WAIKATO BUILDING CONSENT GROUP
BUILDING CONSENT APPLICATION

Dwelling / Planning

PRINT CLEARLY WITH BLUE OR BLACK PEN

OFFICE USE ONLY	
Date Received	RECEIVED 10 AUG 2007 BUILDING
Consent No.	2007 / 18966
Document No.	ID 6634626
Valuation No.	
PIM No.	new dwelling with attach garage e-copy issued

1. APPLICATION TYPE (tick one)

☑ Building Consent and PIM
☐ PIM only

2. THE BUILDING/PROJECT LOCATION

Street Number 8 Street Name Mercury Court /
Town Hamilton
Level or Unit _____ Building name _____ Lot(s) 258
DP/S 356028 Site area _____ (ha) 610 (m²)
Other Information _____

3. OWNER

Name/Company Murray Antram
Mail Address P O Box 20542
Te Rapa
Hamilton
Phone (daytime) _____
Fax _____
Mobile 021 922038
Email _____
Attention _____ Ph _____

4. AGENT

Name/Company QBT Homes Ltd
Mail Address P O Box 20343
Hamilton
Phone (daytime) 849 3979
Fax 849 0136
Mobile _____
Email pip.eyre@oddenhomes.co.nz
Attention Pip Eyre Ph _____
Relationship to Owner Builder

Send Invoice to: ☐ Owner ☑ Agent (tick one)
First point of contact for communication: ☐ Owner ☑ Agent (tick one)

5. EVIDENCE OF OWNERSHIP ATTACHED

☑ Certificate of Title ☐ Lease ☐ Agreement for Sale and Purchase ☐ Other

Duplicate issued

6. THE PROJECT (tick one)

☐ New Building ☐ Demolition ☐ Addition ☐ Alteration
☐ Relocation ☐ Change of use ☐ Other (please specify below)

Description of Work: New dwelling attached garage

Intended Use Family Home
Intended life of building (if less than 50 years) _____
Estimated value of work: inc GST $ 242,110.00
Existing floor area _____ m2 New Floor Area 198.5 m2

3C FORM 2 VER 2

7. INFORMATION REQUIRED FOR PROJECT INFORMATION MEMORANDUM ONLY

You may have information about the site that is unavailable to Council but needs to be considered as part of this consent, this could be critical to the success of what you plan to do on the site. Please supply any relevant information/documents/diagrams and tick checkboxes if your project involves one or more of these:

- ☐ Is there a proposed subdivision for this land?
- ☐ Are you digging out the site for a building platform?
- ☐ Are there new or altered connections to Council sewer, storm water or water mains?
- ☐ Are you altering domestic sewer or storm water drains?
- ☐ Are you building near or over any road or public space?
- ☐ Are you building near or over existing domestic sewer, storm water, water mains or wells?
- ☐ Are you building or altering a vehicle crossing?
- ☐ Is this site contaminated?
- ☐ Will the building be sited on sloping ground, or near to a bank, a stream or a coastal zone?
- ☐ Is there any other relevant information? Please state in the box or attach information

8. BUILDING PRACTITIONERS INVOLVED IN THIS PROJECT

Continue on a separate sheet if required

BUILDER: QBJ Homes Ltd			
Name:		Registration Number:	
Address:			
Telephone:	Fax:	Mobile:	Email:

PLUMBER: Peter Owen Plumbing			
Name: Peter Owen		Registration Number:	
Address: PoBox 5430 - Hamilton			
Telephone:	Fax:	Mobile:	Email:

DRAINLAYER: Drainage System			
Name: Mark Newdick		Registration Number:	
Address: PoBox 21170 - Hamilton			
Telephone:	Fax:	Mobile: 021 972 896	Email:

DESIGNER: The Designer			
Name:		Registration Number:	
Address: PoBox 4039 Mount Maunganui			
Telephone: 07 5723389	Fax:	Mobile:	Email:

Project Role:			
Name:		Registration Number:	
Address:			
Telephone:	Fax:	Mobile:	Email:

Project Role:

9. MODIFICATIONS AND/OR WAIVER REQUESTED FROM BUILDING CODE: ☐ Yes ☐ No

If yes, please specify clause and waiver/modification required, attach additional pages if needed:

10. APPLICABLE BUILDING CODE CLAUSES & MEANS OF COMPLIANCE FOR THIS BUILDING CONSENT

This application contains solutions that are different to the acceptable solutions contained in the Building Code: ☐ Yes ☐ No

If yes, please specify clause and the alternative solution to the Building Code. Attach additional pages if needed.

11. COMPLIANCE SCHEDULE - THE FOLLOWING SYSTEMS APPLY TO/ARE MODIFIED BY THIS PROJECT

Please tick appropriate boxes

Automatic Systems for fire suppression	☐ New	☐ Modified
Automatic or manual emergency warning systems for fire and other dangers	☐ New	☐ Modified
Electromagnetic or automatic doors or windows	☐ New	☐ Modified
Emergency lighting systems	☐ New	☐ Modified
Escape route pressurisation systems	☐ New	☐ Modified
Riser mains for use by fire services	☐ New	☐ Modified
Automatic back-flow preventers connected to potable water supplies	☐ New	☐ Modified
Mechanical ventilation or air conditioning systems	☐ New	☐ Modified
Laboratory fume cupboards	☐ New	☐ Modified
Audio loops or other assisted listening systems	☐ New	☐ Modified
Smoke control systems	☐ New	☐ Modified
Lifts, escalators, travelators or other systems to move people or goods within buildings	☐ New	☐ Modified
Building maintenance units providing access to exterior and interior walls of buildings	☐ New	☐ Modified
Emergency power systems for, or signs to, a system or feature specified in the above clauses	☐ New	☐ Modified

12. CONFIDENTIALITY

Please discuss with the Building Review Officer, this is generally for commercial or public buildings.

13. DECLARATION: SIGNED BY OWNER/AGENT ON BEHALF OF AND WITH AUTHORITY OF THE OWNER

Print name: Pip Eyre Signature: Date: 08.08.07

14. PLEASE ENSURE THAT YOUR APPLICATION FOR BUILDING CONSENT CONTAINS:

- ☐ Complete application form with relevant documents
- ☐ Accurate set of plans and design statements
- ☐ Accurate set of specifications
- ☐ Other information relevant to this application, please specify:

OFFICE USE ONLY

FEES PAYABLE		
Project Information Memorandum	$	140
Building Consent - Application Fee	$	1910
- Approval Fee	$	
- Inspection Fee	$	
- Mileage	$	
Code Compliance Certificate	$	70
BRANZ Levy	$	243
DBH Levy	$	478.71
Photocopying	$	
Microfilm - A4	$	245
- A3	$	
Street Crossing Administration	$	165
Structural Check	$	
Amendments to Consent	$	
External Consultants Check 1	$	
External Consultants Check 2	$	
NZ Fire Service Check	$	
Planning Bond/Resource Consent	$	
Reserves Contribution	$	
Rural Connection	$	
Fire Main	$	
Water Connection	$	
Water Disconnection	$	
Wastewater/Sewerage Connection	$	
Wastewater Disconnection	$	
Backflow Inspection	$	
Stormwater Connection - Mains	$	
- Kerb and Channel	$	
Stormwater disconnection	$	
CCTV Survey Wastewater	$	
CCTV Survey Stormwater	$	
Cellar Indemnity	$	
Council Bonds	$	
	$	
Compliance Schedule	$	
Development Contributions		
- Water	$	
- Stormwater	$	
- Wastewater	$	
- Transport	$	
- Community Infrastructure	$	
Total Fees (inc GST)	07/09/07	$325.71
Less Deposit Paid - Receipt No:		$
Reminder Fees Due		$
		$

REFERRALS
Structural Consultant:
Name:
Sent: Returned:
Structural Consultant:
Name:
Sent: Returned:
Other Consultant:
Name:
Sent: Returned:
Other Consultant:
Name:
Sent: Returned:
New Zealand Fire Service:
Sent: Returned:
Historic Places Trust (Notification)
Date advised:

ADDITIONAL NOTES AND/OR FEES
PLANNING HAVE CHQ
AS NO-ONE AVAIL TO
PRINT DC INVOICE.

AUTHORISED BY:	
DATE AUTHORISED:	3/9/07
ISSUED BY:	
DATE ISSUED:	11/09/07
RECEIPT No:	2057633
RECEIPT No:	
RECEIPT No:	

Consent Reference:	Project Address:	Issue Date:
2007 / 18966	8 Mercury CT	11-Sep-07

Owner: Ltd McCaw Lewis Chapman Trustees (No 2)

Builder: QBT Homes Ltd. McCaw Lewis Chapman Trustees (No 2)

Description of Work: New Single Storey Dwelling with attached Garage

Property Reference: Lot 258 DP 356028

plans

TR / 6/3/08

BUILDING INSPECTIONS

	SIGN	APPROVED Yes	APPROVED No	DATE
Siting				25.09.07
Foundation		✓		25.09.07
Bond Beam	n/r			
Concrete Floor		✓		28.09.07
Tilt Slab				
Framing	n/r			
Cavity/Batten				
Cladding		✓		05/12/07
Prelining		✓		11-12-07
Postlining		✓		18/12/07
Fire protection	n/r			
Crossing		✓		29-02-08
Crossing Final		✓		06-03-08

Consultant/Installer Statement	Requested	Received
Driven Piles		
~~Engineers~~	✓	✓
~~Plaster Coating/Paint~~		
Electrical Certificate		✓
~~Automatic Sprinklers~~		
~~Fire Alarm~~		
~~Emergency Lighting~~		
~~Lifts, Escalators~~		
~~Mechanical Ventilation~~		
~~Automatic Doors~~		
~~Acustic Engineer~~		

COMPLETION

SIGN [signature] DATE 06-03-08

COMMENTS:

PLUMBING & DRAINAGE INSPECTIONS

	SIGN	APPROVED Yes	APPROVED No	DATE
Concrete Floor		✓		28-09-07
Prelining		✓		04-12-07
Stack Test	n/r			
Waste & Soil	n/r			
Foulwater		✓		11/12/07
Stormwater		✓		11/12/07
Chimney	n/r			
Heater	n/r			
Other				

DRAINLAYER: [signature]

PLUMBER: Peter Owen

Consultant/Installer Statement	Requested	Received
Pressure Test	✓	✓
As Laid Drainage Plan		
~~Back Flow Prevention Device~~		
Gas Certificate 452000		✓

COMPLETION

SIGN [signature] DATE 06-03-08

COMMENTS:

Amendments

Date	BRO	Description of Work	Located?

Code Compliance Certificate
No 2007/18966

Section 95, Building Act 2004

Hamilton City Council
Te kaunihera o Kirikiriroa

Private Bag 3010
Hamilton 2020
New Zealand

Phone 07 838 6699
Fax 07 838 6599

info@hcc.govt.nz
www.hamilton.co.nz

Issued by Hamilton City Council
Building Consent ref: 2007/18966
Historic ref:

Date: 7 March 2008

Applicant: Murray Ian Antrim
Mailing Address: P O Box 20542
HAMILTON 3241

Application Lodged: 10/08/2007

Project:
Application Description: New Single Storey Dwelling with attached Garage
Intended Use: Detached Dwelling - Live As A Family
Work Type: New Construction
Intended Life: >50 years
Value of Work: $242110

Property:
Address: 8 Mercury Court HAMILTON 2001
Property Reference: Lot 258 DP 356028

This is:

(X) A final code compliance certificate issued in respect of the building work under the above building consent.

( ) This Certificate is issued subject to the conditions specified in the attached page(s) headed "Conditions of Code Compliance Certificate No. 2007/**18966**"(being this certificate)

Signed for and on behalf of the Hamilton City Council:

Name: PETER MARTENS
NZCB
BUILDING INSPECTOR 7/3/08
CSC[illegible]

Position: Authorised Officer

Building Control Unit

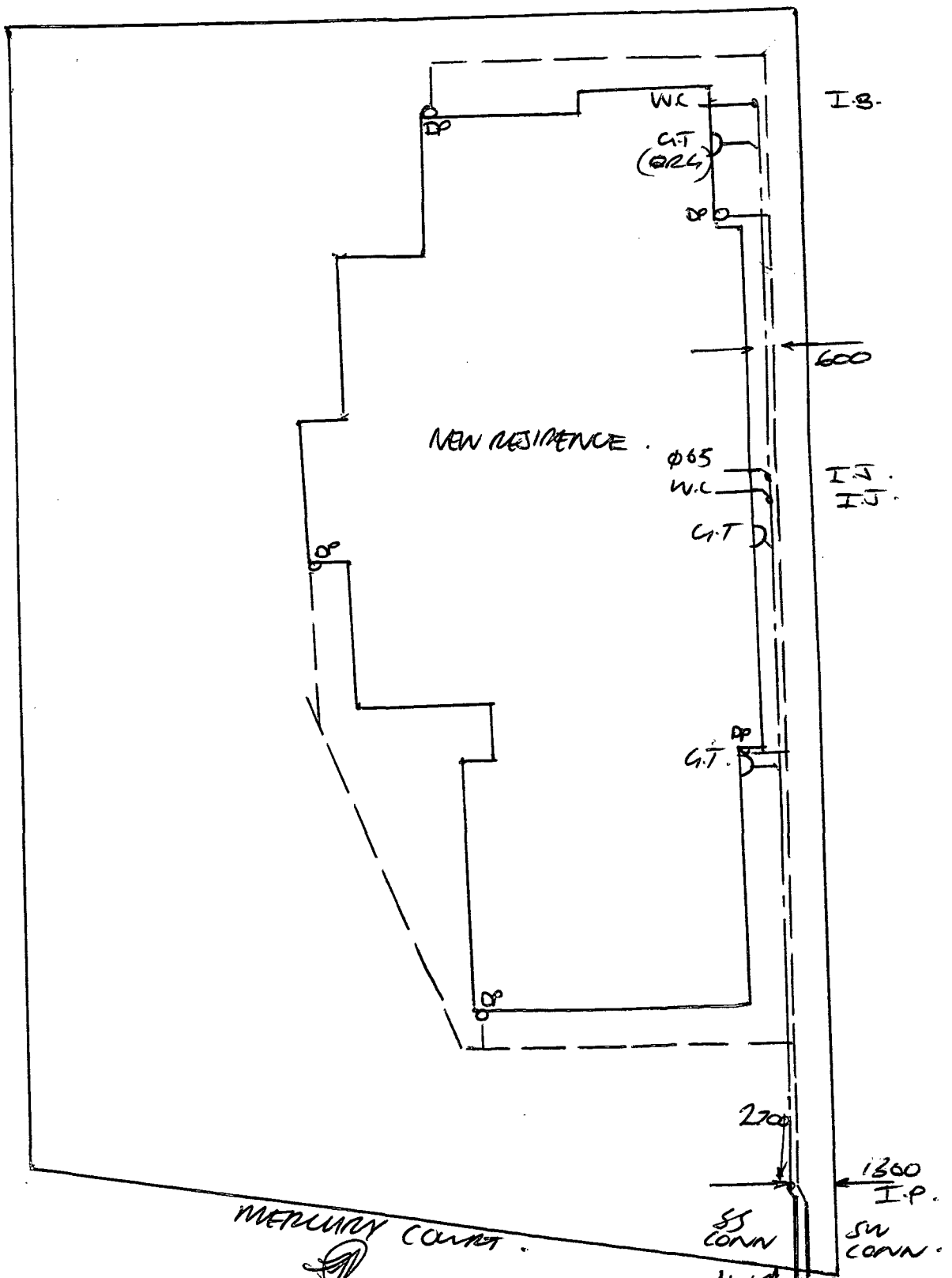
Building

Hamilton City Council
Te kaunihera o Kirikiriroa
Private Bag 3010, Hamilton, New Zealand.
FAX: (07) 838 6950

BUILDING UNIT
AS LAID DRAINAGE PLAN

STREET: MERCURY COURT **No:** 8	**LOT:** 258 **DPS** 356028
OWNER: ANTHAM RESIDENCE.	**DRAINLAYER:** DRAINAGE SYSTEMS
INSPECTOR: D. HUTT.	**REG No:** 20539.
DATE OF INSPECTION: 11.12.07	**CONSENT No:** 2007/18966

DRAINLAYER PLEASE FILL IN ALL DETAILS



DRAINLAYER'S SIGNATURE: _____ **DATE:** 11.12.07

BUILDING

Hamilton City Council
Te kaunihera o Kirikiriroa

Private Bag 3010
Hamilton
New Zealand
Phone 07 838 6699
www.hcc.govt.nz

PRODUCER STATEMENT

PLUMBING SYSTEM PRESSURE TEST

Owner..Murray Ian Antram.....

