AS1

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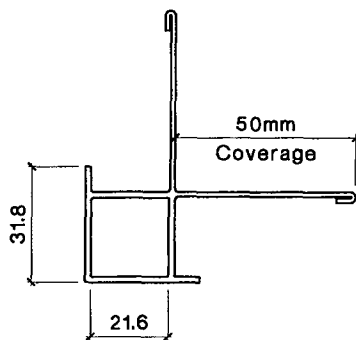
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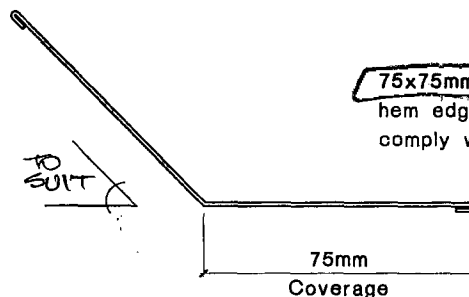
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Selected external corner  
extrusion hem edge folds  
compatibility to comply with  
NZBC E2/AS1



75x75mm selected corner flashing  
hem edge folds compatibility to  
comply with NZBC E2/AS1

## Flashings

# JSC Timber

102 Main Road, Kumeu, Auckland, New Zealand  
PO Box 285 Kumeu, Auckland 0841, New Zealand  
Note: Details may be subject to change without notification

T.09 412-7722  
F.09 412-7723  
[www.jsctimber.co.nz](http://www.jsctimber.co.nz)

Scale: 1:2  
Date: 25/03/10  
Dwg:

