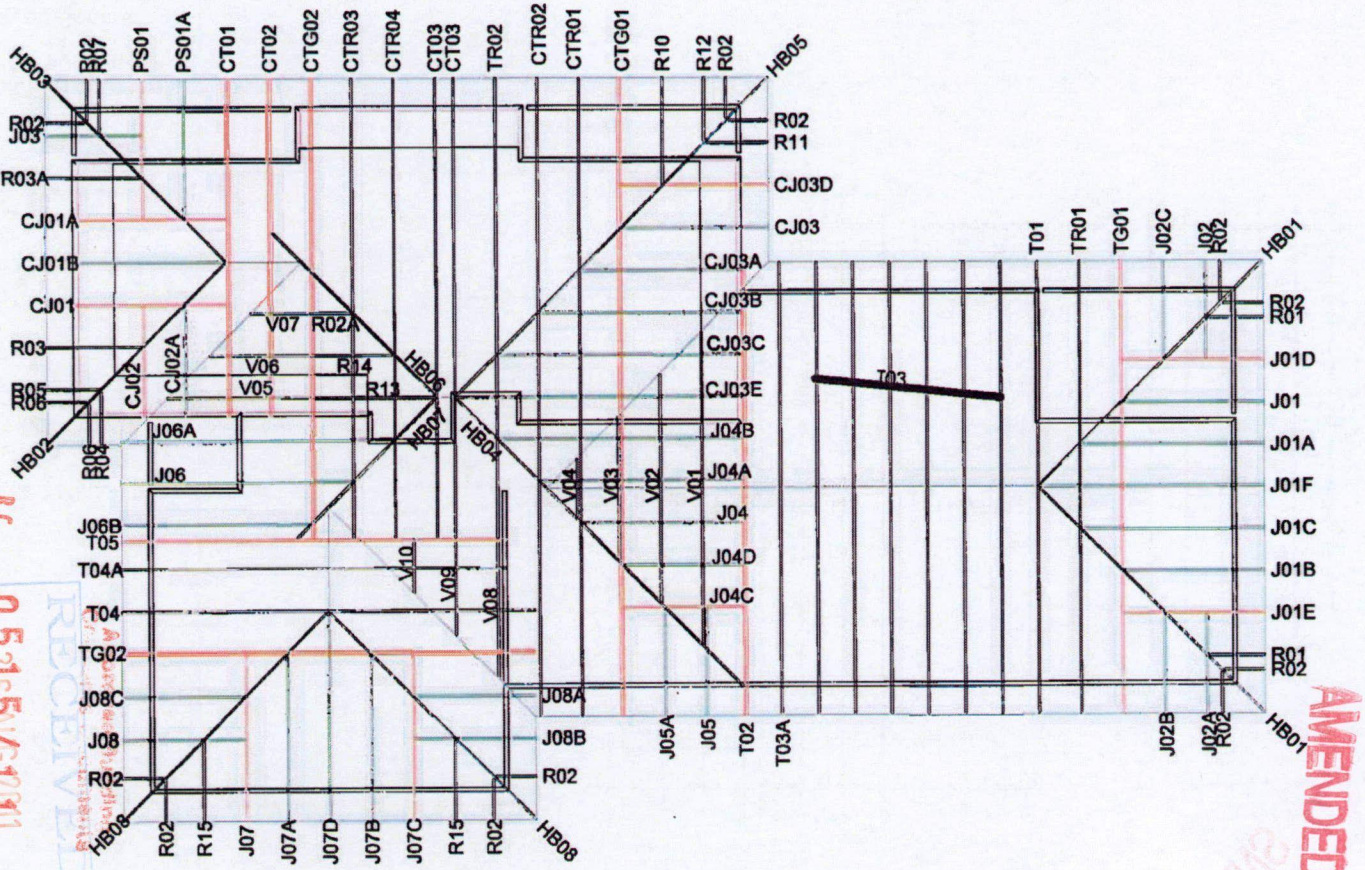


HELMACK BUILDING CENTRE
50 South Street, ASHBURTON
Ph: 03 307 6580 Fax: 03 307 6349
Email: helmack.itm.manu@xtra.co.nz

Site Address :
Duff Residence
Lot 17 Barkers Rd
Methven

Sheet Title :
For Building Consent
Buildable Truss Layout

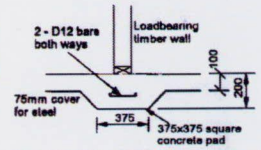
Date : 23 May,2011 | Drawn : Vern Harkess
Scale : 1: 100 | System : MiTek 20/20

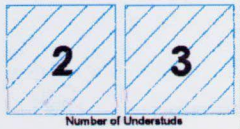
Job Details:

Roof Pitch	:25.00deg
Roof Material	: Galv Iron .5mm
Ceiling Material	: Standard
Wind Zone	: Very High
Roof Snow Load	:0.980kPa
Truss Centres	: 900mm
Roof Live Load	: 0.250kPa
Floor Live Load	:
Wind Speed	: 50m/s
Overhang	: 600mm

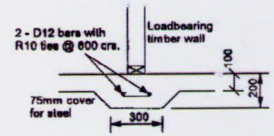
PrimeCad v4.6.4.28
MiTek
Job Title : BS7531
Sheet : 1
Revision Number :

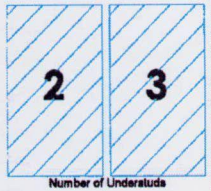
Slab Thickening Details



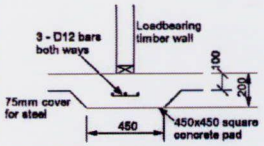


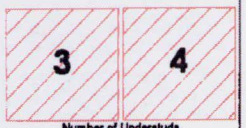
TYPE FP1 - 375x375mm Pad



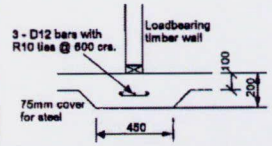


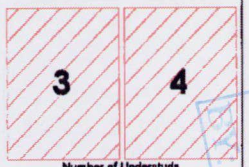
TYPE FS1 - 300mm Strip footing





TYPE FP2 - 450x450mm Pad

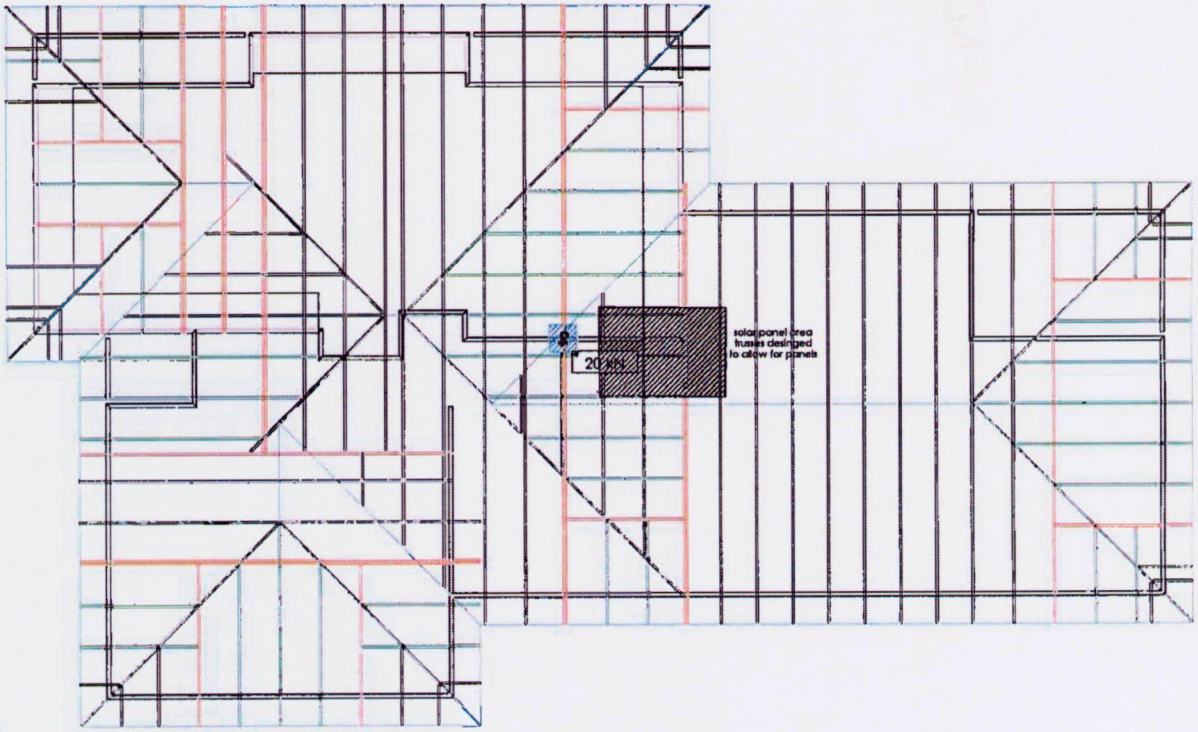




TYPE FS2 - 450mm Strip footing

NOTES:

The numbers found within the hatched area are the number of studs required below each truss.
Refer to:
GANG-NAIL Internal Load Bearing on Concrete Floor Slabs brochure 12/2006



HELMACK BUILDING CENTRE
50 South Street, ASHBURTON
Ph: 03 307 6580 Fax: 03 307 6349
Email: helmack.itm.manu@xtra.cp.nz

Site Address :
Duff Residence
Lot 17 Barkers Rd
Methven

Sheet Title :
For Building Consent
Slab Thickening

Date : 23 May,2011 | Drawn : Vern Harkess
Scale : 1: 100 | System : MiTek 20/20

Job Details:

Roof Pitch	: 25.00deg	Truss Centres	: 900mm
Roof Material	: Galv Iron .5mm	Roof Live Load	: 0.250kPa
Ceiling Material	: Standard	Floor Live Load	:
Wind Zone	: Very High	Wind Speed	: 50m/s
Roof Snow Load	: 0.980kPa	Overhang	: 600mm

PrimeCad v4.6.4.28
MiTek
Job Title : BS7531
Sheet : 2
Revision Number :

Lintel Fixing Details

TYPE E
1.4kN

TYPE F
[illegible]kN

TYPE G
7.5kN

TYPE H
13.5kN

NOTES:

Refer to:
Lintel Fixing Schedule 04/2008
pages 28 & 29, Structrual Fixings
On-site Guide for Building Code
Compliance 2009 Edition

(Alternative to NZS 3604:1999
Table 8.14 & Figure 8.12)

AMENDED PLANS

29 AUG 2010

RECEIVED
26 AUG 2011
BY:

Approved Building Consents [illegible]

BC 0515/11

Ashburton District Council

HELMACK BUILDING CENTRE
50 South Street, ASHBURTON
Ph: 03 307 6580 Fax: 03 307 6349
Email: helmack.itm.manu@xtra.cp.nz

Site Address :
Duff Residence
Lot 17 Barkers Rd
Methven

Sheet Title :
For Building Consent
Lintel Fixing

Date : 23 May,2011 | Drawn : Vern Herkese
Scale : 1: 100 | System : MiTek 20/20

Job Details:
Roof Pitch : 25.00deg
Roof Material : Galv Iron .5mm
Ceiling Material : Standard
Wind Zone : Very High
Roof Snow Load : 0.980kPa

Truss Centres : 900mm
Roof Live Load : 0.250kPa
Floor Live Load :
Wind Speed : 50m/s
Overhang : 600mm

PrimeCad v4.6.4.28

MiTek™

Job Title : BS7531
Sheet : 3
Revision Number :

Stud to top plate fixing details

Type A is minimum fixing required unless specified otherwise

FIXING TYPE A
0.7kN

2/90x3.33 plain steel wire nails driven vertically into stud.

FIXING TYPE B
1.7kN

2/90x3.33 plain steel wire nails driven vertically into stud, plus single LUMBERLOK Tylok 2T4 plate.

FIXING TYPE C
2.7kN

2/90x3.33 plain steel wire nails driven vertically into stud, plus pair LUMBERLOK Tylok 2T4 plates.

FIXING TYPE D
6.0kN

2/90x3.33 plain steel wire nails driven vertically into stud, plus LUMBERLOK 6kN Stud Anchor.

OR

2/90x3.33 plain steel wire nails driven vertically into stud, plus LUMBERLOK Tylok Stud Tie

OR

LUMBERLOK Sheet Brace Strap 400 with 6/30x3.15 nails each stud face

OR

LUMBERLOK Stud Strap

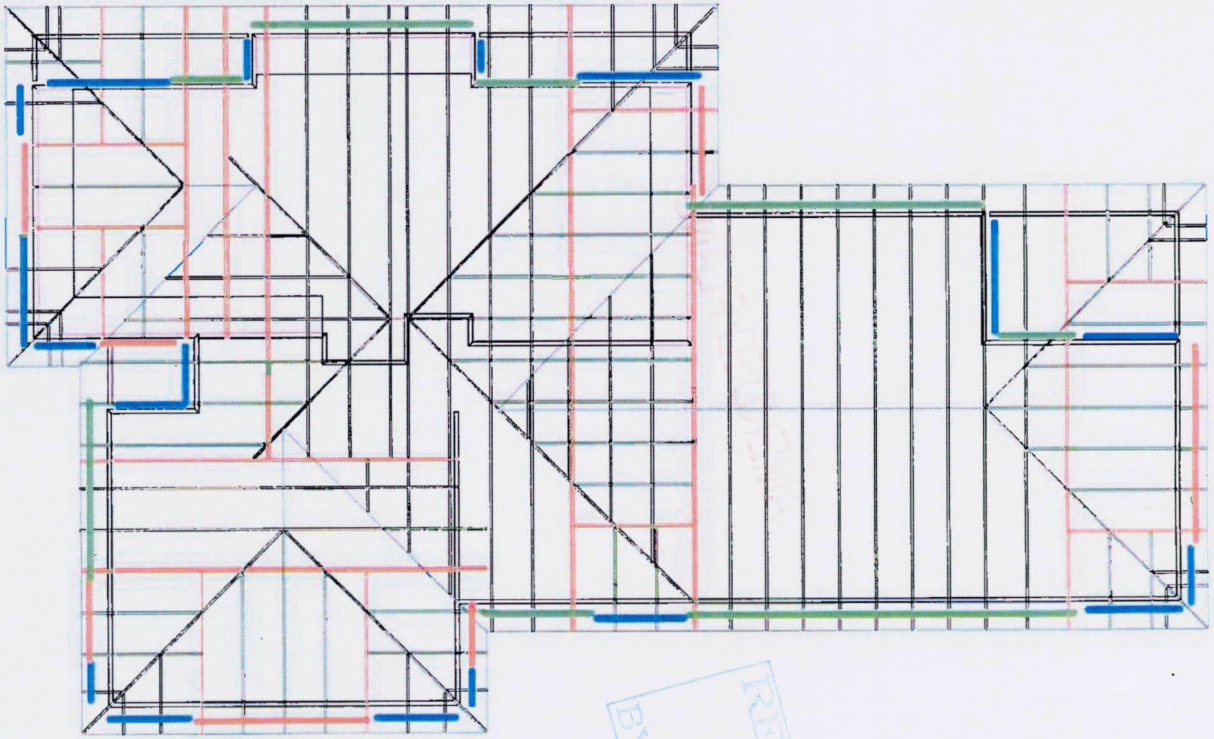
NOTES:

Refer to:
LUMBERLOK Wall Fixing Chart - Stud to Top Plate Fixing Schedule 04/2008

(Alternative to NZS3604:1999 Table 8.18)

AMENDED PLANS
29 AUG 2010

Type B
Type C
Type D



RECEIVED
26 AUG 2011
BY:

HELMACK itm BUILDING CENTRE
50 South Street, ASHBURTON
Ph: 03 307 6580 Fax: 03 307 6349
Email: helmack.itm.manu@xtra.cp.nz

Site Address :
Duff Residence
Lot 17 Barkers Rd
Methven

Sheet Title :
For Building Consent
Stud To Top Plate Fixing

Date : 23 May,2011 | Drawn : Vern Harkerss
Scale : 1: 100 | System : MiTek 20/20

Job Details:

Roof Pitch	: 25.00deg	Truss Centres	: 900mm
Roof Material	: Galv Iron .5mm	Roof Live Load	: 0.250kPa
Ceiling Material	: Standard	Floor Live Load	:
Wind Zone	: Very High	Wind Speed	: 50m/s
Roof Snow Load	: 0.980kPa	Overhang	: 600mm

PrimeCad v4.6.4.28

MiTek

Job Title : BS7531
Sheet : 4
Revision Number :

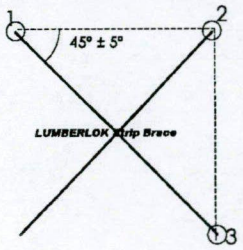
Truss Fixings

- D - Pair of LUMBERLOK Wire Dogs
- X - LUMBERLOK JH47x90 Joist Hanger
- Z - LUMBERLOK JH47x120 Joist Hanger
- P - LUMBERLOK JH47x190 Joist Hanger
- E - LUMBERLOK JH95x165 Joist Hanger
- O - Pair of LUMBERLOK CT200 Ceiling Ties
- H - LUMBERLOK CT400 Cyclone Tie
- B - LUMBERLOK CT600 Cyclone Tie
- M - Pair of LUMBERLOK Multi Grips
- NP - LUMBERLOK Nailon Plate
- N - LUMBERLOK N21 Diagonal Cleat
- W - Pair of LUMBERLOK CPC40 Cleats
- K - LUMBERLOK TTP 16kN Truss to Top Plate set

Roof Bracing

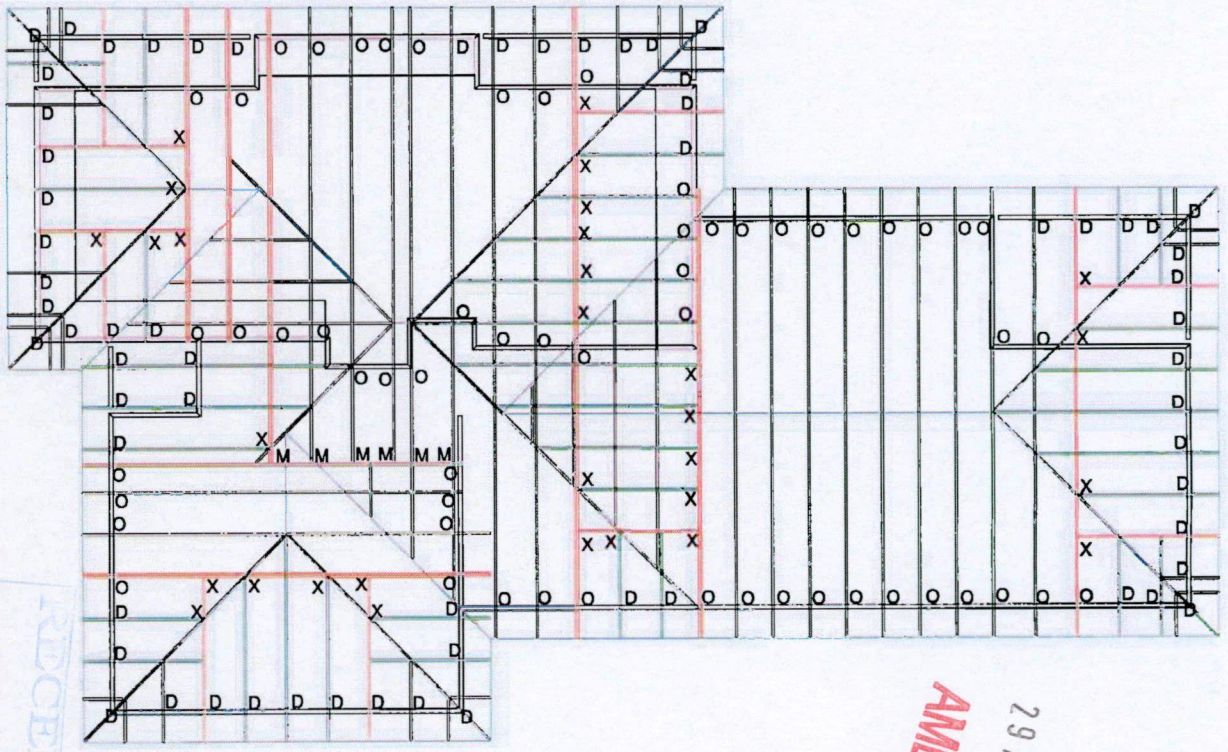
Refer to:
LUMBERLOK Roof Bracing Specifications brochure 08/2006 for end fixing details.

The brace must be located such that it forms an angle of 45° ± 5° to the wall



NOTES:

All other areas must have a minimum of a pair of 90mm skew nails for truss to top plate connections.
Refer to:
LUMBERLOK Timber Connectors Characteristic Loadings Data brochure 03/4



HELMACK BUILDING CENTRE
50 South Street, ASHBURTON
Ph: 03 307 6580 Fax: 03 307 6349
Email: helmack.itm.manu@xtra.cp.nz

Site Address :
Duff Residence
Lot 17 Barkers Rd
Methven

Sheet Title :
For Building Consent
Truss Fixings & Roof Bracing

Date : 23 May,2011	Drawn : Vern Harkess
Scale : 1: 100	System : MiTek 20/20

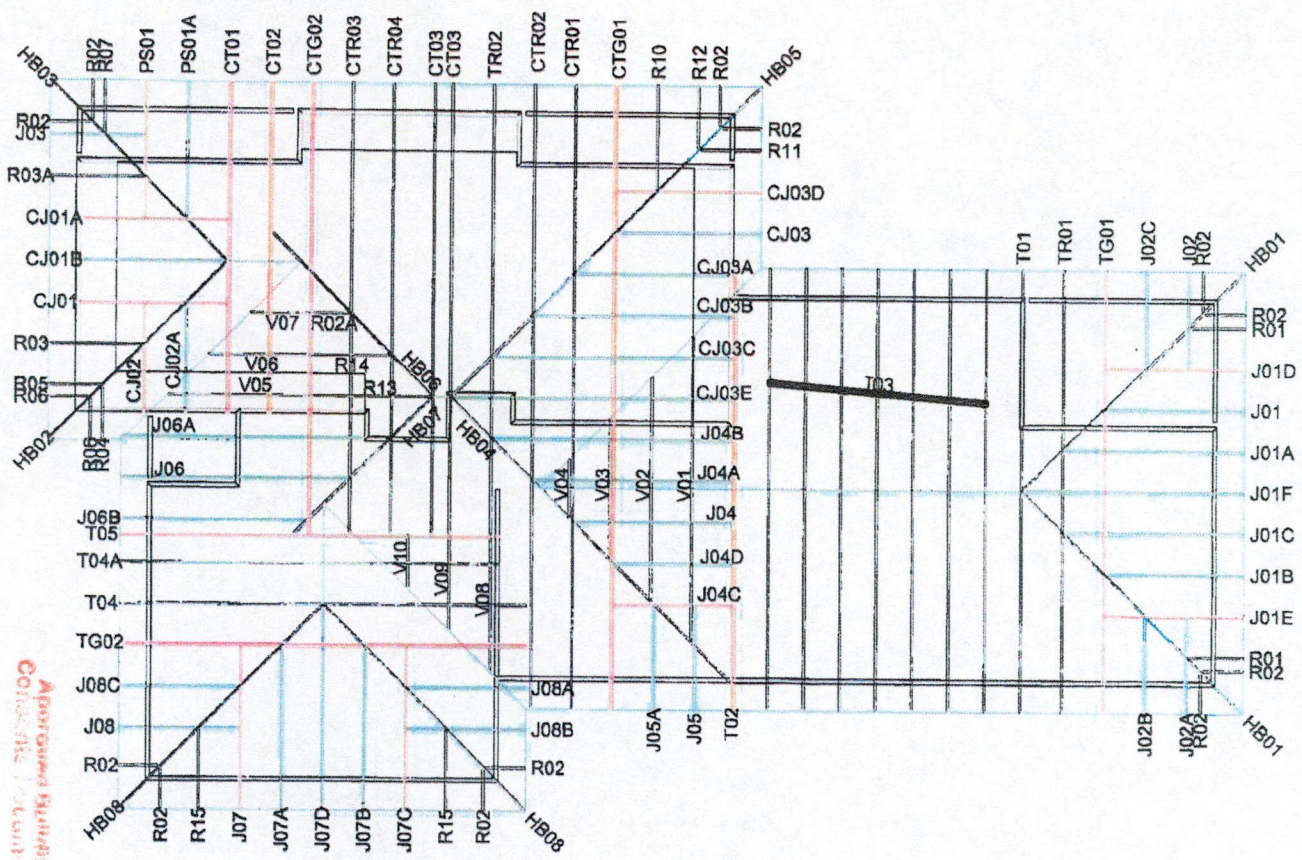
Job Details:

Roof Pitch	: 25.00deg	Truss Centres	: 900mm
Roof Material	: Galv Iron .5mm	Roof Live Load	: 0.250kPa
Ceiling Material	: Standard	Floor Live Load	:
Wind Zone	: Very High	Wind Speed	: 50m/s
Roof Snow Load	: 0.980kPa	Overhang	: 600mm

PrimeCad v4.6.4.28

MiTek

Job Title : BS7531
Sheet : 5
Revision Number :



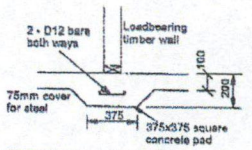
SEE AMENDED PLANS
29 AUG 2010

BC 0515/11
Ashburton District Council
Approved Building Consent Plans

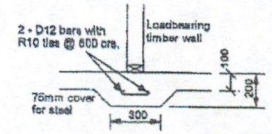
HELMACK BUILDING CENTRE 50 South Street, ASHBURTON Ph: 03 307 6580 Fax: 03 307 6349 Email: helmack.ltm.manu@xtra.cp.nz	Site Address : Duff Residence Lot 17 Barkers Rd Methven	Sheet Title : For Building Consent Buildable Truss Layout Date : 23 May,2011 Drawn : Vern Herkens Scale : 1: 100 System : MiTek 20/20	Job Details: Roof Pitch : 25.00deg Roof Material : Galv Iron .5mm Ceiling Material : Standard Wind Zone : Very High Roof Snow Load: 0.980kPa Truss Centres : 900mm Roof Live Load : 0.250kPa Floor Live Load : Wind Speed : 50m/s Overhang : 600mm

PrimeCad v4.8.4.26
MiTek™
Job Title : BS7531
Sheet : 1
Revision Number :

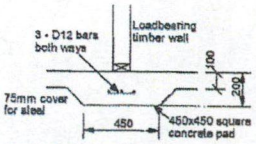
Slab Thickening Details



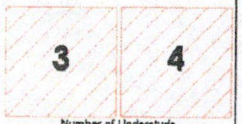
TYPE FP1 - 375x375mm Pad

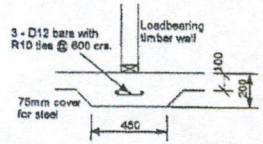


TYPE FS1 - 300mm Strip footing

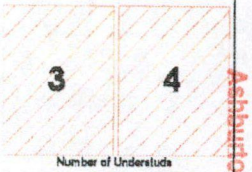


TYPE FP2 - 450x450mm Pad



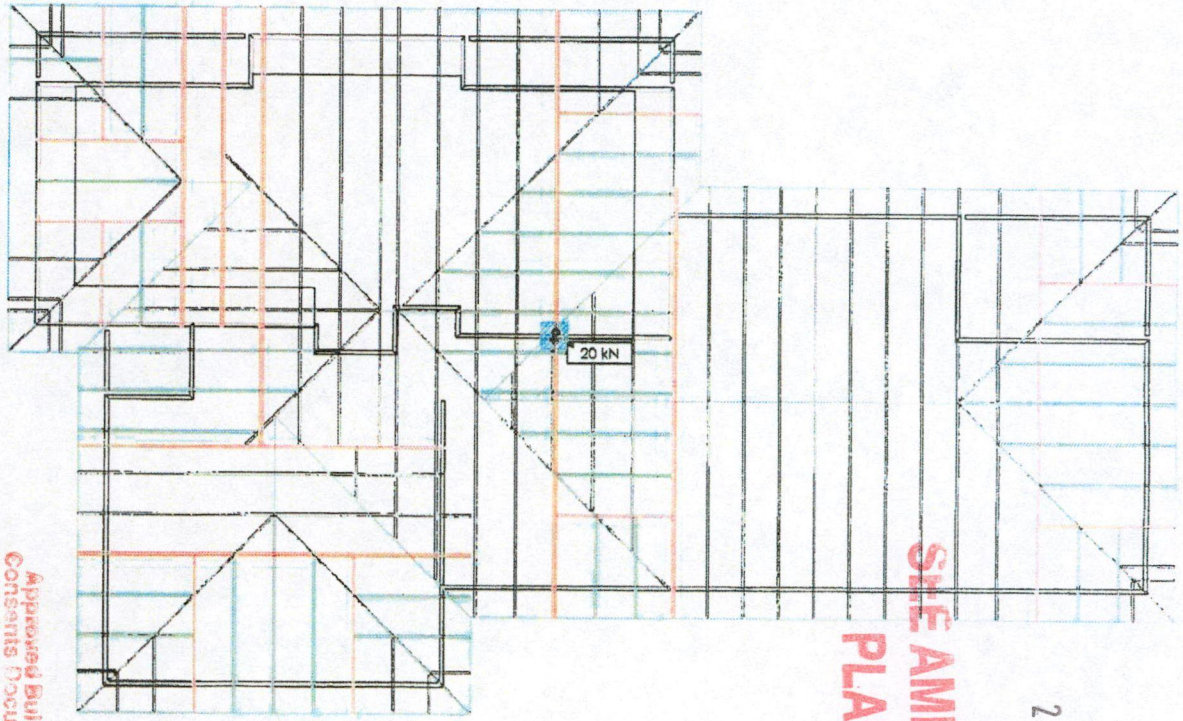


TYPE FS2 - 450mm Strip footing



NOTES:

The numbers found within the hatched area are the number of studs required below each truss.
Refer to:
GANG-NAIL Internal Load Bearing on Concrete Floor Slabs brochure 12/2006



HELMACK BUILDING CENTRE
50 South Street, ASHBURTON
Ph: 03 307 6580 Fax: 03 307 6349
Email: helmack.ilm.manu@xtra.cp.nz

Site Address :
Duff Residence
Lot 17 Barkers Rd
Methven

Sheet Title :
For Building Consent
Slab Thickening

Date : 23 May 2011 | Drawn : Vern Harkema
Scale : 1: 100 | System : MiTek 20/20

Job Details:

Roof Pitch	: 25.00deg	Truss Centres	: 900mm
Roof Material	: Galv Iron .5mm	Roof Live Load	: 0.250kPa
Ceiling Material	: Standard	Floor Live Load	:
Wind Zone	: Very High	Wind Speed	: 50m/s
Roof Snow Load	: 0.980kPa	Overhang	: 600mm

PrimeCad v6.5.4.28
Job Title : BS7531
Sheet : 2
Revision Number :

Stud to top plate fixing details

Type A is minimum fixing required unless specified otherwise

FIXING TYPE A
0.7kN

2/90x3.33 plain steel wire nails driven vertically into stud.

2/90x3.33 plain steel wire nails driven vertically into stud, plus single LUMBERLOK Tylok 2T4 plate.

FIXING TYPE C
2.0kN

2/90x3.33 plain steel wire nails driven vertically into stud, plus pair LUMBERLOK Tylok 2T4 plates.

FIXING TYPE D
6.0kN

2/90x3.33 plain steel wire nails driven vertically into stud, plus LUMBERLOK 6kN Stud Anchor.

OR

2/90x3.33 plain steel wire nails driven vertically into stud, plus LUMBERLOK Tylok Stud Tie

OR

LUMBERLOK Sheet Brace Strap 400 with 6/30x3.15 nails each stud face

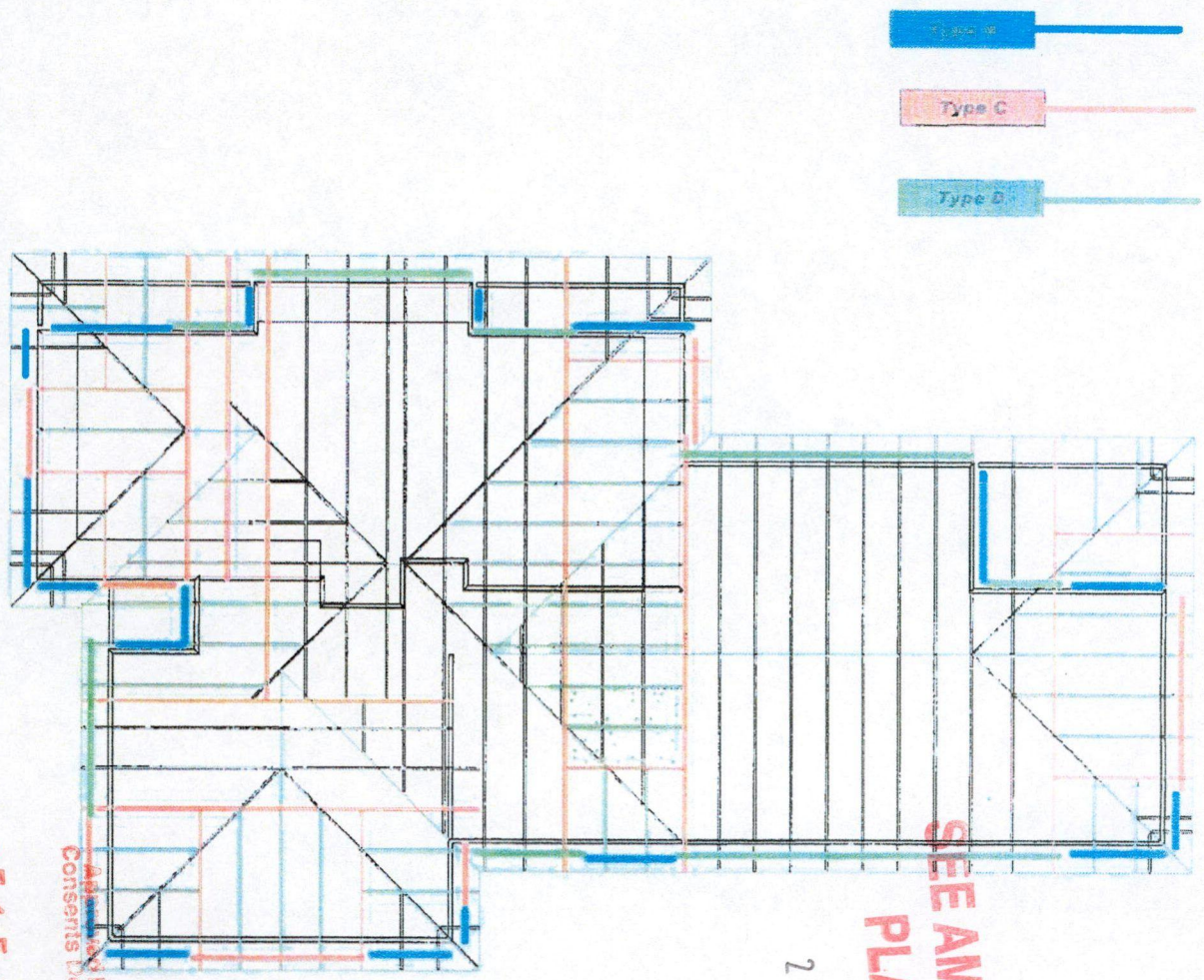
OR

LUMBERLOK Stud Strap

NOTES:

Refer to:
LUMBERLOK Wall Fixing Chart - Stud to Top Plate Fixing Schedule 04/2008

(Alternative to NZS3604:1999 Table 8.18)



HELMACK BUILDING CENTRE
50 South Street, ASHBURTON
Ph: 03 307 6580 Fax: 03 307 6349
Email: helmack.itm.manu@xtra.cp.nz

Site Address :
Duff Residence
Lot 17 Barkers Rd
Methven

Sheet Title :
For Building Consent
Stud To Top Plate Fixing

Date : 23 May,2011 | Drawn : Vern Harkersa
Scale : 1: 100 | System : MiTek 20/20

Job Details:

Roof Pitch	: 25.00deg	Truss Centres	: 900mm
Roof Material	: Galv Iron .5mm	Roof Live Load	: 0.250kPa
Ceiling Material	: Standard	Floor Live Load	:
Wind Zone	: Very High	Wind Speed	: 50m/s
Roof Snow Load	: 0.980kPa	Overhang	: 600mm

PrimeCad v4.6.4.28
Job Title : BS7531
Sheet : 4
Revision Number :

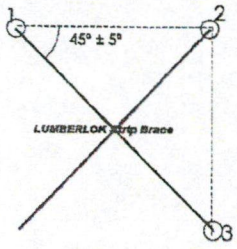
Truss Fixings

- D - Pair of LUMBERLOK Wire Dogs
- X - LUMBERLOK JH47x90 Joist Hanger
- Z - LUMBERLOK JH47x120 Joist Hanger
- P - LUMBERLOK JH47x190 Joist Hanger
- E - LUMBERLOK JH95x165 Joist Hanger
- O - Pair of LUMBERLOK CT200 Ceiling Ties
- H - LUMBERLOK CT400 Cyclone Tie
- B - LUMBERLOK CT600 Cyclone Tie
- M - Pair of LUMBERLOK Multi Grips
- NP - LUMBERLOK Nailon Plate
- N - LUMBERLOK N21 Diagonal Cleat
- W - Pair of LUMBERLOK CPC40 Cleats
- K - LUMBERLOK TTP 16kN Truss to Top Plate set

Roof Bracing

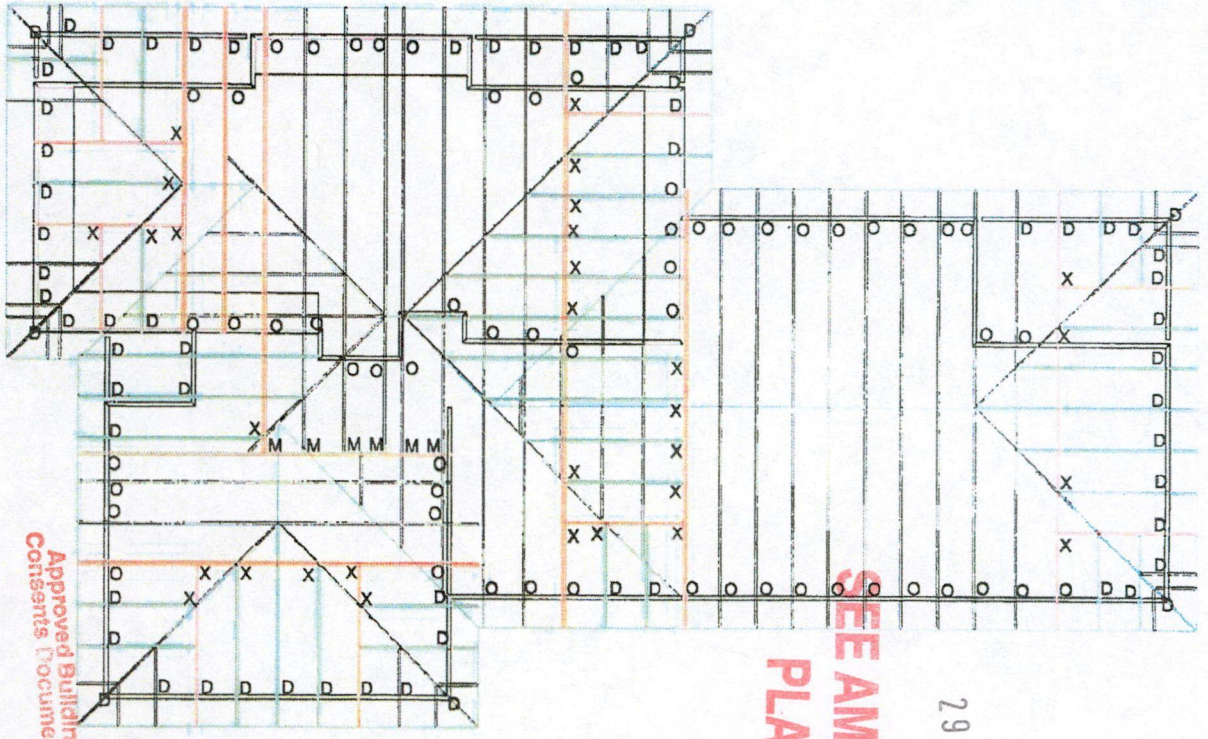
Refer to:
LUMBERLOK Roof Bracing Specifications brochure 08/2006 for end fixing details.