Property Address..8 Mercury Court - Horsham Estate.

Lot..258..DPS..356028..Consent No..2007/18966

To The Hamilton City Council:

Please be advised that our company ..PETER OWEN.....

Has completed a pressure test on the plumbing system in the building at the above address. We certify that the system was tested to 1500kpa for a period of 30 minutes and in accordance with manufacturer recommendations and complies with the provisions of the New Zealand Building Code Approved Solution G12 and AS3500 as appropriate.

We advise that we have current public liability insurance to the value of at least $500,000 and have approved quality control measures in place.

We understand that the Hamilton City Council will conduct random audits of our work where a producer statement has been used and if a workmanship or technical fault is detected from these audits then we undertake to carry out all appropriate remedial work as necessary.

Issued By..P. Owen.....

P.O. Box 10487 Te Rapa
Ph/Fax 07 847-9699

Address..Box 5340 Frankton.....

Contact Phone Number..021 937606.....

Signature.....

Date..Feb 2008.. Registration Number..00045.....

Hamilton City Council
Te kaunihera o Kirikiriroa

BUILDING

Private Bag 3010
Hamilton
New Zealand

Phone 07 838 6699
www.hcc.govt.nz

PRODUCER STATEMENT

PLUMBING SYSTEM PRESSURE TEST

Owner M. Antrum

Property Address Mercury crt #8

Lot 258 DPS Consent No 07/109966

To The Hamilton City Council:

Please be advised that our company PETER OWEN

Has completed a pressure test on the plumbing system in the building at the above address. We certify that the system was tested to 1500kpa for a period of 30 minutes and in accordance with manufacturer recommendations and complies with the provisions of the New Zealand Building Code Approved Solution G12 and AS3500 as appropriate.

We advise that we have current public liability insurance to the value of at least $500,000 and have approved quality control measures in place.

We understand that the Hamilton City Council will conduct random audits of our work where a producer statement has been used and if a workmanship or technical fault is detected from these audits then we undertake to carry out all appropriate remedial work as necessary.

Issued By P Owen

P.O. Box 5340 Frankton
Hamilton
Ph. 021 937 606
Fax. 07 847 9699

Address

Contact Phone Number 07 847 9699

Signature

Date 27/11/07 Registration Number 00025

SCI/Se Version 1 - 15 September 1999

EWRB 551

Electrical Certificate of Compliance

No. 2577374

No. of attachments

for prescribed electrical work that is carried out on electrical installations and involves the placing or positioning or the replacing or repositioning of conductors (including fittings attached to those conductors).
To be completed whether or not an Inspection is required.

CUSTOMER INFORMATION - PLEASE PRINT CLEARLY

Name of customer: ANTRAM — Phone:

Address of installation: Lot 258 DPS 356025 Mercury Crt

Postal address of customer (if not as above): Hamilton HORSHAM ESTATE

WORK DETAILS

34 No. of lighting outlets

23 No. of socket outlets

1 No. of ranges

1 No. of water heaters

Was any installation work carried out by the homeowner? ☐ Yes ☐ No

Please tick (✓) as appropriate where work includes:

☐ Mains ✓ Main earthing system

✓ Switchboard ☐ Electric lines

Description: New House
2 x Heater circuits
2 x T/Rails
1 15 Amp 05 spt
2 x 230 volt Smoke detectors
2x under tile Heating circuits

It is recommended that test results be recorded here:

Visual Examination ✓

Earth Continuity ✓ 2 ohm

Bonding ✓

Polarity ✓

Insulation Resistance +20M Mohm

Other

If necessary attach any pages with sketches of work done

CERTIFICATION OF WORK

I certify that the above electrical work has been carried out in accordance with the requirements of the Electricity Act 1992 and Electricity Regulations 1997.

ELECTRICAL WORKER DETAILS

Name: G Brickhoff

Registration no.: E16602.

Company: GL Electrical

Signature: G Brickhoff

Date: 12/2/08

Contact Ph No.:

CERTIFICATION OF ELECTRIC LINES

(to be completed where a separate electrical worker has installed the electric line portion of the mains)

Name:

Registration no.:

Company:

Signature:

Date:

Contact Ph No.:

INSPECTION DETAILS

Electrical work requiring inspection by a registered electrical inspector

☐ New mains ✓ Switchboard ✓ Earthing system ☐ Installation work in hazardous areas

I certify that the inspection has been carried out in accordance with the requirements of regulation 41 of the Electricity Regulations 1997.

Name: Don Harvey

Signature:

Registration no.: I2773

Date: 18-2-08

Daytime Contact Ph No.: 021 289 6049

CUSTOMER COPY - THIS IS AN IMPORTANT DOCUMENT AND SHOULD BE RETAINED

This form is approved by the Electrical Workers Registration Board (PO Box 10-156, Wellington. Freephone 0800 66-1000) for the purposes of the Electricity Regulations 1997.

Hamilton City Council
Te kaunihera o Kirikiriroa
PH: (07) 838 6677

FINAL PLUMBING /DRAINAGE INSPECTION

BUILDING CHECKLIST

NOTE TO BUILDERS/SUB CONTRACTOR/OWNER: Please check that you have completed all items as listed and ticked the appropriate boxes before arranging for an inspection. This form needs to be shown to the inspector at the time of inspection.

✓ **Inspected** ✗ **Failed** **Not Applicable**

PROPERTY ADDRESS: Mercury Court.

LOT: 258 **DP/S:** 356028 **CONSENT NO:** 07/18966.

Builder/Sub-Contractor/Owner
Inspector

- ✓ ✓ Check you are on correct site
- ✓ ✓ Approved Building Consent documents on site
- ✓ ✓ Check Conditions
- ✓ ✓ Check for previous Comments
- ✓ ✓ Check street number on letterbox
- ✓ ✓ Ensure plumbers and drainlayers names are recorded on job card
- ✓ ✓ As-laid drain plan provided
- ✓ ✓ Pressure test Producer Statement provided if required
- ✓ ✓ Relevant inspections have been called for
- ✓ ✓ If cross lease/subdivision ensure all drainage requirements have been met
- ✓ ✓ Trade waste application approved if applicable
- ✓ ✓ Gully dishes correct height
- ✓ ✓ Ensure overflow gully minimum 150mm below lowest fixture
- ✓ ✓ Waste pipes sealed at point of entry into rear of gully dishes as per G13
- ✓ ✓ Terminal vent position, flashings, cowls fitted
- ✓ ✓ Downpipes clipped and connected to stormwater drainage
- ✓ ✓ If timber floor check wastepipe clipping complies
- ✓ ✓ Novaflow drainage is through sump
- ✓ ✓ Site drainage
- ✓ ✓ Stormwater to correct outfall
- ✓ ✓ Valves, fixings of external cylinder

Builder/Sub-Contractor/Owner
Inspector

- ✓ ✓ Drain and expansion valve drains have been installed and conveyed to the exterior
- ✓ ✓ All wastes are vented if greater than 3.5m and have acceptable falls
- ✓ ✓ General workmanship of all flashings and roof penetrations
- ✓ ✓ Back flow prevention devices where required
- ✓ ✓ Septic tank installation, has been installed as per engineers design (Certificate supplied)

INTERIOR

- ✓ ✓ Water hammer
- ✓ ✓ Toilet cisterns screwed to wall securely
- ✓ ✓ Hot water cylinder for correct type and positions of valves and seismic restraints provided
- ✓ ✓ Cylinder safe tray if required
- ✓ ✓ Cylinder drain/valve pipes
- ✓ ✓ Ternimal vents continuous in ceiling space
- ✓ ✓ Position of vent valves
- ✓ ✓ Insulation of pipes in ceiling space
- ✓ ✓ Traps fitted and holding seals
- ✓ ✓ Venting required to waste or soil pipes is correctly installed
- ✓ ✓ Tub fixed in position
- ✓ ✓ Water temperature = 55 Celcius INFINITY
- ✓ ✓ Gas certificate provided

Name of Builder/~~Sub-Contractor~~/Owner Completing Check List: RUSSELL MATHERS QBT. HOMES.

Signature: _____ **Date:** 28-2-08

Comments Memo No: _____ **Notice to Fix No:** _____

☐ **Further Inspection Required** ✓ **Approved as in accordance with the plans & specifications approved for this consent** **Inspector** [signature]

Date of Inspection 06-03-08 **Auditor** _____ **Date** _____

Hamilton City Council
Te kaunihera o Kirikiriroa
PH: (07) 838 6677

FINAL BUILDING INSPECTION
BUILDING CHECKLIST

NOTE TO BUILDERS/SUB CONTRACTOR/OWNER: Please check that you have completed all items as listed and ticked the appropriate boxes before arranging for an inspection. This form needs to be shown to the inspector at the time of inspection.

✓ **Inspected** ✗ **Failed** | **Not Applicable**

PROPERTY ADDRESS: mercury court

LOT: 258 DP/S: 356028 CONSENT NO: 07/18966

Builder/Sub-Contractor/Owner
Inspector
- Check you are on correct site
- Check street number on letter box
- Approved Building Consent documents on site
- Check Conditions

EXTERIOR
- External envelope complete and weatherproof
- Flashings/sealants complete
- Wet area/kitchen vents
- Safety glass
- Ground/paving heights
- Crossing and footpath for damage
- Brick veneer weep and ventilation holes
- Exterior decorated
- Weathering of penetrations
- Construction of decks/steps/handrails/timber treatment
- Barrier heights and construction/timber treatment
- Sub floor access/ponding/ventilation/insulation
- Roof cladding/flashing fixings/roof penetrations
- Landscaping complete – retaining walls
- Roof pitch for cladding used
- Wall cladding fixings/soakers/scribers etc
- Fire ratings

INTERIOR
- Ceiling and wall insulation in place
- Fire ratings stopped
- Correct installation of shower/bath linings, splash boards etc
- Safety glass
- Shower curtain/screen
- Wet areas completed, walls, ceilings, floors sealed
- Bathroom, ensuite, wc, laundry, kitchen vents ducted to exterior
- Heights of window sashes
- Heights of barriers and handrails/details
- All inspections have been completed
- All certificates have been received
- Smoke Alarms Fitted

Builder/Sub-Contractor/Owner
Inspector
- Energy Certificates Provided
- Acoustic Engineers Certificate Provided

COMMERCIAL
- Surface finishes, smoke development and spread of flame for ceilings, walls, floor coverings
- Stopping of fire walls and penetrations
- Penetrations/light fittings/fire collars etc
- Means of escape, door hardware, signage
- Fire ratings
- Fire and smoke doors: hardware, tags, self closers/magnetic hold open device and signage
- Signage: fire alarm
- Check off Compliance Schedule checklist in consent jobcard and request certificates for all features

ACCESSIBILITY
- ACCESSIBLE CARPARK easy to see, marked out, close to entrance, surfaces non slip
- FOOTPATH RAMPS non slip, width, length, upstands, handrails, kerb ramps 1000 wide
- ENTRANCE signage, threshold, width, floor surfaces
- PUBLIC RECEPTION counters or desks
- LIFT sizes, controls, handrails, lobby width
- STAIRS width, handrails, landings, risers, treads, nosings
- DOORWAYS/CORRIDORS Clear width, glazing, colour contrasted, projections into corridors
- ALERTING DEVICES audible and visual signal
- TOILET size, controls, doors, wash hand basin, taps
- SHOWERS size, controls, door/s
- LAUNDERING size and turning circle
- SIGNAGE entrance doors, information board and facilities signage
- SURFACE FINISHES stable firm and non slip
- Sound system, stage podium access, listening system
- SIGNAGE for listening system
- ACCESSIBLE ROUTE car parks, identifiable route from street to and through building, surface finishes stable firm and non slip

Name of Builder/~~Sub-Contractor~~/Owner Completing Check List: Russell Mathers pp QBT Homes

Signature: [signature] **Date:** 28-2-08.

Comments Memo No: _____ **Notice to Fix No:** _____

☐ **Further Inspection Required** ☐ **Approved as in accordance with the plans & specifications approved for this consent** **Inspector** [signature]

Date of Inspection 06-03-08 **Auditor** _____ **Date** _____

Hamilton City Council
Te kaunihera o Kirikiriroa
PH: (07) 838 6677

CROSSINGS
BUILDING CHECKLIST

NOTE TO BUILDERS/SUB CONTRACTOR/OWNER: Please check that you have completed all items as listed and ticked the appropriate boxes before arranging for an inspection. This form needs to be shown to the inspector at the time of inspection.

✓ **Inspected** X **Failed** – **Not Applicable**

PROPERTY ADDRESS: 8 Mercury Ct - Hamilton

LOT: 258 DP/S: CONSENT NO:

☐ Builder/Sub-Contractor/Owner
☑ Inspector

- ☑ Check you are on correct site
- ☑ Approved Building Consent documents on site
- ☑ Check Conditions
- ☑ Check for previous Comments
- ☑ Check street number
- ☑ Request safety barrier around crossing
- ☐ In the event of a crossing being formed on a section of road which has not yet been fully constructed refer to roads and traffic
- ☐ Rural crossing ensure correct specification is used. If any concerns refer to roads and traffic
- ☐ Shared environment crossing refer to roads and traffic
- ☐ If any of the following apply refer to roads and traffic. Driveway steeper than 12°. Coloured concrete required. Slot crossing required. Stormwater grate, manhole, bus stop, power pole, bin, trees etc. in crossing area

RESIDENTIAL CROSSINGS

- ☑ Crossing width 3.0m minimum
- ☑ Crossing width 5.5m maximum
- ☐ Crossing width 6.5m maximum at kerb & channel 500mm splay each side of crossing
- ☑ 1000mm total splay each side of crossing if crossing width is less than 4.0m and street width is less than 9.0m
- ☐ If asphalt footpath, remove footpath and construct as per crossing standard
- ☐ Crossing must be formed to property boundary
- ☐ If no footpath can construct crossing in asphalt, concrete, or cobblestones
- ☐ **Asphalt Footpath 25mm asphalt + 75mm gap 20**
- ☐ Crossing 1 & 2 dwellings 25mm asphalt + 150mm gap 40
- ☐ Crossing 3–6 dwellings 25mm asphalt + 170mm gap 40
- ☐ **Concrete Footpath 100mm concrete + 25mm sand**
- ☑ Crossing 1 & 2 dwellings 100mm concrete + 50mm gap 40 or 665 mesh
- ☐ Crossing 3–6 dwellings 125mm concrete + 50mm gap 40 or 665 mesh
- ☐ Cobblestone Footpath 60mm paver + 25mm sand
- ☐ Crossing 1–6 dwellings 60mm paver + 25mm sand 90mm gap 40

☐ Builder/Sub-Contractor/Owner
☐ Inspector

COMMERCIAL/INDUSTRIAL OR 7 OR MORE DWELLINGS

- ☐ Crossing width 5.0m minimum
- ☐ Crossing width 7.5m maximum
- ☐ Crossing width 9.5m maximum at kerb & channel, kerb & channel reinforced beam to extend 1.5m past each side of crossing width
- ☐ 500mm splay each side of crossing
- ☐ 1000m total splay each side of crossing where street width is less than 9.0m
- ☐ If asphalt footpath, remove footpath and construct as per crossing standard
- ☐ If concrete footpath, remove footpath and construct as per crossing standard
- ☐ If no footpath, can construct crossing in asphalt, concrete or cobblestones

ASPHALT

- ☐ Commercial crossing or 7 or more dwellings 30mm MIX 10 asphalt + 220 gap 40
- ☐ Industrial 50mm MIX 20 asphalt + 250mm gap 40

CONCRETE

- ☐ Commercial crossing or 7 or more dwellings 150mm concrete + 50mm gap 20
- ☐ Industrial 150mm concrete + 2 layers of 665 mesh + 50mm gap 20
- ☐ Or 175mm concrete + 50mm gap 20

INTERLOCKING BLOCK PAVING

- ☐ Commercial crossing or 7 or more dwellings 80mm paving block + 25mm bedding sand + 95mm gap 40
- ☐ Industrial vehicle crossing 80mm paving block + 25mm bedding sand + 120 mm gap 40

BEAM

- ☐ Depressed kerb channel crossing Pedestrian footpath/residential crossing 1–6 dwellings 75mm gap 20
- ☐ Commercial or 7 or more dwellings 75mm gap 20 + 2 D12 & 6mm links at 600mm centres
- ☐ Industrial crossings 75mm gap 20 + 4 D12 & 6mm links

Any changes to the above, please have Roads and Traffic Unit approve prior to approval

Name of Builder/Sub-Contractor/Owner Completing Check List:

Signature: **Date:**

Comments Memo No: **Notice to Fix No:**

☐ **Further Inspection Required** ☑ **Approved as in accordance with the plans & specifications approved for this consent** **Inspector**

Date of Inspection 19/02/08 **Auditor** **Date**

Hamilton City Council
Te kaunihera o Kirikiriroa
PH: (07) 838 6677

POST LINING
BUILDING CHECKLIST

NOTE TO BUILDERS/SUB CONTRACTOR/OWNER: Please check that you have completed all items as listed and ticked the appropriate boxes before arranging for an inspection. This form needs to be shown to the inspector at the time of inspection.