**Table 2: Acceptable Slip Resistance for Walking Surfaces**  
Paragraphs 2.1.2, 3.1.4 and 4.1.4 c)

| Walking surface <sup>(12)</sup>                                          | Level surface <sup>(1)</sup>         |                                      | Sloping surface <sup>(2)</sup><br>or stairs <sup>(3)</sup> |                                      | Typical values<br>for coefficient of<br>friction (wet) |
|--------------------------------------------------------------------------|--------------------------------------|--------------------------------------|------------------------------------------------------------|--------------------------------------|--------------------------------------------------------|
|                                                                          | Acceptable<br>dry slip<br>resistance | Acceptable<br>wet slip<br>resistance | Acceptable<br>dry slip<br>resistance                       | Acceptable<br>wet slip<br>resistance |                                                        |
| <b>Timber</b>                                                            |                                      |                                      |                                                            |                                      |                                                        |
| Uncoated smooth                                                          | Yes                                  | No                                   | No                                                         | No                                   | 0.20 – 0.35                                            |
| Uncoated profiled <sup>(4)</sup>                                         |                                      |                                      |                                                            |                                      |                                                        |
| – across profile                                                         | Yes                                  | Yes                                  | Yes                                                        | Test                                 | 0.35 – 0.60                                            |
| – along profile                                                          | Yes                                  | No                                   | No                                                         | No                                   | 0.15 – 0.20                                            |
| Coated (paint, polyurethane, etc)                                        | Yes                                  | No                                   | No                                                         | No                                   | 0.10 – 0.30                                            |
| Coated and sand/grit<br>impregnated <sup>(5)</sup>                       | Yes                                  | Yes                                  | Yes                                                        | Yes                                  | 0.55 – 0.90                                            |
| <b>Portland cement concrete</b>                                          |                                      |                                      |                                                            |                                      |                                                        |
| Smooth trowelled finish<br>(Class U3) <sup>(6)</sup>                     | Yes                                  | No                                   | Yes                                                        | No                                   | 0.30 – 0.45                                            |
| Broomed (Class 5 or 6) <sup>(6)</sup><br>or wood float finish (Class U2) | Yes                                  | Yes                                  | Yes                                                        | Yes                                  | 0.65 – 0.85                                            |
| Coated (paint, polyurethane, etc)                                        | Yes                                  | No                                   | No                                                         | No                                   | 0.20 – 0.30                                            |
| Coated and sand/grit<br>impregnated <sup>(5)</sup>                       | Yes                                  | Yes                                  | Yes                                                        | Yes                                  | 0.55 – 0.90                                            |
| Exposed aggregate finish                                                 |                                      |                                      |                                                            |                                      |                                                        |
| – rounded aggregate                                                      | Yes                                  | Test                                 | Yes                                                        | Test                                 | 0.40 – 0.70                                            |
| – crushed aggregate                                                      | Yes                                  | Yes                                  | Yes                                                        | Yes                                  | 0.60 – 0.90                                            |
| <b>Asphaltic concrete</b>                                                | Yes                                  | Yes                                  | Yes                                                        | Yes                                  | 0.60 – 1.00                                            |
| <b>Marble and granite</b>                                                |                                      |                                      |                                                            |                                      |                                                        |
| Polished surface <sup>(7)</sup>                                          | Yes                                  | No                                   | No                                                         | No                                   | 0.10 – 0.20                                            |
| Honed finish <sup>(8)</sup>                                              | Yes                                  | Test                                 | Yes                                                        | Test                                 | 0.10 – 0.60                                            |
| Flamed finish                                                            | Yes                                  | Yes                                  | Yes                                                        | Yes                                  | 0.50 – 0.80                                            |
| Fully sandblasted surface <sup>(9)</sup>                                 | Yes                                  | Test                                 | Yes                                                        | Test                                 | 0.30 – 0.50                                            |
| Patterned sandblasted surface                                            | Yes                                  | Test <sup>(9)</sup>                  | Yes                                                        | Test <sup>(9)</sup>                  | 0.15 – 0.45                                            |
| <b>Split slate</b>                                                       | Yes                                  | Test                                 | Yes                                                        | Test                                 | 0.40 – 0.55                                            |
| <b>Terrazzo</b>                                                          |                                      |                                      |                                                            |                                      |                                                        |
| Polished                                                                 | Yes                                  | Test                                 | No                                                         | No                                   | 0.15 – 0.45                                            |
| Honed                                                                    | Yes                                  | Test                                 | Yes                                                        | Test                                 | 0.20 – 0.60                                            |
| <b>Sandstone</b>                                                         | Yes                                  | Yes                                  | Yes                                                        | Test                                 | 0.55 – 0.65                                            |
| <b>Ceramic tiles</b>                                                     |                                      |                                      |                                                            |                                      |                                                        |
| Unglazed                                                                 |                                      |                                      |                                                            |                                      |                                                        |
| – smooth finish                                                          | Yes                                  | Test                                 | Yes                                                        | Test                                 | 0.10 – 0.60                                            |
| – profiled                                                               | Yes                                  | Test <sup>(9)</sup>                  | Yes                                                        | Test <sup>(9)</sup>                  | 0.10 – 0.65                                            |
| – grit finish                                                            | Yes                                  | Test <sup>(10)</sup>                 | Yes                                                        | Test <sup>(10)</sup>                 | 0.35 – 0.65                                            |
| Glazed                                                                   |                                      |                                      |                                                            |                                      |                                                        |
| – smooth or polished finish <sup>(7)</sup>                               | Yes                                  | No                                   | No                                                         | No                                   | 0.10 – 0.20                                            |
| – profiled                                                               | Yes                                  | Test <sup>(9)</sup>                  | Yes                                                        | Test <sup>(9)</sup>                  | 0.10 – 0.45                                            |
| – grit finish                                                            | Yes                                  | Test <sup>(10)</sup>                 | Yes                                                        | Test <sup>(10)</sup>                 | 0.45 – 0.60                                            |
| <b>Clay pavers</b>                                                       |                                      |                                      |                                                            |                                      |                                                        |
| Wire cut                                                                 | Yes                                  | Yes                                  | Yes                                                        | Test                                 | 0.50 – 0.70                                            |
| Smooth texture                                                           | Yes                                  | Test                                 | Yes                                                        | Test                                 | 0.30 – 0.65                                            |