The brace must be located such that it forms an angle of 45° ± 5° to the wall



NOTES:

All other areas must have a minimum of a pair of 90mm skew nails for truss to top plate connections.
Refer to:
LUMBERLOK Timber Connectors Characteristic Loadings Data brochure 03/4



HELMACK BUILDING CENTRE
50 South Street, ASHBURTON
Ph: 03 307 6580 Fax: 03 307 6349
Email: helmack.itm.manu@xtra.co.nz

Site Address :
Duff Residence
Lot 17 Barkers Rd
Methven

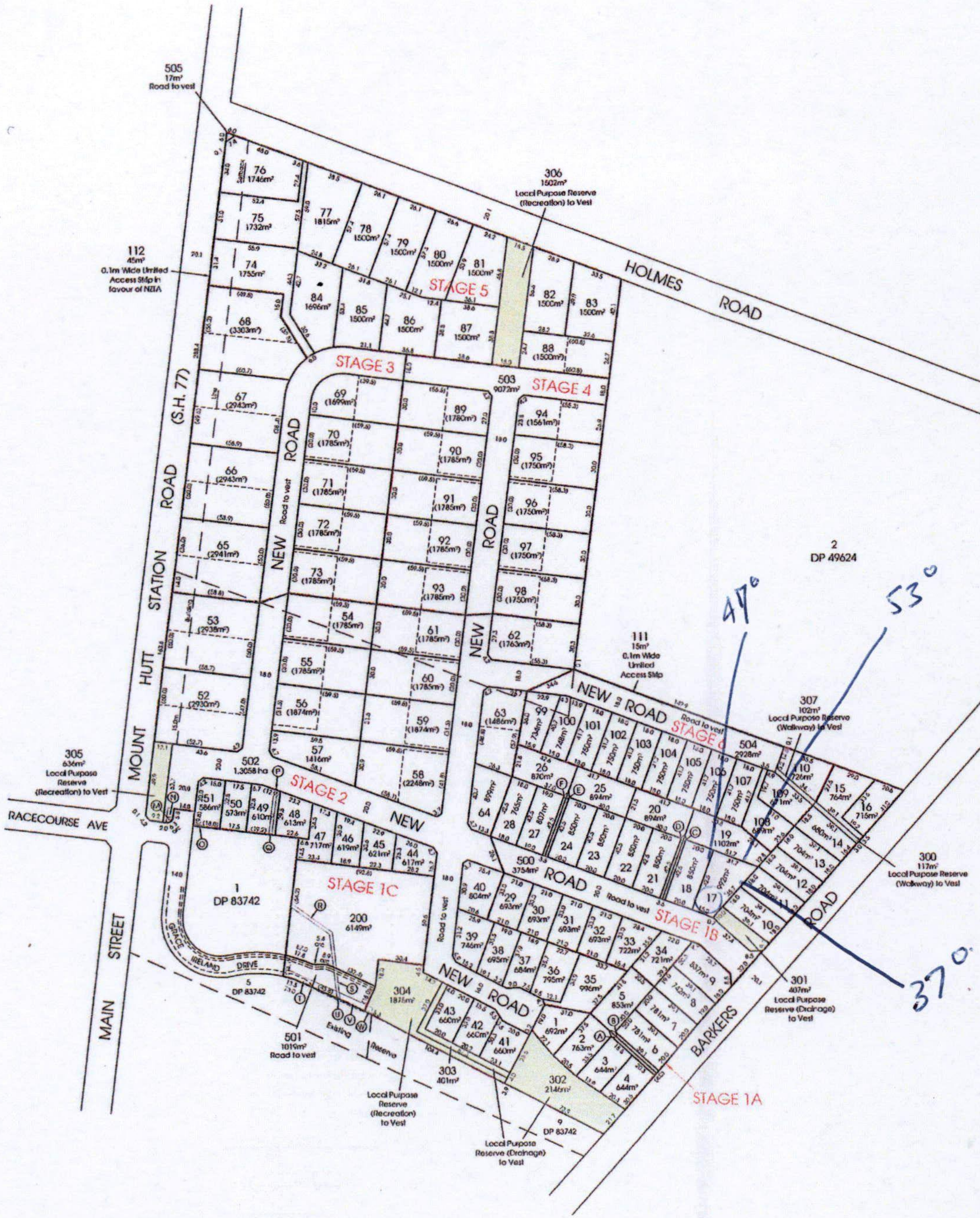
Sheet Title :
For Building Consent
Truss Fixings & Roof Bracing

Date : 23 May,2011 | Drawn : Vern Harkema
Scale : 1: 100 | System : MiTek 20/20

Job Details:

Roof Pitch	: 25.00deg	Truss Centres	: 900mm
Roof Material	: Galv Iron .5mm	Roof Live Load	: 0.250kPa
Ceiling Material	: Standard	Floor Live Load	:
Wind Zone	: Very High	Wind Speed	: 50m/s
Roof Snow Load	: 0.980kPa	Overhang	: 600mm

PrimeCad v4.5.26
MiTek
Job Title : BS7531
Sheet : 5
Revision Number :



ISSUE	DATE	REVISION
A	19-2-10	Addition of Drainage Reserve adjacent to lot 7 and renumber Reserves.
B	15-3-10	Lot area amendment.
C	07-4-10	Amend position of Lane & adjacent lot detail.
D	16-4-10	Lot layout amendments.
E	20-4-10	Lot layout amendments.
F	21-4-10	Lot layout amendments.
G	23-4-10	Lot layout amendments.
H	04-5-10	Lot layout amendments.
I	06-5-10	Rotate lots 14 & 15 & change ROW width to 4.0m.
J	07-5-10	Amend staging bdys & lot numbers.
K	11-5-10	Amend staging to 1a and 1b & re-arrange lot numbers 35 - 39.
L	24-5-10	Add '3m' link strip.
M	26-5-10	Amend lots 27 and 28 and various lot areas.
N	28-5-10	All internal road cnr splays changed to a 3 x 3 cut, amend dims & areas, switch lot nos 70 & 71, move bdy line between lots 58 & 59 to align with lot 56/57 bdy line, add note re NZTA to lot 112, add SH. 77 to road name, add existing & proposed easements, amend lots 47 - 51 & stage bdys.
O	31-5-10	Re-number lots.
P	30-6-10	Adjust various lots to be 1500m², incl part of Res 305 in Stage 1B & remove lot nos containing 'a'.
Q	05-7-10	Add Stage 1C

NOTE:

1. Area and dimensions are subject to final Land Transfer Survey.
2. Land contained in CT CB28F/703 & CB48C/338.
3. All services are to be protected by registering of easements where applicable.
4. Lots 300 - 307 hereon are to vest as Local Purpose Reserve in the Ashburton District Council.
5. Lots 500 - 505 hereon are to vest as Road in the Ashburton District Council.
6. All areas shown are net areas and exclusive of driveways.
7. All corner splays are 3.0m x 3.0m.
8. Lots 1 & 2 hereon are to amalgamate and be held in the one certificate of title.

Schedule of Proposed Easements

Purpose	Shown	Servient Tenement	Dominant Tenement
Right of way & right to drain sewage & water & to convey water, electricity, telecommunications & computer media.	A	Lot 2	Lots 3 & 5
	B	Lot 5	Lots 2 & 3
	C	Lot 19	Lot 20
	D	Lot 20	Lot 19
	E	Lot 25	Lot 26
	F	Lot 26	Lot 25

Schedule of Existing Easements

Purpose	Shown	Servient Tenement	Document
Right to drain sewage in gross.	P	Lot 502 (Road)	T 5251629.5
	Q	Lot 49	
	R	Lot 200	
	S & U	Lot 501 (Road)	
Right to drain water in gross.	M	Lot 502 (Road)	T 5251629.5
	O	Lot 51	
	T, U & V	Lot 501 (Road)	
	W	Lot 303 (Res)	
Right to convey electric power gross.	M & N	Lot 502 (Road)	T 5251629.6

PRELIMINARY

CAMROSE ESTATES LIMITED

OVERALL

CAMROSE ESTATES
GRACE IRELAND DRIVE
METHVEN

PREPARED FOR LOCKHEAD TRUST

LOTS 1-112, 200, 300-307 & 500-505 BEING PROPOSED SUBDIVISION OF LOT 1 DP 49624 & LOT 10 DP 83742

Cardno TCB

LEVEL 1 BATES BUILDING
138 WORCESTER STREET
PO BOX 13 212
CHRISTCHURCH 8141
NEW ZEALAND

TAUPO
HASTINGS
MASTERTON
WELLINGTON

FIELDWORK		
DESIGNED	Pocock Design & DF	Sept 09/Feb 10
DRAWN	D Finlay	Feb 2010
APPROVED		

H: 2007 C07250 Camrose Village acad PS-04Q.dwg

SCALE 1:1500 @ A1 1:3000 @ A3

PROJECT (A1 original)	DRAWING No	REVISION
C07250	PS-04	Q

SPECIFICATION DOCUMENTS

DUFF RESIDENCE

Lot 17 BARKERS RD METHVEN

CRONIN DESIGN LIMITED
PO BOX 9351
CHRISTCHURCH
Telephone (03) 338 8394

PRELIMINARIES & GENERAL

SITE
Visit the site so as to be fully acquainted with the facilities or difficulties of access thereto and the nature and extent of the proposed work.

SAFETY PRECAUTIONS
Allow for complying with all requirements of the New Zealand Building Code.

POWER SUPPLY
The contractor will arrange for the Contractors Power Supply connection on site and arrange all necessary fees to be paid.

ATTENDANCE OF TRADES
Make good after all trades. The contractor shall leave all necessary holes, chases, sleeves, ducts etc as required by subsequent trades.

SETTING OUT
Any discrepancy between work set out and the drawing must be reported to the designer before any work is carried out. The contractor is responsible for the accuracy of the setting out.

SURVEY PEGS
A Surveyor employed by the owner, if required by the builder to define the site, shall provide survey pegs.

STABLITY
The contractor shall take all precautions to ensure the works are braced, supplied as required to prevent damage by wind and protect the works from the elements as necessary at the time.

DAMAGE
The Contractor shall, at his expense, be responsible for any damage to footpaths, kerbs, drains etc, to the satisfaction of the local authority. The Contractor will however be able to recover costs when it is known that such damage is caused by one of the Subcontractors e.g. concrete truck damaging a kerb and will therefore establish that the concrete supply company shall reimburse the Contractor.

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

MATERIALS AND WORKMANSHIP
All materials shall be the best of their respective kinds, qualities, classes and grades as specified and shall comply with requirements of the relevant New Zealand Standards.
Workmanship: conform to good trade practice and the relevant Codes of Practice in current use in New Zealand. All work to be level, plumb and true to line and face. Employ only experienced workers familiar with the materials and techniques specified.

FINISHED WORK

It should be clearly understood that a high standard of workmanship and finish is required throughout this contract. Should any trade consider that any surface finish or fitting be not in a satisfactory condition to ensure a proper fitting of his own thereon, it shall be his responsibility to notify the Contractor before anything further is done and under no circumstances whatever shall such finished work be proceeded with until the necessary improvements have been made. Failing such notification and correction, the finishing trade concerned will be help responsible for the poor finish due to such unsatisfactory conditions.

CLEARING THE SITE

The Contractor shall allow in his tender for the completion of the building in all respects. At completion, the site and the whole of the building shall be left completely free from rubbish and residue and ready for occupation.

EXCAVATOR

PROTECTION
All excavation works shall meet all safety requirements and shall be protected from all water or associated damage. All precautions shall be taken to avoid damage to all public and private property.

EXCAVATION
The area of the top of the site to be covered by the building shall be stripped of all top growth and vegetable matter. Excavate for all foundation pads, piles, slabs etc as shown on the drawings. Should soft clay, peat or filled ground be encountered, an engineer shall be consulted for additional foundation details. Before placing steel or pouring concrete, the excavation shall be cleared and the bottoms dry and firm.

GROUND WATER
Excavations shall be kept free of water. Any ground water in the excavations shall be drained away by means of a sum dug clear of the excavation or by other de-watering system as appropriate.

BACKFILLING
Backfill around foundations with approved material and thoroughly consolidate. Remove all timber and other rubbish and loose material before backfilling.

REMOVAL OF SOIL
The excavator shall remove all surplus material away from the area of the building. Stockpile on the site where directed by the owner.

CONCRETER

SCOPE
This section is for the supply, forming and casting of all new concrete, including the supply, bending and placing of reinforcement and other associated work as shown on the drawings.

MATERIALS AND WORKMANSHIP
The whole of the concrete work shall comply with New Zealand Building Code and New Zealand Standards 3109, 1997, NZS 3114, 1987, NZS 3124, 1987, NZS 3112,1986, NZBC, B2 durability.

CONCRETE STRENGTH
The following strengths shall be used unless specified otherwise on plans

(a)	Foundation and pads	20.0 Mpa @ 28 days
(b)	Floor & steps	20.0 Mpa @ 28 days
(c)	Mortar	15-17.0 Mpa
(d)	75mm minimum clearance to any ground	

FORMWORK
The formwork and falsework shall be constructed to provide a high standard of "fair face" finish.

ENGINEER
Where shown on the drawings or attached drawings, any specifically designed areas by an Engineer will be subject to the Engineer's specifications.

REINFORCING
The reinforcing steel shall comply with the following requirements.

(a) Mild steel reinforcing (plain) shall be grade 300.
(b) Mild steel reinforcing (deformed) shall be grade 300.
(c) High yield steel reinforcing shall be grade 500.

Reinforcing to foundation beam 2/D16mm bars with R10 links @ 600 crs, extending 600mm into concrete floor slab.

FLOOR SLAB

Damp proofing: Lay .250 micron polythene DPC over hardfill. Ensure 150mm wide lap on sheets and the application of pressure sensitive tape to all joints and to the penetrations by all services. Any damage to barrier shall be repaired prior to pouring.

Floor Slab: The concrete floor 100mm thick slab laid over .250 micron polythene with 665 mesh. cover (min 50mm edge & 30mm top) Hard fill shall be minimum 200mm thick unless otherwise specified on the plans. Finished floor level is to be 225mm above finished ground level. Entrance Step-min step 125 to F/FL. start 25 mm below brick veneer weep holes with fall away from building min 1:50 gradient

Floor Finish: The slab shall be finished while still green. Any resulting ridges shall be finished off with a steel float. A high standard of finish is expected. Allow filling and finishing with steel float all pockets, recesses, chase etc. left for pipe work and other trades.

Construction Joints: Form construction joints using boxed construction joints or by saw cuts 6mm wide to a depth of ¼ slab thickness or nominal maximum size of the slab aggregate, whichever is the greatest, made not more than two days after the concrete has been placed. Saw cuts shall be filled with grout to prevent edges fretting. Reinforcing shall be continuous across all construction joints. Saw cuts and construction joints shall be as per plan.

Concreter cont'd…

CHASES
Form all chases pockets, flashing grooves etc. as necessary for the complete and proper execution of the work.

EMBEDDED ITEMS
Provide and build in all bolts, fixings etc necessary for the proper execution of the works. Co-operate with all other tradesmen and trades and build in all items required by them.

BUILDER

SCOPE
This trade shall include all materials, equipment and labour necessary to carry out the complete carpentry and joinery as shown together with any other items of work reasonably inferred as part of this section.

MATERIALS
- All materials shall be the best of their respective types.
- Framing generally shall be gauged and treated to NZ Timber Preservation Council NZS 3640: 2011.
- Finishing timber shall be dressed on four sides.
- All timber shall comform to relevant standards NZS 3602, NZS 3640: 2011and the New Zealand Building Code B2 Durability, B1 Stability.

WORKMANSHIP
All work shall be carried out in a workmanlike manner using the best practices in accordance with the New Zealand Building Code and NZS 3604 :2011

LINTELS
Calculate lintel sizes as set out in NZS 3604:2011 (refer to Truss Layout).

FRAMING
- Exterior – H1.2 Radiata 90mm x 45mm SG8 Dry frame
- Interior – H1.2 Radiata 90mm x 45mm SG8 Dry Frame
- Studs @ 600mm crs and dwangs @ 800 crs. **(Interior)**
- Studs @ 400mm crs and dwangs @ 800 crs **(Exterior)**
- Rafters, purlins, beams, joints etc shall be as shown on the drawings.
- Roof to pitch as indicated on the plan and to detail, well fixed in accordance with NZS 3604: 2011.
- Allow to frame up and finish whole work as detailed.
- Allow for all bracing, dwanging, packing etc for linings, finishings and fitting as drawn.
- Trussed Roof: Drawings showing clearly the type, pitch, span, spacing and overhangs of roof trusses and details of roof claddings shall be provided to the truss manufacturer to allow him to comply with Clause 10.2 of NZS 3604: 2011. The Contractor shall match construction with the drawings and details provided by the truss manufacturer throughout all stages of fixing and bracing.
- In all cases anchorage of all trusses to plates shall be with not less than 2/100mm skew nails plus 2/4.9mm wire dogs.

SOFFITS
Fit 4.5mm Hardiflex sheets generally 600mm wide to 75 x 40 H1.2 treated ribbon plates and sprockets. Soffits wider than 1000mm, fixed to 100 x 50 framing at 600 CRS. B2 durability.

DOORS AND FRAMES
- Internal doors shall be hollow core paint grade unless otherwise indicated by the Owner.
- All external doors to be Aluminium glazed doors, with a specific front door.
- All timber reveals to be H3.1.

WARDROBES
To be lined to full height. Provide inside each with 400 x 25mm full width shelf at 1.7m from floor and coat rail at 77mm before shelf, unless shown otherwise on the drawings. Sliding doors 2.00m high, unless otherwise indicated by the owner.

ARCHITRAVES AND SKIRTINGS
Fit all skirtings to all rooms throughout unless shown otherwise. Confirm with owner as to the type of skirting or architrave.

Builder cont'd...

FINISHING
Provide all finishing trims to baths, showers, joinery etc if required.

DAMP PROOFING
All timber to be protected from dampness, with a continuous D.P.C strip when in contact with concrete. .

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

FASTENINGS AND FABRICATION
The Contractor should especially note that all aspects of fastening and fabrication of timber framing members and wood based products in this contract shall be in accordance with the relevant clauses of NZS 3604:2011. Reference shall also be made to NZS 3604:2011 – Section 13 for the proper fixing of sheet lining and cladding materials for walls and ceilings that are not wood based especially where such materials are used as diaphragms and for wall bracing.

Mild steel structural components used in sub floor spaces, exposed to the weather or in a position where condensation or dampness could occur shall be hot dipped galvanized after forming and shall provide necessary "capacities" called for by NZS 3604:2011 dependant on function and location. In all other cases, select and use connectors according to literature conforming to NZS 3604 requirements.

INSULATION
R3.6 or greater) fibreglass batts shall be installed to all roofed ceilings and R2.6 (or greater) to exterior walls or as specified by owners.

BUILDING WRAP
Breather type building wrap to be fixed to the outside faces of the exterior timber wall framing and fixed horizontally with 150mm laps.

METER RECESS
Provide recess for electrical meter board where directed to the satisfaction of the local Electrical Supply Authority and owner.

ACCESS HATCH
Provide access hatch to ceiling 800mm x 800mm where directed by owner.

FITTED JOINERY
The builder shall take delivery of all joinery fittings and frames and build in carefully, fitting up with the necessary hardware.

MOISTURE CONTROL
Building paper shall be properly fixed to bottom plates. There should be no unsealed openings for service pipes and wiring etc. Linings shall not be fixed until moisture content of framing has been tested and approved.

Builder cont'd…

HARDWARE
Allow to supply and fit hardware to include locks, door furniture, cupboard door and drawer handles. Consult with owner.

INTERNAL LININGS
- Timber battens at 600mm centres.
- Internal walls and ceilings (unless otherwise shown) shall be 13mm Gib Board (ceiling) and 10mm Gib Board to walls fixed to manufacturers specification.
- Gib Board shall be stopped and sanded to paint finish at B2 durability 5 years.
- Aqua Gib to walls in bathroom/ensuite with Villaboard or equal to tiled shower, bath surrounds.

WALL BRACING
Provide all wall bracing that has been shown on drawings and wall bracing calculation sheets as in intended to satisfy the NZBC. Keep strictly to the lengths and locations shown on the plan. Refer bracing schedules.

SCAFFOLDING
Scaffolding to be erected by licensed contractor for any gable or roof higher than 3 metres from the ground.

EXTERIOR CLADDING

SCOPE
All work to be undertaken by a licensed Contractor. The authorised Contractor shall supply all labour, equipment and supervision for applying the exterior cladding.

WORKMANSHIP
All work shall be carried out by skilled tradesmen using adequate and proper equipment and methos in accordance with best trade practice, instructions and recommendations. Workmanship and materials to comply with NZS 4230 & NZS 4229 NZBC E2/ B1 AS1. SNZ HB 4236

EXTERNAL CLADDING

MASONRY VENEER - 70 series clay brick
Run breather type building paper to NZS/BS 1521: 1988 horizontally and well secure to outside face of framing. Repair tears and holes before constructing veneer. Construct brick veneer with approved faced fixed screw ties at correct spacing in accordance with NZS 3604:2011 and to comply to NZBC B1 & B2

- Cavity 50 mm and free from pipes or services. (Using alternative acceptable solutions AS 3500 in G12/AS1 pipes can be through cavity, but free ventilation airflow must be maintained.
- Cavity sealed off from both roof and subfloor spaces, and ventilated to the outside top and bottom.
- Veneer ties to prevent water transfer along length, and under NZBC B2 require 50 year durability, being hidden fixings of the building envelope , materials and workmanship to NZS 4230, 4229. E2 B1/AS1
- Brick ties to start and finish within two courses of the top and bottom of the panel. Also 300mm horizontally on either side of the tie and up to and 200mm vertically above and below the tie and within 300mm of an opening and 300mm from a corner.

COMPLETION AND CURING
Leave all work complete and clear away all mortar droppings. Keep work damp and maintain all finishes to complete.
Approved applicator to issue Construction Certificate to the Council stating that the cladding has been installed to the manufacturers specifications.

ELECTRICIAN

SCOPE
The electrical contract consists of the supply of all materials, plant and labour for the complete light and power system.

MATERIALS AND WORKMANSHIP
All electrical work to be carried out in a tradesman like manner and to comply with NZECP 51 as means of compliance with New Zealand Building Code G8, G9 and relevant New Zealand Standards and the New Zealand Electrical Wiring Regulations Handbook and the local authority regulations. Energy certificate to be supplied to council prior to final inspection.

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

METER BOX AND SWITCHBOARD
Supply and install meter box and switchboard where directed by the owner, with underground supply to local authority supply. The switchboard shall be fitted with appropriate circuit breakers and have all circuits neatly labelled.

WIRING All sub-circuit wiring shall be completely TPS cable reticulated through wall and roof framing. Holes in framing for cable shall be no more than 20mm diameter and shall be in the centre of the depth of the member. All wiring including mains shall be concealed. Lighting circuits to be wired in 1.0mm twin cable. Power circuits to be wired in 2.5mm twin and earth cables. Wire to all the wall mounted power points with vertical droppers only – no horizontal runs to adjacent points.

SOCKET OUTLETS - All wall plugs shall be 250V 15A PDL 600 series or equivalent. Generally install plugs 300mm above the floor or 225mm above bench top. Plugs to washer/dryer space and refrigerator 1200mm from the floor. The exact position of all points shall be determined on the job by the owner. All plugs to be doubles.

LIGHT FITTINGS - Wire for, supply, install and connect to services 75 Watt light bulbs and batten holders unless otherwise specified. Electrical is to confirm location of all lights and points with the owners prior to commencing wiring.
Downlights CA rated type (max 1 per 5m2) as per NZBC H1/AS1 Part 9
In accordance with clauses AS1 of the Building Code and in the Definitions in the New Zealand Building Code Handbook. G8 Artificial Light, lighting to provide a minimum illuminance of 20 lux, the total wattage required per m2 of floor area.
All Electrical work & Items are to comply with:
NZBC F7 G8 G9 AS1, AS/NZS 3000, AS/NZS 3008, AS 3786, NZS 6401.

Equipotential Bonding. G12.2 AS1-9.0 Fig 19 &20.Required if building has electricity & supply pipe work or tap ware is metal & is in ground contact.

SWITCHES - Light switches shall be 16A.P.D.L 600 series or equivalent. Fix switches generally 1200mm above the floor.

ELECTRICAL OVEN AND HOB - Provide and fix a 32-amp flush switch for oven and hobs with sufficient cable for connection and allow for installation.

WATER HEATING ELEMENTS-
High Pressure 300 litre cylinder to comply with energy efficiency requirements of NZS4305
Allow to supply, wire for and install 300 litre cylinder to comply with solar heating system
TELEPHONES - Allow to meet with owner and discuss exact telephone/modem and line requirements, and wire for these.

TV AERIAL OUTLETS - Provide and install aerial outlets, check final position with the owner.
SMOKE DETECTORS - Hush Type To comply with F7/AS1 : UL 217
To be placed within 3 meters of all bedroom doors

PLUMBER

SCOPE
The work shall consist of the supply of all plant, materials and labour for the completion of the installation of a rainwater catchment system, water reticulation and sanitary services, all flashings and cappings, valley gutters, vents, flues, ducts etc.

MATERIALS AND WORKMANSHIP
All materials and workmanship shall be supplied and carried out in accordance with relevant clauses of the New Zealand Building Code 2007 G10 AS1, G12 AS1, G13 AS1, E1 and B2 durability.

TESTS
Subject all water installation to a full water pressure test before pipe work is closed in.

FASCIA AND GUTTERING
Fascia and guttering shall be as shown on the drawings together with down pipes, all in accordance with manufacturer's specifications and recommendations.
Downpipes 75mm dia. Fitting at least 1 downpipe to 70m^2 of roof area.

FLASHINGS
Flash as necessary to render building watertight where not supplied and fitted by other trades, i.e. roofing contractor.

Cold Water Reticulation
20mm polybutylene main through house with 15mm tees to kitchen, laundry, bathrooms and three outside hose taps. 20mm control valve at point of entry to house. Lag pipework outside insulation envelope. B2 durability ASI.

All plumbing to comply with NZ Building Code G12 and G13. B2 durability. AS1. As per solar heater specifications

All internal waste pipes to be 40mm with 1-40 minimum fall with venting to fittings in excess of 3.5 metres.
If sink and dishwasher combined use 50mm pipe

Equipotential Bonding. G12.2 AS1-9.0 Fig 19 &20.Required if building supply pipe work or tap ware is metal & is in ground contact.

TILED SHOWER -Ensuite
Tiled showers to be tanked with Wet Seal to be bonded to the substrate using Wet Seal WPS and must be completely embedded in the waterproofing layers. After applying Wet Seal WPS wait

- 12 – 24 hours on absorbent substrates
- 4 – 5 days on substrates which are not absorbent.
- Sealed to surrounding linings

SHOWER -Bathroom
Cubicle showers to be fitted plumb and true and sealed to surrounding linings.

Plumber cont'd...

WASTES
Waste and vent pipes are to be installed with all work carried out in strict accordance with the manufacturer's instructions for working and using the material. Great care will be taken to ensure that they are adequately supported where they run horizontally.

PIPES AND PIPEWORK
Supply and run 25mm PVC pipe supply line from street mains. To limit the heat loss from storage vessels, and from distribution systems connected to storage vessels. From water heater to kitchen sink: pipe 10mm/run length 25m, 15mm/12m, 20mm/7m. 20mm copper pipe from cylinder position to gully trap and Denso tape wrapped through concrete.
Pipe insulation should have an R-value (thermal resistance) of not less than 0.3 m^2 x °C/W lag pipes with appropriate Armaflex lagging

TAPS, FAUCETS AND VALVES
Consult with the owner on choice of brands and fixing of all taps, faucets and mixing valves.

EXPANSION JOINTS

The New Zealand Building Code Acceptable Solution G13 *Foul Water* AS1 requires copper and uPVC (PVC-U) pipework to have expansion joints and requires uPVC (PVC-U) pipework to be installed to the provisions of Chapter 8 of NZS 7643 *Code of practice for the unplasticised PVC pipe systems.*

AS /NZS 3500.2 *Sanitary plumbing and drainage* requires copper pipework to be installed to the provisions of AS 4809 (with additional requirements) and uPVC (PVC-U)pipework to be installed in accordance with AS 2032 *Code of practice for the installation of unplasticised PVC pipe systems* or NZS 7643.

Expansion joints are required on uPVC (PVC-U) vertical stacks (*Figure I1)at:*

- a minimum spacing of 4m for hot pipelines
- a maximum spacing of 6m for cold pipelines
- each floor level either:
  -immediately above the highest discharge branch entry or
  -if there is no branch entry then at 300mm above that floor level
- 300mm above floor level at the base of the stack
- the centre of any 'hot zone' where the distance between the top discharge branch and the bottom discharge branch in that zone is greater than one metre.

Overflow Relief. An overflow relief to be fitted if at least one gulley is not to be located at least 150mm below the rim of the lowest sanitary fitting.

Thermal movement
The plumbing system shall accommodate without failure the expected longitudinal movement in pipes resulting from temperature changes. All copper and UPVC pipes shall incorporate expansion joints. The provisions described in Chapter 8 of NZS 7643 shall be used for UPVC pipes.

At supports, and at wall and floor penetrations not incorporating expansion joints, movement shall be accommodated using pipe sleeves or flexible lagging such as bituminous felt.

Table C5.Venting requirements	
Stack vent	All stacks must be vented in accordance with *Table C4.* At least one stack in a system (that acting as a main drain vent) must be vented to the open air. Other stacks may be vented with air admittance valves.
Relief vent	All stacks serving more than three floor levels must have a relief vent in accordance with *Table C4.* Relief vents must be vented to the open air.
Fixtures connected to a stack	All fixtures connected to a stack must be vented by a vent to the open air or an air admittance valve in accordance with *Table C4.*
Highest fixture connected to a stack	Must be vented by a vent to the open air on an air admittance valve in accordance with *Table C4* if the discharge pipe exceeds: * 6m for a 100 mm pipe * 1.5m for a 800 mm pipe * 3.5m for 32mm to 65 mm pipes
Soil fixture connected to an unvented branch drain	Must be vented by a vent to the open air or an air admittance valve in accordance with *Table C4.*
Soil fixtures connected to a vented drain with a gradient less than 1:60	Must be vented by a vent to the open air or an air admittance valve in accordance with *Table C4*
Individual soil fixtures connected to a vented drain with a gradient of 1:60 or steeper	Must be vented by a vent to the open air or an air admittance valve in accordance with table C4 if the discharge pipe : * has a gradient of less than 1:60 * exceeds 6 m for a 100 mm pipe or has a vertical crop greater than 2 m * exceeds 1.5 m for an 80mm pipe
Fixtures discharging to a gully trap	Fixtures discharging to a combined waste pipe must be vented by a vent to the open or an air admittance valve in accordance with *Table C4.* Individual fixtures must be vented by a vent to the open air or an air admittance valve in accordance with *Table C4* if the discharge pipe exceeds 3.5m. Vent pipes serving fixtures that discharge to a gully trap must not be connected to a vent pipe connected to a drainage system. 32mm discharge pipes with a vertical drop greater than 2 m must be vented by a 32mm vent to the open air or an air admittance valve.
Main drains discharging to a sewer or on-site disposal system	Must be vented by a minimum 80mm open vent.
Branch drains connected to a vented drain	Must be vented by a vent to the open air in accordance with *Table C4* if the branch exceeds 10m in length.

DRAINLAYER

SCOPE
Work in this section comprises all surface and foul water drainage up to and above ground level to connect to plumber's work. Include all pipes and fittings, construction of manholes; all gully traps and connections for terminal vents, soil and waste pipes. The drainlayer shall confer with the contractor before the foundations are laid to fix exact position of all connections of wastes and drains.

MATERIALS AND WORKMANSHIP
All materials and workmanship shall be in accordance with the best drain laying practices conforming to all relevant clauses of the New Zealand Building Code G13 AS2, G14 E1 and B2 durability.

CONNECTION TO EXISTING DRAINAGE
The drainlayer is responsible for verifying the position and depth of the connection and commence laying his drains from this point.

TRENCHES
The excavation of trenches for drains shall be accurately made with base clean and true grade so that no unnecessary filling is required. Adequate width shall be allowed in accordance with depth of drain to enable laying and jointing to be properly carried out. Trenches shall be kept firm and dry and shall be opened up only in lengths that can be protected, utilised and refilled within a reasonable time.
100mm bedding compacted. Granular bedding and surround of non-cohesive materials with max.particle size of 20mm.

FITTINGS
The drawings show the layout of the system. Additional fittings such as inspection points and inspection bends that are normally required but are not specifically shown must be allowed for by the drainlayer to comply with the New Zealand Building Code.

SEWER AND STORMATER CONNECTIONS
The owner shall arrange for the Council to connect drain to sewer and stormwater and pay all charges in connection to this.

FALLS IN DRAINS
The whole of the soil and stormwater drains are to be laid to a regular and even fall.

GULLY TRAPS
Supply all gully traps and securely bed and build up with 5:1 concrete surround, 150mm above finished ground levels, as per NZBC G13/AS2L 3,.2.1.

COMPLETION
Properly back fill all trenches, consolidate as filling proceeds and leave area in a tidy state.

ROOFER

SCOPE
Supply all labour and supply and fix all materials necessary to complete the roof as shown on the drawings and to render the building watertight.

WORKMANSHIP AND MATERIALS
All workmanship and materials shall be carried out in accordance with the relevant clauses of the New Zealand Building Code and NZS 4206, 3601, 3602, 1170 and 3604:2011. Self-supporting breather type roofing underlay shall be to and B2 NZS 2295 and AS/NZS 4200.1 durability.

PREPARATORY WORK
Provide all gutters, fascias, valleys and other flashings before cladding commences. Ensure all edges of roof cladding are adequately supported around projections such as pipes, ducting and roof lights. Confirm with owner type and colour of roofing materials.

ROOF
Coloursteel longrun roofing fitted to manufacturer's specifications on self supporting roofing underlay on 70mm x 45mm MSG8 H1 timber treated purlins @ 900crs.

FASCIA AND GUTTER
Coloursteel fascia and gutter system fixed to rafters.

SCAFFOLDING
Scaffolding to be erected by licensed contractor for any gable or roof higher than 3 metres from the ground.

JOINER

MATERIALS AND WORKMANSHIP

(a) All timbers are to be the best of their class free from large, loose or dead knots, waney edges and other defects.
(b) All interior finishing timbers are to be dried not exceeding the required maximum moisture content.
(c) All timbers described ad Dressing Grade are to be dressed and sanded smooth on all faces.
(d) All joinery is to be accurately set out, properly machined and framed together and finished to a clean, even and smooth surface and free from cutter marks and other imperfections.
(e) The prices shall include for all work in providing and fixing joinery work complete.
(f) Before commencing any fabrication work the joiner shall verify all sizes on the job, as measurements shown take no account for wall linings and other variations beyond the designer's control.
(g) All timbers used in joinery shall be treated against borer attack.

EXTERIOR JOINERY

Fabricate exterior timber joinery as shown on the drawings, check jambs and mullions into head and sills. Generally house members to the depth of the rebate.

INTERIOR DOOR FRAMES

Fabricate grooved interior door frames glued and nailed.

KITCHEN JOINERY

Construct kitchen joinery units complete with doors, drawers, shelves and bench tops as shown on the drawings or kitchen plans supplied by the owner. Kitchen design to NZBC G3 AS1 fig 1 & 1.5. Finishes to be selected by the owner. Formica to benchtop.

BATHROOM UNITS

To be constructed as for kitchen joinery. Finished to be selected by the owner.

WINDOWS

SCOPE
For the supply of Aluminium windows, door, ranch sliders, wardrobe sliders and any associated flashings required as shown on the drawings.

MATERIALS AND WORKMANSHIP
All materials used shall be the best of their respective types. All work shall be carried out in a workmanlike manner using the best practices in accordance with the NZS4211, B2 durability 15 years.

ALUMINIUM JOINERY
All aluminium joinery shall be site measured and manufactured by a recognised supplier, colour as selected by the owner. Restriction stays shall be fitted to opening windows less than 760mm from floor, limiting opening of sash to 100mm maximum.
Support bars are required to all full height windows and doors over 1.3metres, and all other windows to have a 300mm length under all vertical mullions.

FINISH
Aluminium frames to be Powder Coat to colour as selected by owner.

SAFETY STAYS
Security stays with a 99mm maximum opening to be fitted on bathroom window where bath is within 760mm of opening with fall exceeding 1meter.

REVEALS
Reveals to be H3.1 treated timber for paint finish or as confirmed by owner.

HARDWARE
Hardware as required and selected by owner.

GLAZIER

SCOPE
The glazing contractor shall supply all labour, plant and materials necessary to complete glazing work as shown on the drawings.

WORKMANSHIP AND MATERIALS
All workmanship and materials shall be in accordance with New Zealand Building Code F2, NZBC B1AS1 7-1, B2 durability 15 years and NZS 4223, NZS 4211aluminium framing and NZS 4218:2004 requiring double-glazed windows. Ensure safety glass to relevant locations.

MIRRORS
Provide mirrors above all vanities as required and selected by owner.

DOUBLE GLAZING
To all windows and glazed doors.

OBSCURE GLAZING
Provide obscure glazing to all bathroom and toilet windows unless otherwise directed by owner.

SAFETY GLASS
Provide safety glass to all bathroom windows and doors unless situated above the 2 meter finished floor level. To comply to NZS 4223 1999 Human Impact Part 3

PAINTER

MATERIALS AND WORKMANSHIP
All paints, varnishes and stains used shall be proprietary brand names of first quality premium grade and applied to surfaces strictly in accordance with manufacturer's specifications and recommendations. All preparatory work, i.e. cleaning, filling, sanding etc shall be carried out in accordance with the best painting trade practices and with materials of appropriate quality.

COLOURS
The owner shall provide the Builder and the Painter with a full schedule of finishes and colours. The Contractor shall ensure that all necessary priming is carried out at the required stage of construction.

FINISHES GENERALLY

Exterior
- Timber: One coat of primer/undercoat and two topcoats acrylic/enamel
- Or alternatively: One coat sealer and two coats of polyurethane
- Or alternatively: Propriety timber stain the manufacturer's specification

Interior
- Gibraltar Board: One coat of approved sealer and then two coats of acrylic
- Timber Work: One coat primer/undercoat then two coats gloss/low sheen acrylic
- Or alternatively: Approved sealer then two coats of polyurethane.

WET AREAS – Apply two coats of semi gloss acrylic enamel ensuring that the first coat is completely dry before applying the second. NZ Building Code E3/AS1 Section 3.0 "Watersplash Areas" ie bathroom, toilet, laundry (sealer to Gib board before semi-gloss or gloss painting).

WALLPAPER
All walls to be sized before wallpapering and wallpaper hung strictly in accordance with manufacturer's specifications and recommendations.

CLEANING UP
At completion of contract, Painter shall clean up and remove all stains, putty marks and paint splashes and clean glass to the satisfaction of the Contractor.

FLOORING

- Vinyl or tiling to wet areas ie kitchen, laundry, WC, bathroom/ensuite (owner's choice)
- Tiles as selected to entrance way and bathroom to be slip resistance not less than 0.4 when tested in accordance with AS/NZS 3661.1
  (D1/VM1)
-
- The rest of the house ie living areas, bedrooms, hallway to be carpeted.
- All flooring to NZBC E3.

3 June 2011

To the best of my knowledge these plans are drawn to comply with owner's and/or builders specifications and any changes made on them after prints are made will be done at the owner's and/or builders's expense and responsibility, information shown on the plan is indicative only and it is the builder's responsibility to check all levels, boundaries and measurement on site prior to construction and be solely responsible thereafter.
Where accuracy is critical, on site location and levels should be carried out.
Cronin Design Ltd is not liable for errors once construction has begun. While every effort has been made in the preparation of this plan to avoid mistakes, the maker can not guarantee against human error.
Use figure dimensions in preference to scale. Report any discrepancies to Designer

Rinnai
EXPERIENCE OUR INNOVATION

ARRIVA

Operation and Installation Manual

Approved by the Asthma and Respiratory Foundation

Appliance must be installed with an approved Rinnai flue system.

Appliance must be installed, commissioned and serviced by a licensed tradesperson in accordance with these instructions and all applicable local rules and regulations.

Owner, please retain this manual for future reference.

Close Print

Arriva - Specification

click to enlarge

DESCRIPTION

Inbuilt convector ceramic log space heater, forced convection and power flue system. Appliance discharges a large volume of warm air at low level to provide even heat distribution. Fascia is either curved glass in two colour options (radius models) or flat steel in two colour options, all of which are interchangeable.

GAS TYPE - NG or LPG.

SUITABILITY

Ideal for living rooms and open plan areas. Versatile power flue system makes for easy installation in almost any living space.

SPECIFICATION SUMMARY

- Colour Variants: Radius Silver or Black Glass / Stainless or Black Steel
- Dimensions (unit): H-680mm, W-900mm, Radius = D-370 + 126mm or Flat Steel = D-370 + 90mm
- Dimensions (installation cutaway): H-660-665mm, W-860mm, D-380mm (for direct flue) or 475mm (with extension)
- Input: 31.5MJ/h (on high) and 8MJ/h (on low) ---> for both NG and LPG
- Output: 7.0 - 1.8kW
- Efficiency: 80% on high

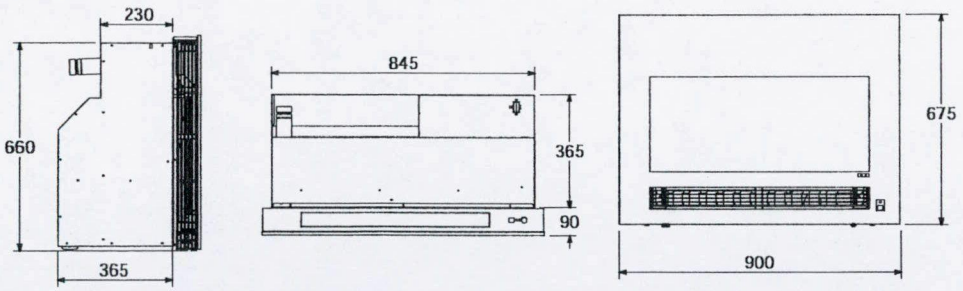
Burner	Ember bed and flame burner
Combustion System	Yellow flame bunsen multi port burner
Data Plate	Inside appliance, upper right hand side beside convection fan
Fan Type	3 speed, Hi / Med / Low / Off radial blower fan
Flue	Horizontal, vertical or downwards fan forced D vent (power flue)
Gas Control	Electronic control
Gas Connection	½" BSPT male thread
Ignition System	Electronic continuous direct spark discharge to intermittent pilot by either remote or push button method
Inlet Pressure	• NG 1.13 - 3kPa • LPG 2.75kPa
Noise Level	• Fan on high - 41 dB(A) • Fan on low - 33 dB(A)
Power Consumption	High - 90W, Low - 60W, Standby 10W

Specification

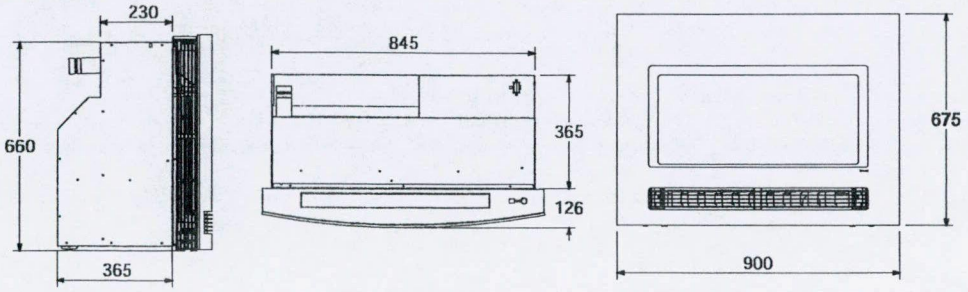
The manufacturer reserves the right to change or modify specifications without notice.

Description	Inbuilt convector, ceramic log space heater with forced convection and power flue system. Glass or steel fronted.
Combustion Method	Yellow flame and bunsen multi port burner
Data Plate	Inside appliance, upper right hand side beside convection fan.
Fan	High, medium and Low (Auto Off function only)
Flue	Balanced flue, inner = 50 mm, outer 75 mm Flue must be terminated to the atmosphere in accordance with NZS 5261. Rinnai warranty conditions will be voided if non Rinnai flue components are fitted. This heater is only certified for use with approved Rinnai Arriva flueing components.
Gas Connection	½ " BSP male flare to barrel union
Gas Control	Electronic control
Gas Type	NG or LPG
Ignition	Electronic continuous spark discharge to intermittent pilot by either remote or push button method.
Input/Output	31.5 - 8 MJ/h 7.0 - 1.8 kW
Noise Level	33 - 41 dB(A), fan low to high
Power Consumption	High 90 W, Low 60 W, Standby 10 W Standard electrical connection is to the right hand side of the appliance
Safety Devices	Overheat, power failure, flame failure, thermal fuse, overcurrent fuse, spark detector and temperature thermistor.
Temperature Control	Thermostatic, temperature control range 16 - 26 °C
Thermal Efficiency	80% on high • energy efficiency 4.2 stars (direct flueing) • energy efficiency 5.2 stars (extended flueing)
Weight	70 kg

Steel Fronted Model



Glass Fronted Model



Appliance Positioning

When positioning the unit, the main points governing location are flueing and warm air distribution.