✓ **Inspected** ✗ **Failed** **Not Applicable**

PROPERTY ADDRESS: 8 Mercury Court.

LOT: 258 DP/S: 356028 CONSENT NO: 07 18966

☐ Builder/~~Sub-Contractor/Owner~~
☐ Inspector

- ✓ ✓ Check you are on correct site
- ✓ ✓ Approved Building Consent documents on site
- ✓ ✓ Check Conditions
- ✓ ✓ Check for previous comments

- ✓ ☐ Floor/Ceiling nailed off as diaphragm
- ✓ ✓ Position of sheet bracing
- ✓ ✓ Fixing of sheet bracing
- ☐ ✓ Holes in sheet braces
- ☐ ✗ Safety glass – Confirmation to be provided
- ✓ ✓ Type of wall linings used; i.e. Fyreline, Noiseline, Aqualine, Braceline, etc

- ☐ ☐ STC Rating Requirements
- ☐ ☐ Stopping and penetrations, light switched, power points etc to fire walls

COMMERCIAL

- ☐ ☐ Fire philosophy
- ☐ ☐ Compliance schedule for features
- ☐ ☐ Fire rating

☐ Builder/Sub-Contractor/Owner
☐ Inspector

- ☐ ☐ Stopping of fire ratings
- ☐ ☐ Penetrations
- ☐ ☐ Discuss Compliance Schedule features and request certificates for completion

ACCESSIBILITY CHECKLIST/DISCUSS

- ☐ ☐ Accessible Carpark
- ☐ ☐ Footpath Ramps
- ☐ ☐ Entrance
- ☐ ☐ Public Reception Area
- ☐ ☐ Lifts
- ☐ ☐ Stairs
- ☐ ☐ Doorways, Corridors
- ☐ ☐ Controls (Auto Doors etc)
- ☐ ☐ Alerting Devices
- ☐ ☐ Toilets
- ☐ ☐ Showers
- ☐ ☐ Laundering
- ☐ ☐ Food Preparation
- ☐ ☐ Signage
- ☐ ☐ Surface Finishes
- ☐ ☐ Accessible Route

Name of Builder/Sub-Contractor/Owner Completing Check List: _____

Signature: _____ **Date:** _____

Comments Memo No: _____ **Notice to Fix No:** _____

☐ **Further Inspection Required** ✓ **Approved as in accordance with the plans & specifications approved for this consent** **Inspector** [signature]

Date of Inspection 18/12/07 **Auditor** _____ **Date** _____

Hamilton City Council
Te kaunihera o Kirikiriroa
PH: (07) 838 6677

SANITARY SEWER AND STORMWATER
BUILDING CHECKLIST

NOTE TO BUILDERS/SUB CONTRACTOR/OWNER: Please check that you have completed all items as listed and ticked the appropriate boxes before arranging for an inspection. This form needs to be shown to the inspector at the time of inspection.

✓ **Inspected** ✗ **Failed** | **Not Applicable**

PROPERTY ADDRESS: MERCURY COURT

LOT: 258 DP/S: 356028 CONSENT NO: 2007/18966

Builder/Sub-Contractor/Owner	Inspector	
✓		Check you are on correct site
✓		Approved Building Consent documents on site
✓		Check Conditions
✓		Check for previous Comments

SEWER

Builder/Sub-Contractor/Owner	Inspector	
✓	✓	Confirm drainlayers name
✓		Ensure sanitary sewer is connected to an appropriate connection
✓	✓	Check pipe size is correct
✓	✓	Check pipe material is approved
✓		Check material, pipe is bedded in
✓	✓	Ensure sanitary sewer drains have correct falls and are laid straight
✓		Check leakage during water test
		Drainlayer to release testing equipment to ensure sanitary sewer connection is clear
✓	✓	Correct fittings used
✓	✓	Check for terminal vents and positions
✓	✓	Discuss protection over drains for inadequate depth
✓	✓	Remind drainlayer to provide as laid drainage plan
✓	✓	Discuss heights of gully traps
	✓	Discuss bends on wastes and seal wastes into gullies (plumber)

Builder/Sub-Contractor/Owner	Inspector	
✓		Inspector

STORMWATER

Builder/Sub-Contractor/Owner	Inspector	
✓	✓	Confirm drainlayers name
✓		Ensure stormwater is connected to an appropriate connection
✓		Check pipe size is correct for given roof area
✓		Check pipe material is approved
✓		Check material, pipe is bedded in
✓		Check adequate number of downpipes for roof area
✓		Check stormwater drains have correct falls and are straight
✓	✓	Correct fittings used
✓	✓	Discuss protection over drains for inadequate depth
		Remind drainlayer to provide as laid drainage plan

Name of Builder/Sub-Contractor/Owner Completing Check List: MAINLINE SYSTEMS

Signature: _____ **Date:** 11-12-07

Comments Memo No: _____ **Notice to Fix No:** _____

☐ **Further Inspection Required** ☑ **Approved as in accordance with the plans & specifications approved for this consent** **Inspector** _____

Date of Inspection 11/12/07 **Auditor** _____ **Date** _____

Hamilton City Council
Te kaunihera o Kirikiriroa
PH: (07) 838 6677

PRELINE - BUILDING

BUILDING CHECKLIST

NOTE TO BUILDERS/SUB CONTRACTOR/OWNER: Please check that you have completed all items as listed and ticked the appropriate boxes before arranging for an inspection. This form needs to be shown to the inspector at the time of inspection.

✓ **Inspected** ✗ **Failed** | **Not Applicable**

PROPERTY ADDRESS: Mercury court

LOT: 258 DP/S: 356028 CONSENT NO: 07/18966

Builder/Sub-Contractor/Owner
Inspector

Check you are on correct site
Approved Building Consent documents on site
Check Conditions
Check for previous comments

SUBFLOOR

Pile/Brace connections
Insulation
Subfloor ventilation
Water ponding under floor
Polythene on ground

EXTERIOR

Construction of decks, bracing, hangers etc
Verandah post connections
Roof cladding type, flashings, nailing
Fireratings

Structural Insp not called for

Builder/Sub-Contractor/Owner
Inspector

INTERIOR

Bottom plate fixings
Moisture content (timber) = 16 %
Insulation/moisture content
Floor nailed off (diaphragm)
Holes and notches in framing
Wall bracing, fixings 26 bracing elements missing
Upper floor joists, joist hangers, holes
Safety glass
STC ratings (Design test for multi unit dwellings)
Fire ratings, penetrations
Joinery provides correct lighting, ventilation to each room
Window sash heights above floor
Post/beam connections
Discuss smoke alarm requirements

ROOF

Bracing, dragon ties etc
Roof underlay grade, netting
Roof correct pitch for material used
Correct trusses for roof material used and spacing
Joist hangers and fixings to intersecting trusses onto girder trusses
Nails connecting trusses to top plates
Truss fixing to design requirements
Ceiling batten sizes, correct spans and nailing (if in place)
Ceiling diaphragms
Purlin Fixings
Vapour barrier for skillion roofs
Insulation to ceiling, correct position

Name of Builder/Sub-Contractor/Owner Completing Check List:

Signature: 11-12-07 **Date:**

Comments Memo No: **Notice to Fix No:**

✓ **Further Inspection Required** ✗ **Approved as in accordance with the plans & specifications approved for this consent** **Inspector**

Date of Inspection 11-12-07 **Auditor** **Date**

Hamilton City Council
Te kaunihera o Kirikiriroa
PH: (07) 838 6677

EXTERIOR CLADDING SYSTEMS - BUILDING

BUILDING CHECKLIST

NOTE TO BUILDERS/SUB CONTRACTOR/OWNER: Please check that you have completed all items as listed and ticked the appropriate boxes before arranging for an inspection. This form needs to be shown to the inspector at the time of inspection.

✓ **Inspected** X **Failed** | **Not Applicable**

PROPERTY ADDRESS: 8 Mercury Court (ANTRAM).

LOT: 258 DP/S: 356088. CONSENT NO: 2007/18966

☐ Builder/Sub-Contractor/Owner
☐ Inspector

- ✓ ✓ Check you are on correct site
- ✓ ✓ Approved Building Consent documents on site
- ☐ ☐ Check Conditions
- ☐ ☐ Check for previous Comments NO JOB CARD.

BRICK VENEER

- ✓ ✓ Correct type, position and condition of building wrap
- ✓ ✓ Cavity size 40mm minimum
- ✓ ✓ Number, spacing and location of ties
- ✓ ✓ Connection of brick ties
- ✓ ✓ Cavity cleaned
- ✓ ✓ Brick support on foundation max. 20mm overhang and max. 20mm joint under brick
- ✓ ✓ Weep/ventilation holes
- ✓ ✓ Flashing detail into joinery
- ✓ ✓ Flashing requirements/fixing position
- ✓ ✓ Minimum panel sizes
- ✓ ✓ Maximum height of veneer
- ✓ ✓ Lintel bars, size/type of fixing details
- ✓ ✓ Cavity sealed from roof space
- ✓ ✓ Slope to sills 15° min.

WEATHERBOARD TYPE SYSTEMS

- ☐ ☐ Correct type, position and condition of building wrap
- ☐ ☐ Flashing requirements/fixing/position
- ☐ ☐ Cladding fixing details
- ☐ ☐ Details at ground level
- ☐ ☐ Battens (ventilated cavity)
- ☐ ☐ Bottom of cladding provides weathering to bottom plates, floor joists and behind decking

MONOLITHIC TYPE CLADDING

- ☐ ☐ Correct type, position and condition of building wrap
- ☐ ☐ Fixing detail of backing
- ☐ ☐ Sheet joining/flashing detail
- ☐ ☐ Joinery head/side and sill flashing detail
- ☐ ☐ Flashing connections to each other
- ☐ ☐ Slope to parapet/sill detail
- ☐ ☐ Roof/wall and parapet flashing details
- ☐ ☐ Detail at ground level
- ☐ ☐ Requirements for expansion/contraction joint details both horizontal and vertical
- ☐ ☐ Spacer spacing, fixings etc.
- ☐ ☐ Battens ventilated cavity

☐ Builder/Sub-Contractor/Owner
☐ Inspector

- ☐ ☐ Reinforcement type/fixing etc.
- ☐ ☐ General workmanship
- ☐ ☐ Weathering detail for barriers/downpipes/weatherboards and penetrations
- ☐ ☐ Remind installer about installation certificate
- ☐ ☐ Internal/external angles

PREPLASTER - RIGID BACKING

- ☐ ☐ Fibre cement sheet
- ☐ ☐ H3 plywood
- ☐ ☐ H3 diagonal sheeting

PREPLASTER - NON RIGID BACKING (CAVITY SYSTEM)

- ☐ ☐ Support
- ☐ ☐ Allowable deflection of flexible backer (e.g. riblath)

PREPLASTER - SOLID PLASTER (MESH)

- ☐ ☐ Mesh type
- ☐ ☐ Reinforcement around openings
- ☐ ☐ 6–9mm spacers
- ☐ ☐ Galvanised
- ☐ ☐ Proprietary self-spacing mesh
- ☐ ☐ Fixings
- ☐ ☐ Proprietary control joints

PREPLASTER - FIBRE CEMENT SHEET

- ☐ ☐ Timber moisture content (battens)
- ☐ ☐ Building wrap/sill approved

BATTENS

- ☐ ☐ H3 timber or plywood
- ☐ ☐ H grade polystyrene
- ☐ ☐ Correct size and placement
- ☐ ☐ Fixings
- ☐ ☐ Sheet layout
- ☐ ☐ Spacing

ALL MONOLITHIC SYSTEMS

- ☐ ☐ Certificate on paint system from applicator

DECKS

- ☐ ☐ Substrate
- ☐ ☐ Upstand and step between main floor level
- ☐ ☐ Drainage for sealed decking
- ☐ ☐ Membrane
- ☐ ☐ Barrier Cladding

Name of Builder/Sub-Contractor/Owner Completing Check List: _____

Signature: _____ **Date:** _____

Comments Memo No: _____ **Notice to Fix No:** _____

☐ **Further Inspection Required** ✓ **Approved as in accordance with the plans & specifications approved for this consent** **Inspector** D J. WILLIAMS.

Date of Inspection 05/12/07 **Auditor** _____ **Date** _____

Hamilton City Council
Te kaunihera o Kirikiriroa
PH: (07) 838 6677

PRELINE PLUMBING

BUILDING CHECKLIST

NOTE TO BUILDERS/SUB CONTRACTOR/OWNER: Please check that you have completed all items as listed and ticked the appropriate boxes before arranging for an inspection. This form needs to be shown to the inspector at the time of inspection.

✓ **Inspected** | X **Failed** | | **Not Applicable**

PROPERTY ADDRESS: 8 Mercury Ct.,

LOT: 258 **DP/S:** 356028 **CONSENT NO:** 07/18966

☐	Builder/Sub-Contractor/Owner	☑	Builder/Sub-Contractor/Owner
☐	Inspector	☐	Inspector
☑ ☐	Check you are on correct site	☑ ☐	Position of hot water cylinder, sludge and relief drains
☑ ☐	Approved Building Consent documents on site	☑ ☐	Fire hose reel pipework in copper only
☑ ☐	Check Conditions	☑ ☐	Soil and waste pipework
☑ ☐	Check for previous Comments	☑ ☑	Top plate connectors
☑ ☐	Confirm plumbers and drainlayers names	☐ ☑	Check pipes are protected from frost damage
☑ ☐	Approved type of pipes/identification IPLEX PIPELINES	☐ ☐	Test on drainage stack
☑ ☐	Support of pipework	☐ ☑	Notches and holes in framing
☑ ☐	Both services on pressure test		
☑ ☑	Or request pressure test producer statement		

Craftsman Plumbers

Name of Builder/Sub-Contractor/Owner Completing Check List: Pete Dean

Signature: P. Dean for Craftsman Plumbers **Date:** 04-12-07

Comments Memo No: _____ **Notice to Fix No:** _____

☐ **Further Inspection Required** ☑ **Approved as in accordance with the plans & specifications approved for this consent** **Inspector** Jim Hickey

Date of Inspection 04-12-07 **Auditor** _____ **Date** _____

Hamilton City Council
Te kaunihera o Kirikiriroa
PH: (07) 838 6677

PREFLOOR PLUMBING AND DRAINAGE

BUILDING CHECKLIST

NOTE TO BUILDERS/SUB CONTRACTOR/OWNER: Please check that you have completed all items as listed and ticked the appropriate boxes before arranging for an inspection. This form needs to be shown to the inspector at the time of inspection.

✓ **Inspected** ✗ **Failed** — **Not Applicable**

PROPERTY ADDRESS: Mercury crt

LOT: 258 DP/S: 356028. CONSENT NO: 07/18966

✓ Builder/Sub-Contractor/Owner	✓ Builder/Sub-Contractor/Owner
✓ Inspector	✓ Inspector
✓ ✓ Check you are on correct site	✓ ✓ No water pipes are laid under concrete slab
✓ ✓ Approved Building Consent documents on site	✓ ✓ If a water heater drain pipe is fitted ensure it has fall
✓ ✓ Check Conditions	✓ ✓ Pipe protection from concrete
✓ ✓ Check for previous Comments	✓ ✓ Check location of terminal vent
✓ ✓ Confirm plumbers and drainlayers names as per consent	✓ ✓ Main or branch drain longer than 10m to be vented for AS3500
✓ ✓ Identify what system to be used G13, AS3500, specific design etc.	✓ ✓ Main or branch drain longer than 6m to be vented for G13
✓ ✓ Plans for position of fixtures and stormwater/sewer connections	✓ ✓ Vent pipe down stream from last fixture connection
✓ ✓ Fixture discharge pipe sizes	✓ ✓ Only one gully upstream of vent
✓ ✓ Number of fixtures, ensure same number of waste pipes exit foundation	✓ ✓ Minimum vent diameter 50mm for AS3500
✓ ✓ Combined wastes, fixtures must be vented as per plan	✓ ✓ Minimum vent diameter 80mm for G13
✓ ✓ Shower waste must be separate	✓ ✓ 80mm W/C pipe maximum length 2.5m unvented
✓ ✓ Fall on all discharge pipes 1:40 (25mm/m) for pipe diameter less than or equal to 65mm min.	✓ ✓ Check for 1 gully 150mm lower than floor
✓ ✓ Length of all discharge pipes. An unvented waste pipe cannot exceed 3.5m	✓ ✓ Flood relief floor waste
✓ ✓ Waste pipes protected where penetrating through floor slab	✓ ✓ Test on AS3500 drains
✓ ✓ Waste pipes are separated at foundation exit point to allow for bends	

Name of Builder/Sub-Contractor/Owner Completing Check List: B. Owen

Signature: _____ **Date:** 27.9.07.