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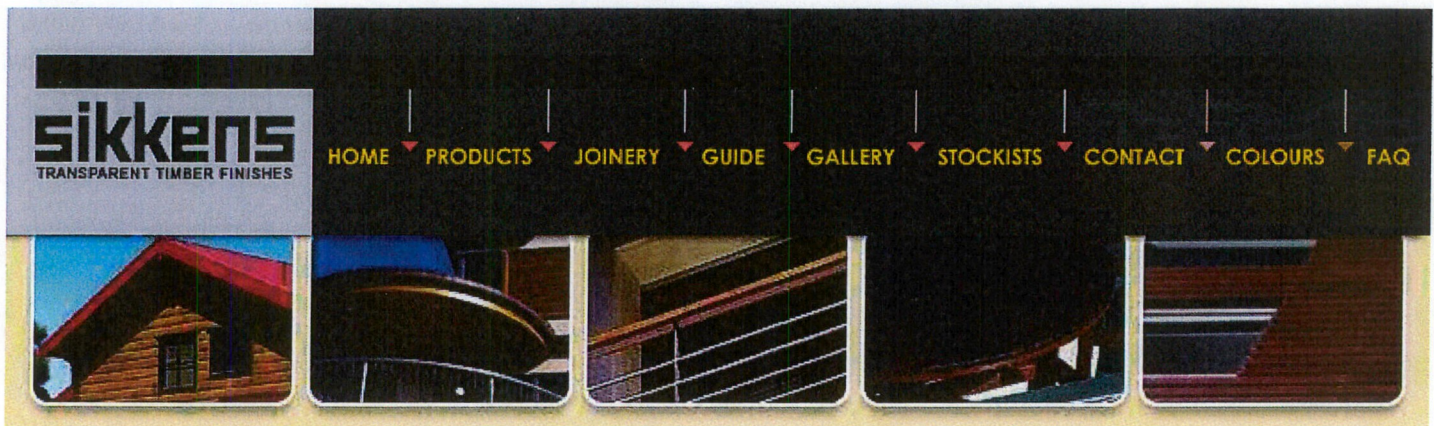
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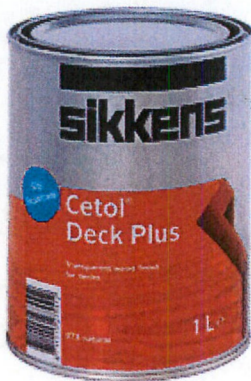
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## products



### SIKKENS CETOL DECK PLUS Data Sheet | MSDS

Slip resistant, translucent satin topcoat for use on timber decks and stairs. Based on a special oil-alkyd resin combination and selected UV-absorbing pigments. Available in (078) Natural.

Slip resistant. Textured satin finish. Highly transparent; ensures optimum visibility of the wood grain. Microporous; allows the wood to breathe. Weather resistant. Water repellent. Very easy application.

Use: As a topcoat over Cetol HLSe to enhance the natural beauty of timber and to provide slip resistance to timber decks and stairs.

Application: Stir well. Do not thin. Apply to clean, dry, sound substrate. Brush application recommended. (click here for application guide)

Available Sizes: 1L, 5L and 20L

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| Number of coats | Practical coverage<br>in m2/litre | Min. film thickness<br>required per coat                                                                                      | Thinning %                                           | Application<br>Brush                 | Drying time                                                                        |
|-----------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------|
| 2-3 coats       | 8-10m2 dressed timber.            | Wet<br>80 microns<br><br>Dry<br>40 microns<br>(thickness is difficult to<br>measure due to suspended<br>particles in coating) | Do not thin<br>Thinning reduces<br>the UV protection | Brush clean up<br>Mineral turpentine | 24hrs at 20° / 65% relative<br>humidity (coating must be<br>dry before re-coating) |