This heater must not be installed where curtains or other combustible materials could come into contact with the appliance. In some cases curtains may need restraining.

Enclosure requirements

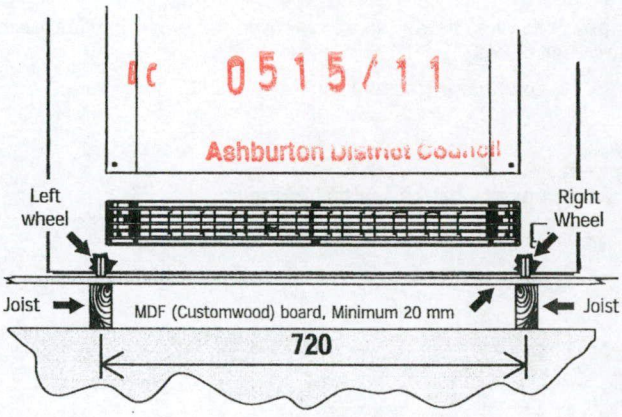
The Rinnai Arriva has a cool outer casing, it can be installed into an existing masonry or decorative fireplace.

A pair of wheels located at the rear of the heater allows it to be slid in and out of the enclosure for commissioning and maintenance. The heater must be positioned on a flat level surface that allows free movement of the appliance.

In a masonry fireplace, use a slurry of sand and cement to level the base as required.

In a decorative fireplace, when the appliance is elevated from the ground, construct a base using a board with supporting joists as shown.

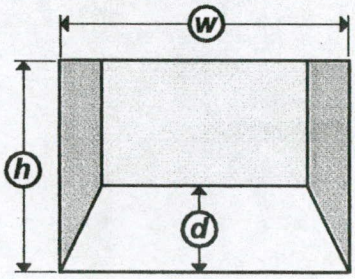
In elevated installations the front mounting feet of the appliance will protrude. These can be re-positioned so they fit within the enclosure by using the slots that sit behind the front wheels.



Enclosure Dimensions

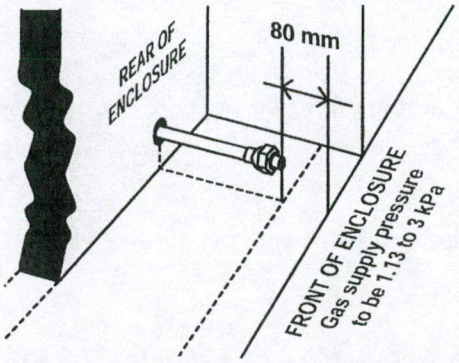
Width (w)	845 - 860 mm
Height (h)	660 - 665 mm
Depth (d)	380 mm direct flue 475 mm extended flue

All dimensions provided are critical to the installation of this appliance and must be strictly adhered to.



Gas Supply

The gas terminates inside the heater and enters the appliance from the rear. To ensure correct positioning, terminate the gas supply so it is 80 mm in from the front face of the enclosure opening.

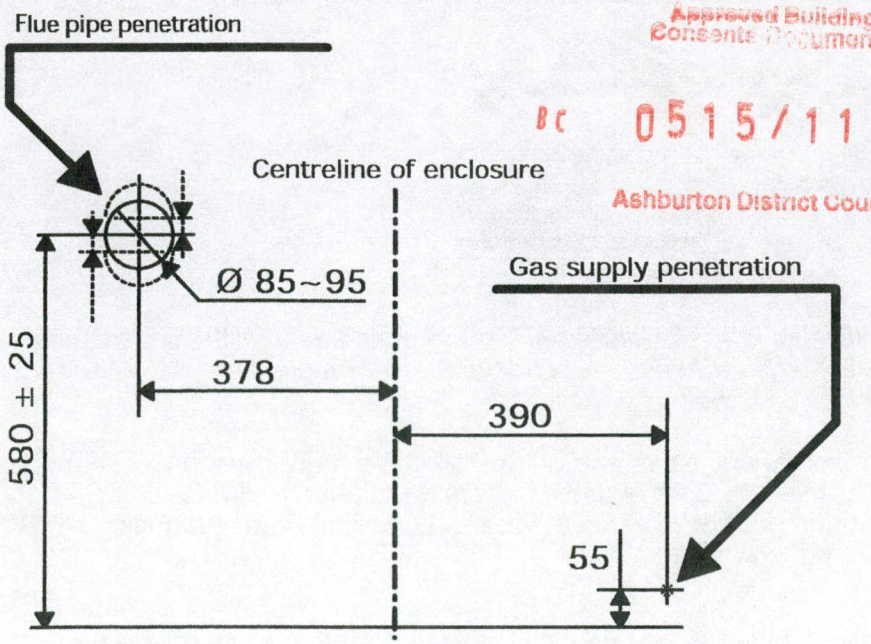


Gas pipe sizing must consider the gas input to this appliance as well as other gas appliances in the premises. The gas meter and regulator must be specified for the total gas rate. An approved sizing chart such as the one in NZS 5261 would be used.

All foreign materials such as filings must be purged from the gas supply as they may cause the gas control valve to malfunction.

Direct Flue Wall Penetration Requirements

Use the guide below to mark the penetration points (mm) for the gas supply and flue transition locations. Consideration must be given to the position of any studs, noggins or other components of the wall structure on both sides of the wall.



Mark these measurements accurately as this is critical for successful installation.

The penetration for the flue transition only needs to be made for Direct flue installations, where the flue terminal is to be terminated directly to the rear of the appliance.

Flueing - General

IMPORTANT For all installations an Rinnai Arriva flue system MUST BE used. Flue system must be fully assembled and secured in place before the heater is installed.

Flue terminal locations

Must be compliant with 'Clearances Required for Flue Terminals' from NZS 5261 2003. Flue terminal should be positioned away from flammable materials.

Flashings

Are not part of the flue kits or components and must be specified.

Clearance to combustibles

- Flue transition (refer page 30) = 5 mm
- Elbow component of Adaption Flue Kit (ASPKIT03) = 25 mm

All other Arriva flue components have zero clearance.

Maximum length and number of bends

- Maximum flue length = 8 m
- Maximum number of bends = 3 bends

1 x 90° bend = 1 m of length, for every 90° bend the overall length must be reduced by 1 m (i.e. with 3 bends maximum flue length is 5 m).

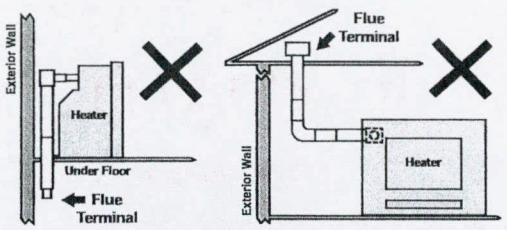
Flue transition for all flueing installations (excluding horizontal direct flueing) is counted as a 90° bend.

Down rating the appliance

For all Arriva flueing except direct flueing, the appliance must be down rated as per instructions on the data plate. Down rating ensures effective performance of the fan.

Roof space or underfloor termination

Flue is not to terminate under floors or in a roof space.



Condensate

A condensate trap is required for any vertical flue installations to ensure condensate generated during combustion is trapped and prevented from entering the chamber.

For horizontal and down and out installations there must be a continuous fall of at least 2°. This equates to approximately 20 mm per metre to the termination point to drain condensate. For standard direct flueing the Rinnai flue kits have an inbuilt 2° fall.

Masonry

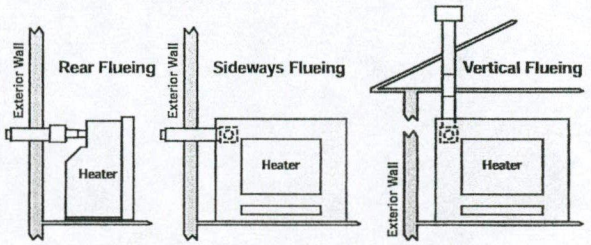
The Arriva must not be flued into natural draft flue cavities or via a chimney.

Flueing - Types of Flue Installations

NOTE Refer Flue Installation manual provided with the Arriva Direct and Adaption Flue kits for detailed flue installation instructions.

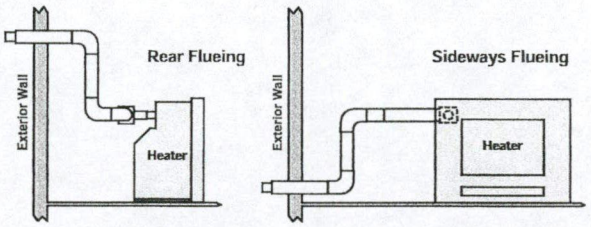
Direct flueing

Flue is run direct from appliance to the termination point either in a horizontal or vertical direction.



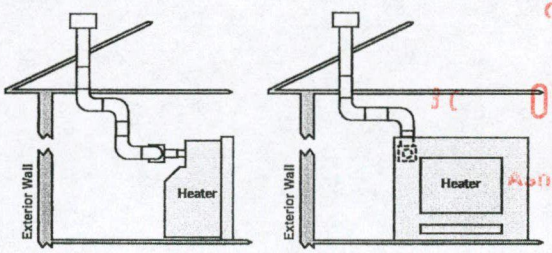
Extended offset horizontal flueing

Flue is run offset from appliance to a horizontal termination point to avoid obstructions.



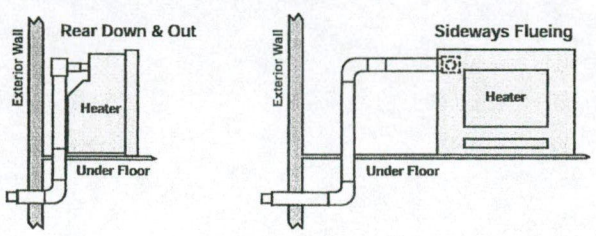
Extended offset vertical flueing

Flue is run offset from appliance to a vertical termination point to avoid obstructions.

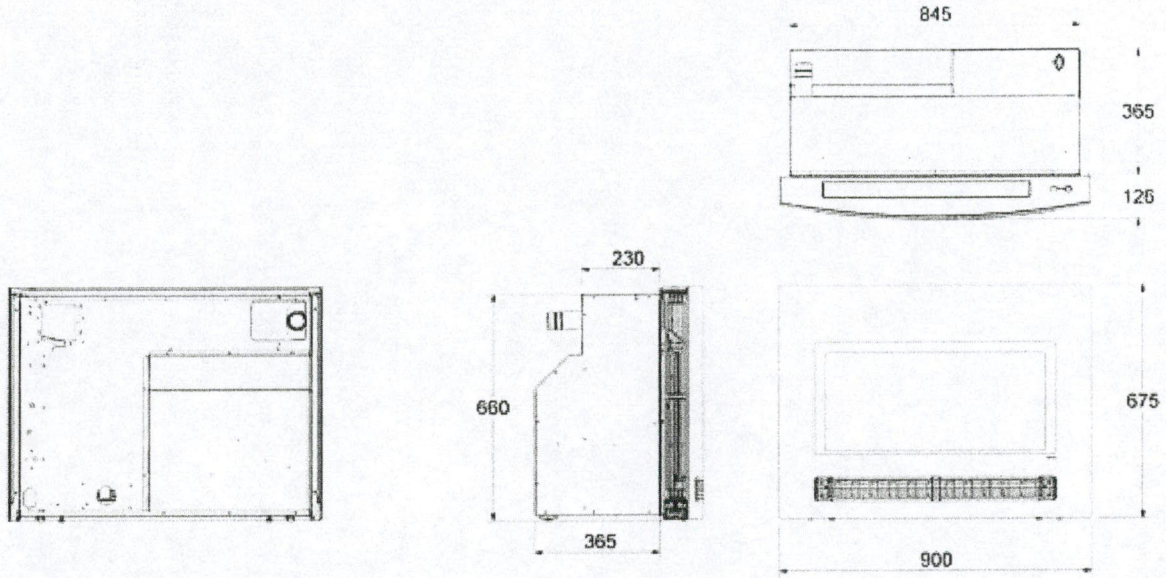


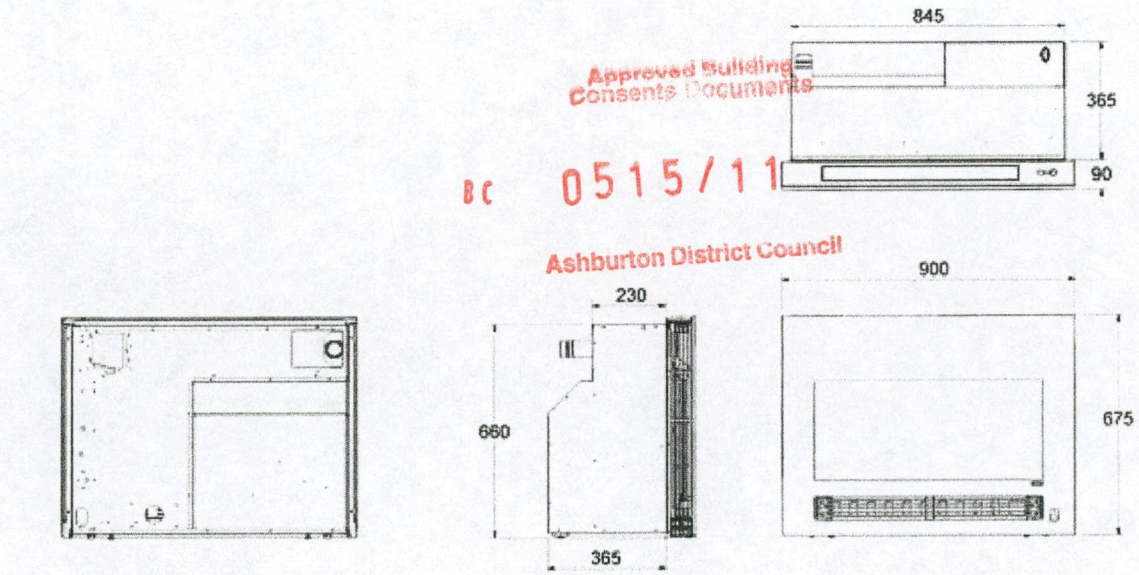
Down and out offset flueing

Flue is run below floor level to an external termination point. Flue must terminate 300 mm above the ground.



Safety Devices	• Overheat	• Overcurrent Fuse
	• Power Failure	• Spark Detector
	• Flame Failure	• Temperature Thermistor
	• Thermal Fuse	
Weight	65kg (packaged)	





Wet-seal Fibre Coat

Internal Wet Area Details for Wet-seal Waterproofing System

The Wet-seal Fibre Coat system is used for all internal wet areas.

It has completed the CSIRO requirements, Test No. 3392 (Feb 06), to meet the requirements of AS/NZ 4858 Wet Area Membranes which is mandatory for all wet area internal membrane systems used in Australia. It also carries a Branz Appraisal 372 (2000).

The Wet-seal Fibre Coat membrane will meet the requirements of the AS3740-2004 "Appropriate Bond Breaker" (Table 5.2) using any of the three types of bond breaker design for membranes. The system also complies with the Building Code of Australia as amended.

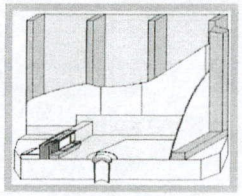
All areas should be prepared in accordance with the Building Code of Australia and AS3740-2004 - Paragraph 5.11 General Shower Requirements.

Wet-seal recommends that falls in showers be incorporated in the initial pour for slab construction. The Standard requires that the finished surface in showers has sufficient fall to prevent water ponding in the shower area as mentioned in Section 4 Design, Paragraph 4.3.1 Shower Floors.

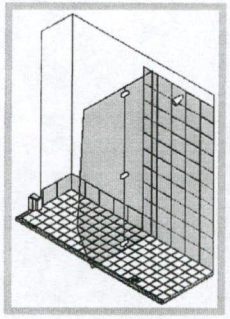
Wet-seal also recommends that unenclosed showers (which include curtained and frameless glass screens) should not be placed next to bathroom doorways. When showers of this type are installed, the floor should be sealed in accordance with AS3740 Section 5.11.9 "Unenclosed Showers including Showers with Frameless Glass Screens".

When underfloor heating systems are laid on the surface of the substrate consideration should be given when installing the water stop angles to allow for the extra depth of mortar bed required.

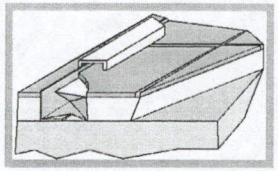
Other areas able to be sealed with the Wet-seal Fibre Coat system include planter boxes constructed of brick or masonry and water features such as fish ponds or fountains.



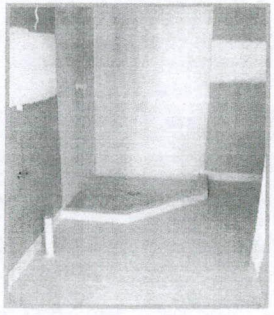
Shower with Hob

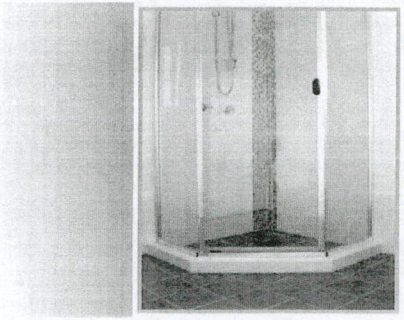


Unenclosed Shower



Angle placement for Walk-in Shower





Wet-seal Fibre Coat

Internal Wet Areas

Description

Wet-seal Fibre Coat is a two coat fibreglass re-inforced polyester resin based waterproofing membrane system and is coloured in the Wet-seal Corporate Jade Green. When cured it is a seamless membrane and will not bleed through porous materials. It is specifically designed for **INTERNAL USE** on Concrete Slab, Cement Render, Concrete and Masonary Walls, Compressed Fibre-cement Flooring, Fibre-cement Flooring Overlay, Fibre-cement Wall Lining, Water Resistant Plasterboard, Wall Lining Plywood Flooring and Particleboard Flooring, preceding Tiles.

Application

Wet-seal Fibre Coat is for internal waterproofing areas such as Showers, Bathrooms, Ensuites, Powder Rooms and Laundries. This highly specified system is supply and fix and is only installed by Wet-seal Australia's nationwide network of fully trained Franchisees; in accordance with the Wet-seal Installation Manual.

Surface preparation

Fall should be incorporated in the original concrete slab pour where possible. Allow concrete to cure for 28 days and cement render to cure for 7 days prior to application of the Wet-seal Fibre Coat. The plumbing and wall sheets must be installed prior to the application of the Wet-seal Fibre Coat. Drainage flanges are recommended to be installed on suspended floors prior to application of the membrane. Surfaces must be clean, completely dry and without any trace of residue or permanent dampness. All grease, oil, wax, curing compounds, dust, droppings, loose material, paint and any other contaminants must be removed. Fibrous cement sheeting, plasterboard, particleboard and all suitable flooring substrates must be fixed in accordance to manufacturers' specifications. Hobs (if applicable) must be constructed from masonry, concrete or similar material.

Curing time

Minimum of 24 hours at 23°C/55% RH but in cooler conditions 48 hours.

Tiling direct or tiling mortar bed covering

This may be carried out after the Wet-seal Fibre Coat has been allowed to dry.

Please Note: If a hob is used in the shower ensure that hob tiles are grouted with a flexible grout.

Tile adhesive

WIPE OVER the Wet-seal Membrane thoroughly with clean water **PRIOR** to application of recommended adhesives that meet the requirements of AS4992.

Limitations

Wet-seal Fibre Coat membrane is not designed to be used as a decorative finish.

Guarantee

Wet-seal Fibre Coat carries a material and workmanship guarantee.

The system when fully cured has

- ✓ Uniformity of thickness
- ✓ Tenacious bond strength
- ✓ Excellent chemical resistance, and;
- ✓ Is free of pitch and does not bleed through porous materials

Physical description and properties

Mass per unit area:	1066 ± 22gm^{-2}	AS 2324	Appendix D
Water absorption:	(%) - 0.40 ± 0.05	AS A121	Appendix K
Mean tensile strength:	45.5 MPA	Std. Dev. 4.9	AS 1145
Loss of volatiles (% volume):	(%) - 0.55 ± 0.01	AS A121	Appendix J
Alkali resistance:	No evidence of degradation	ASTM.D543	1978

Performance properties

Colour:	Wet-seal Jade	Appearance:	Smooth
Cure:	24 hours @ 23°C/55% RH	Specific gravity:	0.95 - 1.15 approximately
Flammability:	Flammable	Application of trafficable products:	48 hours

Precaution

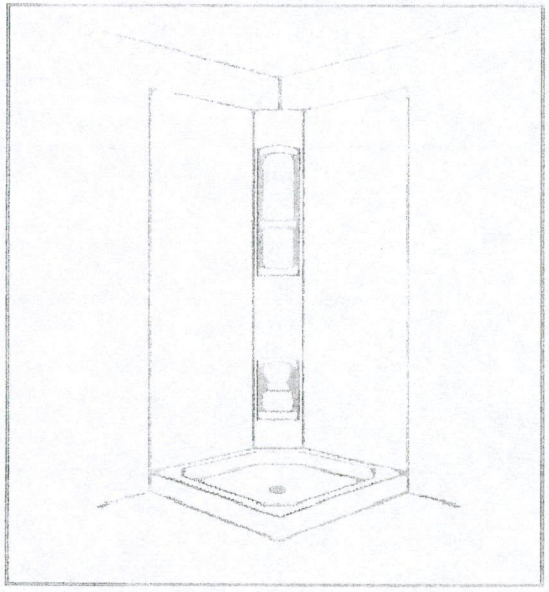
- ✗ This is not a vapour barrier
- ✗ Must not be applied to any contaminated surface
- ✗ This membrane is not designed to stop hydrostatic headwater pressure
- ✗ Must not be applied to a surface with a temperature of less than + 7°C

Health and Safety

The Franchised applicator must comply with the Wet-seal Health & Safety Manual.

CLEARLITE Bathrooms

ACRYLIC SHOWER TRAY AND ACRYLIC SHOWER LINING INSTALLATION INSTRUCTIONS



Important note for Tiled Wall Installations.

Please check for any special installation requirements that may be required for the doors. Some doors will require the wall receivers to be fitted on top of the waterproof membrane prior to tiling application.

Dear Purchaser/Installer

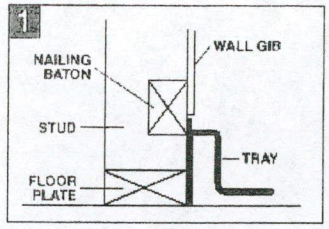
Thank you for purchasing a Clearlite Bathrooms product. We are proud to be 100% NZ owned and operated with over 30 years experience in the bathroomware industry. We hope you enjoy your Clearlite Bathroom experience.

You are about to install a Clearlite Bathrooms product. The unit that you have purchased has been designed and manufactured to the highest possible standard. Please read and ensure that you fully understand the installation principals and how they apply to your unit. Bear in mind that useful old adage - "measure twice and cut once".

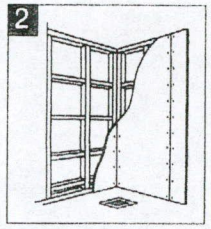
Please note that before wrapping this product it was cleaned and polished under bright lights.

For your own peace of mind, please unwrap and check the product carefully as we cannot accept responsibility for damage that may occur in handling or installation.

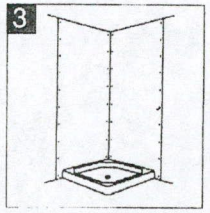
Important Note :- For ease of installation and best visual appearance you should ensure that the walls and floor are square, level and plumb.



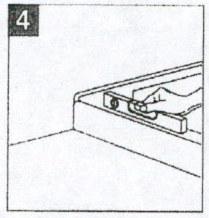
Please read the complete installation instructions before proceeding.



Use wet wall gib to line your walls and double nail into studs with a 200mm minimum centre. Do not stop, seal or sand the surface, as this will affect adhesion.
At this stage, the hole in diagram 2 in which the waste is located needs to be filled with sand or dry mix on concrete floors, nogs on timber floor and levelled, this is to ensure tray and waste are supported on all load bearing areas particularly around the waste.



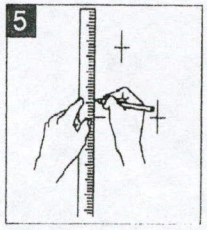
Place the shower tray into position, and mark around the tray. Cut away the gib 10mm above your pencil line and rebate the tray into the wall. Refer to diagram 1.
Note: Ensure walls are square and plumb and that the floor is level. If walls are not square, you may need to rebate the tray into the bottom plate and studs of the wall to ensure the wall lining fits properly.



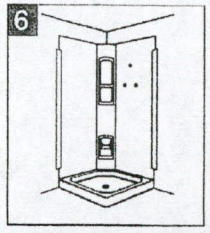
Place the tray into position and check that it is level and that the tray and floor waste holes line up. Remove tray, apply "no more nails" or similar product to PVC rings, and a bead of silicone along the bottom plate of the walls(this will prevent squeaking),place tray into position.

Warning

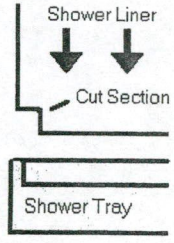
Warranty will be void if the base is not fully supported

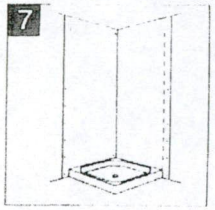


Have a plumber install the shower fittings, and then mark the position of the holes on the liner. Carefully drill holes in the liner for the shower fittings.
Refer to page 4 for drilling details.

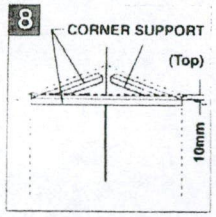


Trial fit the liner by taping it temporarily into position. If for any reason the liner requires cutting to the bottom corners (Pictured right) Use a fine tooth hacksaw and proceed with caution. Edges can be smoothed with a second cut file and medium fine sandpaper.

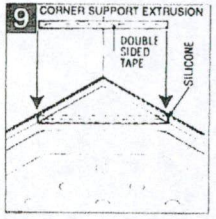




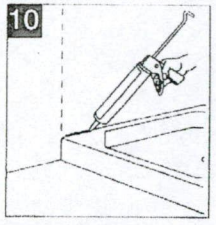
Mark around the liner before removing from wall.
Before gluing, ensure the gib surface is flat, clean and dry.
Any dust, protruding nails, loose paint or plaster will prevent the wall liner from adhering properly.



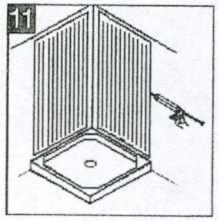
Steps 8 & 9 apply to **Millennium corner moulded liners only**.
Mark the wall where the liner cuts across the corner and fit top support extrusion strips (supplied with the liner) as shown in diagram 8. The diagonal strip should be fixed to the back of the liner. Once the liner is in position, fit and seal the plastic triangle cover supplied with the liner, over the support extrusion strips and seal in place within the white NG silicone



Having fitted the top support strips, fit bottom support extrusion to tray. This should be set at 45° across the corner of the tray to support the bottom edge of the corner liner. N.B. the corner support extrusion has double-sided tape fixed to one side to hold it in place on the tray. Refer to page 4.

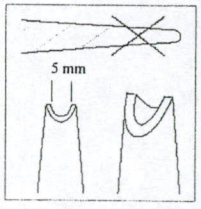


Before fitting the liner, ensure both surfaces to be bonded are clean, dry and grease free. Apply a bead of silicone sealant along the top of the shower trays upstand as illustrated on page 4. This includes the bottom corner support extrusion for Millennium corner moulded liners. (See over page for more details).



Use only the adhesive supplied.
Apply an adhesive bead of 5-6mm in vertical lines at approximately 50 mm centres, then a continuous bead 10 mm inside the perimeter of shower liner. As illustrated in diagram 11. Now place shower liner onto wall and firmly press over the entire sheet, ensuring that complete contact with all beads of adhesive is achieved. It is recommended that 3-sided liners be braced in position. Bracing if required should remain in position for not less than 18 hours. Do not use the shower for at least 24 hours after installation.
Poor adhesion may occur if instructions are not followed.
Refer to adhesive tube for manufactures recommendation.

- **The wallboard/gib should not be plastered/stopped as this will reduce adhesion.**
- **Do not attempt to adhere to painted or sealed wall boards/gib.**
- **Do not apply blobs of adhesive as these may cause unsightly undulations in the liner.**



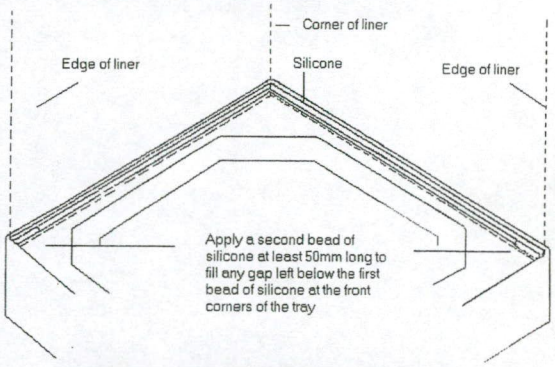
Finally, once liner is installed remove any silicone or adhesive that has been forced out during liner installation.

DETAIL APPLICATION OF SILICONE

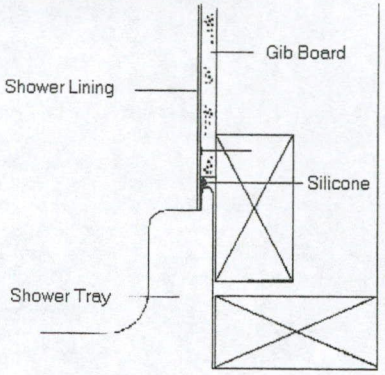
(Refer diagram 10 from page 3)

Silicone Application

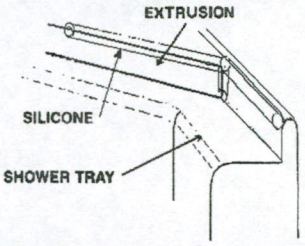
Note: No silicone should be visible inside shower.



Recessed Trav

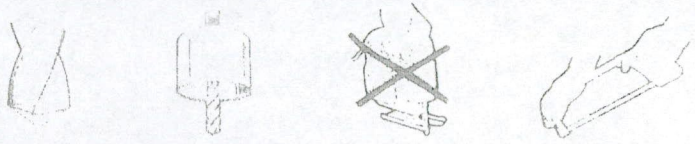


Corner Support Extrusion Millennium Corner Moulded



In line with BRANZ recommendation, we suggest that silicone be applied to the top of the acrylic liner. This is to prevent any moisture penetrating down behind the lining.

If the acrylic is to be cut, use a fine tooth hacksaw and very carefully cut the acrylic.
To smooth edges off use a fine tooth file or wet & dry sand paper. For a high sheen finish, use an abrasive cleaner such as Brasso to burnish.
Small holes can be drilled using a twist drill with the cutting edge backed off with an oilstone (the sharp edge dulled) to prevent 'grabbing'. For larger holes, use a fine tooth hole-saw.



Clearlite Bathrooms
54-58 Hillside Road
Private Bag 40 902 Glenfield
Auckland 1310, New Zealand

CLEARLITE Bathrooms

Telephone 09 444 3780
Facsimile 0800 88 00 11
Email info@clearlite.co.nz
Website www.clearlite.co.nz

Issue Date:- Aug 06

Pre-Release GIB EzyBrace® 2011

Demand Calculation Sheet — single storey — V01/11

Job Details

Name	DUFF RESIDENCE
Street and Number	BARKERS ROAD
Lot and DP Number	LOT 17
City/Town/District	METHVEN
Designer	M Cronin
Company Name	Cronin Design
Date	31/05/2011

Select Lining Option: 10 or 13 mm GIB® Plasterboard

Building Specification

		Single Floor	Complete Single Floor Column only
Number of storeys	single		
Floor Loading	2kPa		
Foundation Type	slab		
Cladding Weight		heavy	
Roof Weight		light	
Room in Roof Space		no	
Roof Pitch (degrees)		25	
Roof height above eaves (m)		3.4	
Building height to apex (m)		5.8	
Ground to lower floor level (m)			
Stud Height (m)		2.4	
Building Length (m)		26.1	
Building Width (m)		15.8	
Building Plan Area (m2)		260	

Building Location

Wind Zone	***Very High***	**Earthquake Zone**	**Soil Type**
Select by Building Consent Authority Map		2	D&E (deep to very soft)
or Preference	Not Available		
Wind Region	A		
Lee Zone	yes		
Ground Roughness	Urban		
Site Exposure	Exposed		
Topographic Class	T1		

Consult NZS3604:2011 for detailed Earthquake and Wind Zone definitions

Bracing Units required for Wind

Demand W (BU)		Walls single
along	slab	1276
across	slab	2552

Bracing Units required for Earthquake

Demand along / across E (BU)		Walls single
slab		1640

DUFF RESIDENCE M Cronin

Pre-Release GIB EzyBrace® 2011

SINGLE OR UPPER STOREY WALLS ALONG

V01/11

Lines		Bracing Elements							
1	2	3	4	5	6	7	8	9	10
Line Total Check	Line Label	Bracing Element No.	Available Wall Length L (m)	Angle to Bracing line (degrees)	Element Height H (m)	Bracing Type	Supplier	Bracing Units Achieved	
								W	E
OK	A	1	0.6		2.4	EP1	Ecoply	78	78
		2	0.6		2.4	EP1	Ecoply	78	78
		3	0.6		2.4	EP1	Ecoply	78	78
		4	0.6		2.4	EP1	Ecoply	78	78
check	B	1	0.6		2.4	EP1	Ecoply	78	78
OK	C	1	3.5		2.4	GS1-N	GIB®	245	210
		2	2.4		2.4	GS1-N	GIB®	168	144
		3	0.6		2.4	EP1	Ecoply	78	78
OK	D	1	1.2		2.4	EP1	Ecoply	156	156
		2	2.6		2.4	GS1-N	GIB®	182	156
OK	E	1	2.7		2.4	GS1-N	GIB®	189	162
			2.7		2.4	GS1-N	GIB®	189	162
			1.2		2.4	EP1	Ecoply	156	156
			1.2		2.4	EP1	Ecoply	156	156
			4.1		2.4	GS1-N	GIB®	287	246
	F								
	G								
	H								

Approved Building Consents

BC 0515/11

Ashburton

					Wind	Earthq.
Totals Achieved	W	172%	EQ	123%	2196	2016
Concrete Slab					OK	OK
Totals Required (from Demand)					1276	1640

DUFF RESIDENCE M Cronin

Pre-Release GIB EzyBrace® 2011

SINGLE OR UPPER STOREY WALLS ACROSS V01/11

Lines		Bracing Elements							
1	2	3	4	5	6	7	8	9	10
Line Total Check	Line Label	Bracing Element No.	Available Wall Length L (m)	Angle to Bracing line (degrees)	Element Height H (m)	Bracing Type	Supplier	Bracing Units Achieved W	Bracing Units Achieved E
OK	M	1	0.6		2.4	EP1	Ecoply	78	78
		2	1.2		2.4	EP1	Ecoply	156	156
		3	0.6		2.4	EP1	Ecoply	78	78
		4	0.6		2.4	EP1	Ecoply	78	78
		5	0.6		2.4	EP1	Ecoply	78	78
OK	N	1	1.1		2.4	EP1	Ecoply	143	143
			1.9		2.4	GS1-N	GIB®	133	114
			1.5		2.4	GS1-N	GIB®	105	90
OK	O	1	1.1		2.4	EP1	Ecoply	143	143
		2	4.9		2.4	GS1-N	GIB®	343	294
OK	P	1	4.2		2.4	GS1-N	GIB®	294	252
		2	2.1		2.4	GS1-N	GIB®	147	126
		3	3.3		2.4	GS1-N	GIB®	231	198
OK	Q	1	3.1		2.4	GS1-N	GIB®	217	186
		2	1.1		2.4	GS1-N	GIB®	75	66
OK	R	1	1.2		2.4	EP1	Ecoply	156	156
		2	1.2		2.4	EP1	Ecoply	156	156
		3	0.4		2.4	EPG	Ecoply	48	50
	S								
	T								

Approved Building Consents Documents
05157/11
Ashburton District Council

					Wind	Earthq.
Totals Achieved	W	104%	EQ	149%	2659	2442
Concrete Slab					OK	OK
Totals Required (from Demand)					2552	1640

NZsolar
New Zealand

Summary of System Specifications for Solar panel at:

Address: ***Name:***

General Information:

Site Plan:

1. Designer to supply

Floor Plans:

2. Designer to supply

Roof Plan:

3. Location of Panels designer to supply
4. Dimensions of 30 tube panel = one panel 2.150m Wide X 1.850m Long. Refer page 4 solar specs
5. Panels are always centre in roof. Panels placed more than a 200mm distance from any gabl
6. Panels sit only 300mm off roof. Under recession angle

Solar Heating Compliance:

7. Test Certificate refer to page 9 of Solar Specs

B1 – Structure:

8. Building Structure complies with all points outlined in G12/AS2 1.1.1.
9. Total weight kg/sqm = 21.370. Refer page 4 Solar Specs
10. Roof Pitch less than 45 degrees. Refer to drawing
11. Wind Zone – Refer to designer
12. Solar Collector Area per panel = 3.97 sq/m. Refer page 4 Solar Specs
13. Snow Load – Refer to designer
14. Solar Panel is fitted parallel to roof pitch.
15. Location of solar panel complies to Fig 2 G12/AS2. Refer to Designer

Collector Fixing:

16. Refer to page 6 of the solar specs for fixing details for actual roofing type.
17. Panel fixings to this roof is as 'Collector Mounting' and 'Solar water heater fixing detail' of specification pack – pages 5 & 6. The panel will have 6-9 galvanized roof screws fixing to the roof.
18. Support is within 200mm of collector edge. Refer to drawing.
19. Weight of panel is within G12 Limit so does not compromise roof framing strength.
20. Collectors have spacer blocks. Refer page 5 of solar specs.

Storage Tanks:

21. Refer to designer/drawings

B2 – Durability

22. Roof Material – Coloursteel
23. Frame Material – Powder coat Aluminium
24. Fixings – Galvanized Roof Screws
25. Collector Material – Powder Coat Aluminium

26. Pipe Flashing – Sealed with 'Dektite' roof flashings as per fig 6 G12/AS2. refer page 8 solar specs

27. Contact & Run off complies with Table 2/3 – Refer Aluminium Coated

Exposure Zone:

28. Drain Lines – Refer page 7 of solar specs for plumbing schematic.

29. No External relief – Refer page 7 of solar spec for plumbing schematic.

30. The frost protection is automatically controlled by electronic solar controller.

31. Insulation is covered by Ventura UV Tape

E2 - External Moisture

32. All Pipes Penetrations are as per fig 6 G12/AS2. refer page 8 solar specs

33. Sealing thru roof is as per fig 6 G12/AS2. refer page 8 solar specs

G12 – Water Supplies

34. Pipe Diagram refer page 7 of Solar Specs

Legionella Control:

35. This is automatically controller by solar controller

Safety Devices

36. Refer to designer

37. Storage capacity of a 30 tube collector with 300L cylinder is 75.56 lt/m2.

H1 – Energy Efficiency

38. Refer to designer

Central Heating New Zealand Ltd
11 Parkhouse Rd
PO Box 31-274, Christchurch
Ph 03 357 1233 Fax 03 343 1236
www.centralheating.co.nz

Central Heating
NEW ZEALAND

Brent Anderson
C/- Lot 17 Barkers Road
Methven

17th May, 2011

Dear Brent,

HEATING DESIGN SOLUTION: Lot 17 Barkers Road, Methven

Thank you for the opportunity to quote for the installation of central heating to this home. This system has been designed with the client's specific requirements in mind. We can provide the complete home heating solution (excluding the bedrooms) as requested.

SYSTEM VALUE

To fully install your central heating system as specified below is **$18,953.00** plus GST.
This includes items 1 - 4.

The specifications of your system would be:

1. HEAT SOURCE

- A Firebird condensing (high efficiency) diesel boiler (26kW) with a low level horizontal balanced flue, situated in the garage.
- A 460 litre aluminium fuel tank situated outside. We have allowed for the tank to be a maximum of 5m from the boiler.

Please note that several councils are changing the rules regarding fuel tanks requiring bunds (secondary containment). In the past this has not been necessary under Ashburton District Council but could change in the near future. If a bund is required to obtain your diesel permit there will be an additional cost of **$530.00** plus GST for 460 litre tanks or **$698.70** plus GST for 880 litre tanks.

2. CONTROL SYSTEM

The boiler will be controlled by a Honeywell two channel programmer. This unit allows the underfloor heating and domestic hot water heating to operate independently of each other. A remote "Aube" thermostat with floor probe will allow the clients to set the overall temperature of the home. This will be located in the family / dining area.

NOTE: Your electrician will need to pre-wire and connect all electrical aspects of this system. We do have an in-house electrician who is familiar with these systems and we would be happy to price for this aspect of the installation.

3. UNDERFLOOR

There would be provision for five underfloor heating zones, which can be manually controlled at the manifold.

- The underfloor manifold will be situated in the hall cupboard outside the laundry.
- 16mm "Multitubo" underfloor PE-RT pipe leading from the manifold will be laid and secured on the reinforcing mesh during construction. This pipe features an oxygen barrier which is very strong and resists damage during installation.
- We will use 150mm spacing for our pipe loops in the floor slab.
- A temperature probe will be located in the floor slab and a room thermostat in the main living area for control of the house temperature.
- All pipework is pneumatically pressure tested before the slab is poured and left pressurized during the construction period.

To give good living temperatures with reasonable running costs, inslab underfloor heating requires constant running. The reason is that the slab is a large mass to warm, and it is easier to keep warm than reheating every day. At each start of the season, the floor will take 8 hours to respond and consume more energy than when the floor is up to temperature.

Zone 1 (master)	Entry, Nook, Family, Dining and Kitchen
Zone 2	Lounge
Zone 3	Hallway
Zone 4	Laundry, WC and Bathroom
Zone 5	Ensuite

Due to physical restrictions when laying under floor pipe, the zoning may alter slightly from the intended design.

- We recommend that your builder lays at least 70mm "Gold foam" or 100mm of high density polystyrene under and around the edge of the concrete slab during construction for the **Underfloor** areas only. You may opt for lower specification insulation if you require, however heat loss will be greater and will increase running costs
- No saw cuts are allowed in the concrete slab, with Underfloor heating. We recommend LESA or CANZAC or CRACKMATE reinforcing system to remove the need for saw cuts.

Please note: To keep costs to a minimum, the following quotation is based on the most economic method of installation, which is tying the underfloor pipe loops to the reinforcing mesh. This requires the concrete slab to have no saw cuts and we recommend the use of crack inducers (see underfloor recommendations). Should your builder insist on saw cuts, there will be additional design and installation costs for your underfloor system.