Comments Memo No: _____ **Notice to Fix No:** _____

☐ **Further Inspection Required** ✓ **Approved** **Inspector** _____

Date of Inspection 28.09.07 **Auditor** _____ **Date** _____

Hamilton City Council
Te kaunihera o Kirikiriroa
PH: (07) 838 6677

PREFLOOR BUILDING

BUILDING CHECKLIST

NOTE TO BUILDERS/SUB CONTRACTOR/OWNER: Please check that you have completed all items as listed and ticked the appropriate boxes before arranging for an inspection. This form needs to be shown to the inspector at the time of inspection.

✓ **Inspected** ✗ **Failed** N **Not Applicable**

PROPERTY ADDRESS: 8 Mercury Ct Hamilton

LOT: 258 **DP/S:** 356028 **CONSENT NO:** 18966.007

Builder/Sub-Contractor/Owner
Inspector

- ✓ ✓ Check you are on correct site
- ✓ ✓ Approved Building Consent documents on site
- ✓ ✓ Check Conditions
- ✓ ✓ Check for previous Comments

- ✓ ✓ Floor thickenings
- ✓ ✓ Confirm concrete grade 17.5 MPA
- ✓ ✓ Thickness of slab
- ✓ N Location of piles if driven piles
- ✓ ✓ Sand fill compaction and excavation ie. No topsoil underneath
- ✓ C Compaction Certificate
- ✓ ✓ Manufacture of steel/mesh
- ✓ ✓ Mesh is correct type and gauge and tied
- ✓ ✓ Mesh is cut if expansion cuts are required
- ✓ ✓ Mesh supported on chairs

Builder/Sub-Contractor/Owner
Inspector

- ✓ ✓ Check that polythene is correct thickness, is lapped and taped
- ✓ ✓ Holes and penetrations in polythene are taped
- ✓ ✓ Reinforcing bars to internal corners
- ✓ ✓ Clean bond will be made between floor slab and bond beams or header blocks
- ✓ ✓ Remind builder to seal brick rebate
- ✓ N Emulsion sealer to be used inside header blocks on wet sites
- ✓ ✓ Types and spacing of bottom plate connectors to be used
- ✓ ✓ Floor levels will be sufficient for ground clearance
- ✓ N Engineers design – request letter of supervision
- ✓ ✓ Request truss design

Name of Builder/Sub-Contractor/Owner Completing Check List: _____

Signature: _____ **Date:** _____

Comments Memo No: _____ **Notice to Fix No:** _____

☐ **Further Inspection Required** ✓ **Approved** **Inspector** [signature]

Date of Inspection 08/09/07 **Auditor** _____ **Date** _____

Hamilton City Council
Te kaunihera o Kirikiriroa
PH: (07) 838 6677

SITING, FOUNDATION AND REPILE INSPECTION

BUILDING CHECKLIST

NOTE TO BUILDERS/SUB CONTRACTOR/OWNER: Please check that you have completed all items as listed and ticked the appropriate boxes before arranging for an inspection. This form needs to be shown to the inspector at the time of inspection.

✓ **Inspected** ✗ **Failed** **Not Applicable**

PROPERTY ADDRESS: 8 Mercury Court

LOT: 258 DP/S: 356028 CONSENT NO: 2007/18966

Builder/Sub-Contractor/Owner
Inspector

- ✓ ✓ Check you are on correct site
- ✓ ✓ Approved Building Consent documents on site
- ✓ ✓ Check Conditions

SITING

- ✓ ✓ Locate boundary pegs – where required
- ✓ ✓ Lot number on pegs
- ✓ ✓ Dimensions between pegs
- ✓ ✓ Measure distance from project to boundary conforms to site plan
- ✓ ✓ Dimensions of building
- ✓ ✓ Profile height in relation to floor heights
- ✓ ✓ Building height in relation to boundary
- ✓ ✓ Excavations, safe slopes, hoarding, shoring, underpinning and barriers for site safety. (Plans for retaining walls)
- ✓ ✓ Council or private drains under building
- ✓ ✓ Siting by surveyor – to provide letter

DESIGN

Soil Report

- ✓ ✓ Engineers designed foundation
- ✓ ✓ Request engineers letter of supervision Sand pad only.
- ✓ ✓ Foundation to NZS 3604

DRIVEN PILES

- ✓ ✓ Request engineers confirmation of supervision and report on length of piles and sets achieved

PILES/DRILLED FOUNDATIONS

- ✓ ✓ Height of profile in relation to top of piles
- ✓ ✓ Correct size and treatment of piles

Builder/Sub-Contractor/Owner
Inspector

- ✓ ✓ Pile spacing for bearers/joists
- ✓ ✓ Floor heights conform to bracing elements provided
- ✓ ✓ Height for 450mm crawl space
- ✓ ✓ Layout of subfloor bracing
- ✓ ✓ Pile heights correct for type of bracing element i.e. anchor or braced pile
- ✓ ✓ Pile depths into cleared ground
- ✓ ✓ 100kpa or greater bearing capacity (including pre-floor excavation)
- ✓ ✓ Holes clean and sides vertical
- ✓ ✓ Confirm types of pile bearer/floor joist fixing to be used and level of protection required, i.e. galvanized/stainless steel (including nails)

CONCRETE FOUNDATIONS

- ✓ ✓ Foundation dimensions and minimum 300mm depth into cleared ground
- ✓ ✓ Foundation clean, square, level and no water in excavations
- ✓ ✓ 100kpa soil bearing capacity
- ✓ ✓ Discuss floor height to proposed finished ground levels as per NZS 3604
- ✓ ✓ Manufacture of steel
- ✓ ✓ Steel sizes
- ✓ ✓ Correct type, i.e. high tensile or deformed etc
- ✓ ✓ Steel laps
- ✓ ✓ All steel has been tied up
- ✓ ✓ Steel is clean
- ✓ ✓ Cover and height pegs
- ✓ ✓ Fire wall. Foundation and reinforcement

Name of Builder/Sub-Contractor/Owner Completing Check List: GME LTD

Signature: _____ **Date:** _____

Comments Memo No: _____ **Notice to Fix No:** _____

☐ **Further Inspection Required** ✓ **Approved as in accordance with the plans & specifications approved for this consent** **Inspector** _____

Date of Inspection 25.09.07 **Auditor** _____ **Date** _____

Building Consent No: 2007/18966

Section 51, Building Act 2004

Issued by Hamilton City Council

Date: 3-Sep-2007

The building:
Street address of building: 8 Mercury Court HAMILTON 2001
Legal description of land where building is located: Lot 258 DP 356028

The owner
Name of owner: Murray Ian Antrim
Mailing Address: P O Box 20542
HAMILTON 3241

First point for communications with the council/building consent authority:

Hamilton City Council
Municipal offices
Garden Place
Private Bag 3010
Hamilton 2001

Phone 07 838 6677
Fax 07 838 6684

Building work
The following building work is authorised by this building consent:

Application Description:	New Single Storey Dwelling with attached Garage
Intended Use:	Detached Dwelling - Live As A Family
Work Type:	New Construction
Intended Life:	>50 years
Value of Work:	$242110

This building consent is issued under section 51 of the building Act 2004. This building consent does not relieve the owner of the building (or proposed building) of any duty or responsibility under any other Act relating to or affecting the building (or proposed building).

This building consent also does not permit the construction, alteration, demolition, or removal of the building (or proposed building) if that construction, alteration, demolition, or removal would be in breach of any other Act.

Compliance schedule
A compliance schedule is not required for the building.

Attachments
Copies of the following documents are attached to this building consent:
Project information memorandum number 2007/18966

Signed for and on behalf of the Hamilton City Council:

Name: 3.9.07

Position: Authorised Officer

Building Control Unit

Hamilton City Council
Te kaunihera o Kirikiriroa

Private Bag 3010
Hamilton 2020
New Zealand

Phone 07 838 6699
Fax 07 838 6599

info@hcc.govt.nz
www.hamilton.co.nz

3 September 2007

QBT Homes Ltd.
PO Box 20343
Hamilton

Dear Sir/Madam

Consent Number: 2007/18966
Project: New Single Storey Dwelling with attached Garage
Project Address: 8 Mercury Court HAMILTON 2001
Legal Description: Lot 258 DP 356028

Thank you for the application for building consent. We are pleased to advise that this consent has been processed and is now ready for collection.

Your next steps are:

1. If this consent has not been pre-paid, please come in, pay for, and pickup your copy of the plans.

2. Please ensure that your approved documentation is kept on the building site for the building inspector to view.

3. This Building Consent is issued subject to the conditions outlined on page 2. In particular please note the requirements for inspections. The phone number to arrange inspections is 838 6677 available from 8:00 am to 11:00 pm. Please quote your consent number when making the booking.

4. Your final step after the completion of the project, is to apply for the issue of a Code Compliance Certificate.

Good luck with your building project and we look forward to our staff assisting you with this and any future building work.

Regards

R Hurrell

Rebecca Hurrell
Council Building
Garden Place, Hamilton
Phone 07 838 6677
Fax 07 838 6684

These are your Building Consent Conditions.
Please read these carefully

Building

(1) Please quote building consent number when requesting an inspection.

(2) A foundation/siting inspection required. Please provide 48 hours notice

(3) A bond beam inspection required. Please provide 24 hours notice.

(4) A pre-concrete floor inspection required. Please provide 24 hours notice.

(5) A pre-lining inspection required. Please provide 24 hours notice.

(6) Completion inspection required prior to issue of final code compliance.

(7) Ground levels to comply with NZ Building Code document E2/AS1, fig 132

(8) A cladding inspection is required. Please provide 24 hours notice.

(9) A post lining inspection is required. Please provide 24 hours notice and ensure that all sheet braces are nailed off and no skirtings or cornice are fitted.

(10) Smoke alarms shall be located on the escape routes on all levels within the household unit. On levels containing the sleeping spaces, the smoke alarms shall be located either:
a) In every sleeping space, or
b) Within 3.0m of every sleeping space door. In this case the smoke alarms must be audible to sleeping occupants on the other side of the closed doors.
Smoke alarms shall comply with at least one of the following standards:
UL 217, ULC S531, AS 3786, BS 5446 Part 1, and be fitted with a hush button.

(11) A structural framing inspection is required. Please provide 24 hours notice and ensure that:
- all sub floor bracing/connections are complete,
- all wall and roof framing, including all bracing and connections, are completed
- no wall or roof claddings are filled.

(12) Truss layout plan to be made available to building inspector at pre-floor stage, and also show lintel and floor loading points.

(13) Inspection of foul water drains required. Please give 24 hours notice. Please note: If new internal drainage runs to existing connection, depth of connection must be confirmed before drainage is laid. If new connection has been requested, no internal drainage shall be laid until new connection has been installed.

(14) Inspection of stormwater drains required. Please provide 24 hours notice.

(15) Preline inspection of Plumbing Installation required. Please provide 24 hours notice.

(16) Prefloor inspection of Plumbing and Soil Waste system required. Please provide 24 hours notice.

(17) All under floor drainage systems serving 2 or more sanitary fixtures must be:
   a) Plugged and filled with water to test and;
   b) Left completely exposed until approved by inspector.

(18) Main drains laid under AS/NZS 3500 shall fall a minimum of 1:60.

(19) Crossing to be constructed to a minimum residential crossing specification.

(20) Please call for inspection of prepared base for crossing. Please give 24 hours notice.

(21) Please note that the final inspection for a crossing will be carried out at Code Compliance Certificate time or when requested.

Important Notes:

1. **The Project Information Memorandum lapses if a building Consent for the work concerned has not been issued within 24 months after the date of the issue of the Project information Memorandum.**

2. **Please be aware that the consent has a lifespan of two years, and you need to apply for a Code of Compliance Certificate before this date. You will be notified before this time to remind you of the expiry date, and you may be able to extend this frame by agreement with HCC.**

3. **Please check with your local Network Utilities Operator as to where your services are located, i.e. Telecom, Wel Energy and Gas.**

4. **To avoid unreasonable noise affecting neighboring properties it is requested that noisy construction activities that would cause sleep disturbance not be undertaken until after 07:30am, and not at all on Sundays and public holidays.**

5. **Berm Protection**

   Kerb and channel, footpaths and grassed areas must be protected whilst work is undertaken on the site. You may be charged for any damage that is done to the berm in front of your property, or any berm that is damanged by you or your contractors accessing your site.

   Where catchpits or berm pits are located within 1m of the temporary crossing point, the consent holder is responsible for ensuring that the grate is kept clear at all times.

5. **Silt Control**

   Where stormwater runoff from the site is flowing to the road kerb and channel, or to an adjacent waterway, the consent holder is required to provide adequate silt control measures. Where material from the site is found to be causing a hazard on a road, the consent holder is required to remove the material as soon as possible. If this is not undertaken, Council will undertake to clear the hazard, the cost of which will be sought from the Consent holder.

Hamilton City Council
Te kaunihera o Kirikiriroa

Private Bag 3010
Hamilton 2020
New Zealand

Phone 07 838 6699
Fax 07 838 6599

info@hcc.govt.nz
www.hamilton.co.nz

3 September 2007

QBT Homes Ltd.
PO Box 20343
Hamilton

Dear Sir/Madam

Consent Number: 2007/18966
Project: New Single Storey Dwelling with attached Garage
Project Address: 8 Mercury Court HAMILTON 2001
Legal Description: Lot 258 DP 356028

Thank you for the application for Project Information Memorandum. We are pleased to advise that this consent has been processed and is included in this letter.

Your next steps are:

1. PIM only:
   -Read carefully the Project Information Memorandum comments on page 2 of this letter. This information may be important to you during the construction process.
   - When you have completed the design and have all the documentation, please lodge your consent application with us. If you have carefully followed this PIM, then this should make the consent application process a lot quicker and easier for you.

2. PIM/Consent application:
   -Read carefully the Project Information Memorandum comments on page 2 of this letter. This information may be important to you during the construction process.

Good luck with your building project and we look forward to our staff assisting you with the consent and any future building work.

Yours faithfully

Rebecca Hurrell
Council Building
Garden Place, Hamilton
Phone 07 838 6677

This is your Project Information Memorandum

This describes (if relevant) any special features of the land, Information of other Acts relating to the land or buildings, Details of waste and storm water systems and confirmation that the works will comply with the Building Act subject to the requirements of the building consent.

Planning

(1) The Zone is Residential, and the proposed dwelling and attached garage comply with the District Plan Residential Rules as per the plans submitted with the PIM and Building Consent application

Building

(1) Please ensure boundary pegs and boundary lines are clearly defined to check siting of building.

(2) All work to comply with the New Zealand Building Code.

(3) Wind zone is rated as medium.

(4) The Earthquake Zone for your area is designated as B.

(5) Any damage to the Council footpath or berm area outside your property resulting from construction works, will be charged to the person responsible or the property owner if not repaired.

(6) All foul water and storm water drains to be laid by registered drainlayer in accordance with the New Zealand Building Code Documents E1 and/or G13 and/or AS/NZS 3500..

(7) Please ensure compliance with G12 and H1 of the Building Code Hot Water Supplies.

Electricity Transmission Lines and Towers

Please be aware that if your property is built under or adjacent to high-voltage electricity lines, or transmission towers/pylons, you are required to ensure that the proposed building complies with the clearances prescribed in the New Zealand Electrical Code of Practice for Electrical Safety Devices (NZECP34:2001).