| Common Exterior Systems   | 1st coat                                   | 2nd coat                                         | 3rd coat                                         | 4th coat                          |
|---------------------------|--------------------------------------------|--------------------------------------------------|--------------------------------------------------|-----------------------------------|
| Joinery                   | Cetol HLSe                                 | Cetol Filter 7 plus                              | Cetol Filter 7 plus                              |                                   |
| Front Doors/ Garage Doors | or Cetol HLSe<br>Cetol Clearcoat LB plus** | Cetol Filter 7 plus<br>Cetol Clearcoat HB plus** | Cetol Filter 7 plus<br>Cetol Clearcoat HB plus** | Recommended for<br>exposed areas  |
| Cladding                  | or Cetol HLSe                              | Cetol HLSe                                       | Cetol HLSe                                       |                                   |
| Soffits                   | or Cetol HLSe<br>Cetol Clearcoat LB plus   | Cetol Filter 7 plus<br>Cetol Clearcoat HB plus   | Cetol Filter 7 plus<br>Cetol Clearcoat HB plus   | -                                 |
| Louvres                   | Cetol HLSe                                 | Cetol Filter 7 plus                              | Cetol Filter 7 plus                              | Cetol Filter 7 plus               |
| Handrails                 | or Cetol HLSe<br>Cetol HLSe                | Cetol HLSe<br>Cetol Filter 7 plus                | Cetol HLSe<br>Cetol Filter 7 plus                | Cetol HLSe<br>Cetol Filter 7 plus |
| Pergolas                  | or Cetol HLSe<br>Cetol HLSe                | Cetol HLSe<br>Cetol Filter 7 plus                | Cetol HLSe<br>Cetol Filter 7 plus                | Cetol HLSe<br>Cetol Filter 7 plus |
| Decking / Door Sills      | or Cetol HLSe<br>Cetol HLSe<br>Cetol HLSe  | Cetol HLSe<br>Cetol DECK<br>Cetol DECK PLUS      | Cetol HLSe<br>Cetol DECK<br>Cetol DECK PLUS      | -                                 |
| Outdoor Furniture         | or Cetol HLSe                              | Cetol HLSe                                       | Cetol HLSe                                       | -                                 |
| Interior Timber           | or Cetol TSI<br>Cetol HLSe                 | Cetol TSI<br>Cetol TSI                           | Cetol TSI<br>Cetol TSI                           |                                   |

\* Use Filter 7 system for a higher quality look but coating must be correctly maintained.

\* Use HLSe system on rough sawn timber or when easier maintenance is required.

\*\* Cetol Clearcoat should only be used on south and east facing protected aspects.