4. DOMESTIC HOT WATER BOOST

Our "Honeywell" controller gives us the ability to boost the domestic hot water heating when your solar system is not sufficient. Your solar hot water cylinder supplier will need to fit a heat exchanger coil (minimum of 20m of 20mm coil) for us to connect to and a cylinder probe pocket.

Please note:

- The cylinder supply, installation and domestic plumbing would be completed by your plumber.

5. TOWEL RAIL OPTION

As requested it is possible to install two water filled ladder style towel rail radiators (bathroom and ensuite). These would be 1200mm high x 600mm wide and would operate when the underfloor system is running.

Our quotation to supply and install 2x **white** towel rails is **$1,905.00** plus GST.
Our quotation to supply and install 2x **chrome** towel rails is **$2,682.00** plus GST.

It is also possible to fit an electric element to each towel rail for summer operation.
Our quotation to supply and fit two electric elements (excluding electrical connection) is **$294.00** plus GST.

Total Design Time Taken (3hrs @ $150/hr) $450.00
Waiver of Design Fee **-$450.00**

You will not be charged for the above design fee. It is an indication of the time spent (value to the customer) by our engineers in getting the proposal to this stage

PLEASE NOTE:

The following will be yours, and your builder's responsibility:

- A level concrete pad for the diesel tank (1550mm x 700mm x 100mm deep).
- A trench for fuel line where required.
- Access and trenching for running pipes & conduits through foundations and tailings, to be provided where required.
- Access to be provided for pipe routes within the house in the event of steel or concrete beams.
- To provide a condensate drain for the boiler
- To provide a water supply at the heat source location.
- Electrical wiring every aspect of this system. A wiring diagram and requirements will be sent on request.
- Your plumber to install the cylinder and complete the domestic plumbing, including installation of a water tap next to the heat source. Requirements will be sent to you on request.
- A diesel permit (we will supply a producer statement for this.)
- Supply of fuel is required for commissioning the system.
- A copy of final plans to be given to us prior to installation. Please advise us of any changes to the plans.

Please make sure your builder and any sub trades are aware of the requirements listed above.

OPTIONAL EXTRAS

Extras which may be added to your heating system	
Electronic Remote Diesel Fuel Gauge	$283 +GST
Upgrade to 880 litre aluminium diesel tank	$550 +GST

VARIATIONS

- Any variations to this quote must be agreed by Central Heating New Zealand Ltd and confirmed in writing.
- This includes any changes to equipment positions once they have been piped.
- Extra charges will occur for variations.
- Specific stage site visits have been allowed for in this quote which is sufficient to complete the installation, provided that work is not held up or hindered by other contractors. Should visits be wasted or extra visits required, these will be invoiced in addition to the amount stated in the quote.
- You may accept CHNZ's offer to carry out this engagement on the terms and conditions attached, by signing below in the space provided and returning it to CHNZ with the deposit.
- Should CHNZ not receive such a signed copy, but the Client continues to instruct CHNZ once installation has started, then the Client will be taken to have accepted the terms and conditions of the quote.

Don't just take our word for it! Here's what our customers have to say!

Peter & Joy Harding

New home with a wood pellet boiler central heating system, underfloor heating, radiators, solar panels & hot water cylinder

"....The customer service that we have received from Central Heating New Zealand has been exceptional; they are an extremely professional and responsive company, providing individualised solutions and a high standard of workmanship. From planning, through to installation, after sales service and ongoing maintenance they are one of the best companies we have dealt with...."

Mark & Trish Pringle

New home with a diesel boiler and radiator system

"....Best company to deal with in the whole building process! Nice to deal with, efficient, excellent knowledge, fantastic service, on top of things the whole way, good follow up! ..."

Elizabeth Stewart

Retro-fitted radiators put into an existing central heating system

"...The heating has made a HUGE difference to us. Henry, who is 4 months old had a persistent cough and this has diminished hugely (to my amazement), and Sera, who is 3 years old, has not needed any ventolin since the system was commissioned.

Everything was so professional. What a relief. From pricing, to planning, to (I imagine) the guys installing things having a planning meeting before the installation occurred. I am REALLY impressed with the service and incredibly grateful for it...."

PAYMENT

Our terms of payment are: a 20% deposit to be paid on acceptance of the quotation, followed by progress payments as work is executed and materials delivered to site. These payments are due within 7 days of receipt of the invoice. The balance must be paid on the day of commissioning; this means when the system becomes operational. Please see the terms and conditions attached.

- The deposit holds the price of the product for the installation for a period of 6 months from date of payment. If the installation runs over the 6 months, you will have the opportunity to purchase the product at the quoted prices. If this option is not taken up, then any increase in product prices will be charged. (This is due to the products being sourced from Europe and our exposure to exchange rates).
- If retentions are to be withheld we reserve the right to charge additional finance costs as required.
- Please note our prices are based on payment within seven days. If our claims are not met we reserve the right to withdraw our services until payment is made.
- You may require a design producer statement for building consent. We are happy to produce this for a fee of $500 including GST. This does not hold the price of any quote but will be deducted from the deposit at time of acceptance.

This quote is valid for 30 days from the date of issue.

To move forward to the next stage, we will contact you to talk through the installation process in more detail, including the timing of installation, our terms and conditions, deposit requirements etc. If you have any queries, please don't hesitate to contact me.

Yours faithfully

Glenn Pearse

Glenn Pearse

ALL PARTIES PLEASE SIGN HERE:

SIGNED_____ **DATE**_____
NAME_____

Yes, I/We accept the above quotation & would like the above works to be carried out as outlined in this letter. I/We agree to the above terms & I/We would like to enter into a contract for the works to commence.

SIGNED ON BEHALF OF CENTRAL HEATING NEW ZEALAND:

SIGNED_____ **DATE**_____
NAME_____

TERMS AND CONDITIONS OF CONTRACT

1. **INTERPRETATION**

Client means the person, firm, company, trust or entity that purchases the Products from CHNZ;
CHNZ means Central Heating New Zealand Limited;
Terms and Conditions means these terms and conditions to be read and construed with each Quotation provided by CHNZ;
Contract means an agreement between the Client and CHNZ comprising the Quotation and the Terms and Conditions;
Contract Price means the price quoted within the Quotation;
Products means the products sold by CHNZ to the Client under a contract:
Quotation means the quotation provided by CHNZ to the Client for the purposes of supply and installation of the Products, which shall form part of and be read and construed with these Terms and Conditions:
Site is the place of delivery for the Products set out in the Quotation.
Unless the Client and CHNZ otherwise agree in writing, the Terms and Conditions and the items set out in the Quotation shall apply to all supply and installation of Products and no other conditions shall apply. Quotations by CHNZ shall remain open for acceptance within 30 days from the date of Quotation.

2. **FORMATION OF CONTRACT** No contract shall come into existence until the Client has signed and returned the Terms and Conditions and the Quotation and paid the deposit of 20% of the Contract Price to CHNZ. The Client cannot cancel a Contract after the contract has come into existence and is bound to pay the Contract Price.

3. **CONTRACT PRICE**

(a) CHNZ reserves the right to alter the Contract Price or charge for any variations to the Contract and shall be entitled to rely upon the accuracy of any plans, specifications and other information provided by the Client.
(b) Unless stated otherwise, all prices quoted by CHNZ are exclusive of GST and other taxes, which are payable by the Client.
(c) Payment of the deposit holds the contract price of the installation for 6 months only. CHNZ reserves the right to inform the client of an impending price rise before the expiry of this 6 month period. The client then has the opportunity to pay for the major remaining installation components at the original contract price or accept the new price set by CHNZ.
(d) All special order products will be invoiced at the time of CHNZ ordering from its suppliers.
(e) A breakdown of the expected progress payments of the total installation can be requested by the Client. The Client will be required to make the progress payments as itemized by CHNZ.

4. **DELIVERY AND INSTALLATION**

(a) Any dates quoted by CHNZ for delivery and installation of Products are approximate only and shall not form part of the Contract. CHNZ shall use its best endeavors to deliver the Products by the quoted date, however it shall not, under any circumstances, be liable for any costs, expenses, damages or loss of profits incurred by the Client as a result of a delay in delivery.
(b) All risk in the Products shall pass to the Client upon delivery. CHNZ will not be liable for any loss or damage to materials delivered to, or installed on Site which is caused by any party other than CHNZ.
(c) Satisfactory access to the Site for trucks is to be provided by the Client. Additional expenses incurred by CHNZ in connection with delivering the Products to the Site, if such access is not available, will be borne by the Client.
(d) CHNZ shall exercise reasonable care and skill in performing installation services to the best of their ability.
(e) CHNZ reserves the right to substitute any Product or materials used in installation of the Product for one of equal or greater quality.
(f) Extra costs incurred by CHNZ caused by the Client's actions (including without limitation by client's instructions or lack of instructions, interruptions, mistakes, or additional work for which CHNZ is not responsible under this Contract) shall be paid by the Client to CHNZ on CHNZ's presentation of its invoice.

5. **PAYMENT**

(a) Payment is to be made on receipt of invoice and as detailed in the Contract, the final amount being due on the day of Installation of the Product.
(b) CHNZ reserve the right to invoice for materials associated with the heating installation as and when they are delivered to the site and invoice progress payments for work completed regardless of any payment schedule provided.
(c) Time for payment is of the essence and, without prejudice to any other rights of CHNZ, if the Client fails to pay any sum payable pursuant to any Contract when due:
   1. CHNZ may treat the Contract as repudiated by the Client or may until payment in full is made, suspend delivery of Products without incurring any liability whatsoever to CHNZ;
   2. the Client shall pay interest to CHNZ at the default interest rate of 5% per annum above the current overdraft rate which CHNZ has with its principal trading bank, payable daily until the date when payment is received; and
   3. the Client shall be liable for all expenses and costs (including legal costs) in relation to CHNZ enforcing or attempting to enforce a Contract or these Conditions.
(d) The Client shall not be entitled to make any deduction from the Contract Price of the Products in respect of any set-off or counterclaim or withhold any payment by way of retention without the prior written approval of CHNZ.
(e) Notwithstanding any rights of lien to which CHNZ may otherwise be entitled, CHNZ shall have a specific lien (including a right of sale) over the Products the subject of a Contract until the price of the Products has been paid.
(f) CHNZ may at its sole discretion require security for payment and may withhold delivery or fixing until sufficient security, including personal guarantees, is provided, or alternatively CHNZ may require pre-payment for further supplies.

6. **OWNERSHIP**

(a) Title to the Products shall not pass to the Client until payment in full of all indebtedness to CHNZ on any account whatever, whether in respect of this Contract or any other contract (herein referred as Total Indebtedness).
(b) The Client hereby grants CHNZ its agents and servants irrevocable authority to enter onto the Client's premises to identify and inspect the Products until such time as ownership passes to the Client and to take possession and remove the same without being responsible for any damage thereby caused and without in any way being liable to the Client or any person claiming through the Client and CHNZ may resell such Products and apply the proceeds in or towards payment of the Total Indebtedness.
(c) If CHNZ exercises its right to reclaim the Products it shall be entitled to dispose of them for its own benefit and the Client shall indemnify CHNZ for:
   1. Any shortfall incurred by it on realisation against the Contract Price at which such Products were contracted to be bought by the Client;
   2. Any costs incurred by CHNZ in the exercise of its right to reclaim the Products, whether relating to the repossession, storage or resale of the Products (including legal costs as between solicitors and own client).
(d) Nothing in this clause shall be construed as permitting the Client to return the Products or any part of them for any reason.
(e) The Client shall not sell, hire, part with possession, or otherwise dispose of all or any part of the Products until either payment in full for the Total Indebtedness is made to CHNZ by the Client or the consent in writing of CHNZ is obtained to such sale, hiring or parting with possession in which case the said sale, hiring or disposal shall be for and on behalf of CHNZ. Where Products or any part of the Products are sold prior to payment in full by the Client, then the proceeds of such sale shall be the property of CHNZ and shall be kept in a separate identifiable account by the Client for payment to CHNZ. The Client will hold all proceeds of sale or disposition on trust for CHNZ.
(f) If at any time prior to payment by the Client to CHNZ for the Products the Client shall become bankrupt or go into receivership and/or liquidation, then the balance of the Contract Price hereunder shall immediately become due and payable and CHNZ shall be entitled to retake possession of the Products forthwith.
(g) Where the Products or services are required by the Client for business purposes, the Client agrees that the Consumer Guarantee Act 1993 does not apply.
Nothing in this Contract will be interpreted to have the effect of contracting out of the provisions of the Consumer Guarantees Act 1993 except to the extent permitted by the Act and all provisions of these Terms and Conditions shall be read and modified to the extent necessary to give effect to that intention.

7. **INFORMATION**

The Client acknowledges and explicitly authorizes CHNZ to:
a. Collect information about the Client from any other person and consents to any person providing CHNZ with such information.
b. Use any information it holds about the Client, and
c. Disclose information about the Client to any person in the course of CHNZ's business, including assessment, debt collection and direct marketing activities.

8. **WARRANTY**

(a) CHNZ stands by the Product manufacturer's warranty provided the Client's claim is within the provisions of the manufacturer's warranty in relation to the Products sold to the Client (Standard Warranty). CHNZ shall, in its discretion, repair or replace defective Products, or refund the Contract Price to the Client, provided:
   i. The Products have been used correctly;
   ii. The Client has notified CHNZ of the defect within 7 days of the alleged defect first coming to the Client's attention; and
   iii. The Client has supplied the date and the invoice relating to the Products when requested to do so by CHNZ.
(b) This Standard Warranty does not cover damage, fault, failure, or malfunction due to:
   i. External causes, including accident, abuse, misuse and problems with electrical power:
   ii. Any repairs, servicing or work on the Products which is not authorized by CHNZ;
   iii. Usage, storage or installation not carried out in accordance with CHNZ and/or manufacturer's instructions;

iv. Failure to perform required preventative maintenance;
v. Normal wear and tear, act of God, fire, flood, war, act of violence or any similar occurrence;
vi. Problems caused by use of parts and components not supplied by CHNZ.

(c) The Standard Warranty does not cover any third party components or materials that are purchased for or used in Products for the Client. The third party manufacturer's warranty shall be the sole warranty in respect of such components or materials.

(d) To the full extent permitted by law, but subject to the express provisions of clause 8(a):
i. CHNZ gives no representation or warranty whatsoever as to the condition or quality of the Products or as to their suitability or fitness for their ordinary or special use or purpose and the description of the Products in any contract in other document shall not import any such condition or warranty on the part of CHNZ;
ii. All statutory and implied conditions and warranties except as to title are excluded; and
iii. It is the responsibility of the Client to satisfy itself as to the condition, quality, suitability and fitness of the Products for its purposes and the Client accepts the Products on this basis.

(e) CHNZ shall be under no liability whatsoever for any failure of the Products to correspond with any description, including without limitation, any description relating to quantity, dimensions, weight or other statements relating to the Products.

9. **LIMITATION OF LIABILITY**

(a) To the full extent permitted by law, CHNZ will in no circumstances be liable to the Client (whether in contract, tort or otherwise) for any loss (included but not limited to any loss of profits and consequential loss), damage or expense, sustained or incurred, by the Client or any other party, whether direct or indirect, special or consequential, arising directly or indirectly out of the supply of or failure to supply Products or any negligence by CHNZ. This includes the supply, performance or use of any Products or services.

(b) If notwithstanding clause 9(a), CHNZ is found to be liable to the Client in any circumstances then CHNZ's maximum combined liability to the Client, if any, in contract, tort or otherwise, will be the amount equal to the lesser of the Contract Price for the Products and/or services under the Contract or the cost of replacement or repair of the Products. In the event that the Products are supplied to businesses, the Client acknowledges that the provisions of Consumer Guarantees Act 1993 shall not apply.

10. **INDEMNITY**

The Client shall comply with all instructions of CHNZ in relation to the handling, fitting, installation and use of the Products and, notwithstanding such compliance, the Client shall keep CHNZ indemnified against all costs, claims, demands, expenses and liabilities of whatsoever nature, including without prejudice to the generality of the foregoing, claims for death, personal injury, damage to property and consequential loss (including loss of profits), which may be made against CHNZ or which CHNZ may sustain, pay or incur as a result of or in connection with the manufacture, sale, export, import or use of the Products, unless such cost, claim, demand, expense or liability shall be directly and solely attributable to the negligence of CHNZ or the negligence of a duly authorised employee or agent of CHNZ.

11. **DEFAULT**

(a) In the event that;
i. The amounts payable by the Client to CHNZ are overdue, or the Client fails to meet any other obligation to CHNZ, under this or any other Contract or agreement or in CHNZ's opinion the Client is likely to be unable to meet any payment or other obligation to CHNZ; or
ii. The Client becomes insolvent, has a receiver appointed in respect of all or some of its assets, makes or is likely to make an arrangement with its creditors or has a liquidator (provisional or otherwise) appointed or is placed under saturator or official management; or
iii. The Client no longer carries on business or threatens to cease carrying on business; or
iv. The ownership or effective control of the Client is transferred or the nature of the Client's business is materially altered; **then**
v. CHNZ shall be entitled to cancel all or any part of any Contract with the Client which remains unperformed, in addition to and without prejudice to its other remedies; and
vi. All amounts outstanding under this Contract or any other Contract shall, weather or not due for payment, immediately become due and payable; and
vii. CHNZ shall be entitled to recover and re-sell the Products on commercially reasonable terms and apply the proceeds derived in or towards payment of the Contract price and other monies owing pursuant to the Contract and all costs and expenses incurred by CHNZ as a result of and incidental to any such action shall be payable to CHNZ by the Client upon demand, including any shortfall, incurred by CHNZ on realization against the Contract Price at which the Products were contracted to be bought ; and
viii. The Client irrevocably gives CHNZ and its agents and servants leave and license to enter on and into any premises or property occupied by the Client or any property on which the Products are stored or held without notice, in order to inspect, search for and remove the Products supplied and CHNZ shall not be liable to the Client or any third party for any damage of any kind whatsoever which may result from the exercise of its rights under this clause.

12. **HEALTH AND SAFETY**

The Client shall be responsible to ensure that it complies in all respects with the relevant provisions of the Health and Safety in Employment Act 1992 and the Health and Safety in Employment Regulations 1995 and any relevant code of practice. All reasonably practicable steps must be taken by the Client in relation to ensuring there is a safe place of work, including (but not limited to) the storage, handling and use of the Products and the health and safety of CHNZ' staff working on the Client's Site. All CHNZ's employees operate under CHNZ's own Health and Safety Policy.

13. **PERSONAL PROPERTY SECURITIES ACT 1999 ("PPSA")**

(a) The Contract constitutes a security interest in the Products for the purposes of the PPSA as security for payment by the Client of all amounts due under the Contract, including any future amounts.

(b) The Client agrees to promptly execute and deliver to CHNZ all assignments, transfers and other agreements and documents and do anything else which CHNZ may deem appropriate to perfect CHNZ's security interest in any Products, or obtain the priority required by CHNZ or register (and renew registration) a financing statement for a security interest in favour of CHNZ in the Products.

(c) To the extent that Part 9 of the PPSA applies, the Client agrees that the provisions of sections 114(1)(a), 117(1)(c), 120, 122, 133 and 134 of the PPSA which are for the Clients benefit, or place any obligations on CHNZ in the Client's favour, shall not apply; and where CHNZ has rights in addition to those in Part 9 of the PPSA, those rights shall continue to apply.

(d) To the extent that Part 9 of the PPSA applies, without limiting anything in the previous paragraph, the Client hereby waives its rights under sections 116, 119, 120(2), 121, 125, 126, 127, 129, 131and 132 of the PPSA.

(e) The Client hereby waives its right to receive a copy of a verification statement under section 148 of the PPSA in respect of any financing statement or financing change statement registered by CHNZ.

14. **MISCELLANEOUS**

(a) CHNZ reserves the right to subcontract the performance of the Contract or any part of the Contract to any other person.

(b) Failure by CHNZ to insist upon strict performance by the Client of any of the Terms and Conditions shall not be a waiver of any rights of CHNZ on any subsequent occasion.

(c) If any term or condition of the Contract is held to be invalid or unenforceable, the invalidity or unenforceability shall be deemed eliminated or modified to the minimum possible extent necessary to make the remainder of the Contract enforceable.

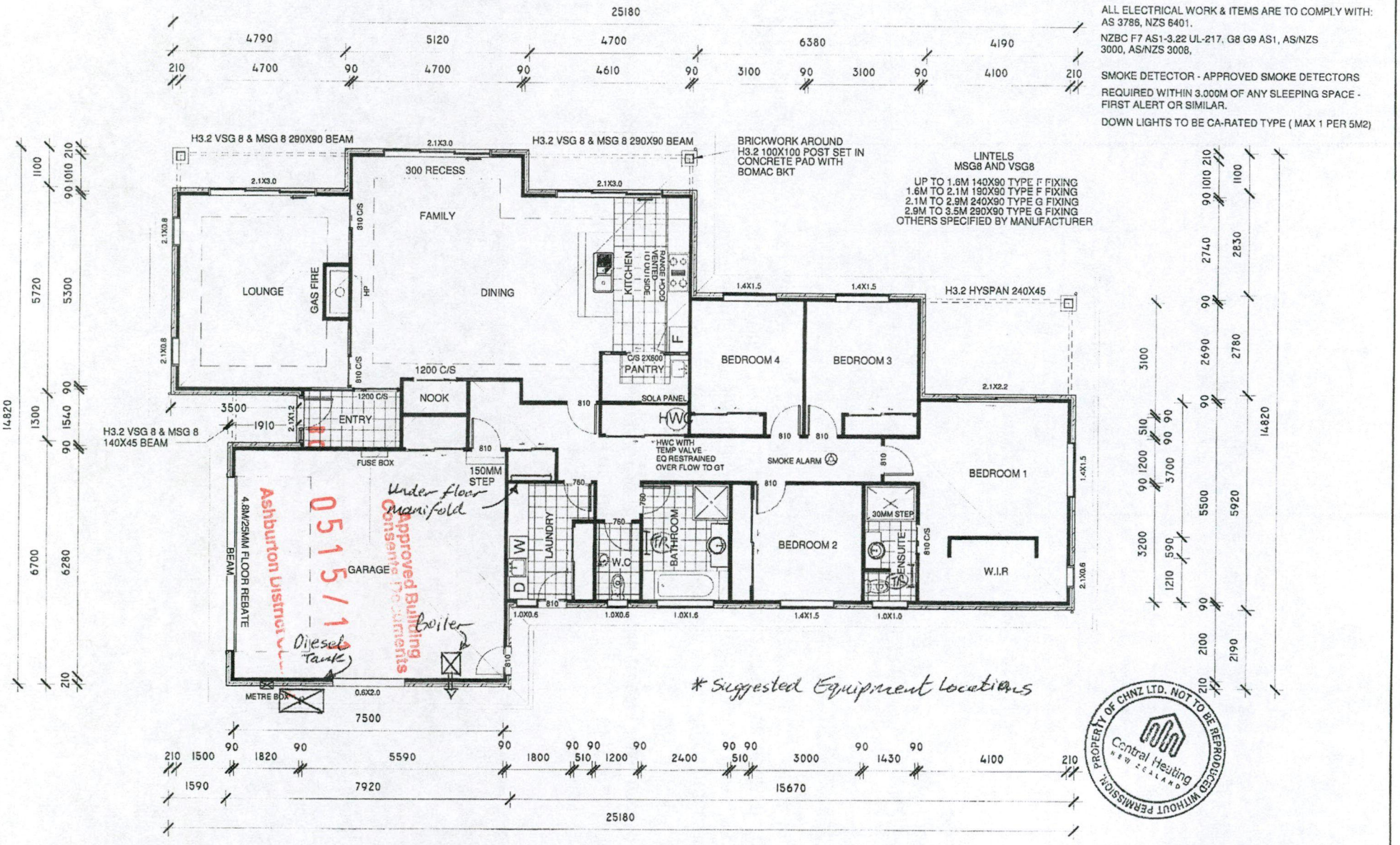
(d) This Contract may only be varied by CHNZ in writing in its absolute discretion.

(e) The Client may not assign or transfer or purport to assign or transfer any of its rights or obligations under or in connection with the Contract to any other person whatsoever.

(f) All Contracts made between CHNZ and the Client shall be governed by and construed in accordance with the laws of New Zealand and the Client agrees to submit to the non-exclusive jurisdiction of the New Zealand Courts.

(g) Neither party shall be liable for any delay, alteration or failure to perform its obligations under a Contract where occasioned by any event beyond that party's reasonable control ("Force Majeure") and such party shall be entitled to a reasonable extension of time for the performance of any such obligations.

(h) Any notice given by one party to the other shall be deemed to have been delivered 48 hours after posting to the recipient's registered office or last known address and immediately if forwarded by facsimile. (i) The Client shall pay the costs and expenses including legal fees incurred by CHNZ in exercising any of its rights or remedies or enforcing any of the Conditions.



C:\CRONIN DESIGN\MASTER FILE 2010\10200 PHILIP&IRENE DUFF\10200 PHILIP IRENE DUFF RESIDENCE.rvt

28/04/2011 6:30:06 p.m.

CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

LOT 17 BARKERS ROAD
METHVEN

Floor Plan
260M²
LOF 84M

Designed by	Date	Scale
A.L	20/04/11	1 : 100

New Dwelling

10200 | 02 of 17

WARRANTY

Central Heating
NEW ZEALAND

WARRANTY FOR SYSTEMS DESIGNED AND INSTALLED BY CENTRAL HEATING NEW ZEALAND LTD

Please Read Carefully

Central Heating New Zealand Ltd (CHNZ Ltd) warrants to the customer (providing the customer is the original purchaser of the goods and such goods are in the possession of and used by the customer) that the system and operation is warranted to be free from defects in materials and workmanship for the period specified below, from the date of purchase and delivery.

CHNZ Ltd will, free of charge, replace or repair (at CHNZ Ltd's discretion) any parts proved to CHNZ Ltd's satisfaction to be defective by faulty materials or workmanship.

OPERATIONAL WARRANTY

STANDARD WARRANTY

The system operation warranty on operation of the overall heating system is 2 years and includes parts, labour, and travel costs. This excludes servicing labour and consumables such as filters, elements and burner nozzles.

EXTENDED WARRANTY

$750 – extends the warranty on the boiler or heat pump to 5 years, including parts, labour, and travel costs. This excludes servicing labour and consumables such as filters and burner nozzles.

CONDITIONS OF WARRANTY

Repair work under this warranty is limited to service during normal working hours. A surcharge in respect of service outside normal working hours shall be borne by the customer.

The warranty covers the exchange of any faulty or defective parts or materials under the following conditions:

- The appliance/system has been used and maintained in accordance with the user manuals; and has not been tampered with, modified or otherwise subjected to misuse, neglect or damage.
- Equipment must be adequately protected from the elements or damage from other outside sources.
- The appliance/system has not been taken apart or repaired by anyone other than a qualified employee of CHNZ Ltd or other approved service personnel.
- The system has been serviced annually by CHNZ Ltd as per the user manual.
- If the cylinder (if installed) fails within the warranty period, we require a water quality survey to be provided. Should a water quality issue be found to be present, CHNZ reserves the right to withdraw the warranty.

WARRANTY EXCLUSIONS

- This Warranty shall not apply to any defect which, in CHNZ Ltd's opinion, arises due to misuse, neglect, negligence or accident; or to any damage caused by flood, fire or act of God.
- This Warranty shall not apply to any defect which, CHNZ Ltd's opinion, arises due to misuse, neglect, negligence or accident; or to any components or equipment manufactured or supplied by any person other than CHNZ Ltd's staff. CHNZ Ltd is not liable under any warranty, expressed or implied, unless the goods or equipment have been paid in full.
- This warranty does not cover consequential damages or damage caused by the failure of any product or component installed by CHNZ Ltd.

The terms of the Warranty above are expressly restricted to the repair and replacement of defective parts of the goods purchased and excludes every condition or warranty not herein set out. In particular, CHNZ Ltd is not liable or responsible, in any way, for any incidental or consequential damages or loss of any kind.

This warranty will continue in force for its original term, irrespective of what replacements may be made under it, but such replacements shall not attract any fresh warrant.

WARRANTY PERIOD FOR PARTS

The distributor of the parts offers the following product warranties outside the system warranty offered by Central Heating New Zealand.

PARTS	MANUFACTURERS WARRANTY PERIOD
RADIATORS	10 years
MULTITUBO PIPE SYSTEM*	10 years
GAS, DIESEL & WOOD PELLET BOILERS incl flues	2 years
FIREBIRD DIESEL BOILER HEAT EXCHANGER	5 years
HOT WATER HEAT PUMPS	2 years
HOT WATER CYLINDER	10 years - pro rata**
PUMPS & ELECTRICAL PARTS	1 year
FUEL TANKS	1 year
ALL NON RESIDENTIAL INSTALLATIONS	1 year

* Excludes incorrectly fitted connectors

**The hot water cylinder warranty is calculated according to the length of time it has been installed.
The amount paid is the replacement cost of the cylinder minus 10% for each year of service.

NB: Auto Air Vents and Pressure Relief Valves are covered by warranty on commissioning filling only.
The most common reason for AAV and PRV failure is either incorrect system fill pressure, incorrect expansion vessel sizing or foreign object damage (FOD) to the valve seats due to insufficient flushing and cleansing of the system prior to commissioning. We recommend calculation of heating system water contact to size the correct expansion vessel. We also recommend satisfactory flushing of the heat source and heating system and fitting of an air separator and dirt trap such as Spirovent or Magnaclean.

PLEASE NOTE: The warranty is limited to repair or replacement of parts and excludes labour and consequential loss.

NZsolar
New Zealand

Your Solar Hot Water Specialist's

Specifications

NZ Solar equipment has been tested and has the AS/NZS2712.2002 Standard.
This Collector has passed the impact test under AS/NZS2712.2007 clause 4.6.
Compliance Certificate was issued on the 14th April 2010
All equipment meets and exceeds ISO 9001 Standards

All NZ Solar systems can be configured to maximise the requirements of the customer. By using the glass evacuated tubes there is inbuilt flexibility in the design of your new system. The tubes can be configured in banks of 20, 24 or 30 giving total flexibility of power output and installation size.

Due to the special thermal heat pipe inside a vacuum tube allowing for heat transfer the heater can dispense with the water feeding into the vacuum tube.

This delivers many advantages:

- v Massive power production
- v High efficiency
- v Long service life
- v Fast start and
- v Outstanding resistance to freezing and temperature strain

All qualities that are, not only desirable, but absolutely necessary in New Zealand's extremely variable climate.

The NZ Solar heating systems feature excellent thermal characteristics, high operating temperatures, all-weather application and very high reliability (tried and tested in good working order at temperatures as low as –50C).

Installation is to be installed to G12/AS2

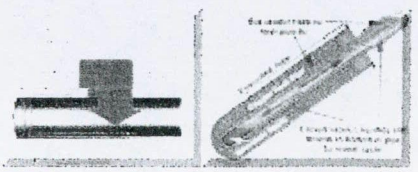
NZsolar

New Zealand

For normal NZ Solar heat tubes:

- v Degree of Vacuum: >5x10-3 Pa
- v Coating: Aluminium Nitride
- v Absorption coefficient: >0.93
- v Emissivity: <0.08
- v Starting Temperature: <25C
- v Maximum Temperature: 250C
- v Freeze Proof: -50C
- v Service Life: 15-20 years
- v Wind Resistance: 55.5 m/s
- v Hail Proof: 25mm
- v Glass Material: Concentrated borosilicate glass
- v Absorber Plate: Copper Profile
- v Size of Single Tube: (mm) 58x1800
- v Weight of a Single Tube: 2.0 kg
- v Size of Condenser end: (mm) 14x50
- v Heating-up coefficient: >95%
- v Recommended flow rate of 2/3 litres per minute

Glass-evacuated Tube Solar Water Heater



NZsolar
New Zealand

Advantages of NZ Solar Glass-evacuated Tube Solar Water Heater

v Uses AL-N/AL heat adsorption coating on the vacuum tubes; this provides high heat absorption with a low emission rate.

v Superior all glass vacuum heat collection tubes.

v An Electronic controller is mounted at a convenient point within the house. This allows the homeowner to assess at a glance what the water heating system is doing.

v A microcomputer controls the water temperature bringing electricity to boost the solar system on days of continual unfavourable weather patterns.

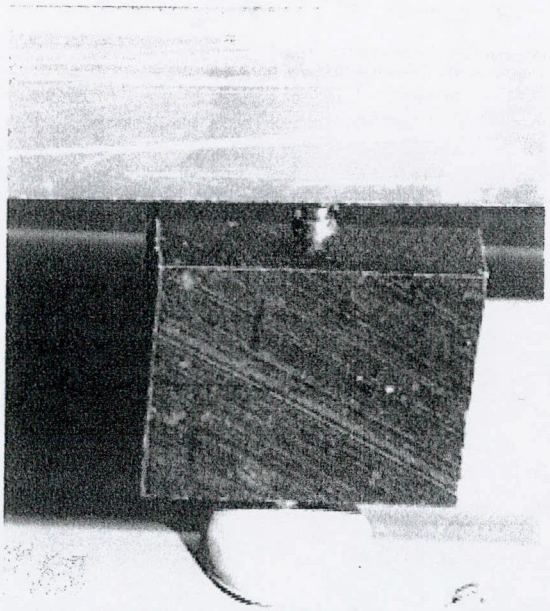
NZ Solar Unit Sizes & Weights:

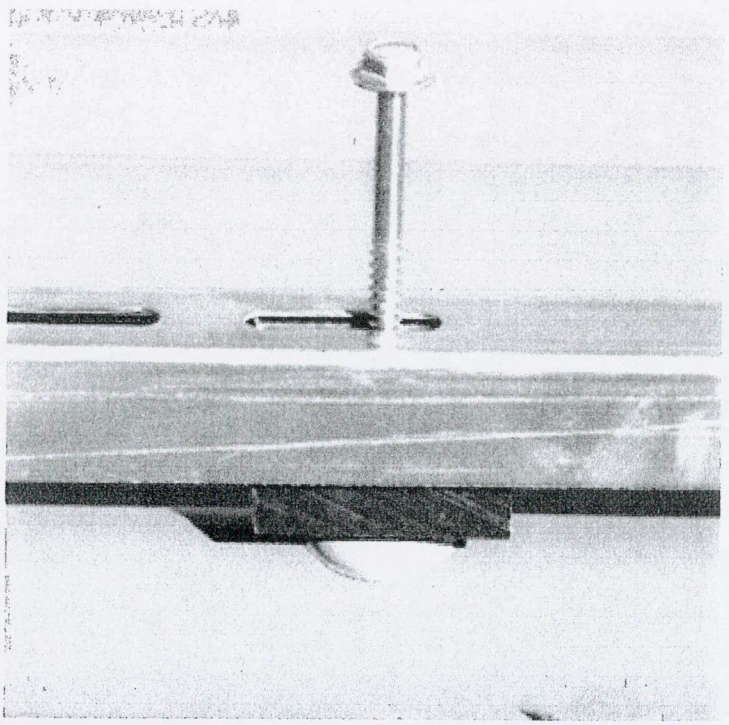
Number of Heat Tubes	Width	Length	Weight
20 tube panel	1450mm	1850mm	55kg
24 tube panel	1700mm	1850mm	70kg
30 tube panel	2150mm	1850mm	85kg

NZsolar
New Zealand

Collector Mounting

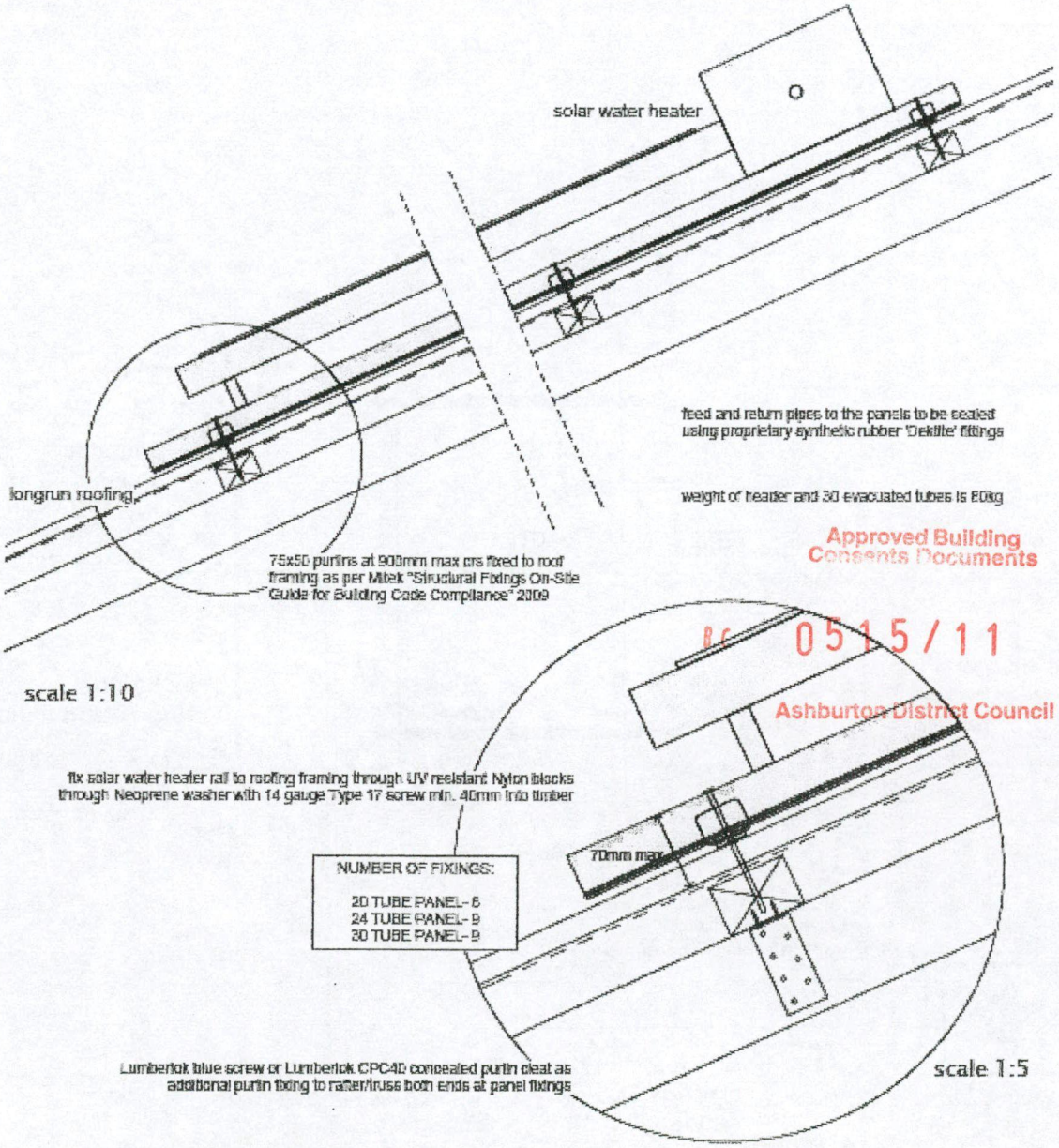
The collector is mounted by using the stainless steel bolts, rubber domed washer and the black plastic spacers (which are UV resistant) provided. (see Figure 7)
Depending on the type of roof Unistrut or some type of additional mounting brackets may be necessary (this can be supplied as an extra cost)
Make sure clear silicon sealer is used round head of bolt and where domed washer meets roof





Use galvanized bolt, plastic spacer block and rubber domed washer supplied
(Space Block are made from UV Resistant material) Make sure you have fixing under roof

NZsolar
New Zealand

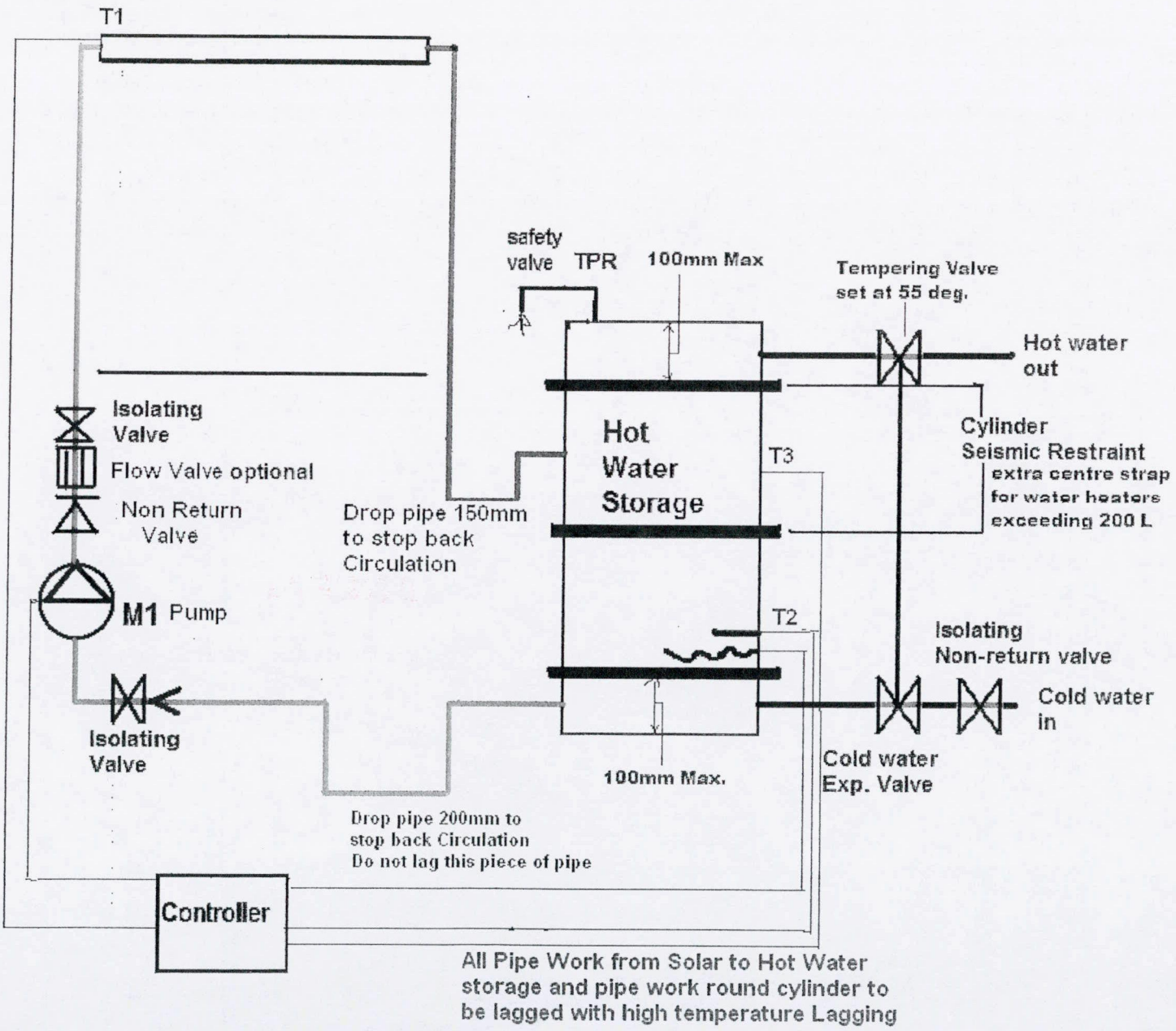


NZsolar New Zealand

fixing to longrun roof

updated 22/10/2010

Pipe & wiring set out for Mains Pressure Open loop system



Notes:

Auto Air Valve is a Caleffi Solar auto Air Vent
Pump is a Wilo-Star-Z 25mm
Isolating Non Return Valve are Apex or similar
All Installation work to be done to AS/NZS 3500.5:2000 (3.25 to 3.31.4)
And the electric supply to comply with AS 3000 and with NZECPs
Roof fixing to be as per NZ Solar roof foxing details
Pipe work to and from Cylinder to be in 15mm copper pipe and lagged with high temperature lagging

Figure G48 shows the requirements for a relief valve drain to avoid blockage.