It is the responsibility of the property owner to ensure compliance with NZCEP34:2001 and if necessary to contact the line owner to determine whether the proposed building will comply, prior to commencing any site activity or construction.

Please check with your Local Network Utilities Operator as to where your services are located, ie Telecom, WEL Energy and the Gas Centre.

Project Information Memorandum
No: 8.2007.18966.1

Section 34, Building Act 2004
Issued by the Hamilton City Council

Date:	3 September 2007
Applicant:	Murray Ian Antrim
Mailing Address:	P O Box 20542 HAMILTON 3241
Application Lodged:	10/08/2007
Project	
Application Description:	New Single Storey Dwelling with attached Garage
Stage:	
Intended Use:	Residential Use With RMA Levies Paid
Work Type:	New Construction
Intended Life:	>50 years
Value of Work:	$242110
Property	
Address:	8 Mercury Court HAMILTON 2001
Property Reference	Lot 258 DP 356028

This is:
Confirmation that the proposed building work may be undertaken, subject to the provisions of the Building Act 2004 and any requirements of the building consent.

( ) Not yet applied for.
(✓) No.:7.**2007.18966.1** attached.
( ) Not yet issued.

This Project Information Memorandum includes the following information:

- ☐ (a) Information likely to be relevant to the proposed building work that identifies
  - (i) the heritage status of the building (if any); and
  - (ii) each special feature of the land concerned (if any); and

- ☐ (b) Information likely to be relevant to the proposed building work that, in terms of any other Act, has been notified to the territorial authority by a statutory authority; and

- ☐ (c) Details of any existing stormwater or wastewater utility systems that
  - (i) relate to the proposed building work; or
  - (ii) are on, or adjacent to, the site of the proposed building work; and

- ☐ (d) details of any authorisation in respect of the proposed building work that the territorial authority, on its own behalf and on behalf of any network utility operator (if the territorial authority is acting as agent for a network utility operator by prior agreement with the network utility operator), is authorised to refuse or require under any Act, except this Act, and, in respect of each authorisation,
  - (i) a statement of the requirements to be met in order for the authorisation to be granted or imposed; and
  - (ii) the conditions to which an authorisation will be subject; and

- ☐ (e) if the territorial authority considers that the owner of the building or proposed building to which the project information memorandum relates is likely to be required, under section 21A of the Fire Service Act 1975, to make provision for a scheme that provides for evacuation from the scene of a fire, a statement to that effect; and

- ☐ (f) if the territorial authority considers that notification to the New Zealand Historic Places Trust is likely to be required under section39, a statement to that effect; and

- ☐ (g) confirmation, subject to this Act, that building work may be carried out subject to the requirements of a building consent and subject also to all other necessary authorisations being obtained

Signed for and on behalf of the Hamilton City Council:

Name: ..... R E Hurrell 3/9/07

Position: Authorised Officer
Building Control Unit

PLANNING GUIDANCE UNIT PIM/BUILDING CONSENT CHECKSHEET

PG M10
Version July 2007

PIM/BUILDING CONSENT NUMBER: 18966

RESOURCE CONSENT REQUIRED: NO ☑ YES ☐

Resource Consent in progress ☐ Planner File Number :	APPROVED ☐ File Number :

DEVELOPMENT CONTRIBUTIONS NOT REQUIRED ☐

DEVELOPMENT CONTRIBUTIONS REQUIRED YES ☑

- Entered into DC BC Invoicing database (F drive) ☑
- DC advice letter sent to owner ☑
- Copies of letter, calculation sheet, and map saved to Attachment folder in DC BC Invoicing database (F drive) ☑

Comments Rds. Greenfields CI only

RESERVE CONTRIBUTION: NO ☑ YES ☐ Condition No.....of Consent .....

**To be paid at time of building consent issue, and to be included in the BUILDING CONSENT FEES LIST AND ENTERED INTO AUTHORITY IN THE BUILDING CONSENT Amount

$_____ Inc GST

APPLICANT CONTACT: N/A ☑ YES ☐ ☐Phone ☐ Fax ☐ Email

Unsuccessful Attempt Made ☐ | NOTES

WITHHOLD BUILDING CONSENT

Comments:

Planner: Date:

Attention Building Review Officer --
Please do not release any building consent for this work until the above issues have been resolved.

RELEASE BUILDING CONSENT/PIM

Comments: Complete

Planner: Date: 26/8/07

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**228613**
Land Registration District	**South Auckland**
Date Issued	21 March 2006

Prior References
117893

Estate	Fee Simple
Area	610 square metres more or less
Legal Description	Lot 258 Deposited Plan 356028

Proprietors
Murray Ian Antram and McCaw Lewis Chapman Trustees (No.2) Limited

Interests

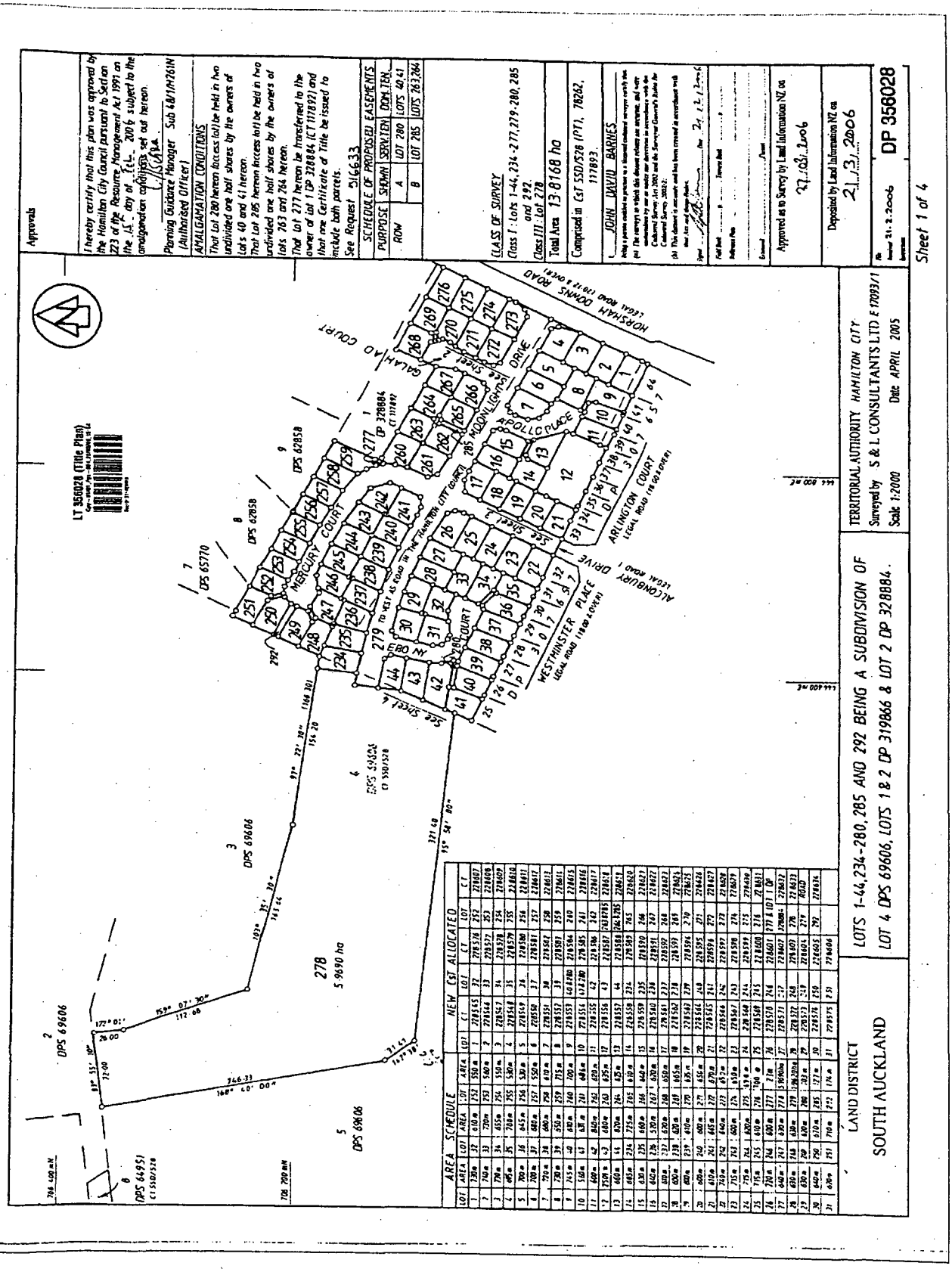
6795993.9 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 21.3.2006 at 9:00 am

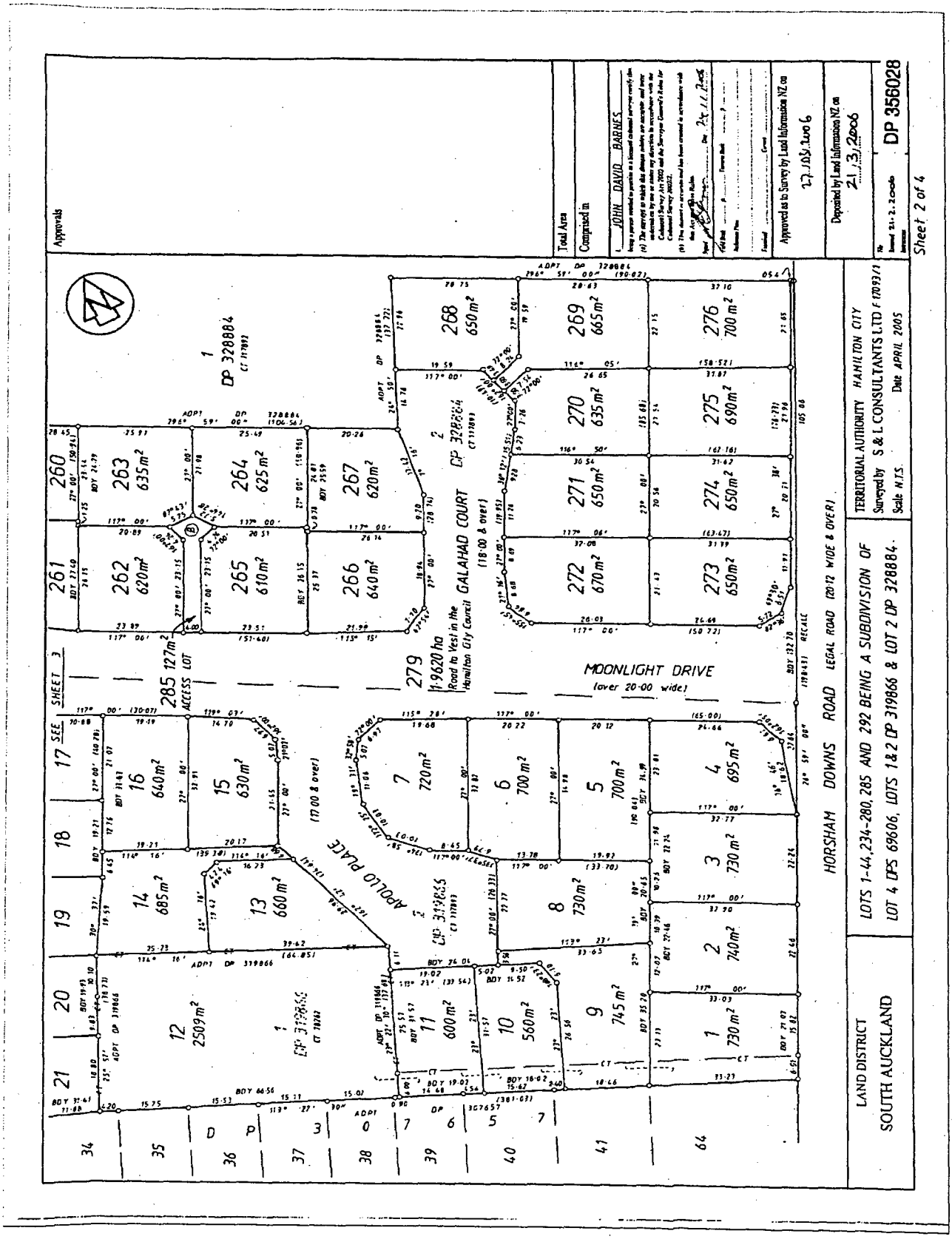
Fencing Covenant in Easement Instrument 6795993.11 - 21.3.2006 at 9:00 am

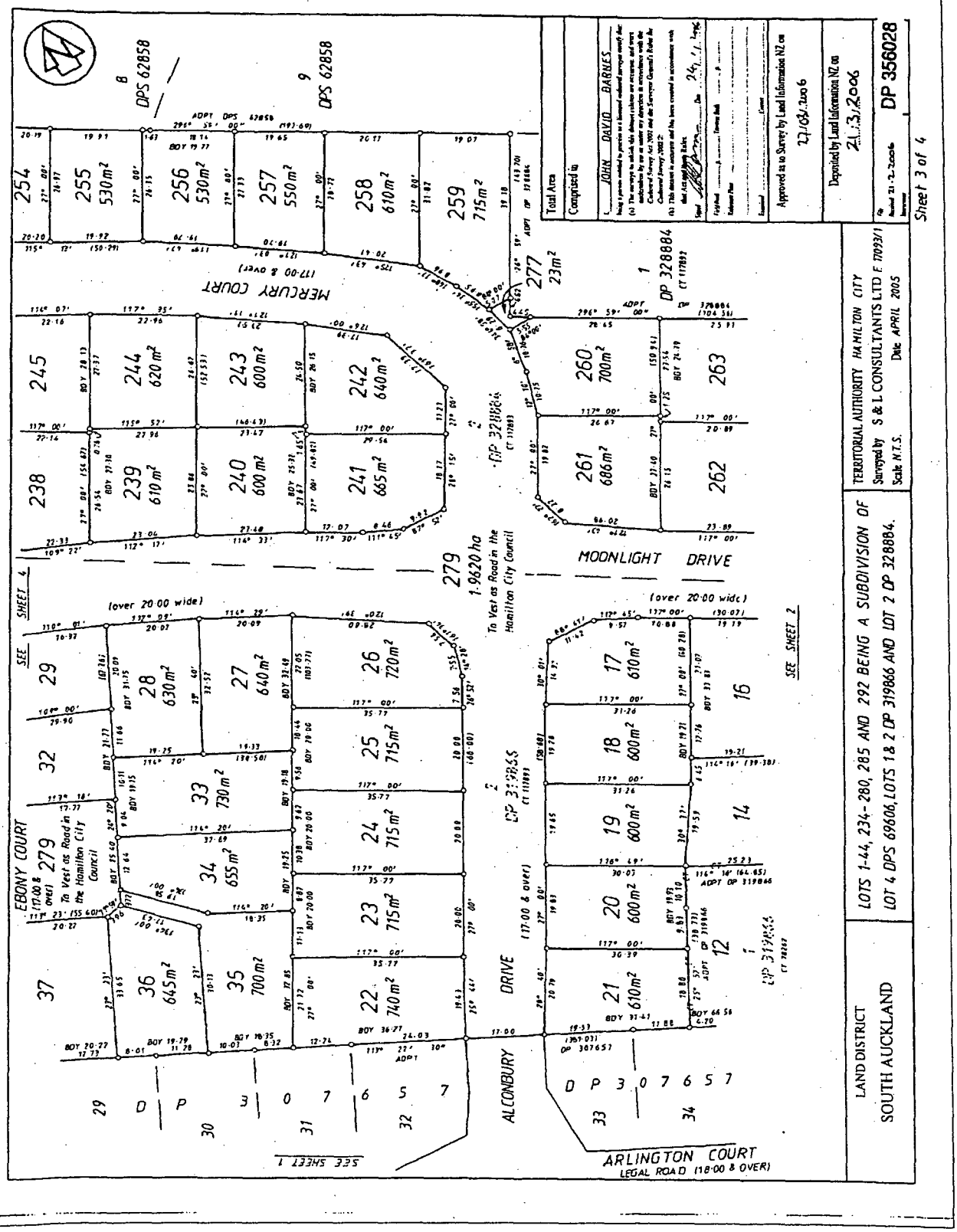
Land Covenant in Easement Instrument 6795993.11 - 21.3.2006 at 9:00 am