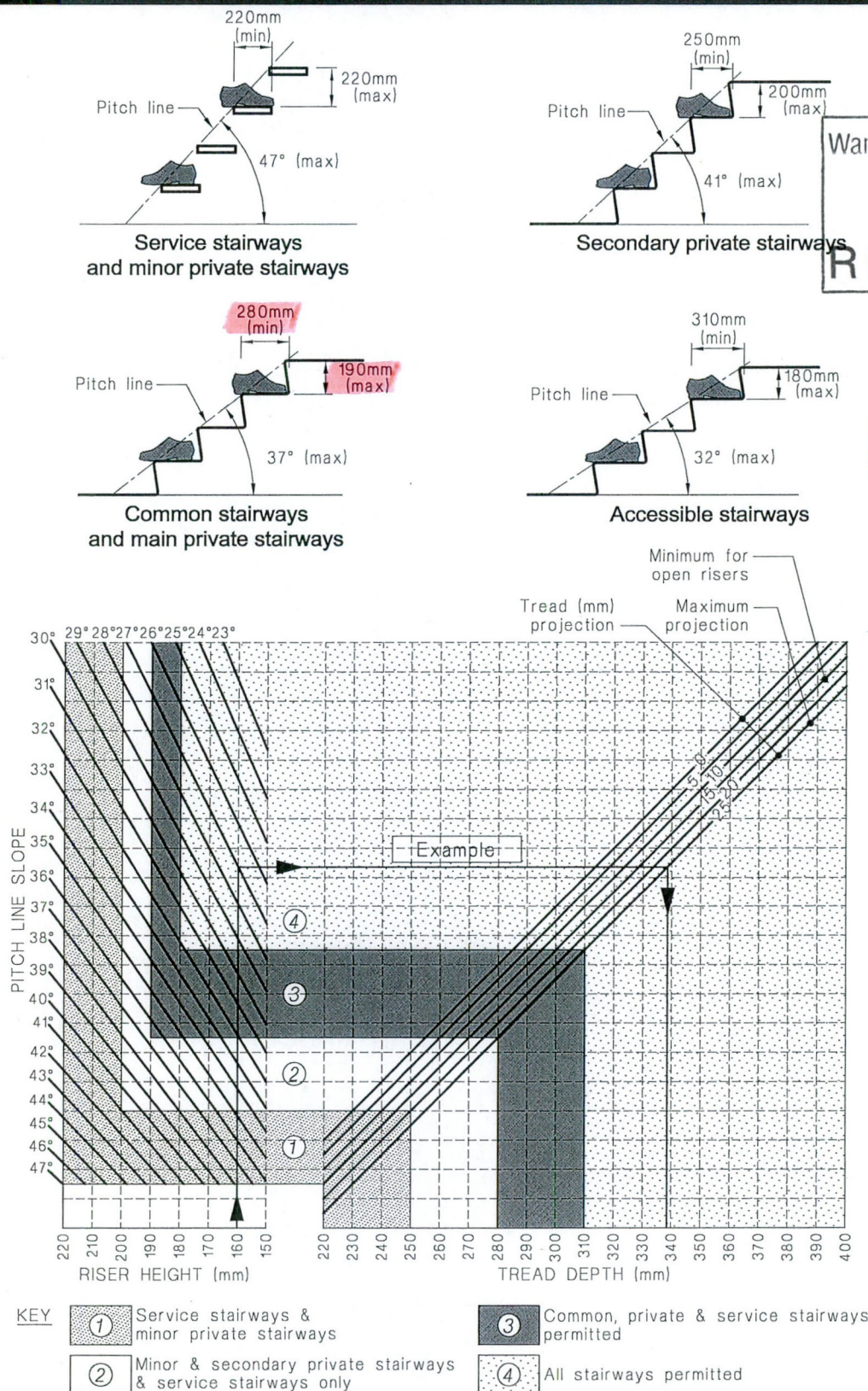
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**Figure 11: Pitch, Risers and Treads for Stairs**  
Paragraphs 4.1.1, 4.1.4, 4.4.2, 4.5.1 a) and Figure 17



#### Example of accessible stairway

For a riser height of 160mm, pitch line slope of 27° and tread projection of 25mm, the design tread depth is 340mm.