Figure G47. Mains pressure unvented storage water heater system.

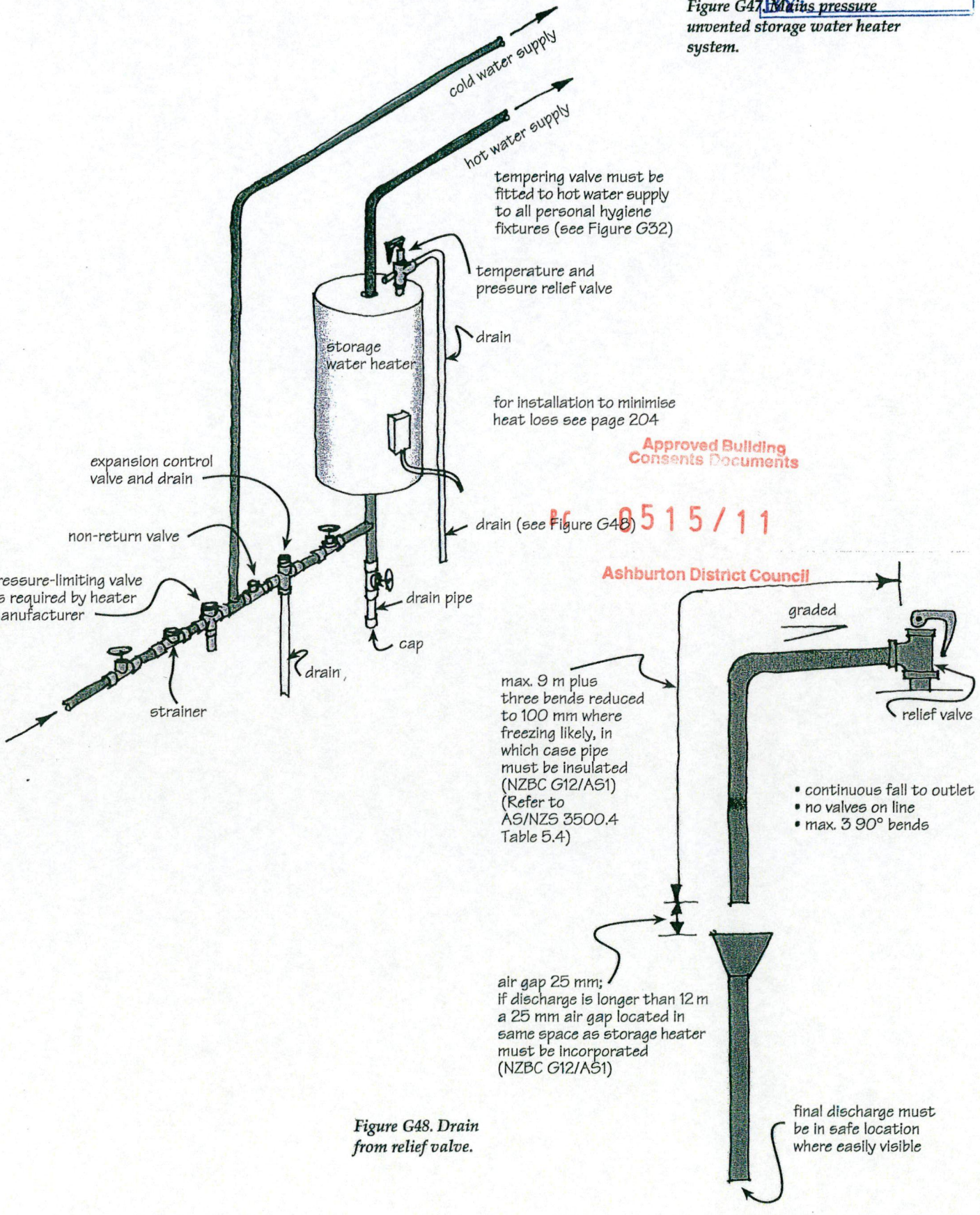
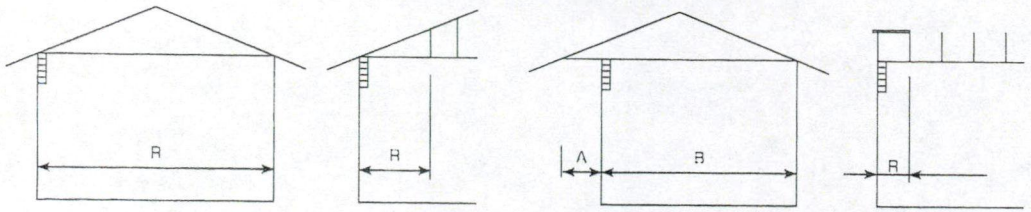


Figure G48. Drain from relief valve.

PROLAM®

Prolam® On-line Calculator - www.prolamnz.com/specifiers
Ph 03 526 7436 E info@prowoodnz.com

SELECTION CHARTS



A ≤ ¼ (A + B), R = B + 2A

TABLE 1:
PROLAM® LINTELS SUPPORTING ROOF AND CEILING ONLY

		LINTEL SIZE	MAXIMUM LINTEL SPAN (m) SUPPORTED ROOF SPAN 'R' (m)												
			2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0
GL8	LIGHT ROOF	PLL 150 140 x 88mm	3.25	3.00	2.80	2.60	2.40	2.25	2.15	2.05	1.95	1.85	1.80	1.75	1.70
		PLL 200 190 x 88mm	4.15	3.95	3.70	3.45	3.20	3.00	2.85	2.70	2.60	2.50	2.40	2.30	2.25
		PLL 250 240 x 88mm	4.90	4.60	4.40	4.30	4.00	3.70	3.50	3.40	3.20	3.10	3.00	2.90	2.80
		PLL 300 290 x 88mm	5.60	5.30	5.10	4.90	4.70	4.50	4.30	4.10	3.90	3.70	3.60	3.50	3.30
		PLL 350 315 x 88mm	6.30	6.00	5.70	5.50	5.30	5.10	5.00	4.70	4.50	4.30	4.20	4.00	3.90
	HEAVY ROOF	PLL 150 140 x 88mm	2.75	2.50	2.30	2.10	2.00	1.85	1.75	1.70	1.60	1.55	1.50	1.45	1.40
		PLL 200 190 x 88mm	3.65	3.35	3.05	2.80	2.65	2.50	2.35	2.25	2.15	2.05	2.00	1.90	1.85
		PLL 250 240 x 88mm	4.50	4.10	3.80	3.50	3.30	3.10	2.90	2.80	2.70	2.50	2.40	2.40	2.30
		PLL 300 290 x 88mm	5.30	4.90	4.50	4.20	3.90	3.70	3.50	3.30	3.20	3.10	2.90	2.80	2.70
		PLL 350 315 x 88mm	5.90	5.60	5.30	4.90	4.60	4.30	4.10	3.90	3.70	3.60	3.40	3.30	3.20
GL12	LIGHT ROOF	PL12 150 140 x 88mm	3.65	3.40	3.20	2.95	2.75	2.60	2.45	2.35	2.25	2.15	2.05	2.00	1.95
		PL12 200 190 x 88mm	4.55	4.30	4.10	3.95	3.70	3.45	3.30	3.15	3.00	2.85	2.75	2.65	2.60
		PL12 250 240 x 88mm	5.40	5.10	4.90	4.70	4.50	4.30	4.10	3.90	3.70	3.60	3.40	3.30	3.20
		PL12 300 290 x 88mm	6.20	5.80	5.60	5.40	5.20	5.00	4.90	4.70	4.50	4.30	4.10	4.00	3.80
		PL12 350 315 x 88mm	6.90	6.60	6.30	6.00	5.80	5.60	5.50	5.30	5.20	5.00	4.80	4.60	4.50
	HEAVY ROOF	PL12 150 140 x 88mm	3.10	2.90	2.65	2.45	2.25	2.15	2.00	1.95	1.85	1.75	1.70	1.85	1.60
		PL12 200 190 x 88mm	4.10	3.85	3.50	3.25	3.05	2.85	2.70	2.55	2.45	2.35	2.25	2.20	2.10
		PL12 250 240 x 88mm	5.10	4.70	4.30	4.00	3.80	3.50	3.30	3.20	3.00	2.90	2.80	2.70	2.60
		PL12 300 290 x 88mm	5.89	5.50	5.20	4.80	4.50	4.20	4.00	3.80	3.70	3.50	3.40	3.30	3.20
		PL12 350 315 x 88mm	6.50	6.20	5.90	5.60	5.20	4.90	4.70	4.50	4.30	4.10	3.90	3.80	3.70

The span tables apply only to Prolam® products

PROLAM®

Prolam® On-line Calculator - www.prolamnz.com/specifiers
Ph 03 526 7436 E info@prowoodnz.com

SELECTION CHARTS

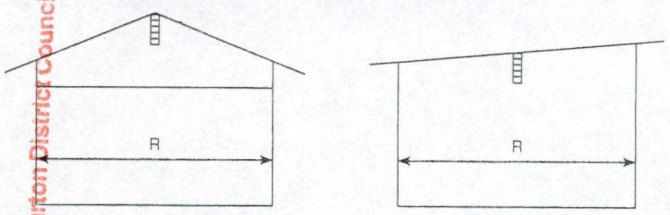


TABLE 2:
PROLAM® RIDGE BEAM SUPPORTING ROOF AND SARKING OR CEILNG (RAFTERS AT 1200mm CRS MAX)

		LINTEL SIZE	MAXIMUM LINTEL SPAN (m) SUPPORTED ROOF SPAN 'R' (m)												
			3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0
GL8	LIGHT ROOF	PLL 150 140 x 88mm	3.50	3.15	2.95	2.70	2.50	2.35	2.20	2.10	2.00	1.90	1.85	1.75	1.70
		PLL 200 190 x 88mm	4.40	4.10	3.90	3.60	3.35	3.10	2.95	2.80	2.65	2.55	2.45	2.35	2.30
		PLL 250 240 x 88mm	5.20	4.80	4.60	4.40	4.10	3.90	3.70	3.50	3.30	3.20	3.00	2.90	2.80
		PLL 300 290 x 88mm	6.00	5.50	5.20	5.00	4.80	4.60	4.40	4.20	4.00	3.80	3.70	3.50	3.40
		PLL 350 315 x 88mm	6.70	6.20	5.90	5.60	5.40	5.20	5.10	4.90	4.60	4.40	4.30	4.10	4.00
	HEAVY ROOF	PLL 150 140 x 88mm	3.10	2.70	2.45	2.20	2.05	1.90	1.80	1.70	1.65	1.55	1.50	1.45	1.40
		PLL 200 190 x 88mm	4.15	3.60	3.25	2.95	2.75	2.55	2.40	2.30	2.20	2.10	2.00	1.95	1.90
		PLL 250 240 x 88mm	4.90	4.50	4.00	3.70	3.40	3.20	3.00	2.80	2.70	2.60	2.50	2.40	2.30
		PLL 300 290 x 88mm	5.60	5.20	4.80	4.40	4.10	3.80	3.60	3.40	3.30	3.10	3.00	2.90	2.80
		PLL 350 315 x 88mm	6.20	5.80	5.45	5.10	4.70	4.40	4.20	4.00	3.80	3.60	3.50	3.40	3.30
GL12	LIGHT ROOF	PL12 150 140 x 88mm	3.90	3.60	3.30	3.10	2.90	2.70	2.55	2.40	2.30	2.20	2.10	2.05	1.95
		PL12 200 190 x 88mm	4.85	4.50	4.25	4.05	3.85	3.60	3.40	3.20	3.05	2.95	2.80	2.70	2.65
		PL12 250 240 x 88mm	5.70	5.30	5.00	4.80	4.60	4.40	4.20	4.00	3.80	3.60	3.50	3.40	3.30
		PL12 300 290 x 88mm	6.50	6.10	5.70	5.50	5.30	5.10	5.00	4.80	4.60	4.40	4.20	4.10	3.90
		PL12 350 315 x 88mm	7.30	6.80	6.50	6.20	5.90	5.70	5.60	5.40	5.30	5.10	4.90	4.70	4.60
	HEAVY ROOF	PL12 150 140 x 88mm	3.60	3.10	2.80	2.55	2.35	2.20	2.10	2.00	1.90	1.80	1.75	1.65	1.60
		PL12 200 190 x 88mm	4.55	4.15	3.70	3.45	3.15	2.95	2.80	2.65	2.50	2.40	2.30	2.25	2.15
		PL12 250 240 x 88mm	5.30	5.00	4.60	4.20	3.90	3.70	3.40	3.30	3.10	3.00	2.90	2.80	2.70
		PL12 300 290 x 88mm	6.10	5.70	5.40	5.00	4.70	4.40	4.10	3.90	3.70	3.60	3.50	3.30	3.20
		PL12 350 315 x 88mm	6.80	6.40	6.10	5.80	5.40	5.10	4.80	4.60	4.40	4.20	4.00	3.90	3.80

The span tables apply only to Prolam® products

NZsolar
New Zealand

Summary of System Specifications for Solar panel at:

Address: Lot 17 Barkers Rd. Methven **Name:** Philip Duff. Irene.

General Information:

Site Plan:

1. Designer to supply

Floor Plans:

2. Designer to supply

Roof Plan:

3. Location of Panels designer to supply
4. Dimensions of 30 tube panel = one panel 2.150m Wide X 1.850m Long. Refer page 4 solar specs
5. Panels are always centre in roof. Panels placed more than a 200mm distance from any gal
6. Panels sit only 300mm off roof. Under recession angle

Solar Heating Compliance:

7. Test Certificate refer to page 9 of Solar Specs

B1 – Structure:

8. Building Structure complies with all points outlined in G12/AS2 1.1.1.
9. Total weight kg/sqm = 21.370. Refer page 4 Solar Specs
10. Roof Pitch less than 45 degrees. Refer to drawing
11. Wind Zone – Refer to designer
12. Solar Collector Area per panel = 3.97 sq/m. Refer page 4 Solar Specs
13. Snow Load – Refer to designer
14. Solar Panel is fitted parallel to roof pitch.
15. Location of solar panel complies to Fig 2 G12/AS2. Refer to Designer

Collector Fixing:

16. Refer to page 6 of the solar specs for fixing details for actual roofing type.
17. Panel fixings to this roof is as 'Collector Mounting' and 'Solar water heater fixing detail' of specification pack – pages 5 & 6. The panel will have 6-9 galvanized roof screws fixing to the roof.
18. Support is within 200mm of collector edge. Refer to drawing.
19. Weight of panel is within G12 Limit so does not compromise roof framing strength.
20. Collectors have spacer blocks. Refer page 5 of solar specs.

Storage Tanks:

21. Refer to designer/drawings

B2 – Durability

22. Roof Material – Colorsteel
23. Frame Material – Powder coat Aluminium
24. Fixings – Galvanized Roof Screws
25. Collector Material – Powder Coat Aluminium

26. Pipe Flashing – Sealed with 'Dektite' roof flashings as per fig 6 G12/AS2. refer page 8 solar specs

27. Contact & Run off complies with Table 2/3 – Refer Aluminium Coated

Exposure Zone:

28. Drain Lines – Refer page 7 of solar specs for plumbing schematic.

29. No External relief – Refer page 7 of solar spec for plumbing schematic.

30. The frost protection is automatically controlled by electronic solar controller.

31. Insulation is covered by Ventura UV Tape

E2 - External Moisture

32. All Pipes Penetrations are as per fig 6 G12/AS2. refer page 8 solar specs

33. Sealing thru roof is as per fig 6 G12/AS2. refer page 8 solar specs

G12 – Water Supplies

34. Pipe Diagram refer page 7 of Solar Specs

Legionella Control:

35. This is automatically controller by solar controller

Safety Devices

36. Refer to designer

37. Storage capacity of a 30 tube collector with 300L cylinder is 75.56 lt/m2.

H1 – Energy Efficiency

38. Refer to designer

Approved Building
Consents Department

BC 0515/11

Ashburton District Council

NZsolar

Your Solar Hot Water Specialist's

Specifications

NZ Solar equipment has been tested and has the AS/NZS2712.2002 Standard.
This Collector has passed the impact test under AS/NZS2712.2007 clause 4.6.
Compliance Certificate was issued on the 14th April 2010
All equipment meets and exceeds ISO 9001 Standards

All NZ Solar systems can be configured to maximise the requirements of the customer. By using the glass evacuated tubes there is inbuilt flexibility in the design of your new system. The tubes can be configured in banks of 20, 24 or 30 giving total flexibility of power output and installation size.

Due to the special thermal heat pipe inside a vacuum tube allowing for heat transfer the heater can dispense with the water feeding into the vacuum tube.

This delivers many advantages:

- v Massive power production
- v High efficiency
- v Long service life
- v Fast start and
- v Outstanding resistance to freezing and temperature strain

All qualities that are, not only desirable, but absolutely necessary in New Zealand's extremely variable climate.

The NZ Solar heating systems feature excellent thermal characteristics, high operating temperatures, all-weather application and very high reliability (tried and tested in good working order at temperatures as low as –50C).

Installation is to be installed to G12/AS2

NZsolar

For normal NZ Solar heat tubes:

- v Degree of Vacuum: >5x10-3 Pa
- v Coating: Aluminium Nitride
- v Absorption coefficient: >0.93
- v Emissivity: <0.08
- v Starting Temperature: <25C
- v Maximum Temperature: 250C
- v Freeze Proof: -50C
- v Service Life: 15-20 years
- v Wind Resistance: 55.5 m/s
- v Hail Proof: 25mm
- v Glass Material: Concentrated borosilicate glass
- v Absorber Plate: Copper Profile
- v Size of Single Tube: (mm) 58x1800
- v Weight of a Single Tube: 2.0 kg
- v Size of Condenser end: (mm) 14x50
- v Heating-up coefficient: >95%
- v Recommended flow rate of 2/3 litres per minute

Glass-evacuated Tube Solar Water Heater

NZsolar
New Zealand

Advantages of NZ Solar Glass-evacuated Tube Solar Water Heater

v Uses AL-N/AL heat adsorption coating on the vacuum tubes; this provides high heat absorption with a low emission rate.

v Superior all glass vacuum heat collection tubes.

v An Electronic controller is mounted at a convenient point within the house. This allows the homeowner to assess at a glance what the water heating system is doing.

v A microcomputer controls the water temperature bringing electricity to boost the solar system on days of continual unfavourable weather patterns.

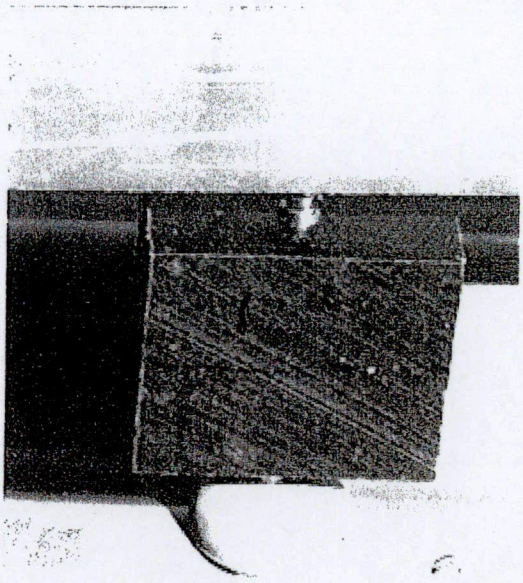
NZ Solar Unit Sizes & Weights:

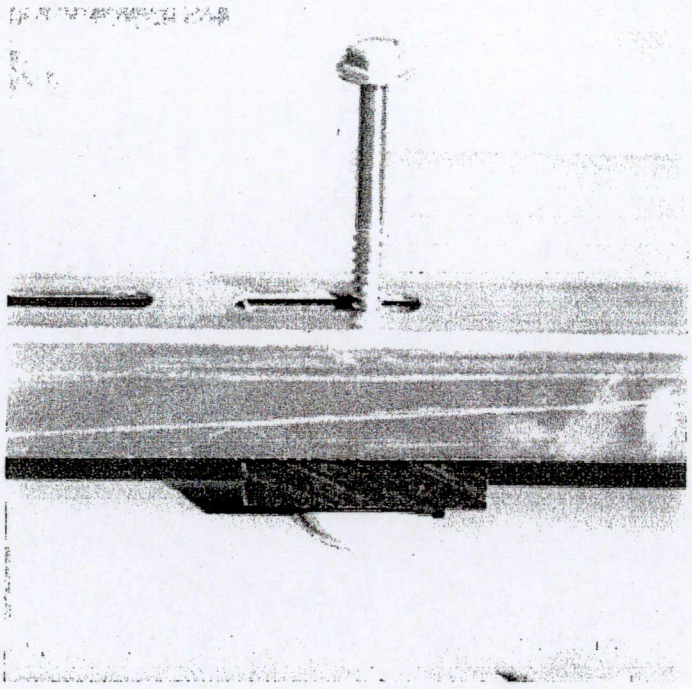
Number of Heat Tubes	Width	Length	Weight
20 tube panel	1450mm	1850mm	55kg
24 tube panel	1700mm	1850mm	70kg
30 tube panel	2150mm	1850mm	85kg

NZsolar
New Zealand

Collector Mounting

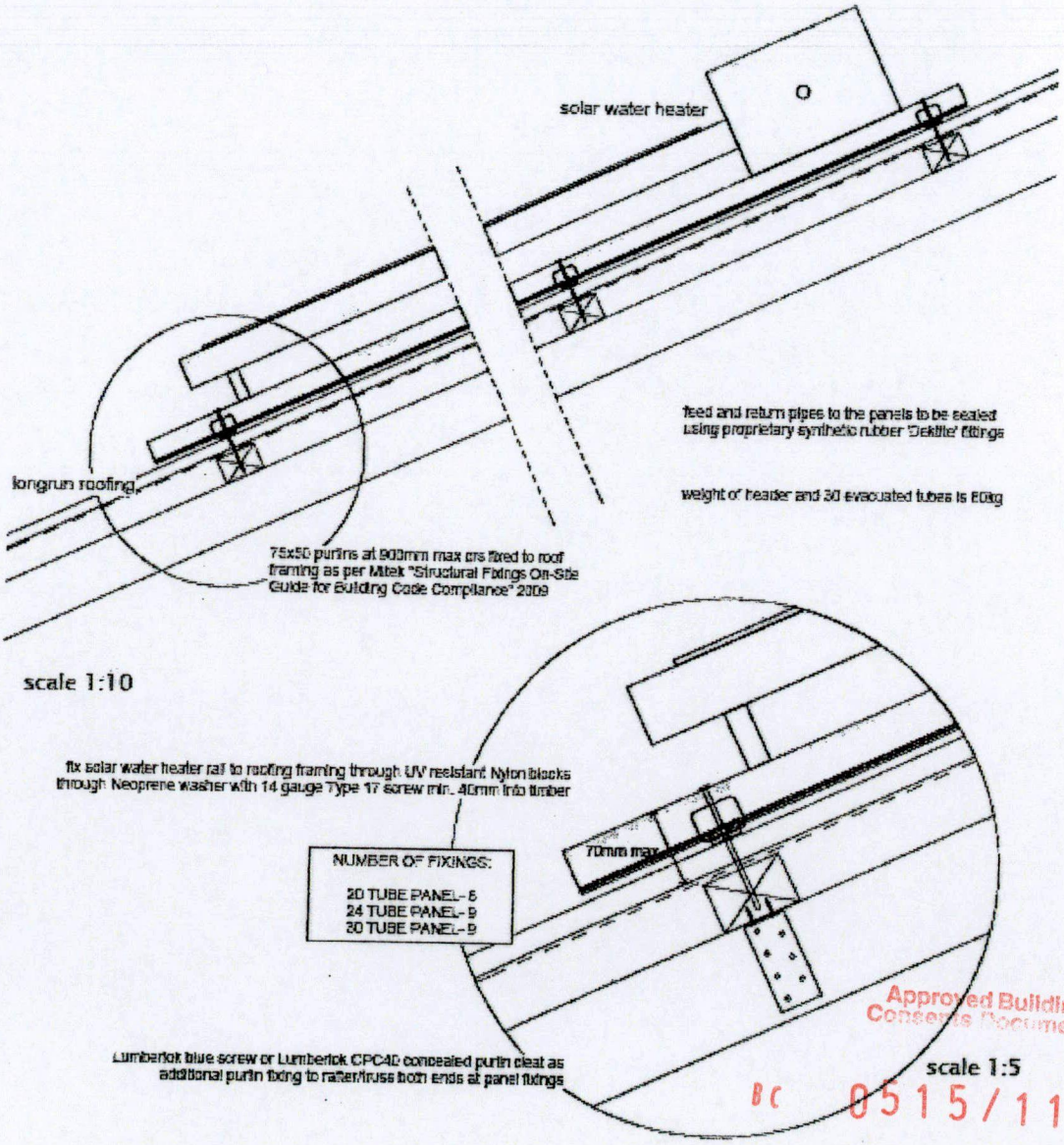
The collector is mounted by using the stainless steel bolts, rubber domed washer and the black plastic spacers (which are UV resistant) provided. (see Figure 7)
Depending on the type of roof Unistrut or some type of additional mounting brackets may be necessary (this can be supplied as an extra cost)
Make sure clear silicon sealer is used round head of bolt and where domed washer meets roof





Use galvanized bolt, plastic spacer block and rubber domed washer supplied
(Space Block are made from UV Resistant material) Make sure you have fixing under roof

NZsolar
New Zealand



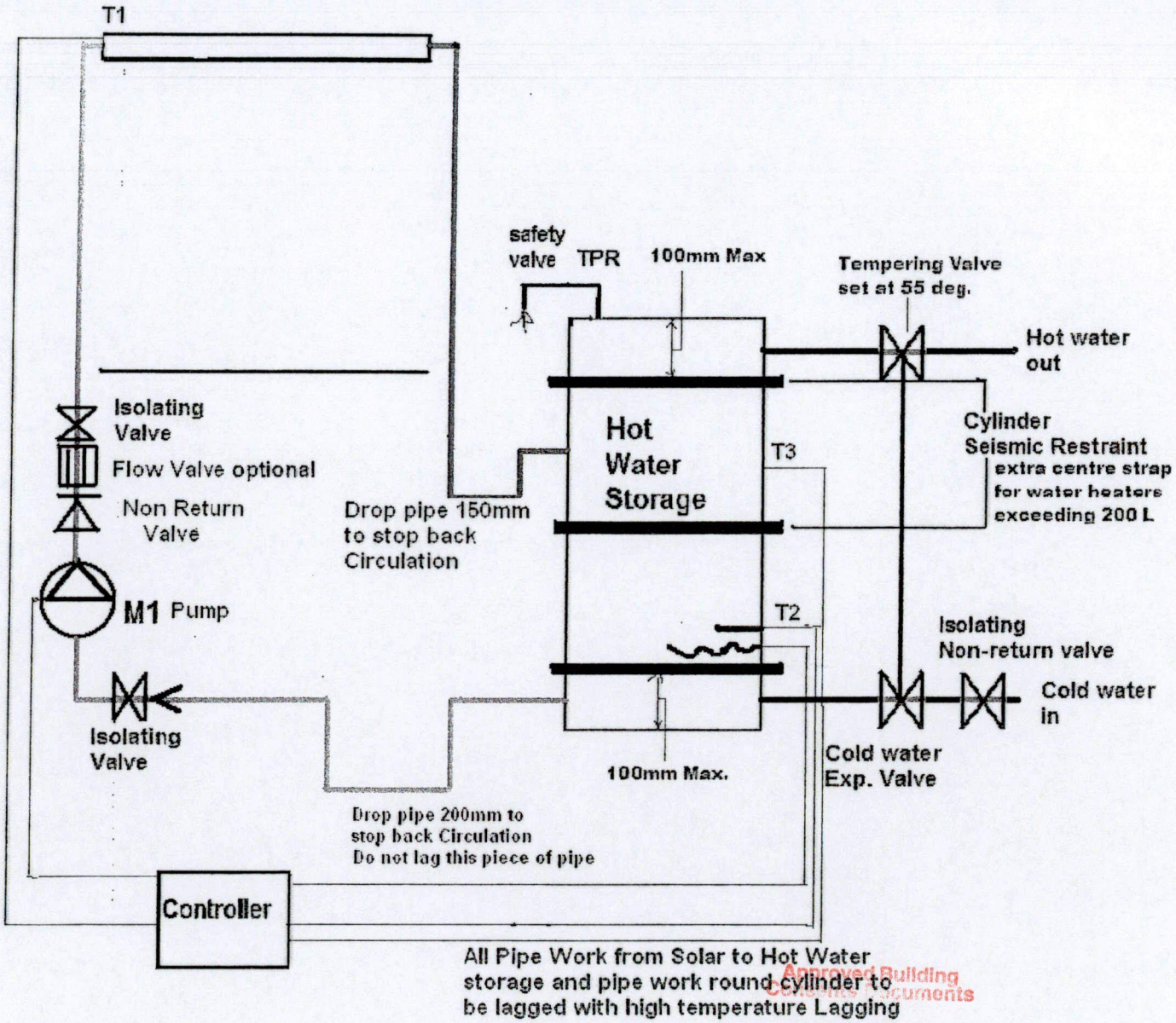
NZsolar New Zealand

fixing to longrun roof

updated 22/10/2010

NZsolar
New Zealand

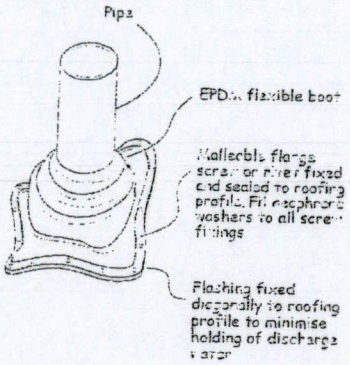
Pipe & wiring set out for Mains Pressure Open loop system



Notes:

Auto Air Valve is a Caleffi Solar auto Air Vent
Pump is a Wilo-Star-Z 25mm
Isolating Non Return Valve are Apex or similar
All Installation work to be done to AS/NZS 3500.5:2000 (3.25 to 3.31.4)
And the electric supply to comply with AS 3000 and with NZECPs
Roof fixing to be as per NZ Solar roof foxing details
Pipe work to and from Cylinder to be in 15mm copper pipe and lagged with high temperature lagging

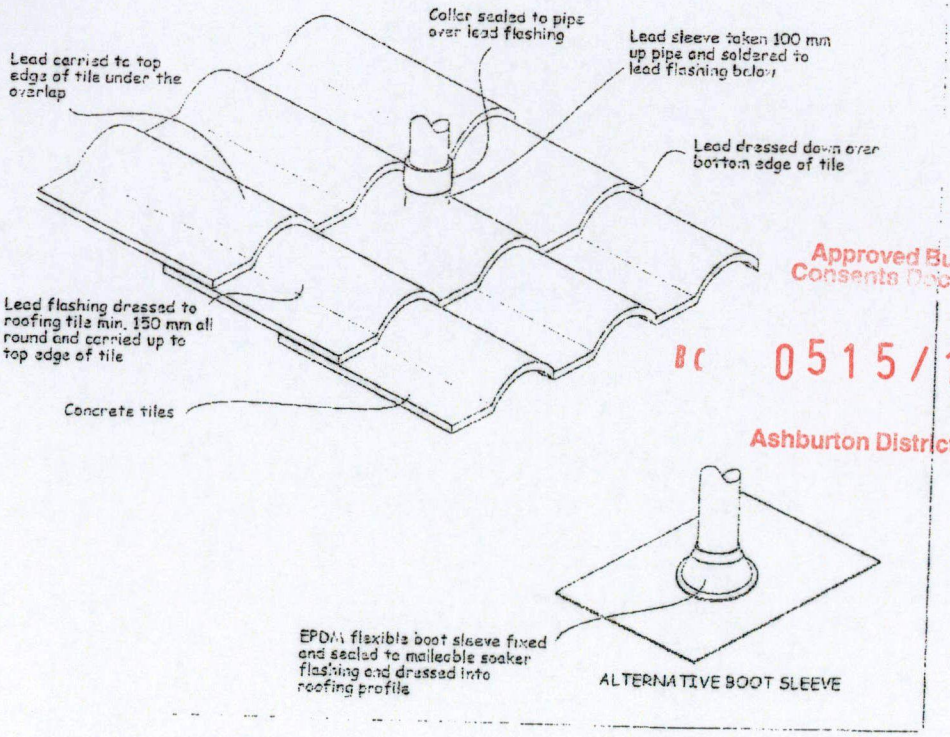
Figure 5



NOTE:
(1) Max. roof pitch for this flashing 45°, minimum pitch 10°.
(2) For pipes up to 60mm diameter

Acceptable Solution G12/AS2
SOLAR WATER HEATERS

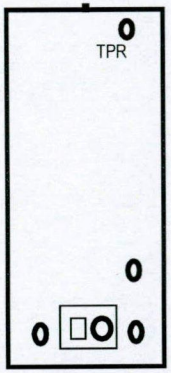
Figure 5



superheat

SUPERHEAT MAINS PRESSURE HOT WATER CYLINDER - STOCK EXAMPLES

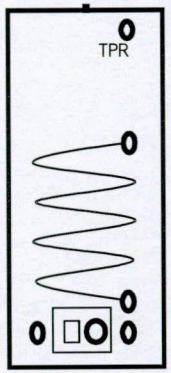
STANDARD



195 litre
280 litre
300 litre

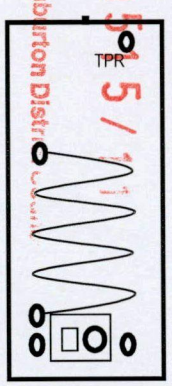
WETBACK/BOILER COIL

RH coil



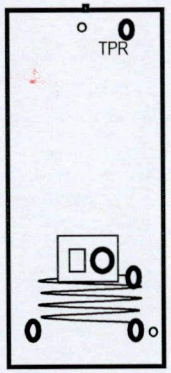
(approx 5 o'clock/4.30)
195 litre
280 litre
300 litre

LH coil



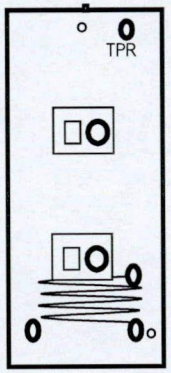
(approx 7 o'clock/7.30)
195 litre
280 litre
300 litre

SOLAR COIL



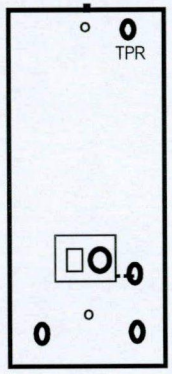
280 litre
300 litre

SOLAR COIL + BOOST ELEMENT



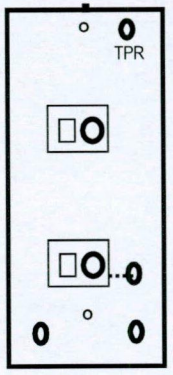
280 litre
300 litre

SOLAR COMPLETE (OPEN SOLAR)



280 litre
300 litre

SOLAR COMPLETE +BOOST ELEMENT



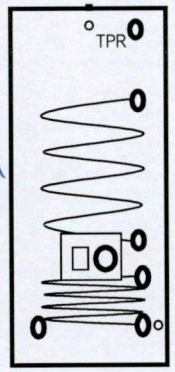
280 litre
300 litre

All Solar cylinders (open or coil) includes 2 probe pockets, bottom & top

Notes: Diagrams show standard stock orientations other orientations and combinations MADE TO ORDER

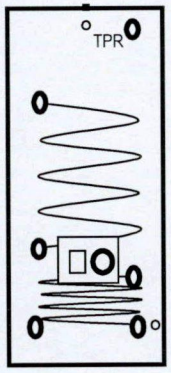
SOLAR COIL + WETBACK COIL

RH coil



280 litre
300 litre

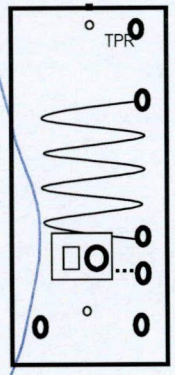
LH coil



280 litre
300 litre

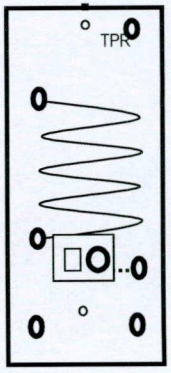
WETBACK COIL + SOLAR COMPLETE

RH coil



280 litre
300 litre

LH coil



280 litre
300 litre

STANDARD SIZES

Capacity (litres)	195	280	300	350
Diameter (mm)	560	560	560	560
Height (mm)	1300	1800	1920	2200
Element (kW)	3	3	3	3

Please refer to Pamphlet, standard/typical layout sheet and Owners Manual for additional information and specifications etc

- positions of fittings and coils can be altered for made to order cylinders
- 350 litre cylinders usually made to order.
- other sizes available eg 110 litres, 250 litres

If you require assistance specifying or designing a cylinder please contact Superheat
ph: 03 389 9500 fax: 03 389 9666
info@superheat.co.nz

Examples of stock Mains cylinders

Apr09

AQUA TANKS
A Division of Galloway SPI Asia Pacific Ltd

Browse our range

- Aqua Water Storage Tanks
- Retention & Detention Stormwater Water Tanks
- Septic Tanks
- Slimline Water Tanks
- Stackable Water Tanks
- Water Tank Filters
- Water Tank Level Indicators
- Water Tank Pumps

You are not logged in. Click here to log in.

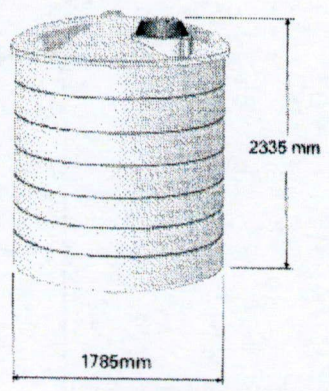
Search

Water Tanks For Sale -AQ05000 - 5,020 litres - $1,426.00

Description

5,020 litre, above-ground polyethylene tank. Free delivery North Island excludes Waiheke & other Islands.

Colours as listed only at $1,426.00. For other colour choices please contact us direct.