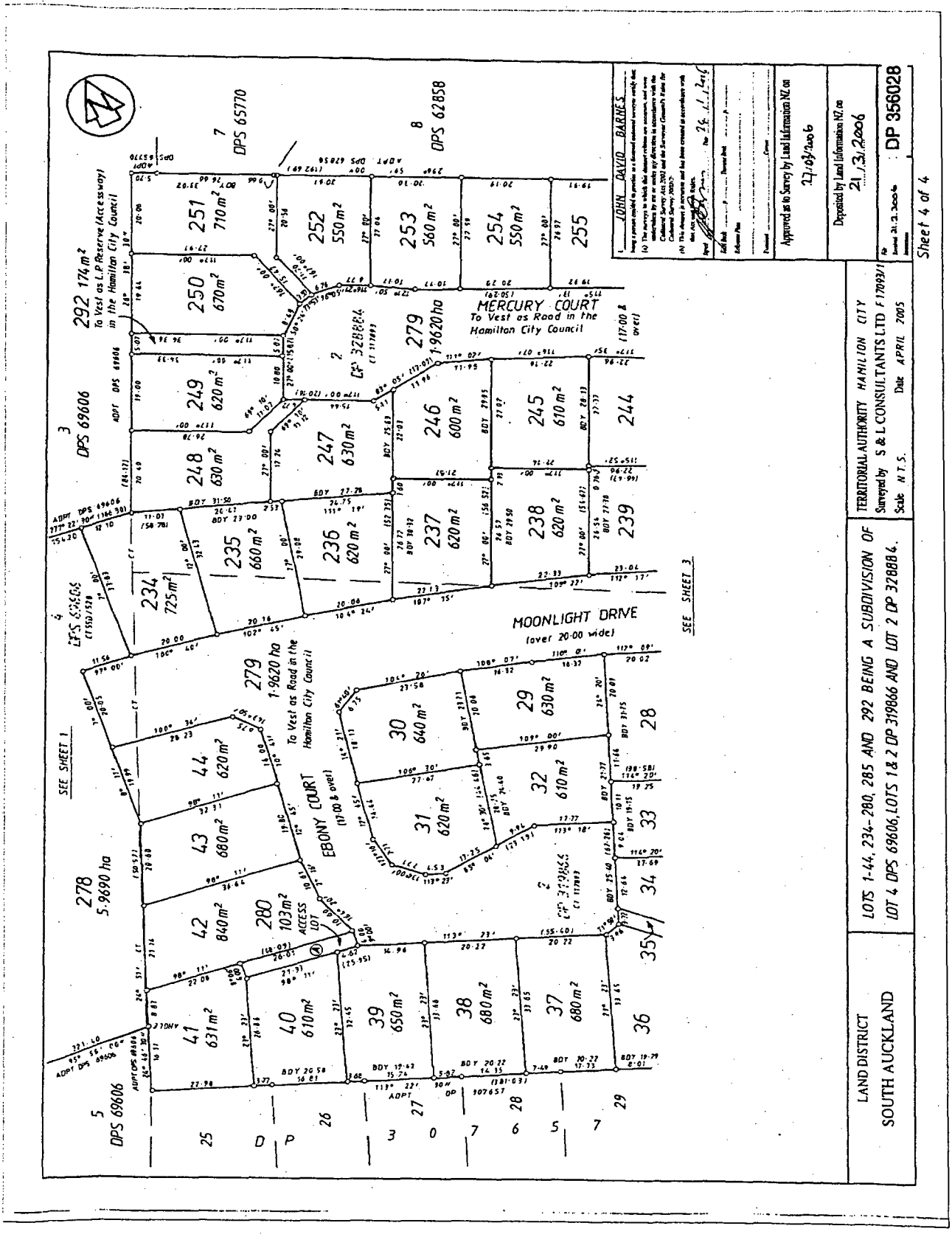
6858693.3 Mortgage to Mortgage Holding Trust Company Limited - 10.5.2006 at 9:00 am

Identifier **228613**




Approvals
Total Area
Comprised in
I JOHN DAVID BARNES
Approved as to Survey by Land Information NZ on 17.10.2006
Deposited by Land Information NZ on 21/3/2006
DP 356028
Sheet 2 of 4
TERRITORIAL AUTHORITY HAMILTON CITY
Surveyed by S & L CONSULTANTS LTD
Scale N.T.S.
Date APRIL 2005
LAND DISTRICT SOUTH AUCKLAND
LOTS 1-44,234-280, 285 AND 292 BEING A SUBDIVISION OF LOT 4 DPS 69606, LOTS 1 & 2 DP 319866 & LOT 2 DP 328884.
HORSHAM DOWNS ROAD LEGAL ROAD (20.12 WIDE & OVER)
MOONLIGHT DRIVE (over 20.00 wide)
GALAHAD COURT (18.00 & over)
APOLLO PLACE (17.00 & over)
279 1.9620 ha Road to Vest in the Hamilton City Council
285 127m² ACCESS LOT
SHEET 3
SEE 17
DP 328884
DP 319866
DP 367657
268 650m²
269 665m²
276 700m²
270 635m²
275 690m²
271 650m²
274 650m²
272 670m²
273 650m²
260
263 635m²
264 625m²
267 620m²
261
262 620m²
265 610m²
266 640m²
16 640m²
15 630m²
7 720m²
6 700m²
5 700m²
4 695m²
14 685m²
13 660m²
8 730m²
3 730m²
2 740m²
12 2509m²
11 600m²
10 560m²
9 745m²
1 730m²
34
35
36
37
38
39
40
41
64


DP 356028
Sheet 3 of 4
Total Area
Comprised in
I JOHN DAVID BARNES
Approved as to Survey by Land Information NZ on 24/03/2006
Deposited by Land Information NZ on 21/3/2006
TERRITORIAL AUTHORITY HAMILTON CITY
Surveyed by S & L CONSULTANTS LTD F 11093/1
Scale N.T.S. Date APRIL 2005
LAND DISTRICT SOUTH AUCKLAND
LOTS 1-44, 234-280, 285 AND 292 BEING A SUBDIVISION OF LOT 4 DPS 69606, LOTS 1 & 2 DP 319866 AND LOT 2 DP 328884.
MERCURY COURT
MOONLIGHT DRIVE
EBONY COURT
ALCONBURY DRIVE
ARLINGTON COURT
LEGAL ROAD (18.00 & OVER)
279 1.9620 ha To Vest as Road in the Hamilton City Council
277 23m²
SEE SHEET 4
SEE SHEET 2
SEE SHEET 1
DP 328884
DP 319866
DP 307657


MERCURY COURT
To Vest as Road in the Hamilton City Council
MOONLIGHT DRIVE
(over 20.00 wide)
EBONY COURT
To Vest as Road in the Hamilton City Council
SEE SHEET 1
SEE SHEET 3
292 174 m² To Vest as L.P. Reserve (Accessway) in the Hamilton City Council
279 1.9620 ha
278 5.9690 ha
LOTS 1-44, 234-280, 285 AND 292 BEING A SUBDIVISION OF LOT 4 DPS 69606, LOTS 1 & 2 DP 319866 AND LOT 2 DP 328884.
TERRITORIAL AUTHORITY HAMILTON CITY
Surveyed by S & L CONSULTANTS LTD F 17093/1
Scale N.T.S. Date APRIL 2005
LAND DISTRICT SOUTH AUCKLAND
JOHN DAVID BARNES
Approved as to Survey by Land Information NZ on 27/03/2006
Deposited by Land Information NZ on 21/3/2006
DP 356028
Sheet 4 of 4

Hamilton City Council
Te kaunihera o Kirikiriroa

Private Bag 3010
Hamilton 2020
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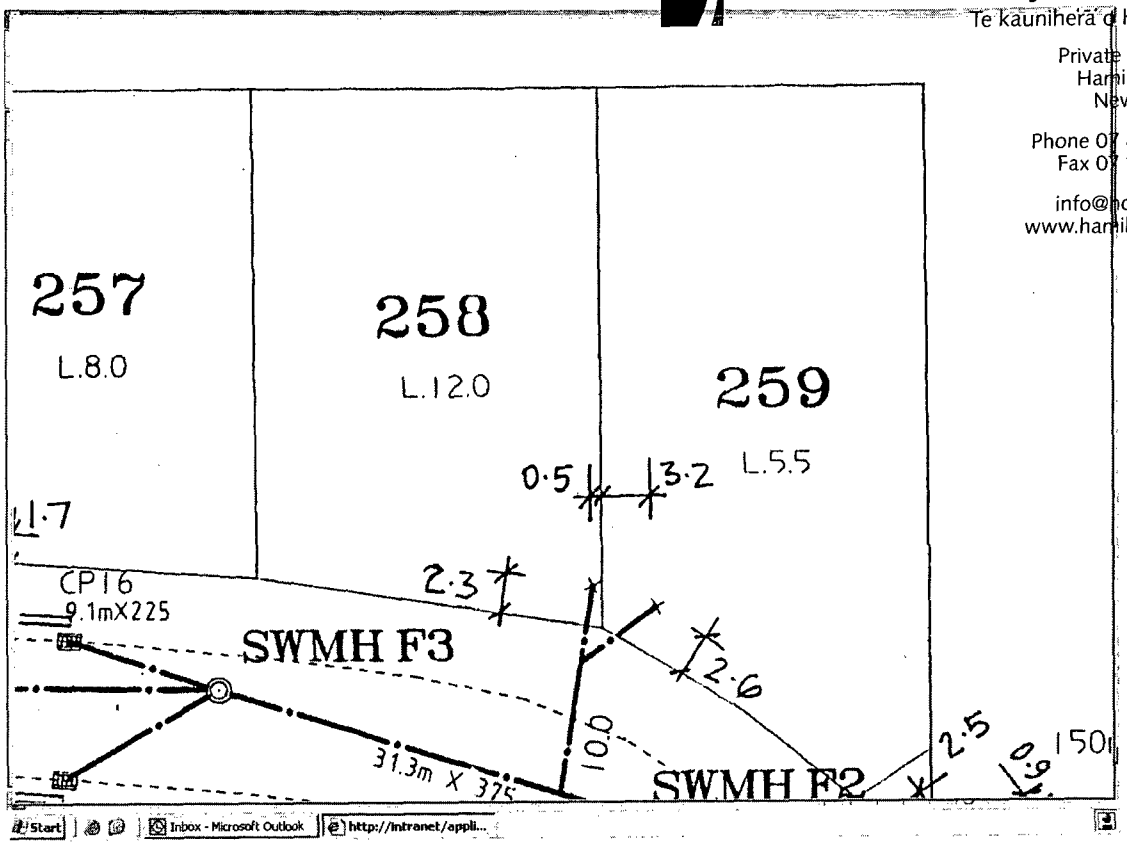
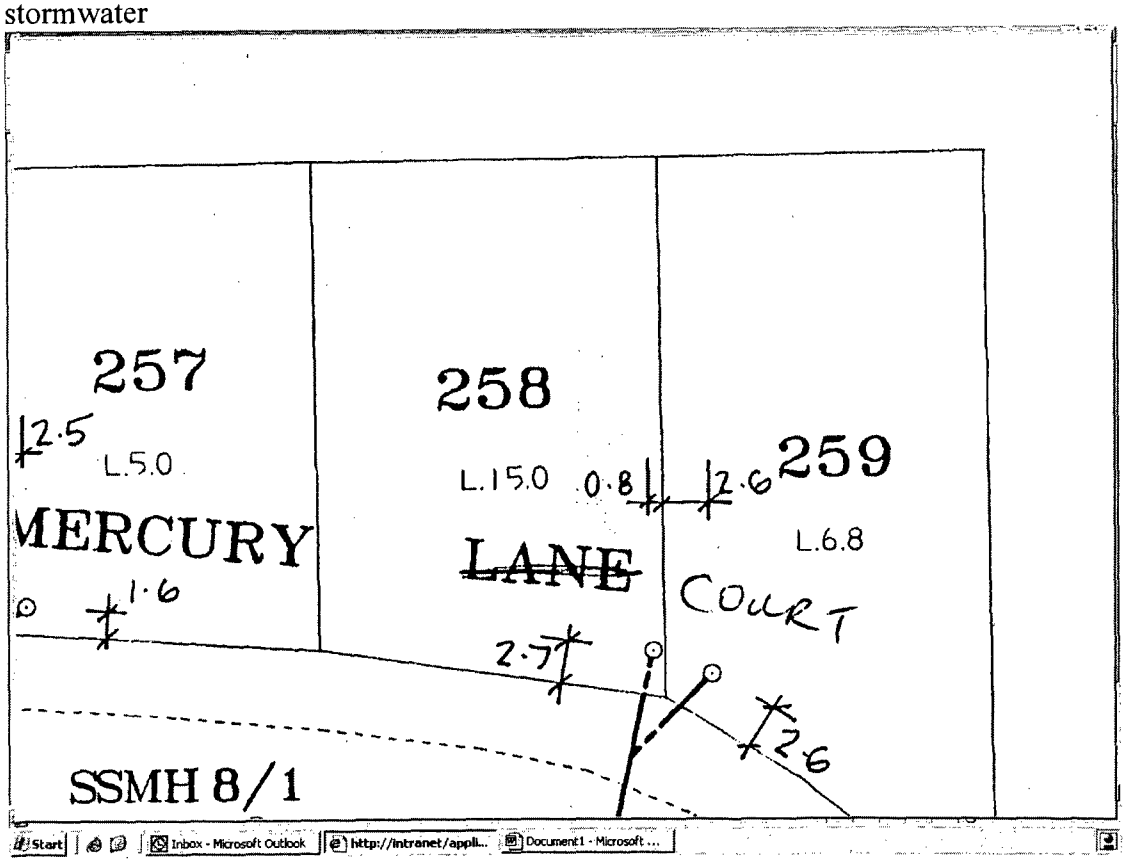