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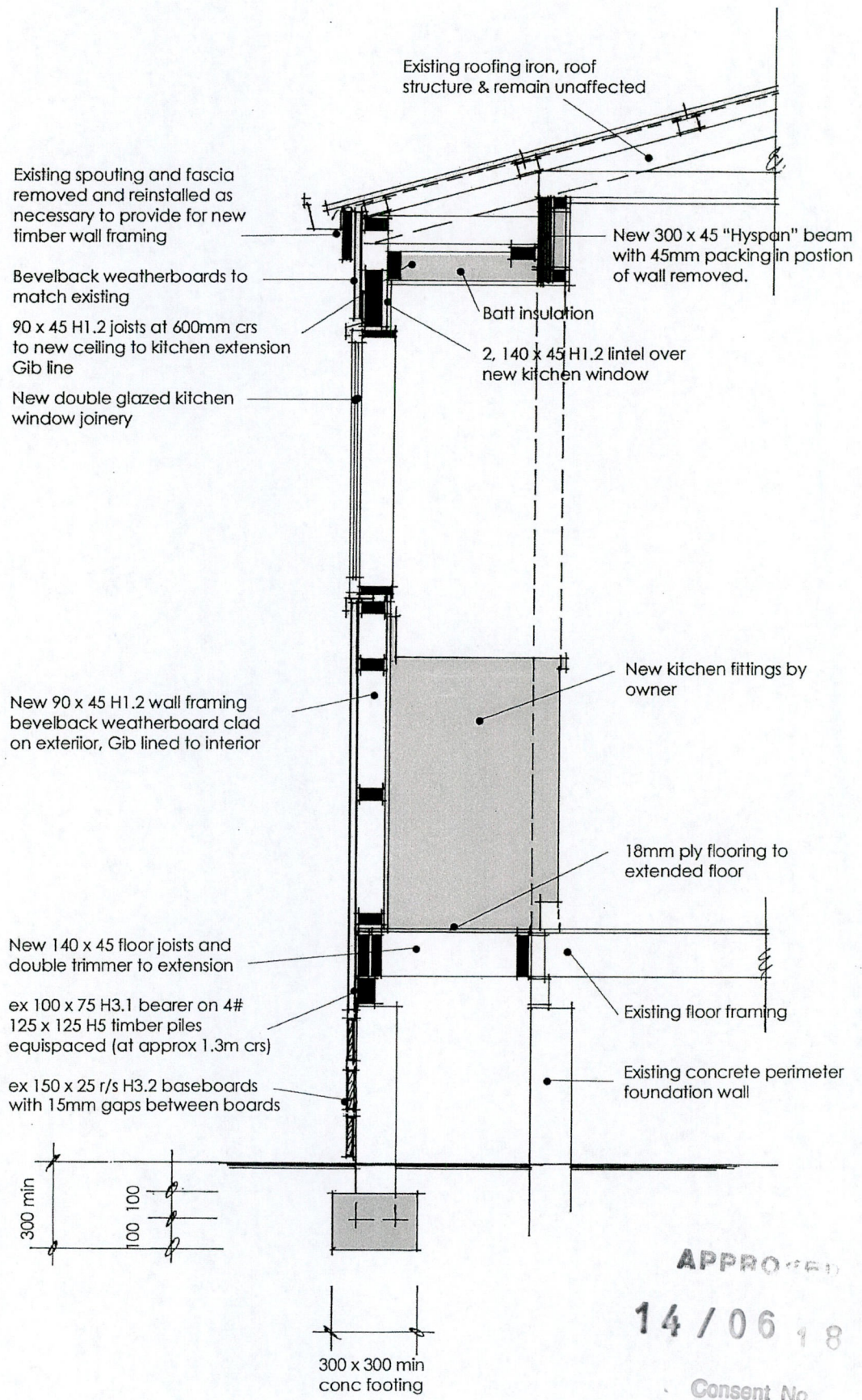
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**Cross Section Through Kitchen Extension**  
Scale 1: 20



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200mm wide barge flashing beyond

200mm wide cover flashing under roofing above

140 x 45 H3.2 barge trimmer

125 x 125 H5 post

90 x 45 H3.2 ledgers each side with purlin between at mid-span

90 x 45 H3.2 fascia trimmer

125 x 125 H5 post

Detail Y - Y  
Scale 1:10

APPENDIX

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.55mm "Coloursteel MAXX" cover flashing under "Coloursteel" roofing iron and min. 200mm over lower roof. Fold to suit roof angle

"Coloursteel MAXX" trapezoidal roofing iron at 3 deg. pitch

90 x 45 purlin

12mm s.s. bolts to 140 x 45 H3.2 trimmer and 125 x 125 H5 posts

.55mm cover flashing under garage cladding and min. 200mm over entry canopy roofing