AQ05000

Specifications

Capacity		5020Litres 1106Gallons
Diameter	Base	1785mm
	Top	1830mm
Height	Overall	2335mm
	To Inlet	2110mm
Weight		110kg
Outlet	Size	50mm BSP
	Quantity	1 x 50mm BSP Fitting

Downloads

- Installation Instructions
- Brochure
- Technical Drawing

Price: NZ$1,426.00

(inc GST)

Order now

Select colour:

BUY NOW Enquire

FEATURED PRODUCTS


Water Tanks For Sale - AQ16000 - 16,095 litres - $2,505.00


Water Tanks For Sale - AQ10000 - 10,046 litres - $2,040.00

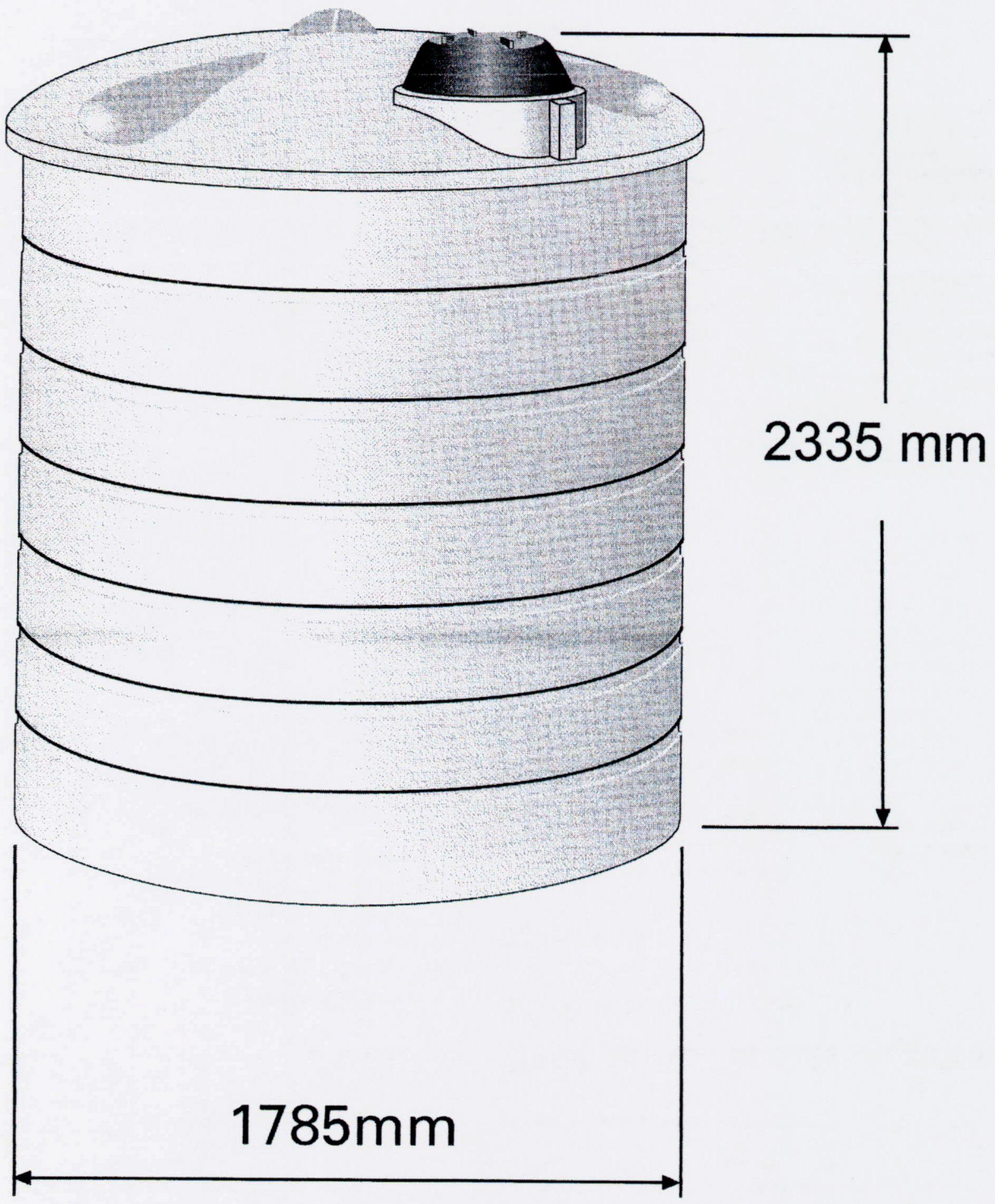

Water Tanks For Sale - NEW AQ30000 - 31,000 litres - $3,450.00


Water Tanks For Sale - AQ25200 - 25,210 litres - $2,995.00

Download PDF versions of our catalogue

Your cart

CHECKOUT



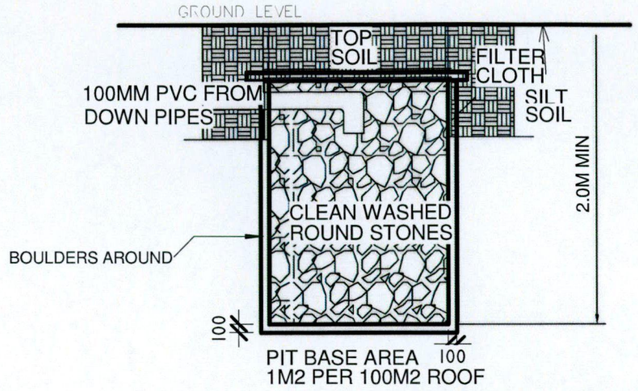
C:\CRONIN DESIGN\MASTER FILE 2010\10200 PHILIP&IRENE DUFF\10200 PHILIP IRENE DUFF RESIDENCE.rvt

PVC 100MM SEWER AND STORMWATER
1:120 MIN FALL
PVC 40MM WASTE PIPES
FROM FITTINGS
OVER 3.5M LONG TO BE VENTED
MIN FALL 1:40
SOAK HOLE
DUG TO SOAKAGE
WITH BIDEM CLOTH
AND ROUND STONES
PVC 75MM DPS PER 70M2 ROOF
MIN GUTTER C/SECTION 60MMX115MM

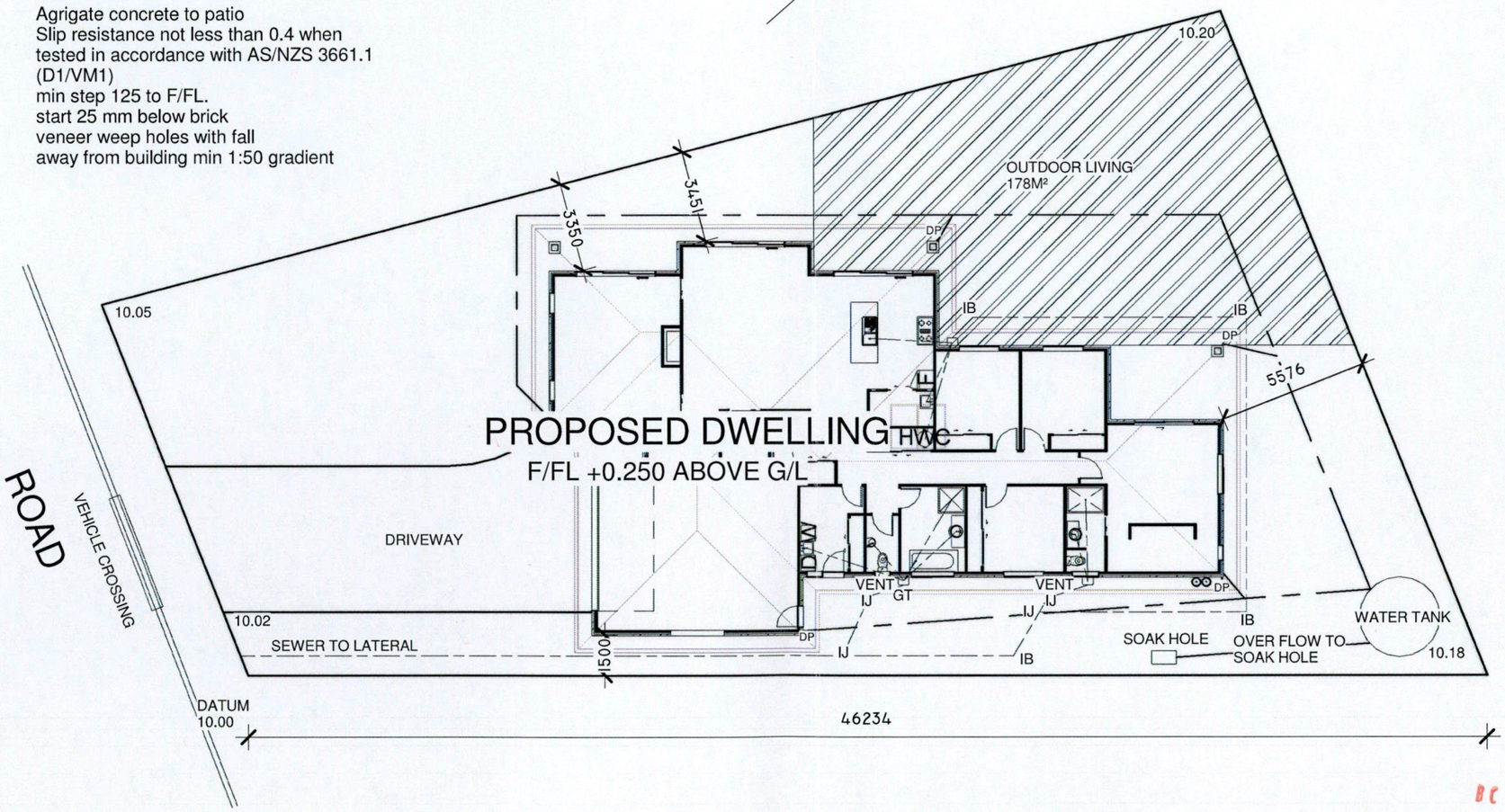
G13 AS1

LOT 17 DP 83742
SITE=880M²
DWELLING=260M²
SITE COVERAGE=30%

WIND ZONE=VERY HIGH
WIND REGIONS=LEE ZONE
SOIL TYPE=C
EARTHQUAKE ZONE=2
CORROSION ZONE=B
SNOW LOAD=N4



Agrigate concrete to patio
Slip resistance not less than 0.4 when tested in accordance with AS/NZS 3661.1 (D1/VM1)
min step 125 to F/FL.
start 25 mm below brick
veneer weep holes with fall
away from building min 1:50 gradient



27/07/2011 12:06:06 p.m.

CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

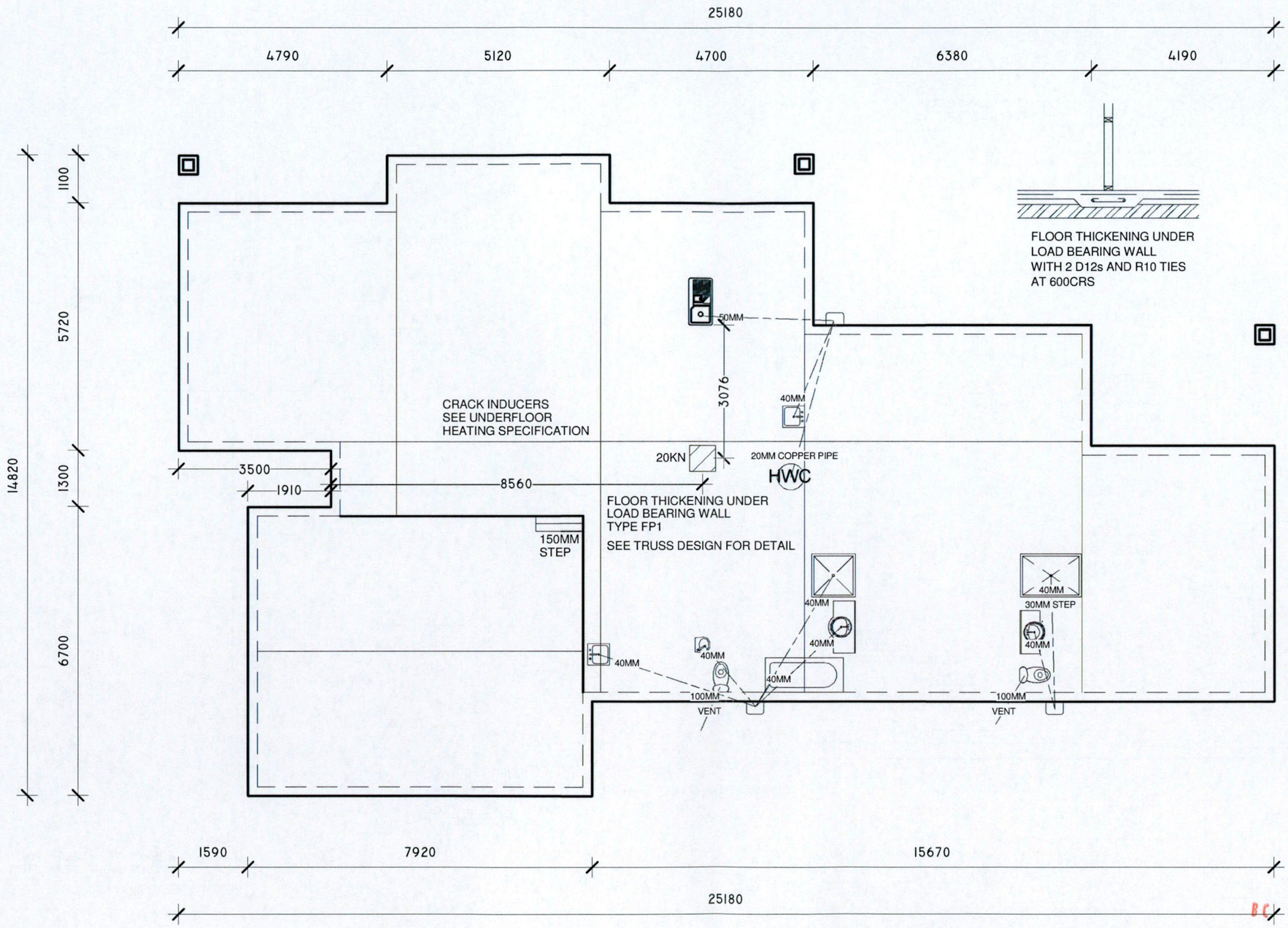
LOT 17 BARKERS ROAD
METHVEN

Site Plan

Designed by	Date	Scale
A.L	27/07/11	As indicated

New Dwelling

10200 | 01 of 17



CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

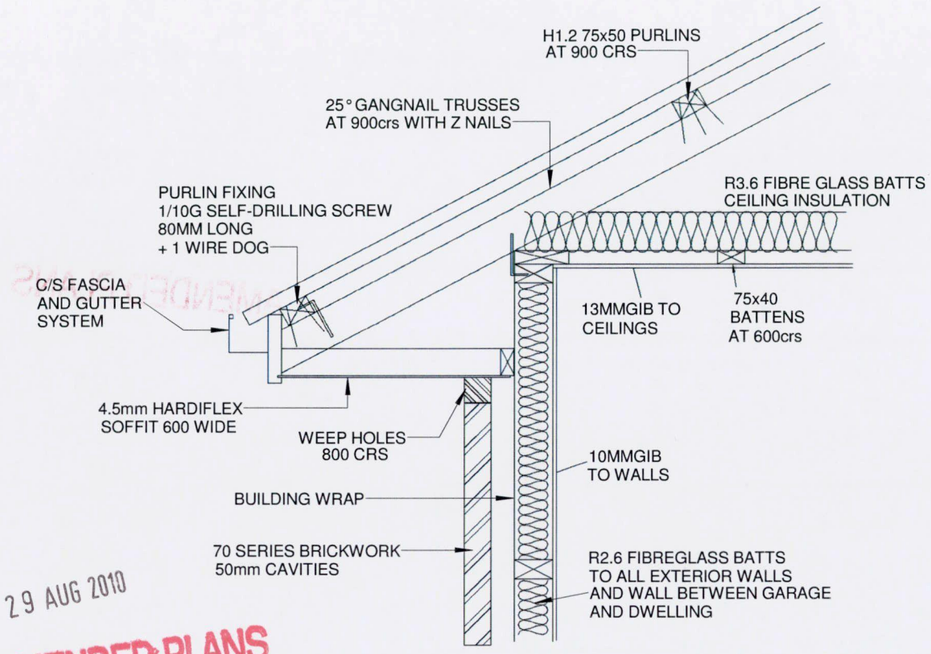
LOT 17 BARKERS ROAD
METHVEN

Floor

Designed by	Date	Scale
A.L	27/07/11	1 : 100

New Dwelling

10200 | 04 of 17

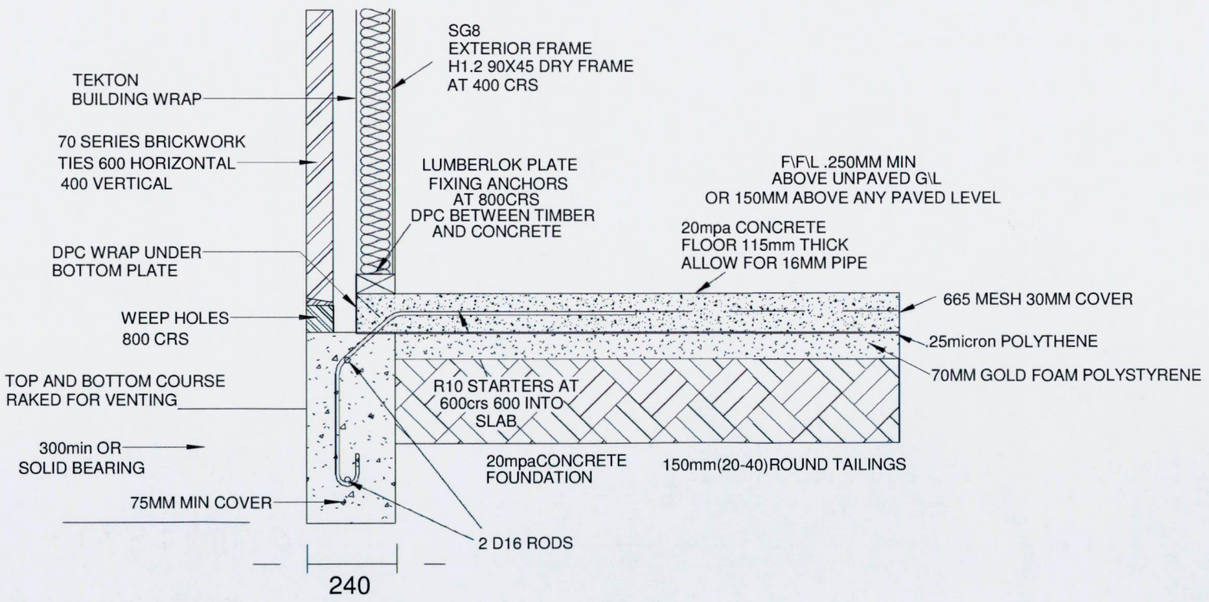


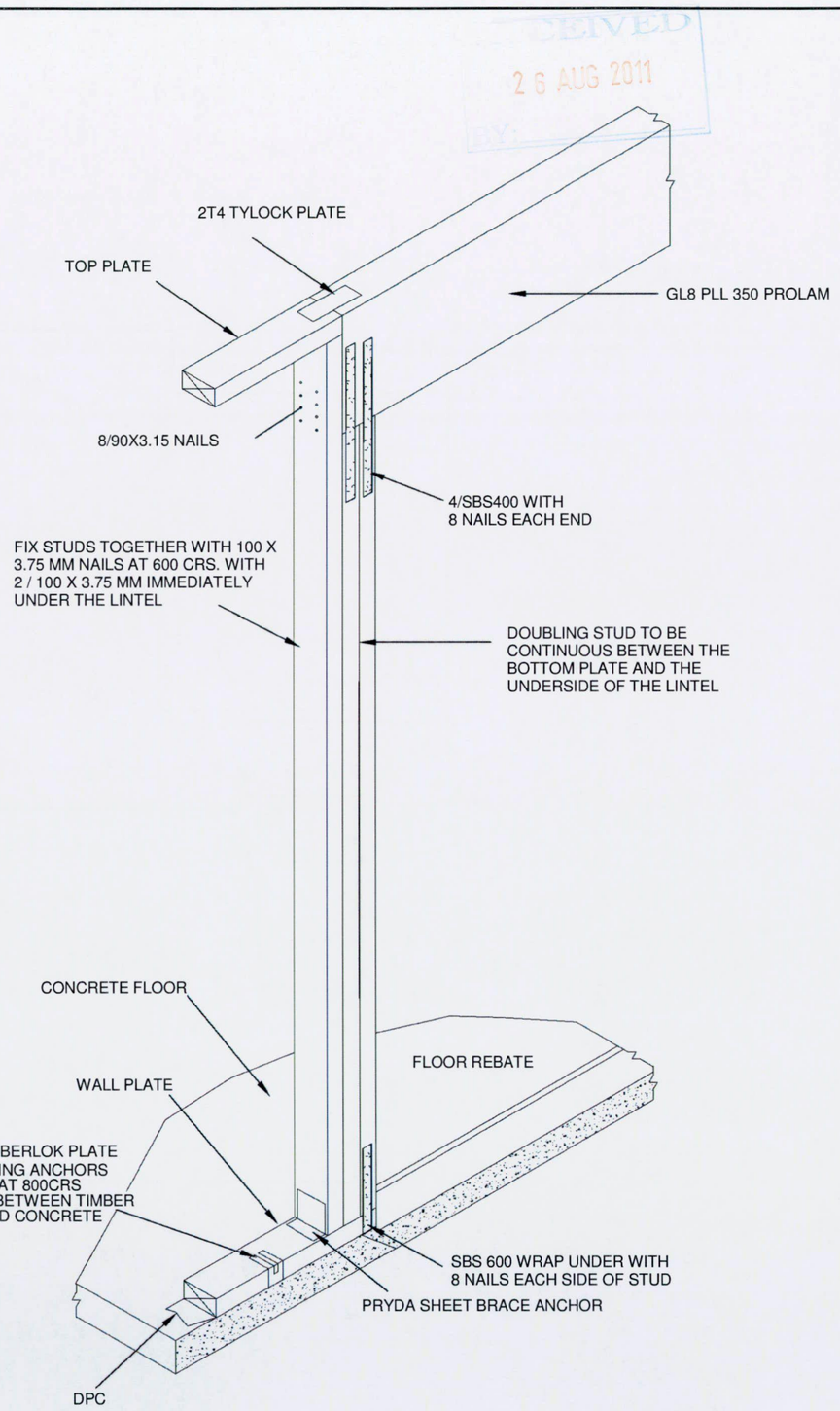
29 AUG 2010

AMENDED PLANS

TOP PLATE TO STUD
CONNECTIONS TO BE 6Kn

SG8 INTERIOR
FRAME H1.2 90X45
DRY FRAME @ 600CRS





CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

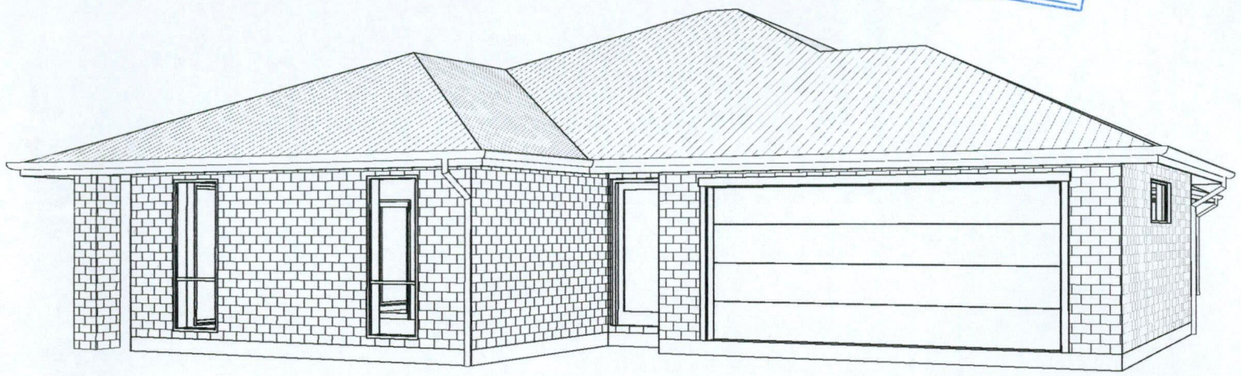
LOT 17 BARKERS ROAD
METHVEN

Detail Section

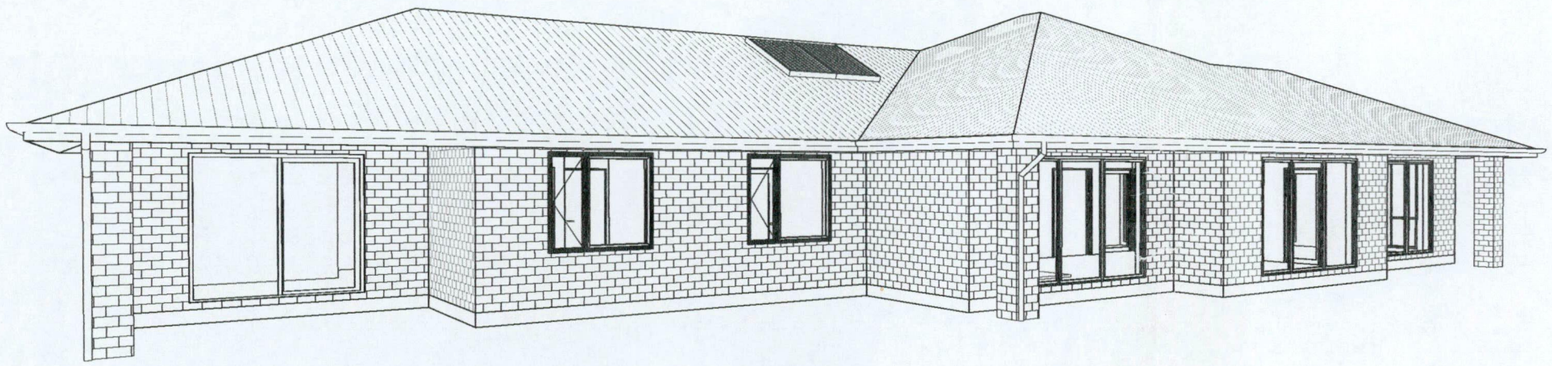
Designed by	Date	Scale
A.L	27/07/11	1 : 100

New Dwelling

10200 | 06 of 17



2 3D View 2



1 3D View 1

CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

LOT 17 BARKERS ROAD
METHVEN

3D View

Designed by	Date	Scale
A.L	13/04/11	

New Dwelling

10200 | 0 of 17

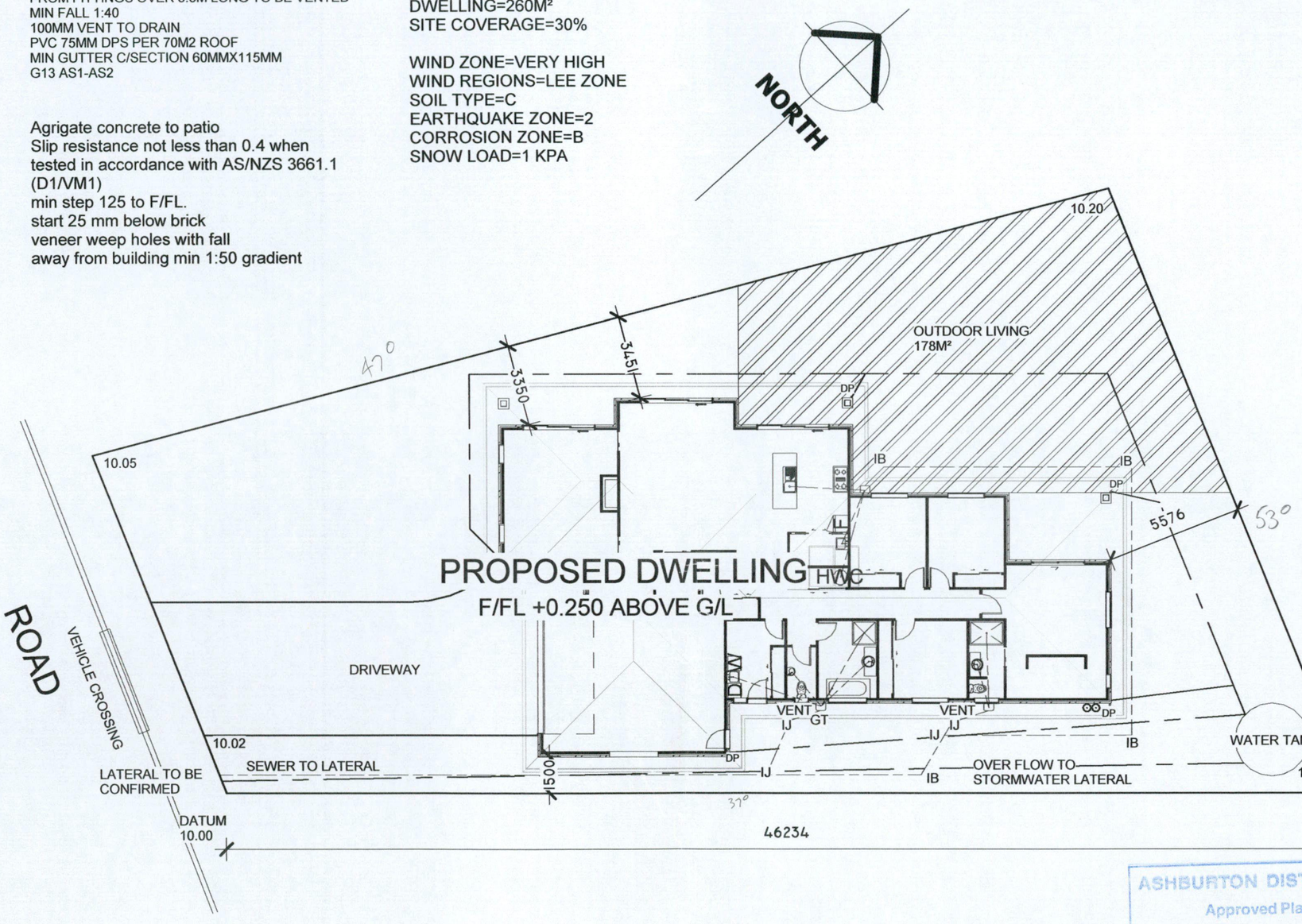
C:\CRONIN DESIGN\MASTER FILE 2010\10200 PHILIP&IRENE DUFF\10200 PHILIP IRENE DUFF RESIDENCE.rvt

PVC 100MM SEWER AND STORMWATER
1:120 MIN FALL PVC 40MM WASTE PIPES
FROM FITTINGS OVER 3.5M LONG TO BE VENTED
MIN FALL 1:40
100MM VENT TO DRAIN
PVC 75MM DPS PER 70M2 ROOF
MIN GUTTER C/SECTION 60MMX115MM
G13 AS1-AS2

Agrigate concrete to patio
Slip resistance not less than 0.4 when
tested in accordance with AS/NZS 3661.1
(D1/VM1)
min step 125 to F/FL.
start 25 mm below brick
veneer weep holes with fall
away from building min 1:50 gradient

LOT 17 DP 83742
SITE=880M²
DWELLING=260M²
SITE COVERAGE=30%

WIND ZONE=VERY HIGH
WIND REGIONS=LEE ZONE
SOIL TYPE=C
EARTHQUAKE ZONE=2
CORROSION ZONE=B
SNOW LOAD=1 KPA



Approved Building Consents Documents
0515/11
Ashburton District Council

ASHBURTON DISTRICT COUNCIL
Approved Planning Dept
Date 13/6/2011 Initial

1/06/2011 9:52:09 a.m.

CRONIN DESIGN 9 Print Place Christchurch Ph 03 3388394 merv@cronindesign.co.nz	DUFF RESIDENCE LOT 17 BARKERS ROAD METHVEN	Site Plan	Designed by A.L Date 25/05/11 Scale 1 : 200 New Dwelling 10200	01 of 17

C:\CRONIN DESIGN\MASTER FILE 2010\10200 PHILIP&IRENE DUFF\10200 PHILIP IRENE DUFF RESIDENCE.rvt

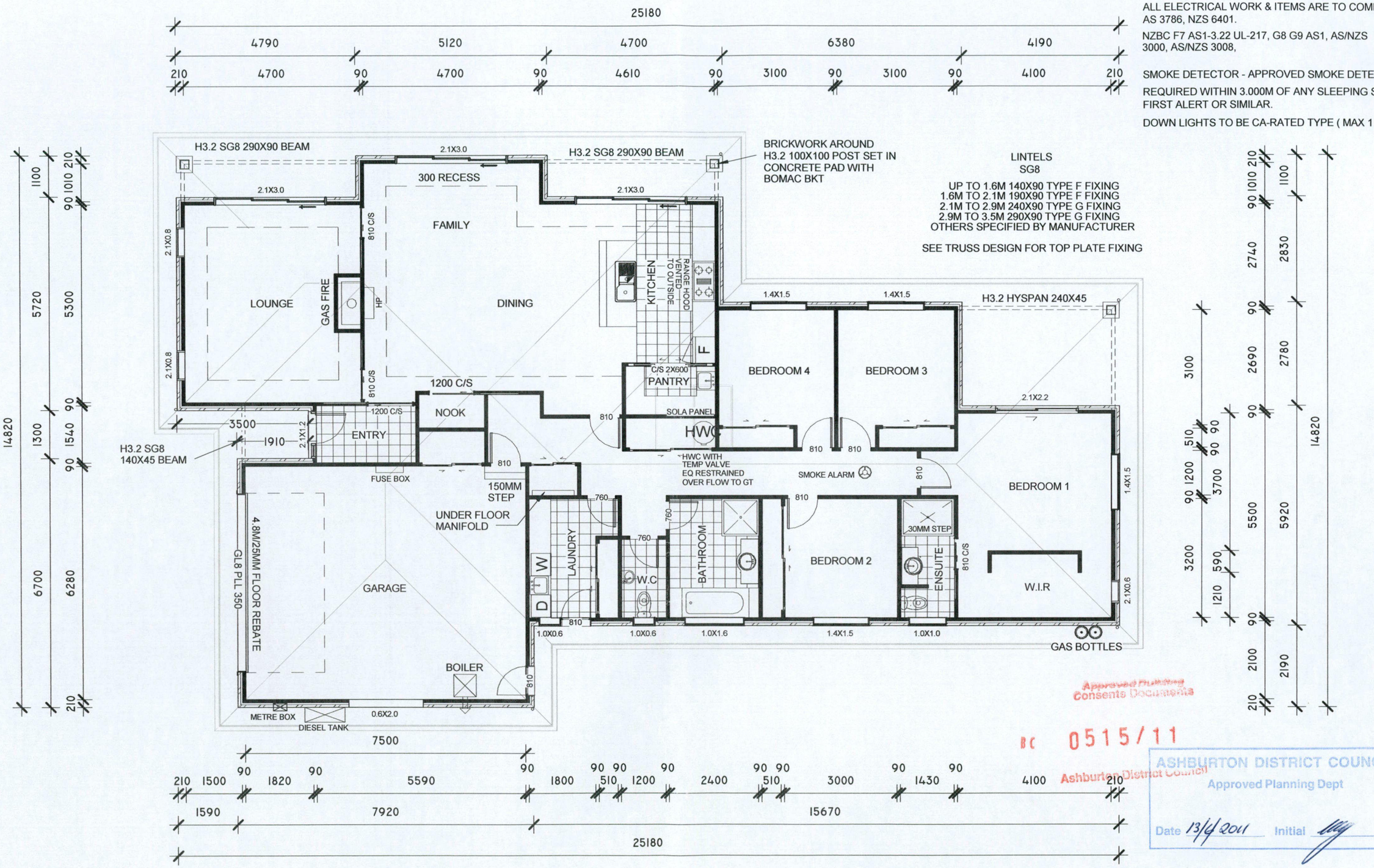
1/06/2011 9:52:10 a.m.

ALL ELECTRICAL WORK & ITEMS ARE TO COMPLY WITH: AS 3786, NZS 6401.

NZBC F7 AS1-3.22 UL-217, G8 G9 AS1, AS/NZS 3000, AS/NZS 3008,

SMOKE DETECTOR - APPROVED SMOKE DETECTORS REQUIRED WITHIN 3.000M OF ANY SLEEPING SPACE - FIRST ALERT OR SIMILAR.

DOWN LIGHTS TO BE CA-RATED TYPE (MAX 1 PER 5M2)



CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

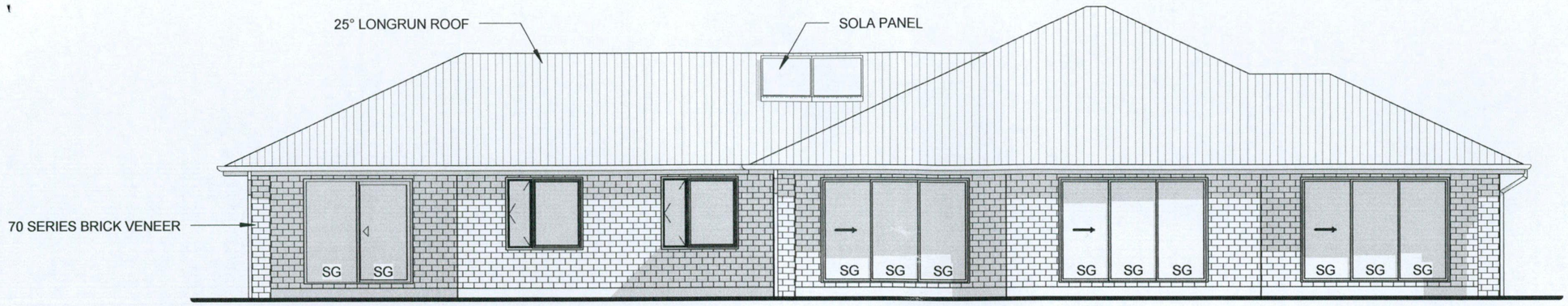
LOT 17 BARKERS ROAD
METHVEN

Floor Plan
260M²
LOF 84M

Designed by	Date	Scale
A.L	25/05/11	1 : 100

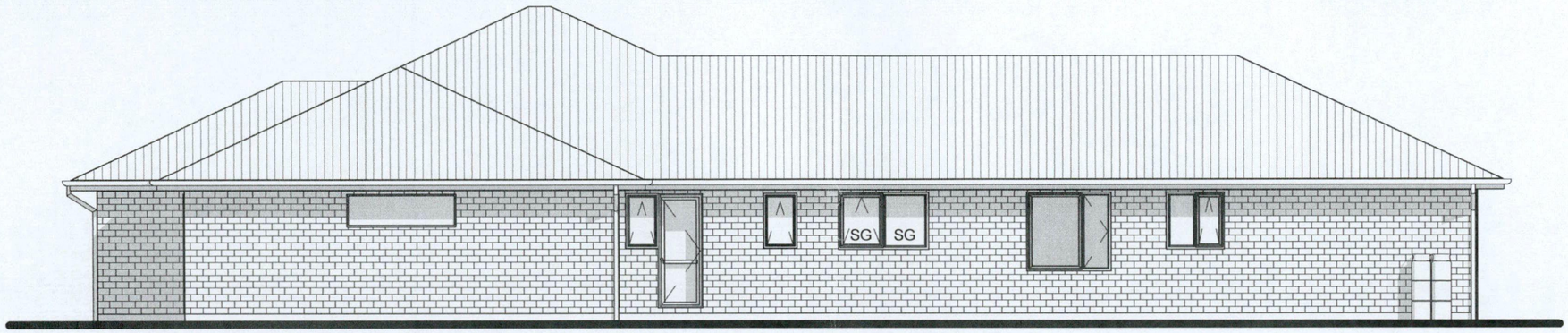
New Dwelling

10200 | 02 of 17



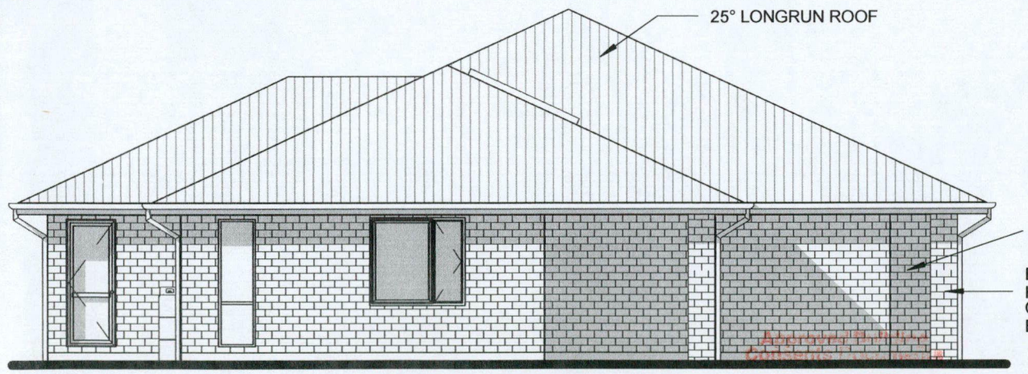
1 North
1 : 100

SG=SAFETY GLASS TO NZS 4223 1999
HUMAN IMPACT PART 3
ALL GLASS IS DOUBLE GLAZED
TO NZS 4218 2004



2 South
1 : 100

3 West
1 : 100



4 East
1 : 100

ASHBURTON DISTRICT COUNCIL
Approved Planning Dept
Date 13/6/2011 Initial

BC 0515/11
Ashburton District Council

C:\CRONIN DESIGN\MASTER FILE 2010\10200 PHILIP&IRENE DUFF\10200 PHILIP IRENE DUFF RESIDENCE.rvt
1/06/2011 9:53:37 a.m.

CRONIN DESIGN

9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

LOT 17 BARKERS ROAD
METHVEN

Elevation

Designed by	Date	Scale
A.L	25/05/11	1 : 100

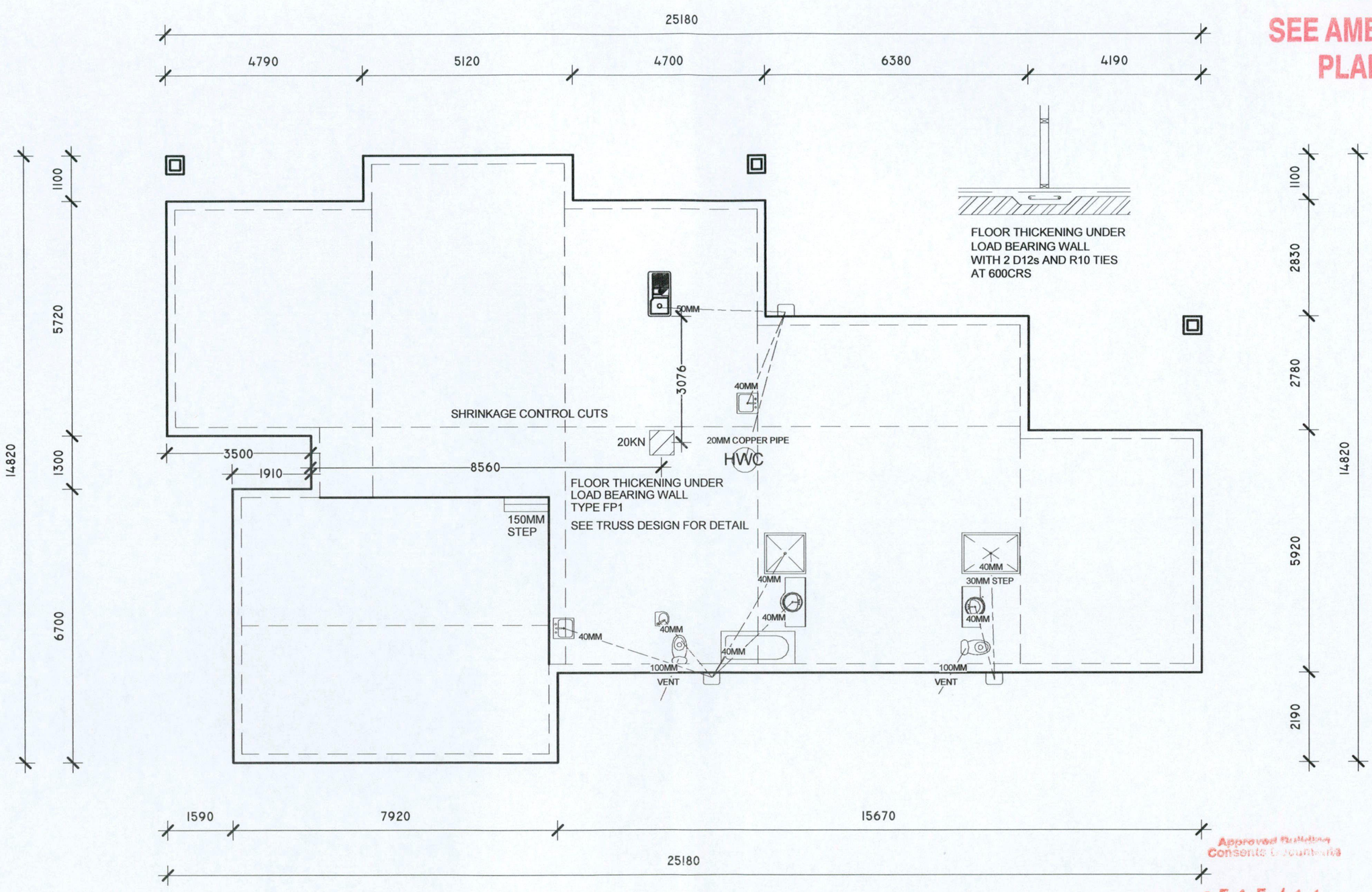
New Dwelling

10200 | 03 of 17

C:\CRONIN DESIGN\MASTER FILE 2010\10200 PHILIP&IRENE DUFF\10200 PHILIP IRENE DUFF RESIDENCE.vt

29 AUG 2010

SEE AMENDED PLANS



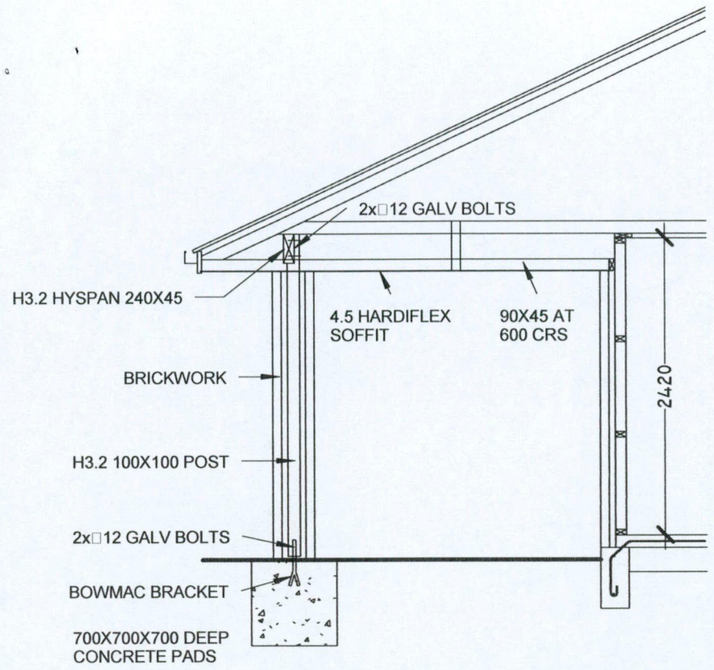
Approved Building Consents Documents

BC 0515/11

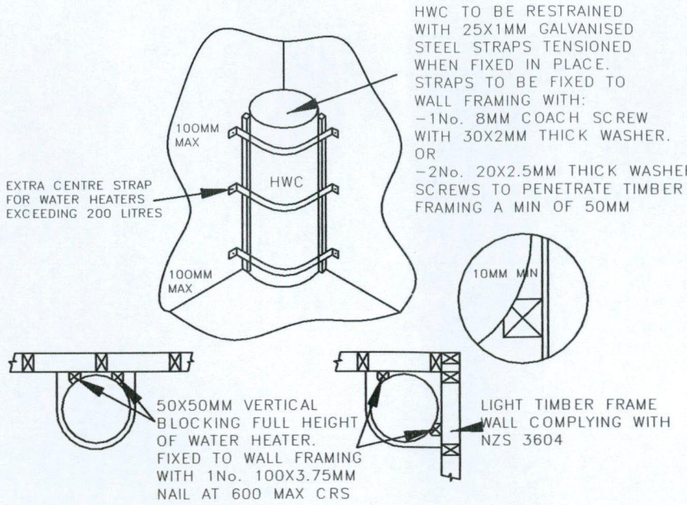
Ashburton District Council

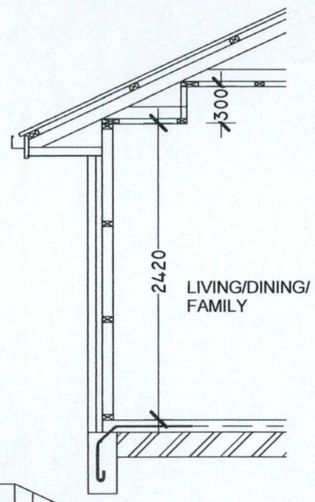
27/05/2011 9:57:08 a.m.