stormwater



sanitary sewer

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Te kaunihera o Kirikiriroa

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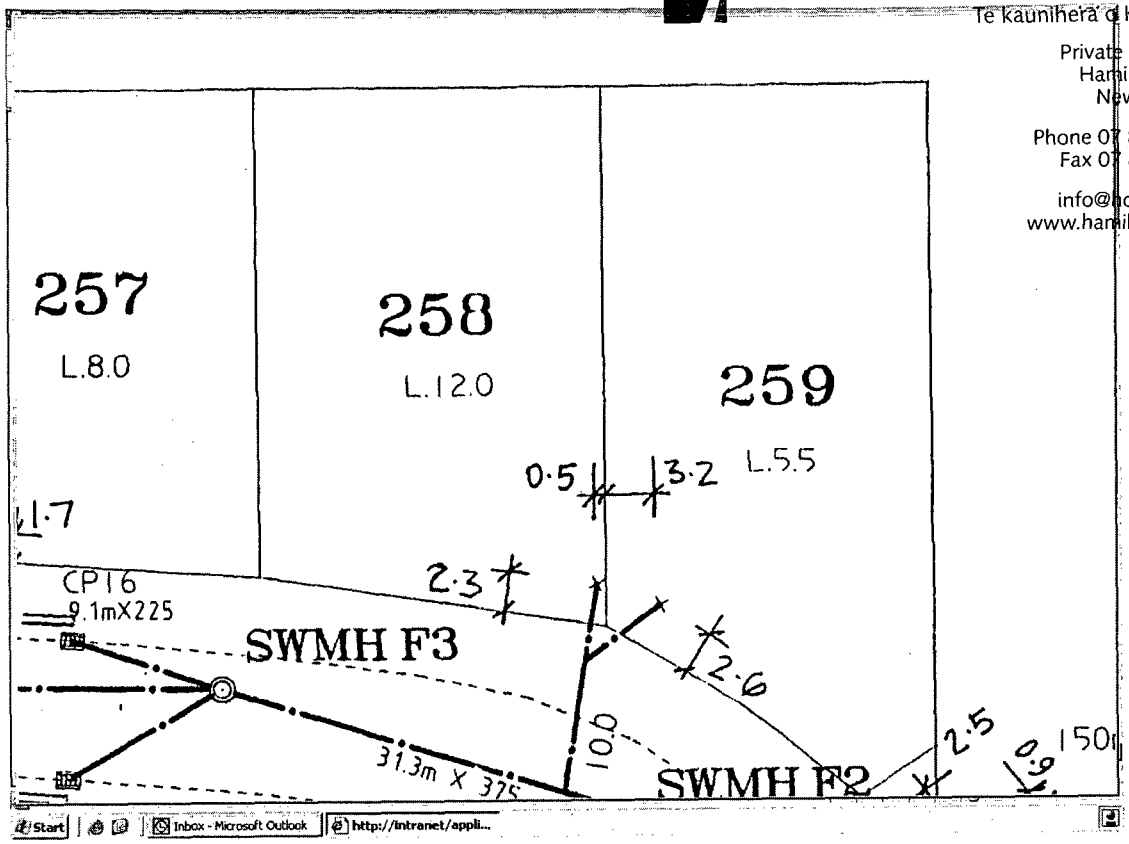
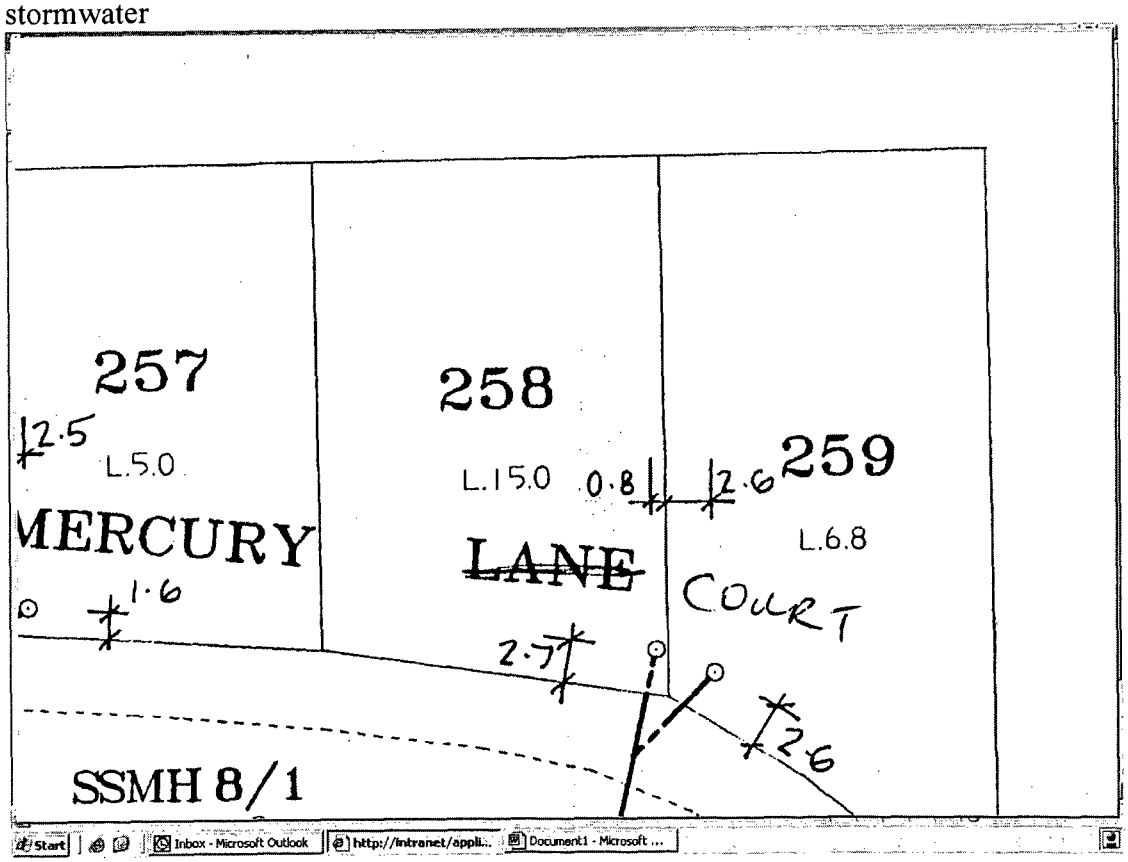


stormwater



sanitary sewer

Hamilton City Council
Te kaunihera o Kirikiriroa

BUILDING CONSENT
ACCOUNT DUE

TAX INVOICE
G.S.T. REG. No. 11-174-531

Private Bag 3010 Hamilton, Phone 07 838 6699, Fax 07 838 6684
Office Hours: Monday to Friday 8am to 4.45pm

PLEASE QUOTE ACCOUNT No. ON ALL CORRESPONDENCE

QBT Homes Ltd.
PO Box 20343
Hamilton

Account No. 632.37
Page 01
Date 03/09/2007
TAX INVOICE

DATE	INVOICE No.	DETAILS		BALANCE
03/09/2007	18966	DBH Levy		478.71
		GST	$0.00	
		Branz Levy		243.00
		GST	$0.00	
		Code Compliance Cert		70.00
		GST	$7.78	
		Building Consent		1910.00
		GST	$212.22	
		Street Crossings		165.00
		GST	$18.33	
		A4 Microfilming		245.00
		GST	$27.22	
		2007/18966 - 8 Mercury Court HAMILTON	3111.71	
		Invoice Total (including GST if applicable)		3111.71
		Total Value non-taxable supply(s)		721.71
		Total Value taxable supply(s) excluding GST		2124.45
		Total GST Payable		265.55

ALL QUERIES TO BUILDING CONSENTS

DUE DATE 03/09/2007

TOTAL DUE 3111.71

ALL FEES & CHARGES MUST BE PAID PRIOR TO THE BUILDING CONSENT BEING UPLIFTED. THIS ACCOUNT INCLUDES G.S.T. THE CUSTOMER WILL BE LIABLE FOR UNPAID DEBTS AS WELL AS ASSOCIATED COLLECTION COSTS.

HAMILTON CITY COUNCIL BUILDING CONSENTS
PRIVATE BAG 3010
HAMILTON

DUE DATE
03/09/2007

TOTAL DUE
3111.71

QBT Homes Ltd.
PO Box 20343
Hamilton

ACCOUNT No. 632.37
INVOICE 18966

IF ADDRESS IS INCORRECT PLEASE COMPLETE THE FOLLOWING:

NAME: _____ ☐ THIS ACCOUNT ONLY

ADDRESS: _____ ☐ ALL COUNCIL SERVICES

Hamilton City Council
Te kaunihera o Kirikiriroa

BUILDING CONSENT
ACCOUNT DUE

TAX INVOICE
G.S.T. REG. No. 11-174-531

Private Bag 3010 Hamilton, Phone 07 838 6699, Fax 07 838 6684
Office Hours: Monday to Friday 8am to 4.45pm

PLEASE QUOTE ACCOUNT No. ON ALL CORRESPONDENCE

QBT Homes Ltd.
PO Box 20343
Hamilton

Account No. 632.39
Page 01
Date 03/09/2007
TAX INVOICE

DATE	INVOICE No.	DETAILS		BALANCE
03/09/2007	18966	Project Information		140.00
		GST $15.56		
		2007/18966 - 8 Mercury Court HAMILTON	140.00	
		Invoice Total (including GST if applicable)		140.00

Total Value non-taxable supply(s)	0.00
Total Value taxable supply(s) excluding GST	124.44
Total GST Payable	15.56

ALL QUERIES TO BUILDING CONSENTS

DUE DATE 03/09/2007

TOTAL DUE 140.00

ALL FEES & CHARGES MUST BE PAID PRIOR TO THE BUILDING CONSENT BEING UPLIFTED. THIS ACCOUNT INCLUDES G.S.T. THE CUSTOMER WILL BE LIABLE FOR UNPAID DEBTS AS WELL AS ASSOCIATED COLLECTION COSTS.

HAMILTON CITY COUNCIL BUILDING CONSENTS
PRIVATE BAG 3010
HAMILTON

QBT Homes Ltd.
PO Box 20343
Hamilton

DUE DATE
03/09/2007

TOTAL DUE
140.00

ACCOUNT No. 632.39
INVOICE 18966

IF ADDRESS IS INCORRECT PLEASE COMPLETE THE FOLLOWING:

NAME: _____

ADDRESS: _____

❑ THIS ACCOUNT ONLY

❑ ALL COUNCIL SERVICES

QBT HOMES LIMITED

Schedule of Specification

To be read in conjunction with, but to take precedence over, general specifications and plans attached hereto.

Client:	Murray Ian Antram and McCaw Lewis Chapman (No 2) Ltd		
		☎ Home	0
Site Address:	Mercury Court	**☎ Work**	0
	Horsham Estate	**☎ Mobile**	021 922038
	Hamilton	**☎ Fax**	0
		House Plan:	Esmeralda
Present Address:	P.O.Box 20542	**Layout:**	Altered
	Te Rapa	**Floor Area:**	198.5
	Hamilton	**Façade:**	Contemporary

Exterior	
CCTV & HTB survey	If required by council they will be charged as a varation to contract
Steps, Landscaping & Fences	Owners Care
Services and connections	refer to pc sum
Cesspit	Owners care
Retaining Walls	Owners Care
Pathways and Patios	Owners Care
Waste Water Plant	Owners care
Water Tanks	Owners Care
Foundation	as per plans
Framing	90x45 and 70x45 (refer plans) MSG graded, kilned dried laser frame pre-cut and pre-nailed framing c/w 2 rows of nogs 90x45 and 70x45 (refer plans) MSG graded, kilned dried laser frame pre-cut and pre-nailed trusses 140x35 extra Top Plate to external and internal walls Thermakraft cover-up exterior frame wall wrapping 70x35 Finger jointed laser frame ceiling battens
Timber Treatment	H3LOSP Treatment to exterior frames only
Exterior Cladding	Hardies above window and doors Austral 70 series clay kiln-fired brick with natural coloured mortar
Roofing Type	Rosscrete Hacienda or Villa profile concrete tile @22.5deg with building paper underlay, rated to high wind zone "Colourfast" Metro flex ridge security
Exterior Joinery	Double Glazed powdercoated aluminium windows and doors with pre-primed H3 treated finger jointed pine liners.
Obscure Glass	To toilet, bathroom, ensuite, rear door All remaining glass is clear
Front Door	4 Panel, fibreglass
Front Door Hardware	Schlage keyed alike entry - satin chrome
Spouting	Timber fascia and external powdercoated gutter
Garage Door	Somerset woodgrain powdercoated sectional door c/w opener and remotes
Exterior Taps	2 x Brass HMC 15mm taps
Downpipes	PVC
Finishing Timber	Paint Quality
Decorating	2 coats exterior low sheen to soffits, window and door headers

SIGNED _____ SIGNED _____

DATE 02/08/07 DATE / /

Interior	
Carpets	N/A
Tiles	N/A
Interior Lining	13mm Gib board to ceilings taped and stopped to paint finish 9.5mm Gib board to walls taped and stopped to either paint or wallpaper finish Aqualine Gib to *"Bath"* and *"En"* areas as marked on plans
Interior Doors	4 Panel paint quality doors and paint quality frames
Interior Door Hardware	Schlarge Elan satin chrome. Privacy locks to bathroom and ensuite. Dummy trims and Roller ball catches to wardrobe and cupboards
Door Stops	White plastic cushion
Skirting	60mm single bevel paint quality pine
Scotia	55mm Gib cove
Insulation	Ceilings - R2.6 Pink Batts to living areas - excludes garage(s) Walls - R2.2 Pink Batts to external walls of house and internal wall between house and garage(s)
Wardrobes - Walk in Wardrobe	1 x 300mm wide MDF shelf c/w white pryda rail. Painted 3 x 300mm wide MDF shelves c/w white pryda rail. Painted and/or Papered
Hot Water Cupboard Hall Cupboard	5 Rows x 4 Slats of 100x25mm kiln dried pine shelving. Painted 1 x 300mm wide MDF shelf. Painted
Decorating - Up to 3 paint colours	Flat finish to ceilings, Gloss enamel to finishing timber, window frames, doors and door frames **NB: Extra paint colours and feature walls will incur additional costs**
Wallpaper - Up to 3 wallpapers	All wallpaper is random hung From selected Resene range **NB: Selecting outside this wallpaper range will incur additional costs**
Finishing Timber	Paint Quality

Kitchen	
Kitchen Units	Melteca carcasses - overhead cupboard and 4° wine rack above fridge space
Door & Drawer Fronts	Arborform with 6mm radius profile from select colour range. White Innotech silent system to drawers
Handles	Range from builders selection
Cupboard Tops	30mm thick, 6mm radius pelmet from select colour range and Bulkhead to ceiling
Bench Top	50mm thick laminate, 6mm radius edge with 900mm wide servery
Sink	Stainless steel under bench mounted 1.1/4 sink with draining tray
Rubbish Bin	Plastic with pop up lid
Pantry(s)	Melteca carcase with adjustable shelving
Sink Mixer	Methven Celeste ceramic disk flick mixer - chrome

Laundry	
Tub	By Owner
	Space for 5kg Fisher & Paykel washing machine

SIGNED _____ SIGNED _____

DATE / / DATE / /

Bathroom	
Shower	Clearlite Sierra 900mm x 900mm Tray and Liner - white
Shower Door	Clearlite Millennium single pivot safety glass with chrome handle
Shower Mixer	Methven Celeste ceramic disk flick mixer - chrome
Shower Rose	Methven Futura Satin Jet sliding shower rail - chrome
Bath	Clearlite Gauguin 1675mm - white
Bath Mixer	Methven Celeste ceramic disk flick mixer - chrome
Bath Spout	Methven SP99CP - chrome
Vanity	Michel Cesar Pepe with vitreous china top - white
Vanity Mixer	Methven Celeste ceramic disk flick mixer - chrome
Soap Dispenser	Aquatica - chrome
Mirror	Frameless - to full length of vanity
Toilet	Clearlite Roca Victoria vitreous china - white
Toilet Vanity	N/A
Tiling	150mm white tiles to bath surround and between vanity and mirror

Ensuite	
Shower	Clearlite Sierra 900mm x 900mm Tray and Liner - white
Shower Door	Clearlite Millennium single pivot safety glass with chrome handle
Shower Mixer	Methven Celeste ceramic disk flick mixer - chrome
Shower Rose	Methven Futura Satin Jet sliding shower rail - chrome
Bath	N/A
Bath Mixer	N/A
Bath Spout	N/A
Vanity	Michel Cesar Pepe with vitreous china top - white
Vanity Mixer	Methven Celeste ceramic disk flick mixer - chrome
Soap Dispenser	Aquatica - chrome
Mirror	Frameless - to full length of vanity
Toilet	Clearlite Roca Victoria vitreous china - white
Tiling	150mm white tiles between vanity and mirror

Guest Ensuite	
Shower	N/A
Shower Door	N/A
Shower Mixer	N/A
Shower Rose	N/A
Bath	N/A
Bath Mixer	N/A
Bath Spout	N/A
Vanity	N/A
Vanity Mixer	N/A
Soap Dispenser	N/A
Mirror	N/A
Toilet	N/A
Tiling	N/A

SIGNED _____ SIGNED _____

DATE / / DATE / /

Electrical		
Recessed Lights	20	
Power Points - Single	3	Required for Refrigerator - Microwave - Rangehood - Hall
- Double	13	1 Required for Dishwasher - Waste Disposal
Garage Door Point	1	
2 Way Light Circuit	2	
Alarm	N/A	
Data Network Unit	N/A	
TV Points	1	
Phone Points	2	
Bathroom Points (single)	2	
Heated Towel Rails	2	
Heat Light Extractor Fans	2	c/w soffit ducting kit
Smoke Detectors	2	
Halogen Light c/w switch	N/A	
Halogen Light	N/A	
Dimmer Switch	N/A	
Pantry Light & door switch	1	
Sensor Light 2 Bulb	N/A	
Outside Power Point	N/A	
Digital Sky Outlet	N/A	
Stereo Speaker Point	N/A	
Doorbell and Chime	N/A	
Surge Protection	N/A	
Hotwater Cylinder	Gas Infinity	
Oven	Fisher & Paykel B1602E	
Hobb	Fisher & Paykel GC603WFC	
Dishwasher	Fisher & Paykel DD603	
Rangehood	Fisher & Paykel RH900CRC	
Splashback	Fisher & Paykel SB900	
Waste Disposal	WD2002 c/w Air pressure switch	