90 x 45 H3.2 ledger

Timber wall framing and cladding to new garage

Detail X - X  
Scale 1:10

Additional Covered Way Details for

Alterations to Residence

149 Karaka Street, Wanganui

The Building Design Company Ltd  
PO Box 227, Wanganui, Ph: 027 434 6788

\* STOP END COVER FLASHING AS FIGURE 8B (E2/AS1) ATTACHED  
WHR

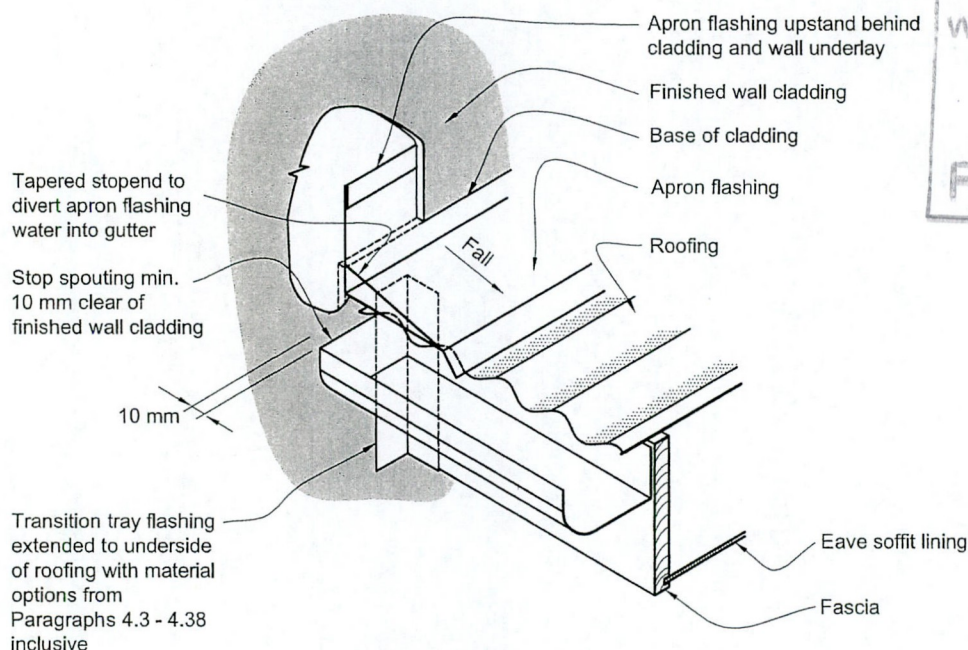
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**Figure 8B: Gutter/wall junction**  
Paragraphs 5.1 and 5.2

- NOTE: (1) The upstand at the lower edge of the *apron flashing* may be preformed to a larger size and then trimmed on site to suit.  
(2) The transition *flashing* bridges gap at the end of the fascia to protect the soffit framing.  
(3) *Wall underlay* omitted for clarity.



Amend 5  
Aug 2011

## 5.2 Gutters, barges and fascias

Amend 5  
Aug 2011

Where *eaves gutters/spoutings, barges or fascias* terminate against *claddings*, these shall be installed after the wall *cladding*, and after any protective finishes have been applied.

Amend 5  
Aug 2011

*Eaves gutters/spouting, barges and fascias* shall terminate so as to leave a gap of 10 mm from the finished *wall cladding* as shown in Figure 8B.

### COMMENT:

Amend 5  
Aug 2011

It is important to ensure the *wall cladding* behind *eaves gutters/spoutings, barges and fascias* is protected by the surface coating to prevent moisture penetration through the unsealed *cladding*.

## 5.3 Soffits

*Eaves* shall be enclosed by installing soffit *linings* direct fixed to *framing* and comprising minimum 4.5 mm fibre cement sheet, or 7 mm H3 plywood, with joints, fixings and finishes as shown in Paragraphs 9.7 and 9.8. Soffit *linings* shall be finished to fascias, barges and *wall claddings* as outlined in Figure 8A generally, or Figure 114 for *flush finished* fibre cement. *Wall underlays* shall not be required behind soffit *linings*.

Amend 5  
Aug 2011

"CONTROLLED DOCUMENT"  
"If not in RED"  
"Check Status"

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7/4/2015 - BCON 14/0618 - 149 KARAKA ST PHILINE *etc*







7/4/2015 - Blon 14/0618 - 149 Karaka SV - online  
Dr.