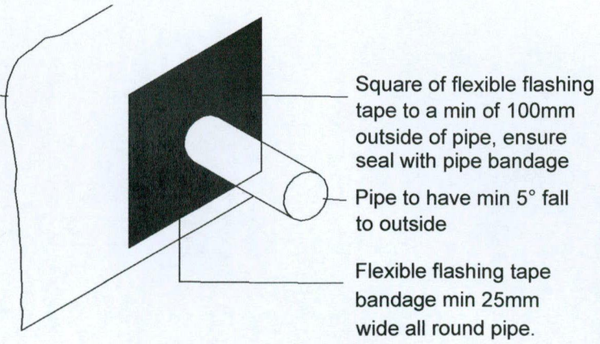
CRONIN DESIGN 9 Print Place Christchurch Ph 03 3388394 merv@cronindesign.co.nz	DUFF RESIDENCE LOT 17 BARKERS ROAD METHVEN	Floor	Designed by A.L Date 25/05/11 Scale 1 : 100 New Dwelling 10200 04 of 17



TERRACE/ENTRANCE CROSS SECTION

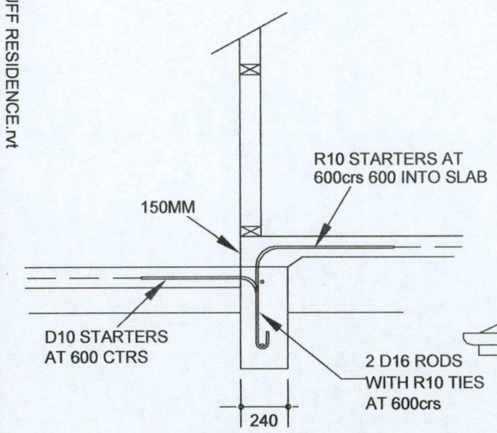




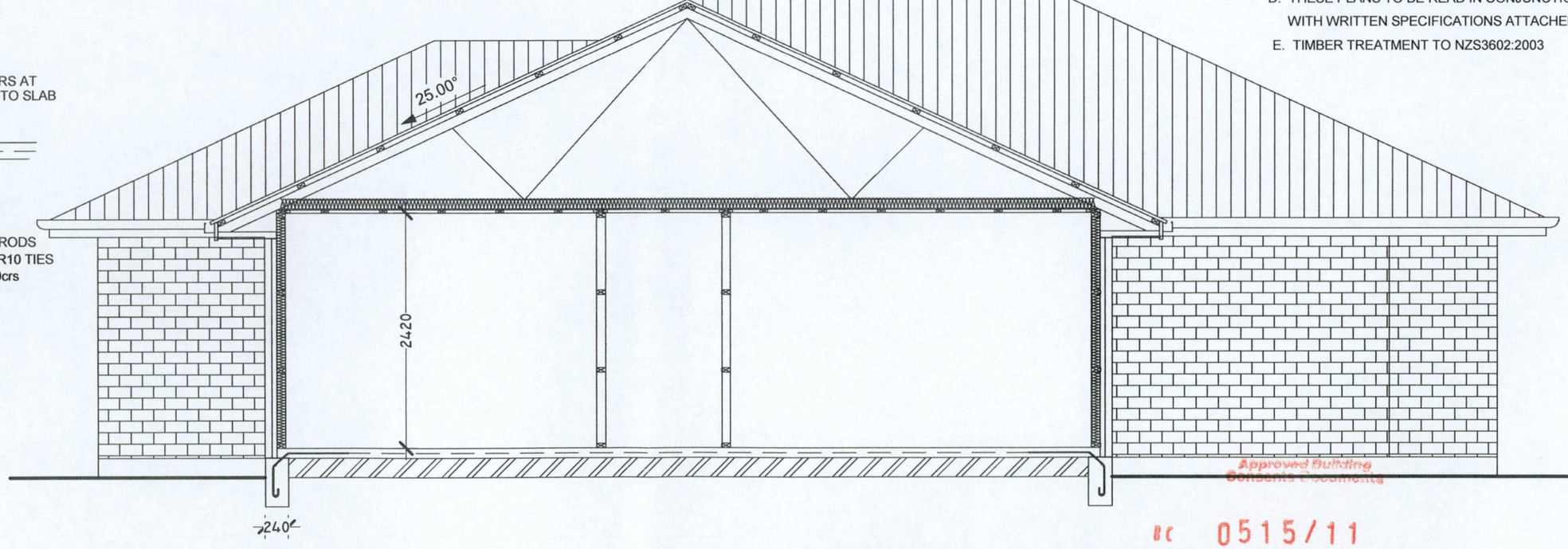


PIPE PENETRATION

NOTE:
A. ALL WORKMANSHIP TO BE OF BEST TRADESMAN LIKE MANNER
B. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED BEFORE ANY CONSTRUCTION COMENCES.
C. ALL WORK TO CONFORM TO NZ BUILDING CODE 1991.AND AMENDMENTS
D. THESE PLANS TO BE READ IN CONJUNCTION WITH WRITTEN SPECIFICATIONS ATTACHED.
E. TIMBER TREATMENT TO NZS3602:2003



GARAGE/DWELLING



CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

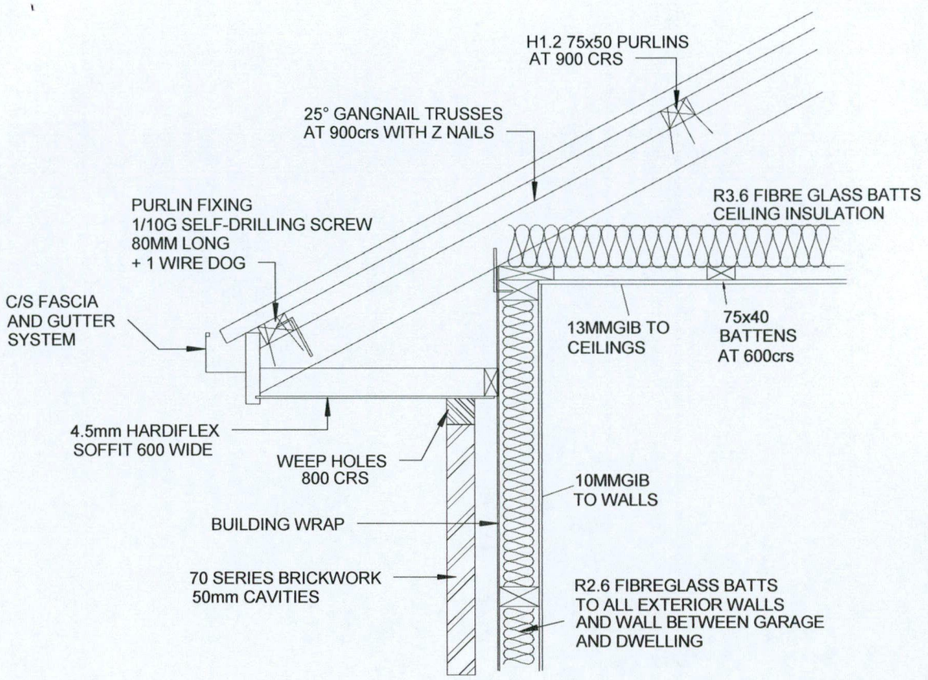
LOT 17 BARKERS ROAD
METHVEN

Cross Section

Designed by	Date	Scale
A.L	25/05/11	As indicated

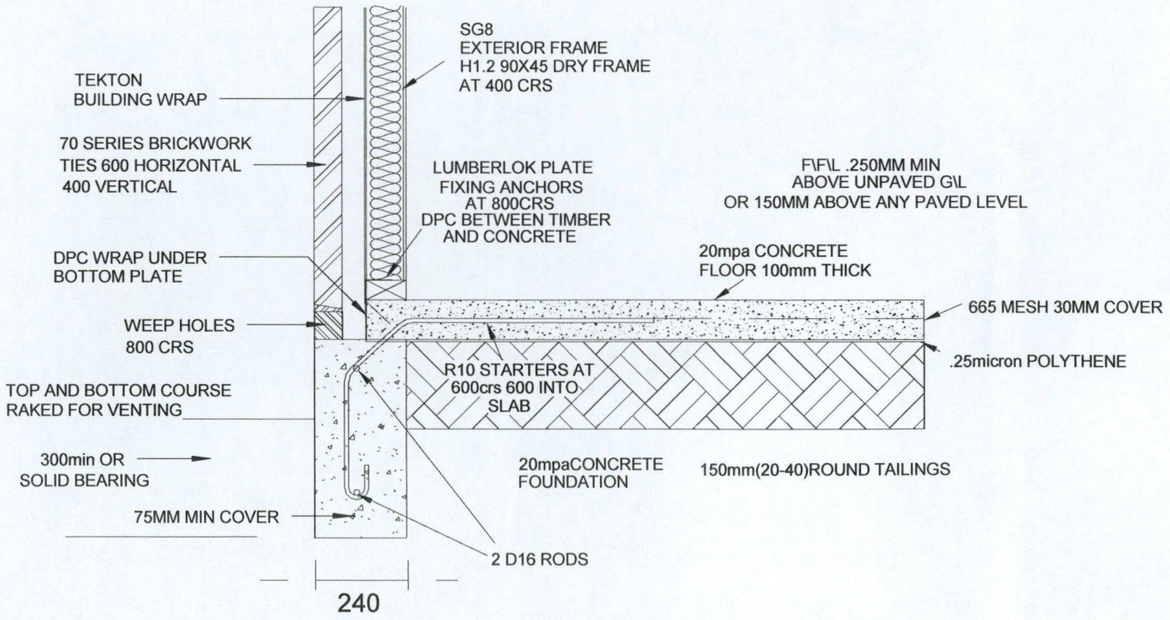
New Dwelling

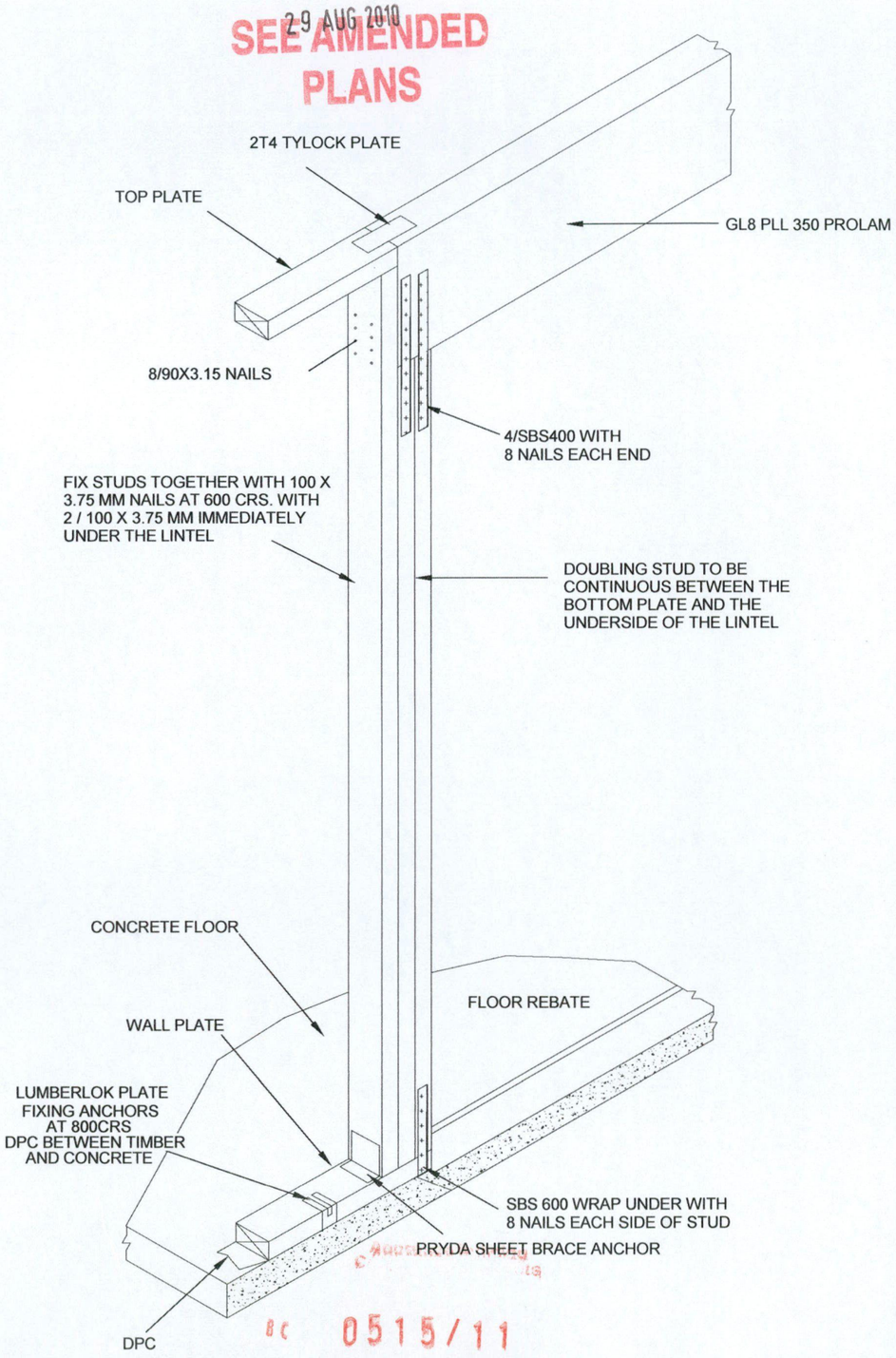
10200 — 05 of 17



TOP PLATE TO STUD
CONNECTIONS TO BE 6Kn

SG8 INTERIOR
FRAME H1.2 90X45
DRY FRAME @ 600CRS





CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

LOT 17 BARKERS ROAD
METHVEN

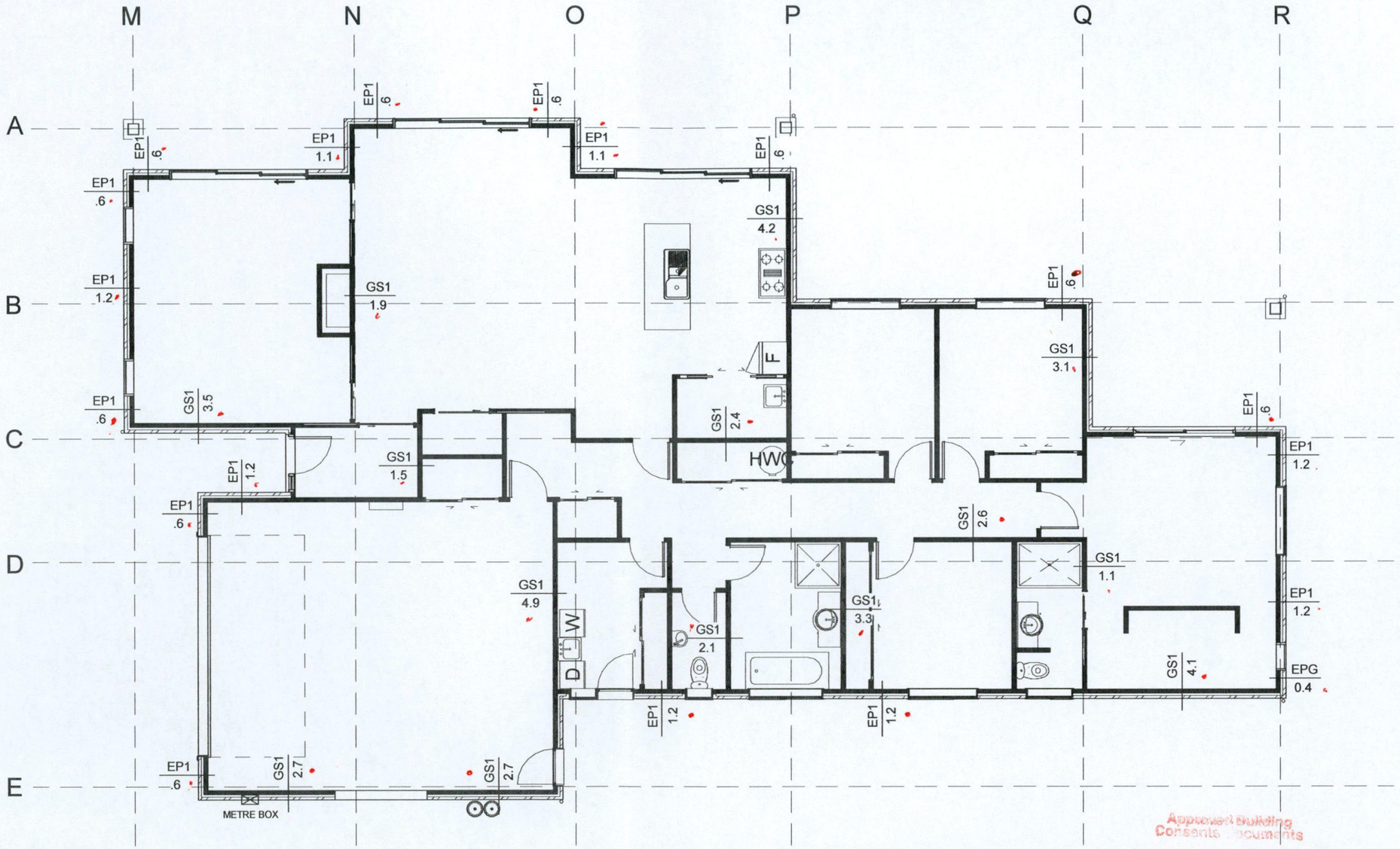
Detail Section

Designed by	Date	Scale
A.L	25/05/11	1 : 100

New Dwelling

10200 | 06 of 17

C:\CRONIN DESIGN\MASTER FILE 2010\10200 PHILIP&IRENE DUFF\10200 PHILIP IRENE DUFF RESIDENCE.rvt



Approved building Consents documents

BC 0515/11

Ashburton District Council

27/05/2011 9:57:12 a.m.

CRONIN DESIGN 9 Print Place Christchurch Ph 03 3388394 merv@cronindesign.co.nz	DUFF RESIDENCE LOT 17 BARKERS ROAD METHVEN	Bracing	Designed by A.L / Date 25/05/11 / Scale 1 : 100 New Dwelling 10200	07 of 17

FIG. 41 DOOR JAMB - Aluminium

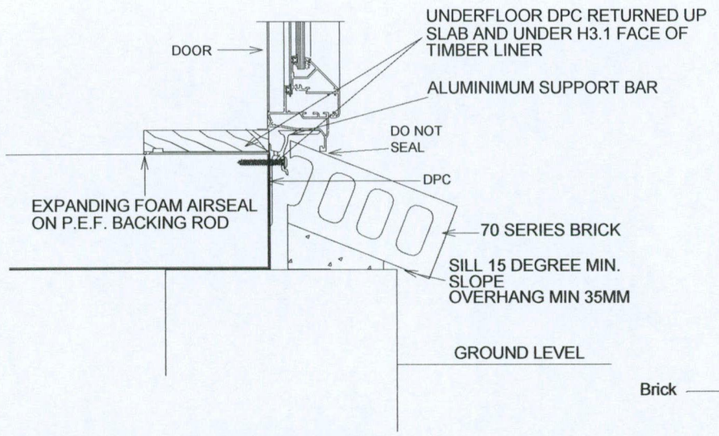


FIG. 37a GARAGE JAMB

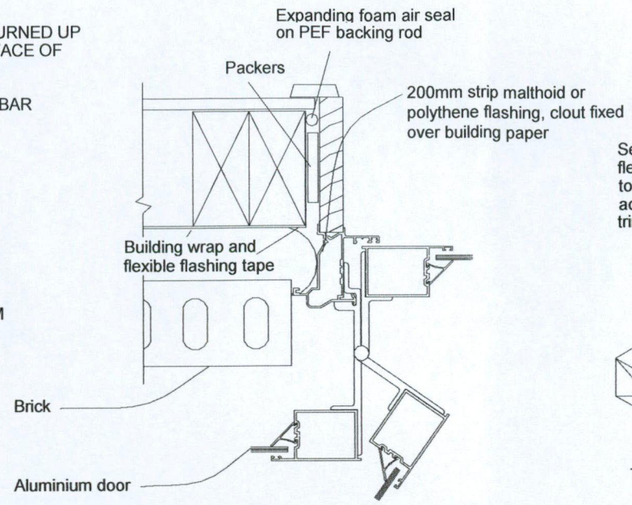


FIG. 26a Metre Box

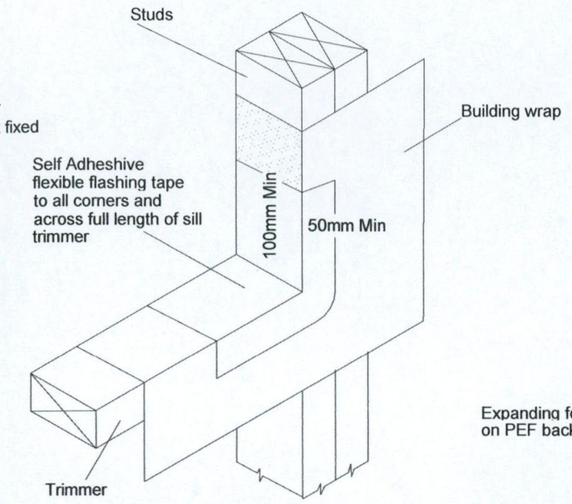


FIG. 37 WINDOW JAMB - Aluminium

FIG. 26a WINDOW HEAD - Soffit

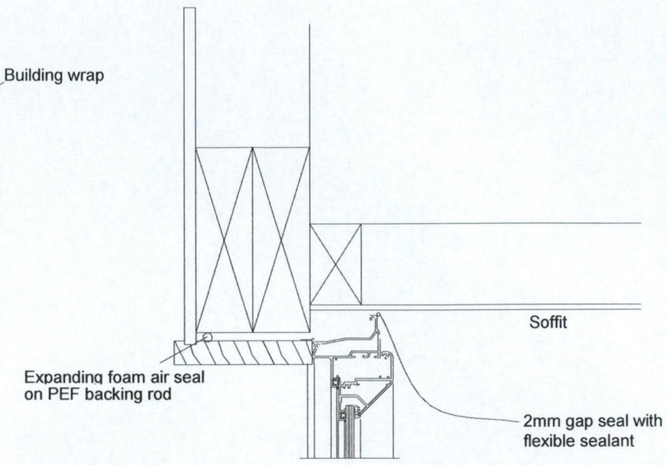


FIG. 39 WINDOW SILL - Aluminium

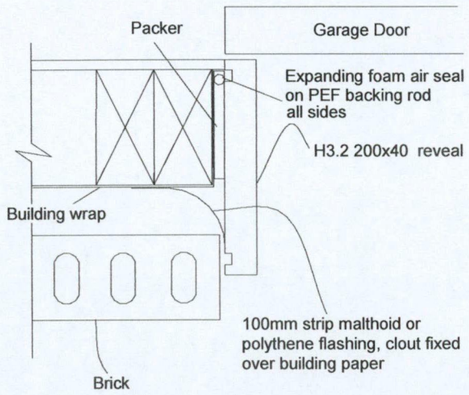
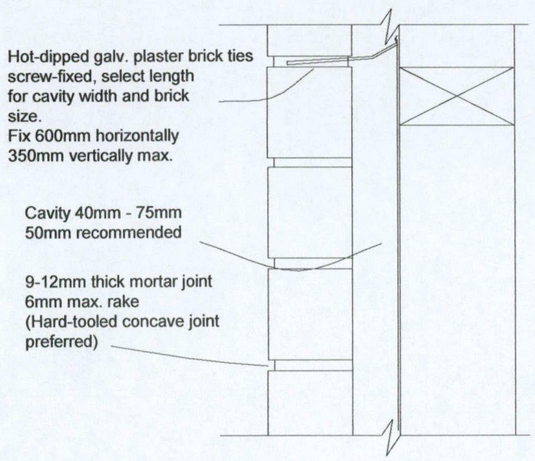
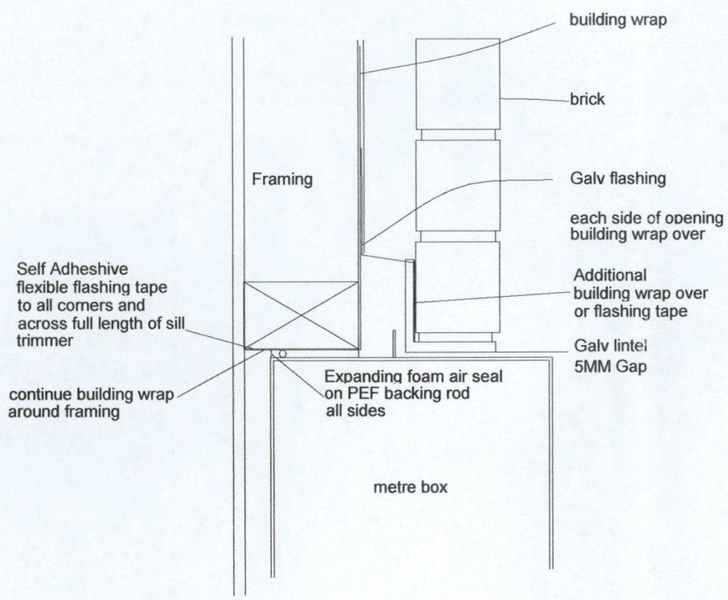
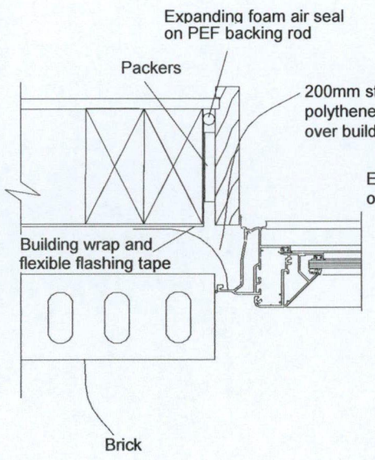
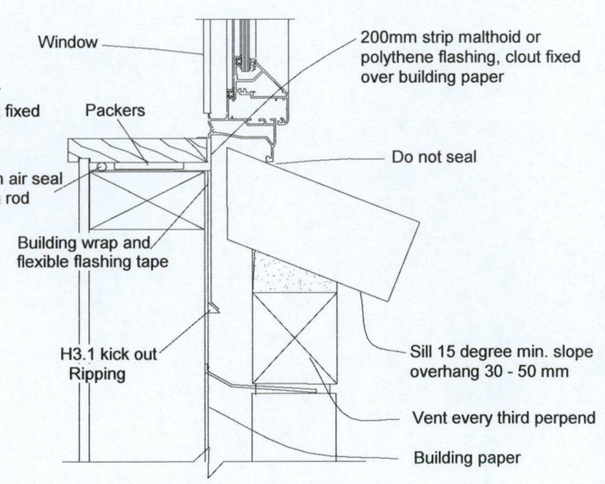


FIG. 10 TYPICAL WALL SECTION









CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

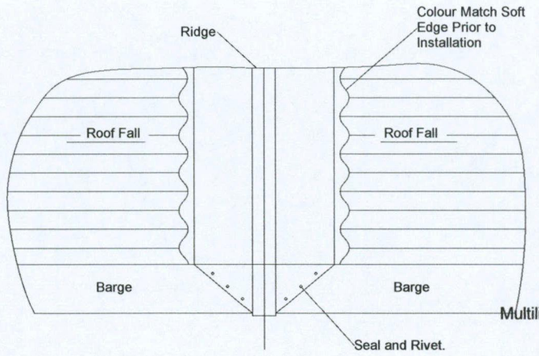
LOT 17 BARKERS ROAD
METHVEN

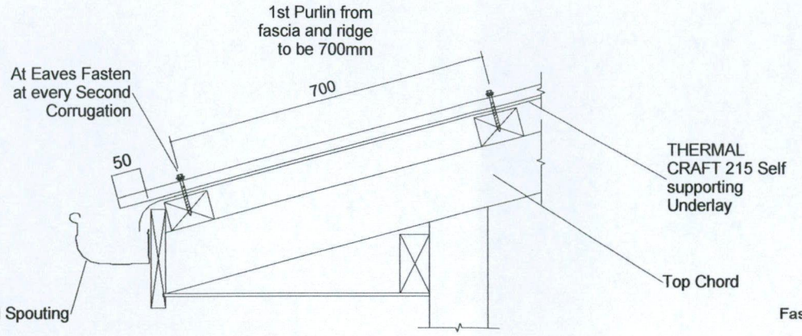
Flashing

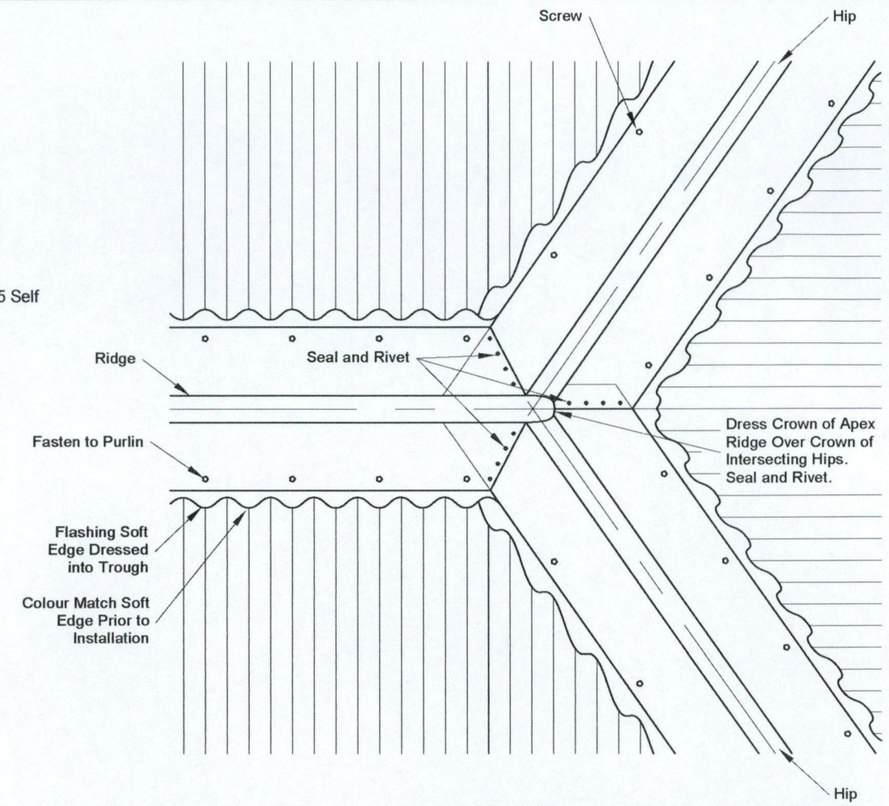
Designed by	Date	Scale
A.L	25/05/11	1 : 100

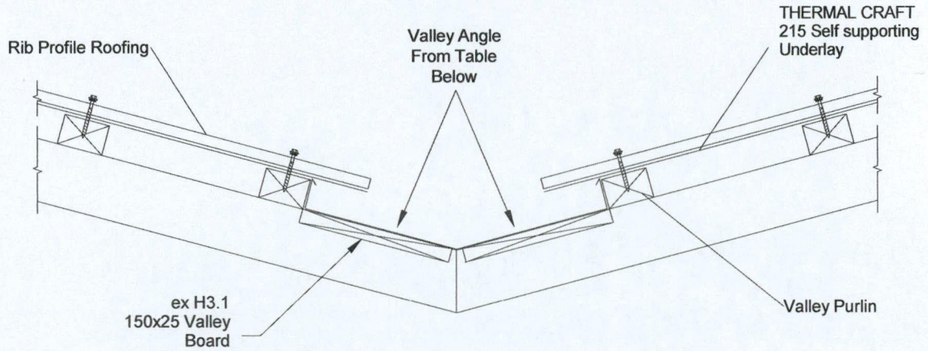
New Dwelling

10200 | 08 of 17



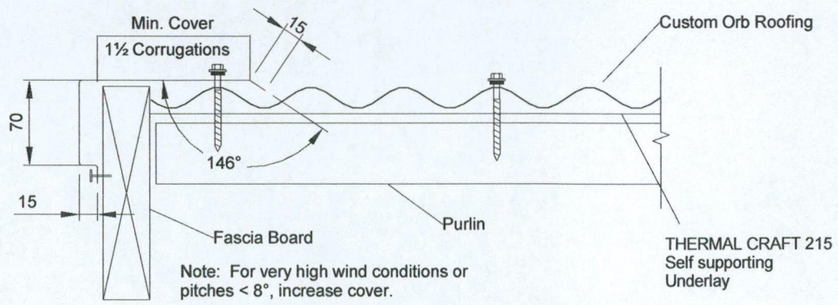




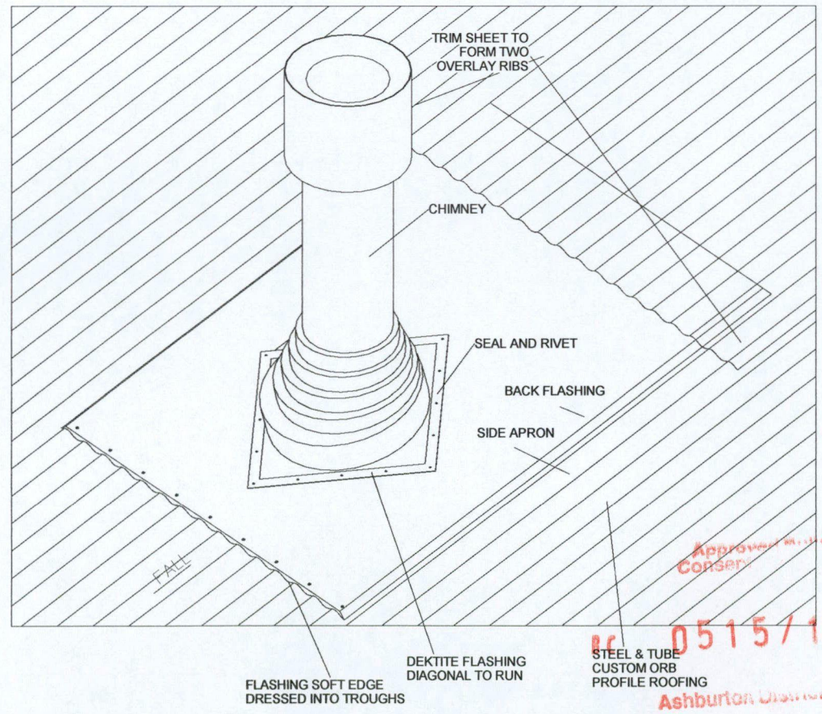


Valley Angle Table

Roof Pitch	5	10	15	20	25	30	35	45	60
Valley Angle	173	166	159	152	145	139	132	120	104



Square Barge



CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

LOT 17 BARKERS ROAD
METHVEN

Roof

Designed by	Date	Scale
A.L	25/05/11	1 : 100

New Dwelling

10200 | 09 of 17

LUMBERLOK®

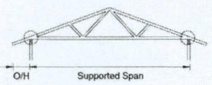
04/2008

STUD TO TOP PLATE FIXING SCHEDULE
ALTERNATIVE TO TABLE 8.18 NZS 3604:1999

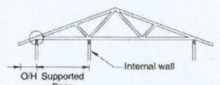
NOTE:

- All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20 kPa.
- Refer to Table 8.19. NZS 3604:1999 for nailing schedule to resist horizontal loads.
- These fixings assume the correct choice of rafter/truss to top plate connections have been made.
- Gable end wall top plate/stud connections require only 2 x 90mm x 3.15 dia. nails driven vertically into stud through top plate.
- All fixings assume top plate thickness of 45mm maximum. Note: TYLOK options on timber species.
- Wall framing arrangements under girder trusses are not covered in this schedule.
- All timber selections are as per NZS 3604:1999.

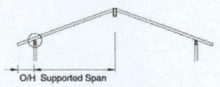
LOADED DIMENSION DEFINITION



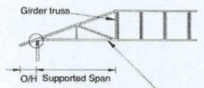
External wall
Standard truss



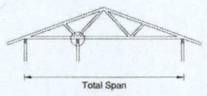
External wall
Internally supported truss



External wall
Rafter roof



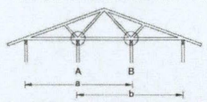
External wall
Jack truss



Internal wall
Internally supported truss
(overhang dimension does not apply)

EXTERNAL WALL
LOADED DIMENSION = SUPPORTED SPAN / 2 + O/H

INTERNAL WALL
LOADED DIMENSION = TOTAL SPAN / 2



Multiple internal walls
(overhang dimension does not apply)

MULTIPLE INTERNAL WALL
LOADED DIMENSION FOR
WALL A = a/2 + b/2
WALL B = b/2

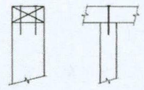
FIXING SELECTION CHART

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

Loaded Dimension (m)		Light Roof				Heavy Roof			
Stud Centres		Wind Zone				Wind Zone			
400mm	600mm	L	M	H	VH	L	M	H	VH
2.25	1.5	A	A	B	B	A	A	B	B
3.0	2.0	A	B	B	C	A	A	B	B
3.8	2.5	A	B	C	C	A	A	B	C
4.5	3.0	B	B	C	D	A	A	B	C
5.3	3.5	B	B	C	D	A	A	B	D
6.0	4.0	B	C	D	D	A	A	C	D
6.8	4.5	B	C	D	D	A	B	C	D
7.5	5.0	B	C	D	D	A	B	C	D
8.3	5.5	B	C	D	D	A	B	C	D
9.0	6.0	B	C	D	-	A	B	D	D

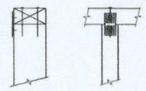
FIXING OPTIONS

FIXING TYPE A 0.7kN



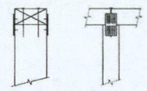
2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.

FIXING TYPE B 1.7kN



2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.
Plus
1 x Tylok 2T4 (min.) plate for Radiata Pine
1 x Tylok 2T5 (min.) plate for Douglas Fir

FIXING TYPE C 2.7kN

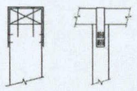


2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.
Plus
2 x Tylok 2T4 (min.) plate for Radiata Pine
2 x Tylok 2T5 (min.) plate for Douglas Fir

FIXING TYPE D 6.0kN

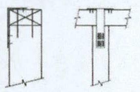
CHOOSE ANY OF THE 4 OPTIONS

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



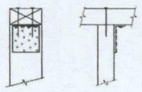
Plus LUMBERLOK Stud Tie

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



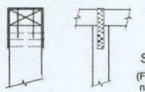
Plus LUMBERLOK Stud Strap

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

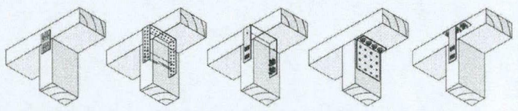


Plus LUMBERLOK 6kN Stud Anchor

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



Plus LUMBERLOK Sheet Brace Strap
(Fix 3 x 30mm x 3.15 dia. nails to each stud face.)



MiTek New Zealand Ltd.
AUCKLAND
PO Box 58-014, Greenmount
Phone: (09) 274 7109
Fax: (09) 274 7100
www.miteknz.co.nz
CHRISTCHURCH
PO Box 8387, Riccarton
Phone: (03) 348 8691
Fax: (03) 348 0314
HOME OF GANG-NAIL® BUILDING SYSTEMS

Slab Thickening & Stud Requirement Table

GANG-NAIL®

CONSTRUCTION SPECIFICATIONS

Max truss crs @ 1200mm, Min truss crs @ 600mm.
Assume walls are fully lined on at least one face.
Assume full bearing on top plate (i.e. no eccentric loading).

TRUSS BEARING REACTION	SLAB THICKENING DETAIL		STUD REQUIREMENTS UNIFORM DIST LOADS OR CONCENTRATED LOADS	
	CONCENTRATED LOAD	UNIFORM DIST LOAD	STUD HEIGHT	STUD REQUIREMENTS
Bearing reaction up to & including 10kN	STANDARD unreinforced or reinforced slab as per NZS 3604:1999	STANDARD unreinforced or reinforced slab as per NZS 3604:1999	2400 2700 3000	Refer to NZS 3604:1999
			STUD HEIGHT	STUD NO's UNDER TRUSS / MIN. TIMBER SIZE
Bearing reaction up to & including 20kN	TYPE FP1 375 x 375 PAD	TYPE FS1 300 STRIP THICKENING	2400 2700 3000	2 / 90 x 35 2 / 90 x 45 3 / 90 x 45
			STUD HEIGHT	STUD NO's UNDER TRUSS / MIN. TIMBER SIZE
Bearing reaction up to & including 30kN	TYPE FP2 450 x 450 PAD	TYPE FS2 450 STRIP THICKENING	2400 2700 3000	3 / 90 x 45 3 / 90 x 45 4 / 90 x 45

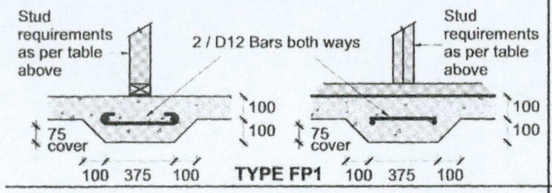
TIMBER SPECIFICATIONS

Timber properties based on NZS 3603:1993 Amendment No.4 March 2005.
Minimum grade specified is MSG8 / VSG8 unless otherwise noted.
For MSG6 and non-verified No 1 Fr Grade, use the studs for the next highest category.
i.e. - For loads up to 10kN select studs from the 20kN table.
- For loads up to 20kN select studs from the 30kN table.
- For loads above 20kN Special Design is required.

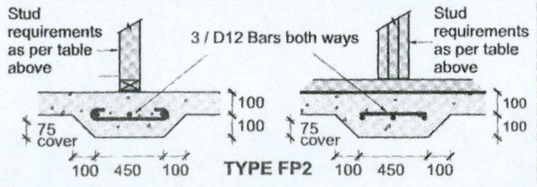
Slab Thickening Details

CONCRETE PAD OPTIONS
(for concentrated loads)

STANDARD 100mm SLAB



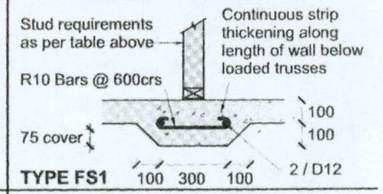
TYPE FP1



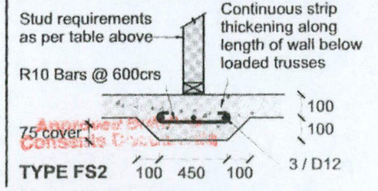
TYPE FP2

CONTINUOUS CONCRETE THICKENING OPTIONS
(for uniformly distributed loads)

STANDARD 100mm SLAB



TYPE FS1



TYPE FS2

NOTE: FP = Foundation Pad FS = Foundation Strip

CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE
LOT 17 BARKERS ROAD
METHVEN

Mitek Fixing

Designed by	Date	Scale
A.L	25/05/11	1 : 100

New Dwelling

10200 | 10 of 17

LUMBERLOK®

04/2008

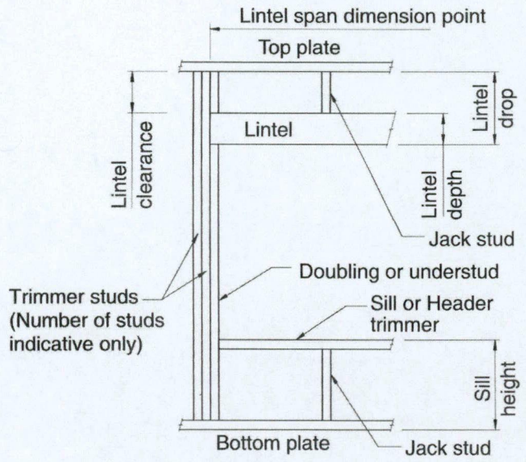
LINTEL FIXING SCHEDULE

ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:1999

NOTE:

- All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20 kPa.
- Refer to Table 8.19 NZS 3604:1999 for nailing schedule to resist horizontal loads.
- These fixings assume the correct choice of rafter/truss to top plate connections have been made.
- All fixings assume bottom plate thickness of 45mm maximum. Note: TYLOK options on timber species.
- Wall framing arrangements under girder trusses are not covered in this schedule.
- All timber selections are as per NZS 3604:1999.

DEFINITIONS



SELECTION CHART FOR LINTEL FIXING

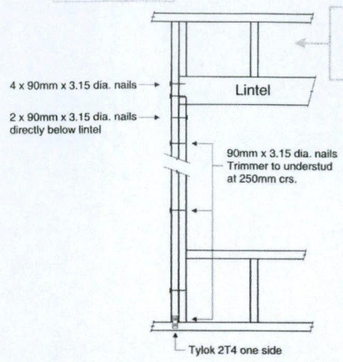
Lintel Span	Loaded Dimension (See Fig. 1.3 NZS 3604:1999)	Light Roof Wind Zone				Heavy Roof Wind Zone			
		L	M	H	VH	L	M	H	VH
1.5	2.0	E	E	F	F	E	E	F	F
	3.0	E	E	F	G	E	E	F	F
	4.0	E	F	G	G	E	E	F	G
	5.0	E	F	G	G	E	E	G	G
	6.0	E	F	G	H	E	E	G	G
2.0	2.0	E	F	F	G	E	E	F	F
	3.0	E	F	G	G	E	E	F	G
	4.0	E	F	G	G	E	E	G	G
	5.0	E	G	G	H	E	E	G	G
	6.0	F	G	G	H	E	F	G	H
2.4	2.0	E	F	F	G	E	E	F	F
	3.0	F	F	G	G	E	E	G	G
	4.0	F	G	G	H	E	E	G	G
	5.0	F	G	G	H	E	F	G	H
	6.0	F	G	H	H	E	F	G	H
3.0	2.0	E	F	G	G	E	E	F	G
	3.0	F	F	G	H	E	E	G	G
	4.0	F	G	G	H	E	F	G	H
	5.0	F	G	H	H	E	F	G	H
	6.0	G	G	H	-	E	F	H	H
3.6	2.0	F	F	G	G	E	E	F	G
	3.0	F	G	G	H	E	F	G	G
	4.0	F	G	H	H	E	F	G	H
	5.0	F	G	H	-	E	F	H	H
	6.0	G	H	H	-	E	F	H	-
4.2	2.0	F	F	G	G	E	E	G	G
	3.0	F	G	H	H	E	F	G	H
	4.0	G	G	H	-	E	F	H	H
	5.0	G	H	H	-	E	F	H	-
	6.0	G	H	-	-	E	G	H	-
4.8	2.0	F	G	G	H	E	E	G	G
	3.0	F	G	H	H	E	F	G	H
	4.0	G	G	H	-	E	F	H	H
	5.0	G	H	-	-	E	F	H	-
	6.0	G	H	-	-	E	G	H	-

NOTES:

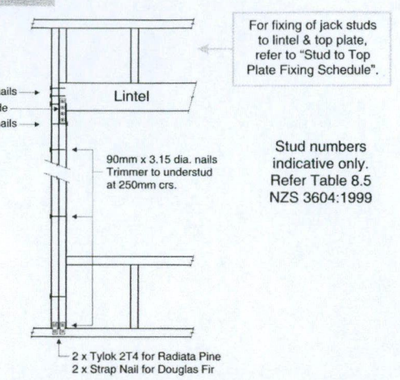
Lintels supporting Girder trusses for ALL load cases use:
Fixing Type G where contributary area = $10m^2$
Fixing Type H where contributary area = $20m^2$
All cases outside this require specific design.

LINTEL FIXING OPTIONS

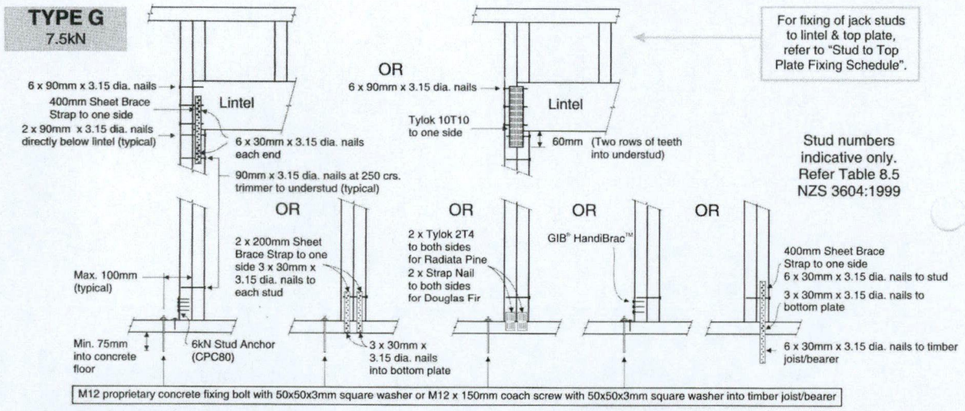
TYPE E 1.4kN



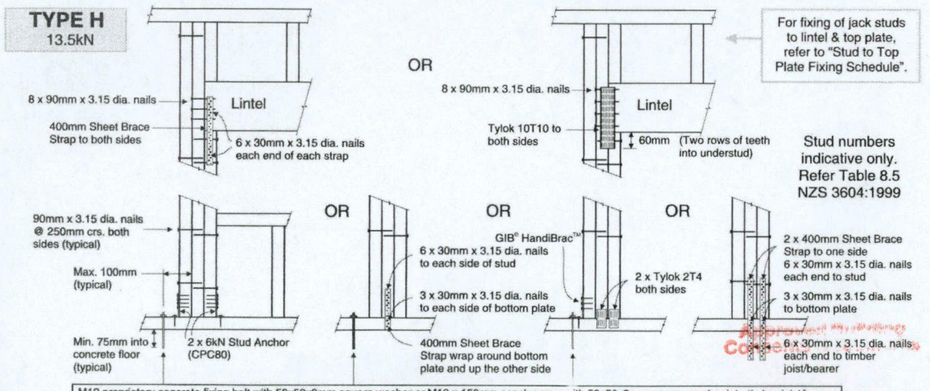
TYPE F 4.0kN



TYPE G 7.5kN



TYPE H 13.5kN



BC 0515/11

Ashburton District Council

MiTek New Zealand Ltd.
AUCKLAND
PO Box 58-014, Greenmount
Phone: (09) 274 7109
Fax: (09) 274 7100
www.miteknz.co.nz
CHRISTCHURCH
PO Box 8387, Riccarton
Phone: (03) 348 8691
Fax: (03) 348 0314
HOME OF GANG-NAIL® BUILDING SYSTEMS

27/05/2011 9:57:24 a.m.

CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

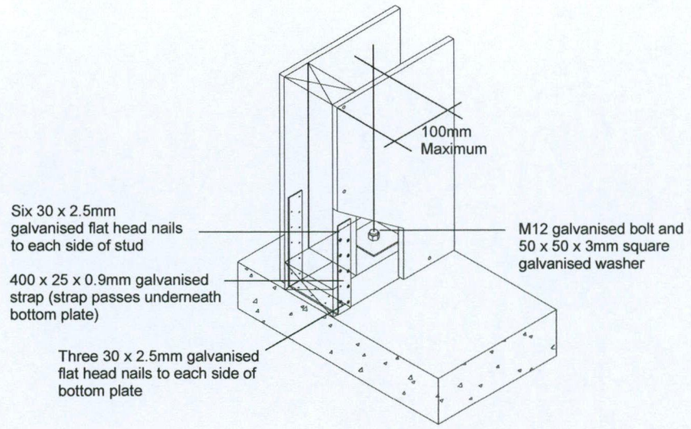
LOT 17 BARKERS ROAD
METHVEN

Lintel Fixing

Designed by	Date	Scale
A.L	25/05/11	1 : 100

New Dwelling

10200 | 11 of 17

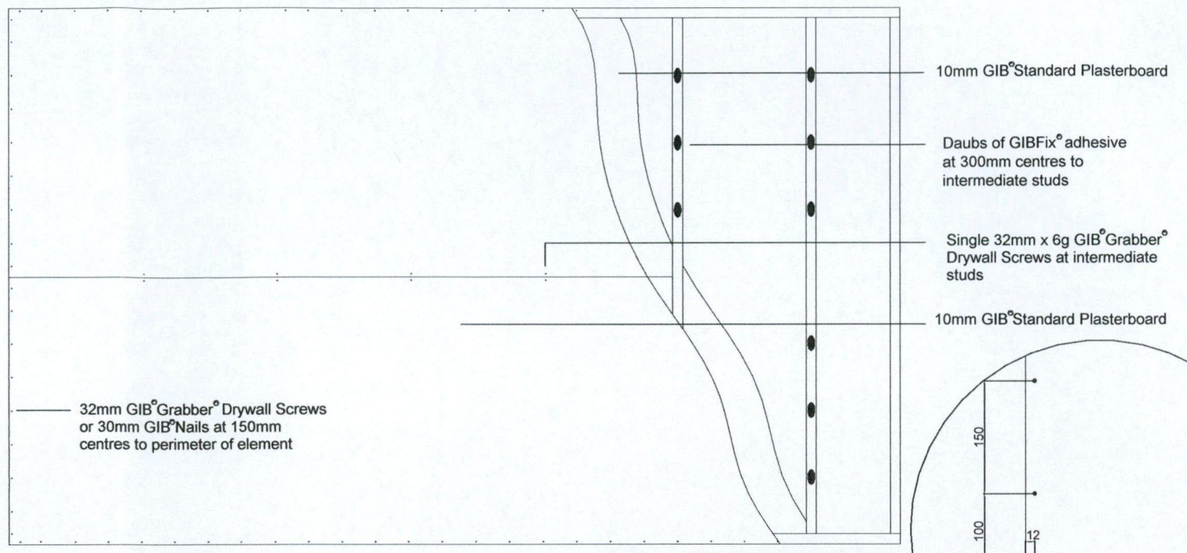


Internal / External Walls

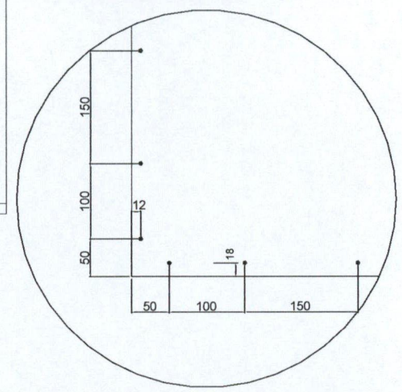
Concrete Floor

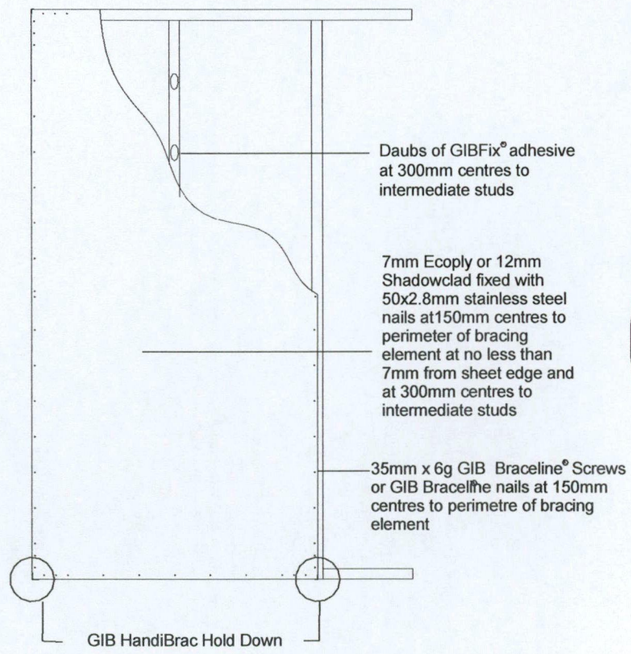
10mm GIB® Standard Plasterboard MINIMUM LENGTH 1200mm
GS2 HORIZONTAL FIXING LINED BOTH SIDES

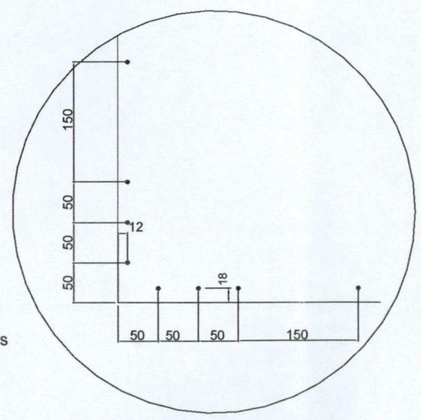
GS2 Horizontal Fix



Fasteners are placed at 150mm centres around the bracing element perimeter starting at 50, and 150mm from the bracing element corner. Fasteners are placed no closer than 12mm to a paper bound machine edge of the sheet and no closer than 18mm to a sheet end or cut edge.







Fasteners are placed at 150mm centres around the bracing element perimeter starting at 50,100, and 150mm from the bracing element corner. Fasteners are placed no closer than 12mm to a paper bound machine edge of the sheet and no closer than 18mm to a sheet end or cut edge.

10mm GIB Braceline® MINIMUM LENGTH 400mm
BL1 HORIZONTAL OR VERTICAL FIXING LINED ONE SIDE ONLY

BL1

Approved Building Consent No. 0515/11
Ashburton District Council

27/05/2011 9:57:25 a.m.

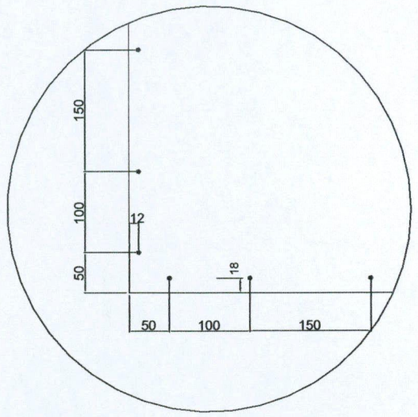
CRONIN DESIGN 9 Print Place Christchurch Ph 03 3388394 merv@cronindesign.co.nz	DUFF RESIDENCE LOT 17 BARKERS ROAD METHVEN	Gib Fixing 1	Designed by A.L Date 25/05/11 Scale 1 : 100 New Dwelling 10200	12 of 17

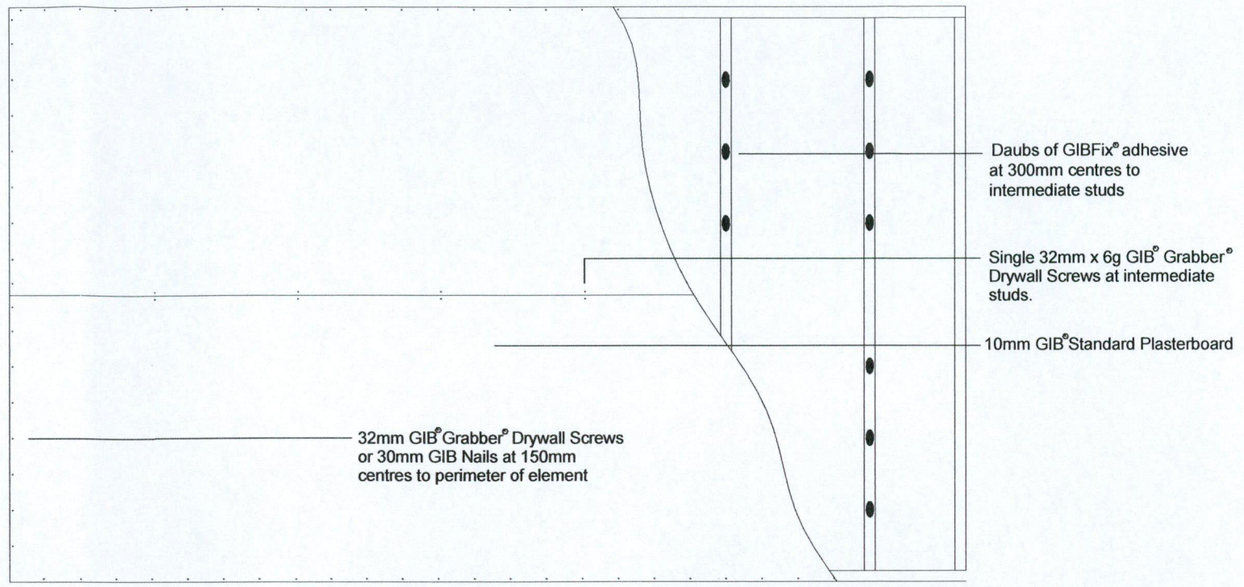
C:\CRONIN DESIGN\MASTER FILE 2010\10200 PHILIP&IRENE DUFF\10200 PHILIP IRENE DUFF RESIDENCE.vwf

27/05/2011 9:57:27 a.m.

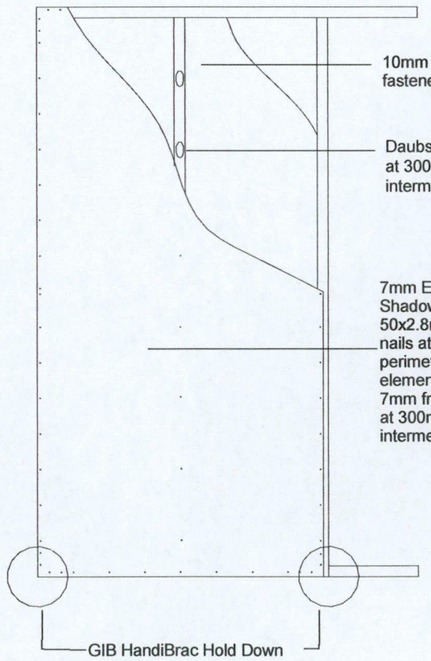
10mm GIB Standard® Plasterboard MINIMUM LENGTH 1800mm
GS1 HORIZONTAL FIXING LINED ONE SIDE ONLY

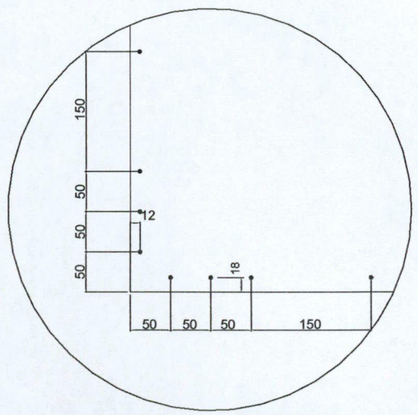
GS1 Horizontal Fixed





Fasteners are placed at 150mm centres around the bracing element perimeter starting at 50, and 150mm from the bracing element corner. Fasteners are placed no closer than 12mm to a paper bound machined edge of the sheet and no closer than 18mm to a sheet end or cut edge.

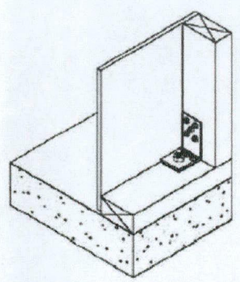
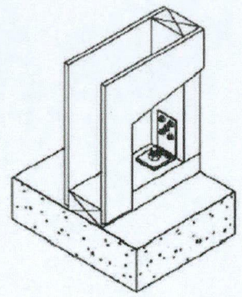
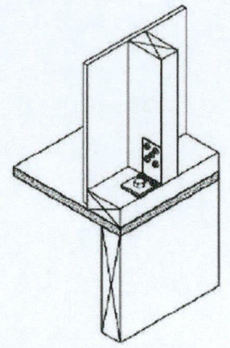
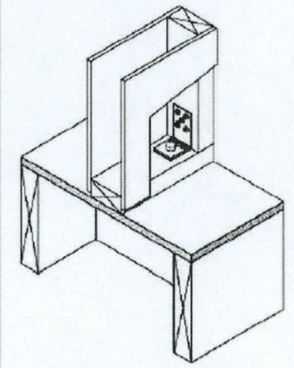




Fasteners are placed at 150mm centres around the bracing element perimeter starting at 50,100, and 150mm from the bracing element corner. Fasteners are placed no closer than 12mm to a paper bound machined edge of the sheet and no closer than 18mm to a sheet end or cut edge.

10mm GIB Braceline® MINIMUM LENGTH 600mm
BLG HORIZONTAL OR VERTICAL FIXING LINED ONE SIDE AND 10MM GIB STANDARD PLASTERBOARD ON OTHER SIDE

BLG

Concrete Floor		Timber Floor	
External walls	**Internal walls**	**External walls**	**Internal walls**
			
Position GIB HandiBrac® as close as practicable to the internal edge of the bottom plate	Position GIB HandiBrac® at the stud/ plate junction	Position GIB HandiBrac® in the centre of the perimeter joist or bearer	Position GIB HandiBrac® in the centre of the floor joist or full depth solid block
Hold-down fastener requirements			
A mechanical fastening with a minimum characteristic uplift capacity of 15kN		12 x 150 mm galvanised coach screw	

CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

LOT 17 BARKERS ROAD
METHVEN

Gib Fixing 2

Designed by	Date	Scale
A.L	25/05/11	1 : 100

New Dwelling

10200

Ecoply® Bracing Specification – EP1

April 2009

Single sided structural plywood brace

Specification No.	Minimum Wall Length	Lining Requirements	BUs/m Wind	BUs/m Earthquake
EP1	0.6 m	7mm Ecoply® or 12mm Shadowclad® one side	130	130

Framing

Wall framing must comply with:

- NZBC B1 - Structure: AS1 Clause 3 Timber (NZS3604)
- NZBC B2 - Durability: AS1 Clause 3.2 Timber (NZS3602)

Framing dimensions and height are as determined by the NZS3604 stud and top plate tables for load bearing and non load bearing walls. Kiln dried verified structural grade timber must be used. Machine stress graded timber, such as Laserframe®, is recommended.

Bottom Plate Fixing

Use GIB Handibrac® hold-down connections at each end of the bracing element. Refer to installation instructions supplied with the connectors for correct installation instructions and bolt types to be used for either concrete or timber floors. Within the length of the bracing element, bottom plates are fixed in accordance with the requirements of NZS 3604:1999.

Lining

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

Fastening the Ecoply®

Fasteners

Fasten with 50 x 2.8 mm galvanised or stainless steel flat head nails for direct fix or 60 x 2.8mm over cavity battens. Place fasteners no less than 7 mm from sheet edges.

Where fasteners are in contact with CCA treated timber or plywood, or the bracing panel forms part of an exterior envelope, fasteners must be stainless steel. Stainless steel fasteners must be annular grooved.

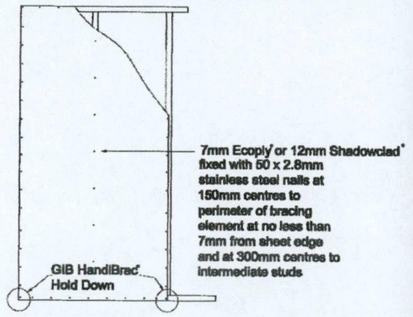
Fastening Centres

Fasteners are placed at 150 mm centres around the perimeter of each sheet and 300 mm centres to intermediate studs.

Fastening to Cavity Battens

The brace element may be fixed over cavity battens.

The cavity battens must be a minimum of 40 x 20mm nailed staggered formation at 150mm centres to studs around the perimeter of the brace element, and nailed to the intermediate studs within the element at 300mm centres, with 50mm x 2.8mm flat head galvanised or annular grooved stainless steel nails.



SPECIFICATION

Ecoply® Bracing Systems are designed to meet the requirements of the NZBC and have been tested and analysed using the P21 method referenced in NZS3604:1999 listed as an acceptable solution B1/AS1 Structure. Testing was carried out using Ecoply, Shadowclad and Laserframe MSG8 timber framing manufactured by Carter Holt Harvey Limited trading as Carter Holt Harvey Woodproducts New Zealand, and GIB® products manufactured by Winstone Wallboards Ltd. **Substituting materials may compromise performance of the system.** GIB® and GIB HandiBrac® are registered trade marks of Fletcher Building Holdings Ltd.

0800 746 399
www.chhwoodproducts.co.nz
www.ecoply.co.nz

ecoply Proven. Durable. Strong

Ecoply® Bracing Specification - EPG

April 2009

Structural Plywood brace with plasterboard other side

Specification No.	Minimum Wall Length	Lining Requirements	BUs/m Wind	BUs/m Earthquake
EPG	0.4 m	7mm Ecoply® or 12mm Shadowclad® one side and 10mm GIB® Standard plasterboard other side	120	125
	1.2 m		150	150

Framing

Wall framing must comply with:

- NZBC B1 - Structure: AS1 Clause 3 Timber (NZS3604)
- NZBC B2 - Durability: AS1 Clause 3.2 Timber (NZS3602)

Framing dimensions and height are as determined by the NZS3604 stud and top plate tables for load bearing and non load bearing walls. Kiln dried verified structural grade timber must be used. Machine stress graded timber ,such as Laserframe®, is recommended.

Bottom Plate Fixing

Use GIB HandiBrac® hold-down connections at each end of the bracing element. Refer to installation instructions supplied with the connectors for correct installation instructions and bolt types to be used for either concrete or timber floors. Within the length of the bracing element, bottom plates are fixed in accordance with the requirements of NZS 3604:1999.

Lining

Side 1: One layer 7mm Ecoply structural plywood or 12mm Shadowclad exterior wall cladding fixed directly to framing or over cavity battens. If part sheets are used, ensure nailing at required centres is carried out around the perimeter of each sheet or part sheet. A 2-3mm expansion gap should be left between sheets.

Side 2: One layer 10 or 13mm GIB® Standard plasterboard vertically or horizontally fixed. Sheet joints are touch fitted and fastener heads and joints stopped in accordance with the GIB® Site Guide.

Fastening the Ecoply®

Fasteners

Fasten with 50 x 2.8mm galvanised or stainless steel flat head nails for direct fix or 60 x 2.8mm over cavity battens. Place fasteners no less than 7mm from sheet edges.

Where fasteners are in contact with CCA treated timber or plywood, or the bracing panel forms part of an exterior envelope, fasteners must be stainless steel. Stainless steel fasteners must be annular grooved.

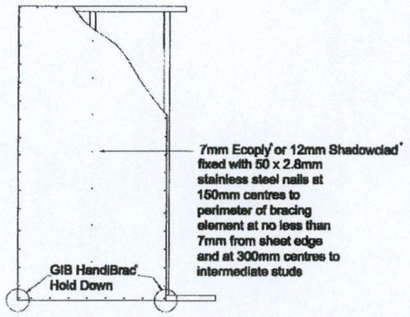
Fastening Centres

Fasteners are placed at 150mm centres around the perimeter of each sheet and 300mm centres to intermediate studs.

Fastening to Cavity Battens

The plywood side of the brace element may be fixed over cavity battens.

The cavity battens must be a minimum of 40 x 20mm nailed staggered formation at 150mm centres to studs around the perimeter of the brace element, and nailed to the intermediate studs within the element at 300mm centres, with 50mm x 2.8mm flat head galvanised or annular grooved stainless steel nails.



SPECIFICATION

Ecoply® Bracing Systems are designed to meet the requirements of the NZBC and have been tested and analysed using the P21 method referenced in NZS3604:1999 listed as an acceptable solution B1/AS1 Structure. Testing was carried out using Ecoply, Shadowclad and Laserframe MSG8 timber framing manufactured by Carter Holt Harvey Limited trading as Carter Holt Harvey Woodproducts New Zealand, and GIB® products manufactured by Winstone Wallboards Ltd. **Substituting materials may compromise performance of the system.** GIB® and GIB HandiBrac® are registered trade marks of Fletcher Building Holdings Ltd.

0800 746 399
www.chhwoodproducts.co.nz
www.ecoply.co.nz

ecoply Proven. Durable. Strong

CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

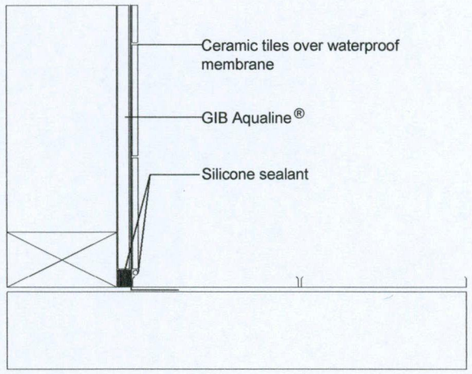
LOT 17 BARKERS ROAD
METHVEN

Ply Fixing

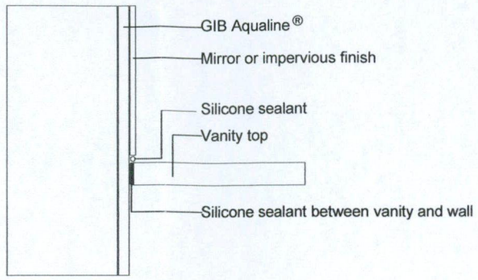
Designed by	Date	Scale
A.L	25/05/11	1 : 100

New Dwelling

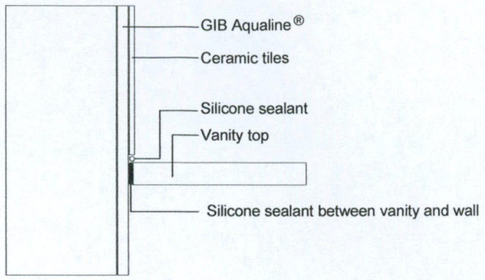
10200



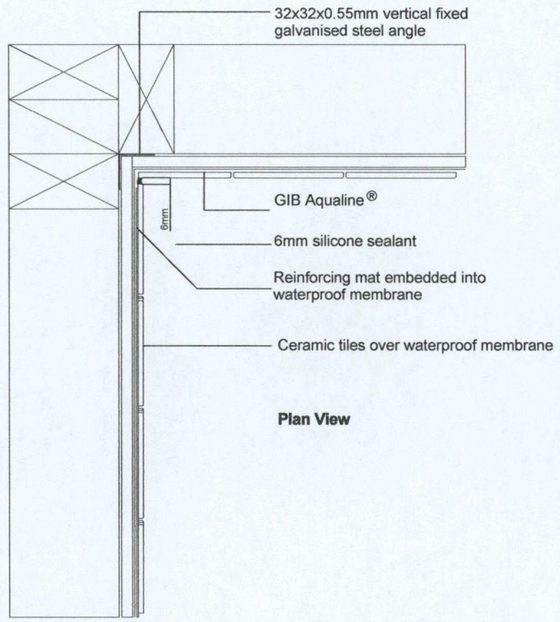
Wall/Floor Detail
Tiled Walls
GAW-D003



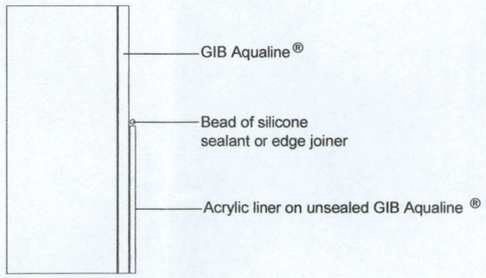
Vanity Top Detail
GAW-D011



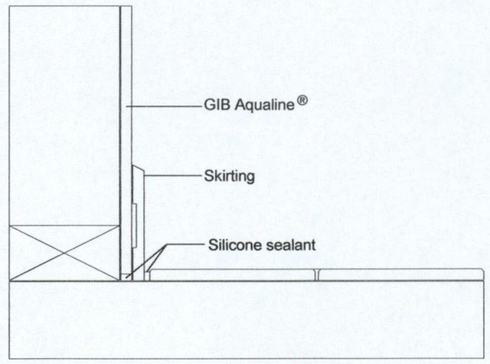
Vanity Top Detail
GAW-D005



Corner Detail
Shower - Tiled Walls
GAW-D001



Liner Top Detail
Acrylic Liner
GAW-D008



Wall/Floor Detail
GAW-D010

CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

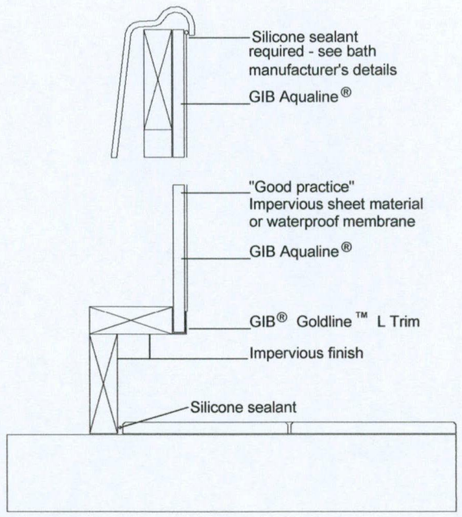
LOT 17 BARKERS ROAD
METHVEN

Bathroom 1

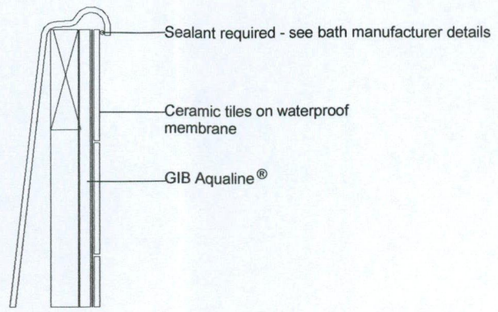
Designed by	Date	Scale
A.L	25/05/11	1 : 100

New Dwelling

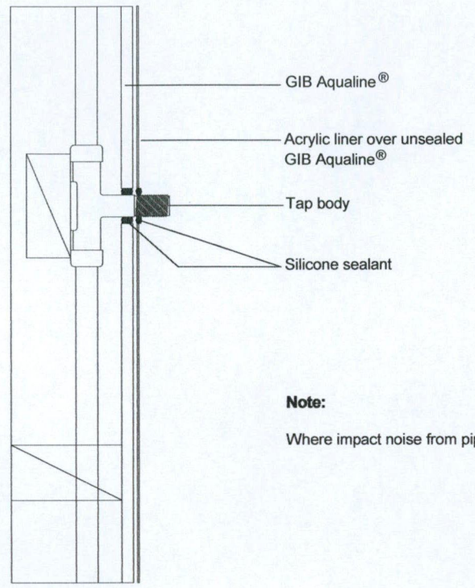
10200



Bath Plinth Detail
GAW-D009



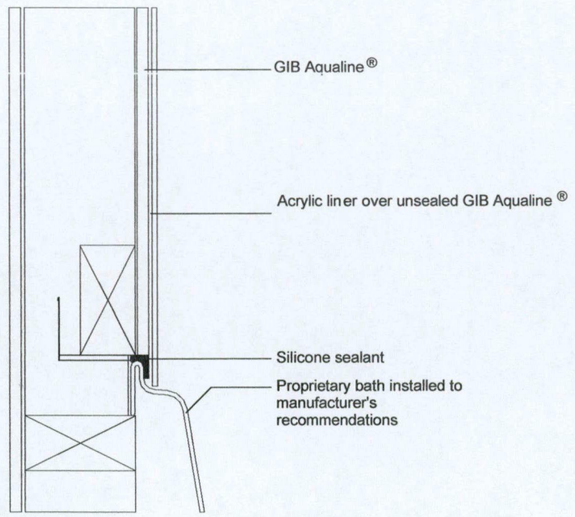
Bath Edge Detail Tile



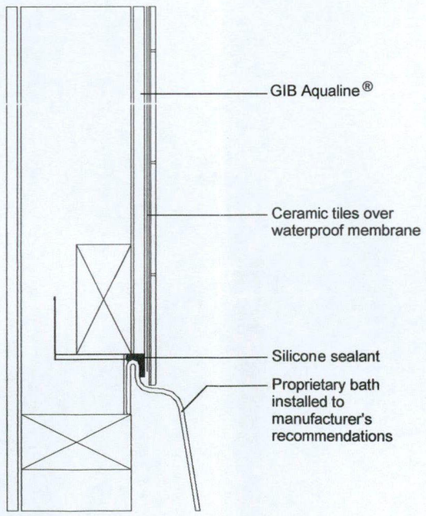
Penetration Detail
Acrylic Liner
GAW-D012

Note:

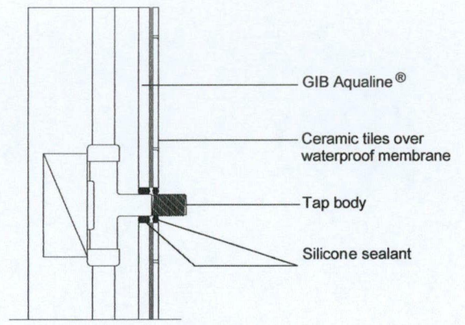
Where impact noise from pipes is an issue, fix all pipes on resilient brackets



Bath/Wall Detail
GAW-D007



Bath/Wall Detail Tile
GAW-D006



Penetration Detail
Tiled Walls
GAW-D002

Note:

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

CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

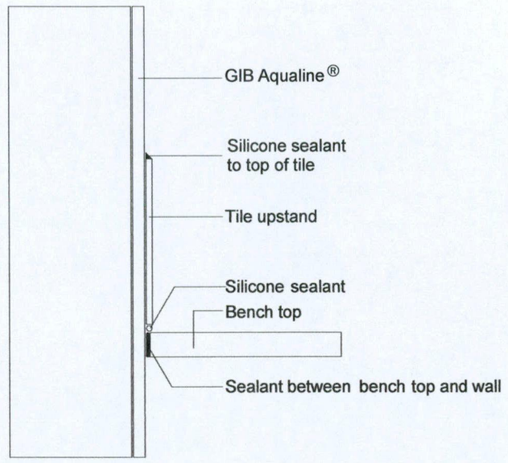
LOT 17 BARKERS ROAD
METHVEN

Bathroom 2

Designed by	Date	Scale
A.L	25/05/11	1 : 100

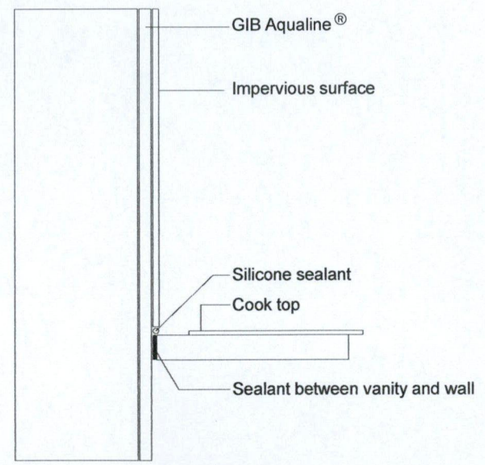
New Dwelling

10200



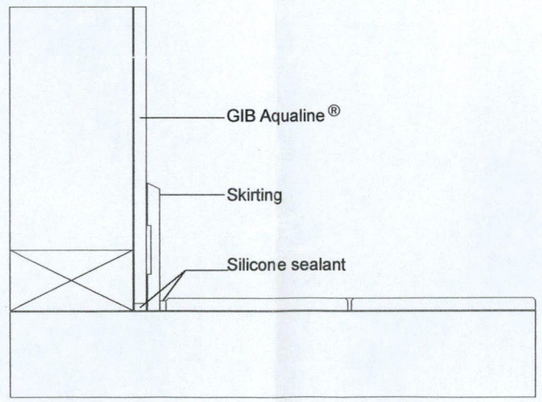
Bench Top/Wall Detail

Kitchen and Laundry



Cook Top/Wall Detail

Kitchen and Laundry



Wall/Floor Detail

Kitchen and Laundry

CRONIN DESIGN
9 Print Place Christchurch
Ph 03 3388394
merv@cronindesign.co.nz

DUFF RESIDENCE

LOT 17 BARKERS ROAD
METHVEN

Kitchen And Laundry

Designed by	Date	Scale
A.L	25/05/11	1 : 100

New Dwelling

10200 | 17 of 17