SIGNED _____ SIGNED _____

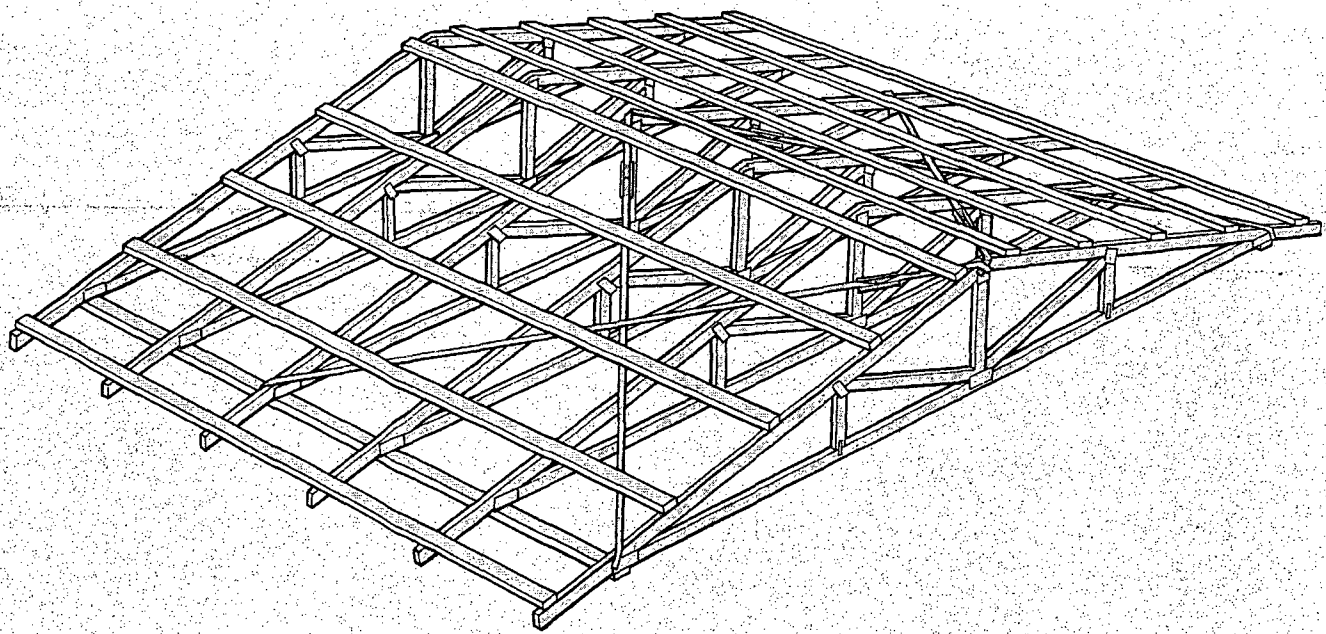
DATE / / DATE / /

LUMBERLOK®

08/2006

ROOF BRACING SPECIFICATION

AS PER NZS 3604:1999



- ☆ **Covers roof bracing requirements to resist horizontal loads as set out in NZS 3604:1999 Section 10.**
- ☆ **A definitive guide to the description and installation of Roof and Ceiling Plane Braces as well as Roof Space Braces.**

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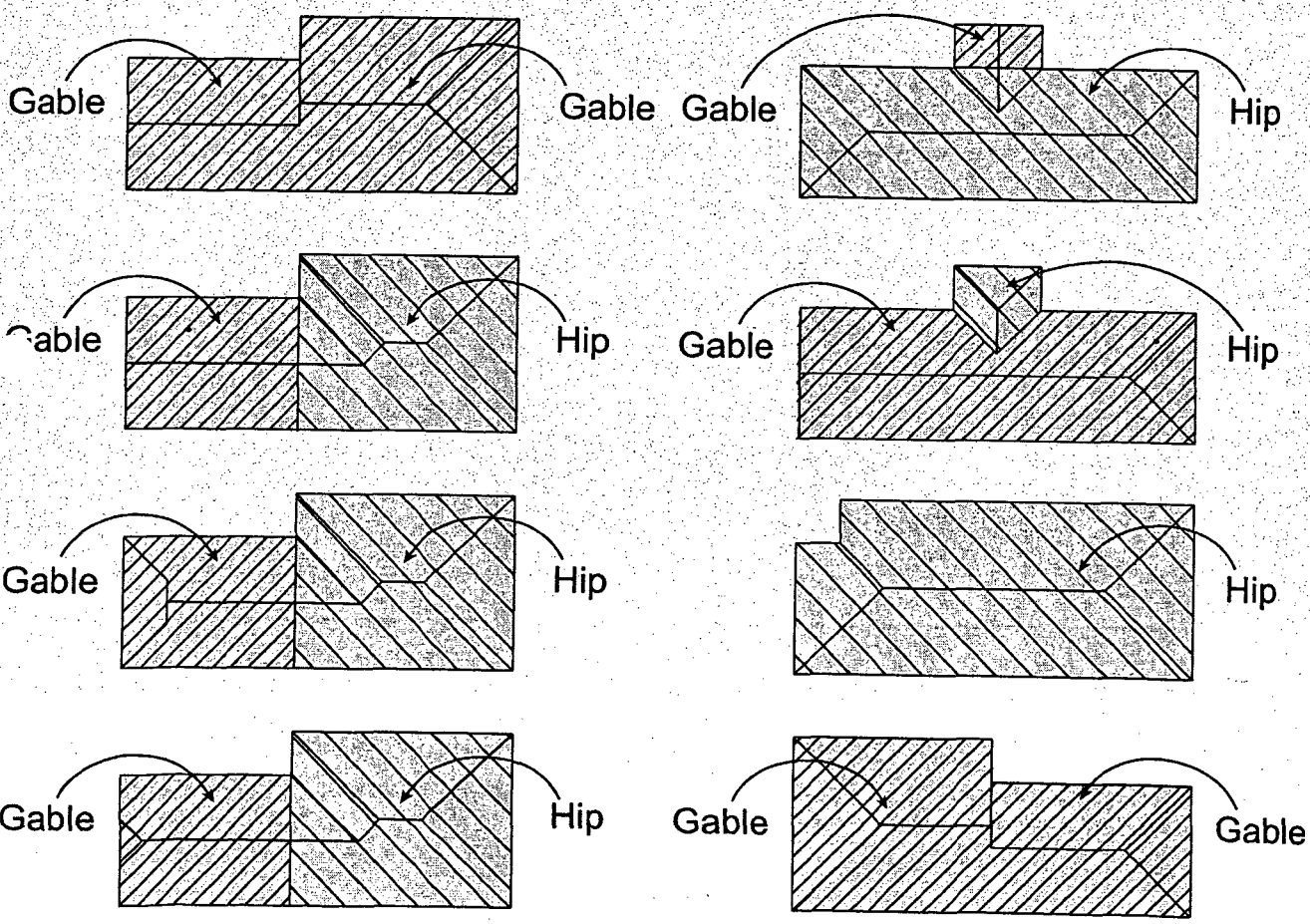
Roof Bracing - Rules & Definitions

LUMBERLOK®

1. The bracing described in this brochure covers both framed roofs and fully trussed roofs.
2. Roof plane areas less than 6m^2 (e.g. dormers & porches) do not require bracing.
3. The definition of a hip roof is one having a sloping roof on part of all sides raking over the exterior walls (see examples below).
4. The definition of a gable roof is one having at least one vertical face above an exterior wall (see examples below).
5. Roof plane area is the actual area of the roof normal to the slope and can exclude the overhang section but not the verge overhangs.
6. A hip or valley rafter running clear from ridge to top plate can be classed as one roof plane brace.
7. A crossed row of LUMBERLOK Strip Brace (preferred for ease of installation) can be classed as one roof plane brace and shall be installed as detailed in this brochure.
8. A hip or valley rafter used as a roof plane brace can be considered to act in both directions of the respective roof planes that they cross.

Example Hip & Gable Roof Definitions



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Roof Plane & Roof Space Brace Requirements Flow Chart

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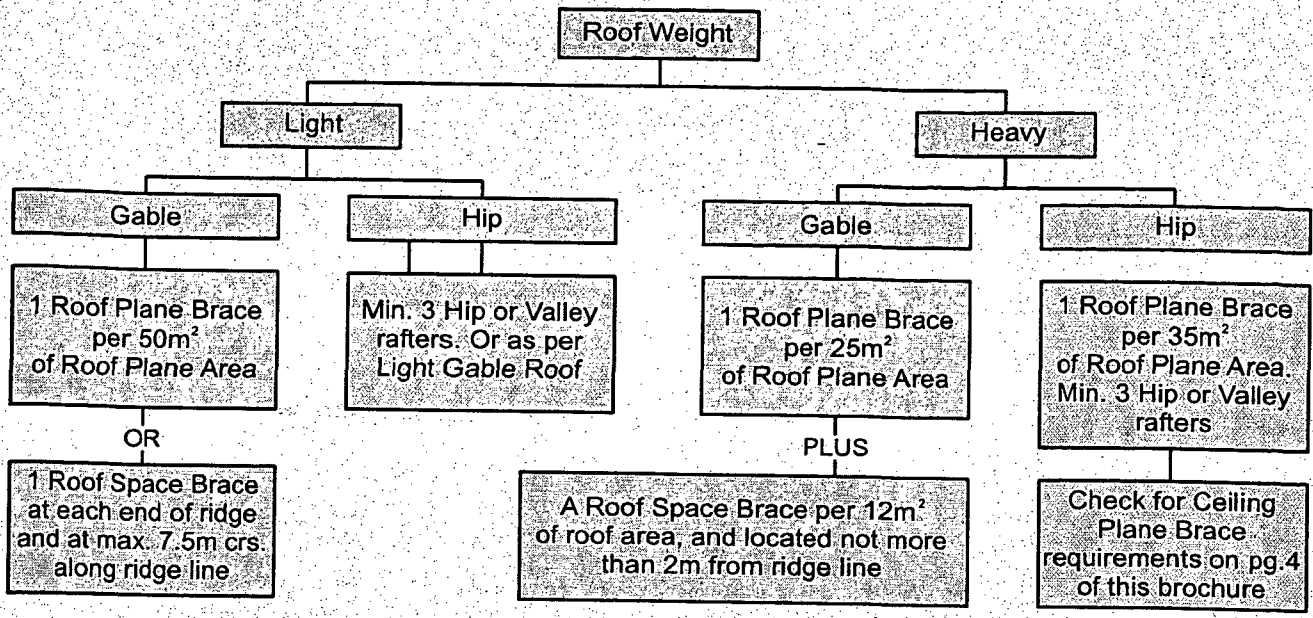
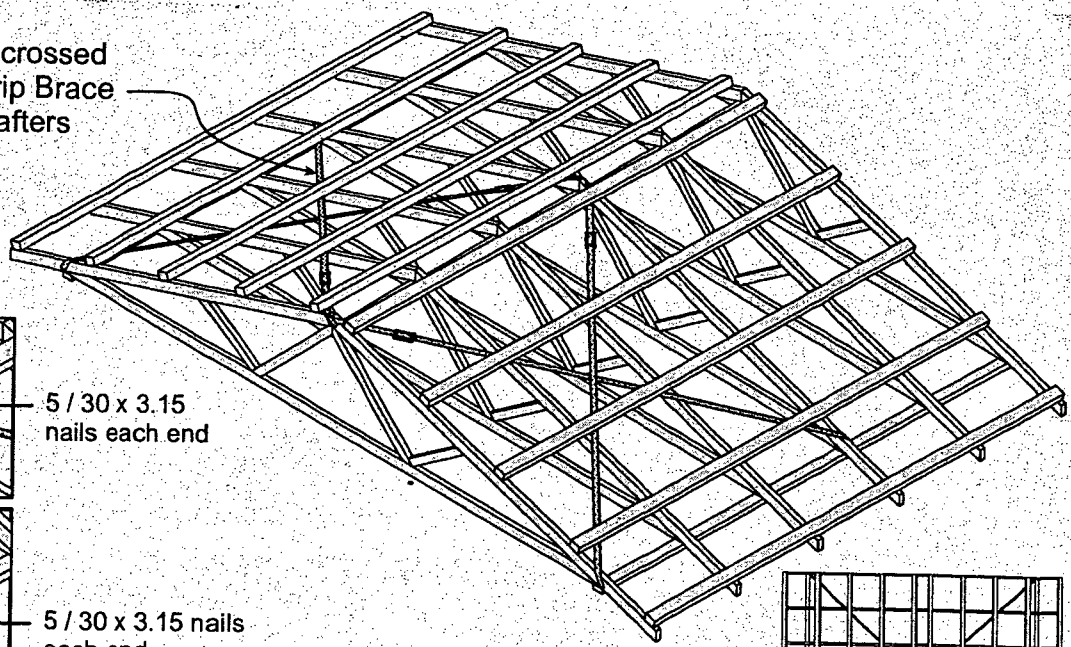
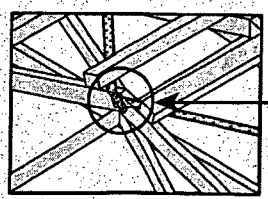


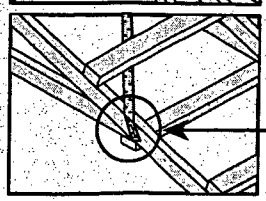
Roof Plane Brace & Installation

Single tensioned crossed LUMBERLOK Strip Brace over top chords/rafters

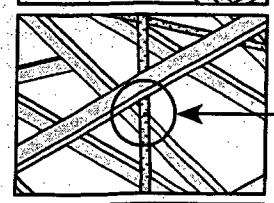




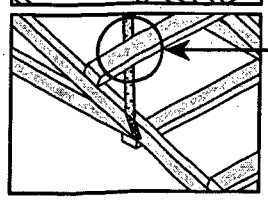
5 / 30 x 3.15 nails each end



5 / 30 x 3.15 nails each end

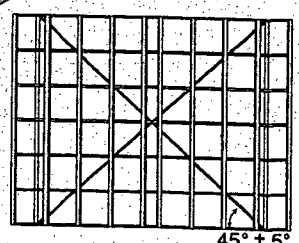


1 / 30 x 3.15 nail at crossing

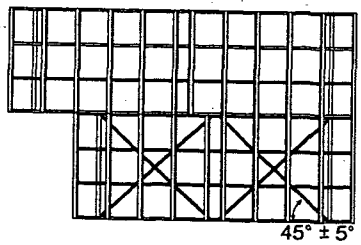


When purlin depth above truss chord is 50mm or less, Strip Brace can be installed over top of purlins

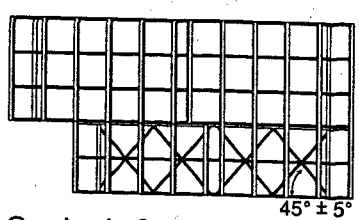
Alternative Layout Options



Single Cross @ 45°



Double Cross @ 45°



Quadruple Cross @ 45°

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Roof Space Brace Installation

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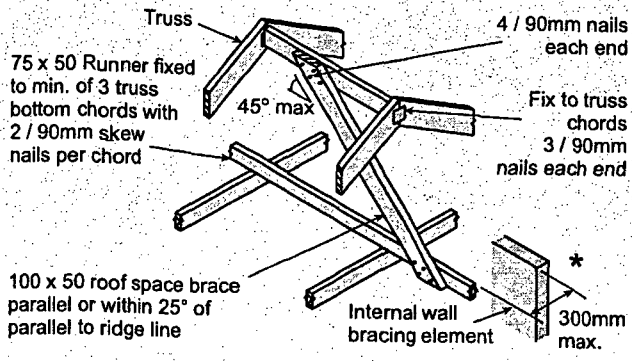
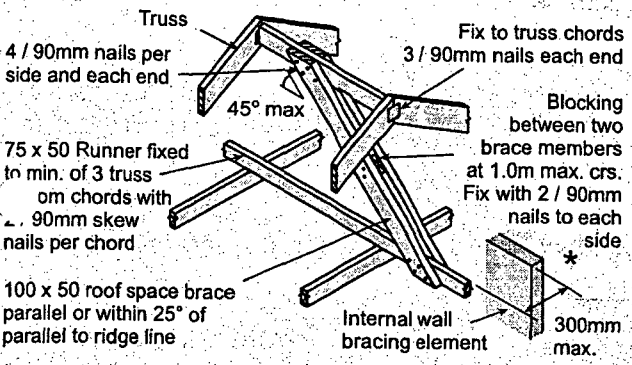
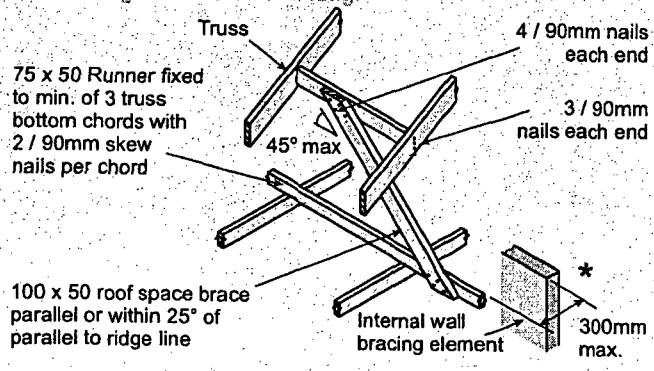
(A) ROOF SPACE BRACE - less than 2m long.



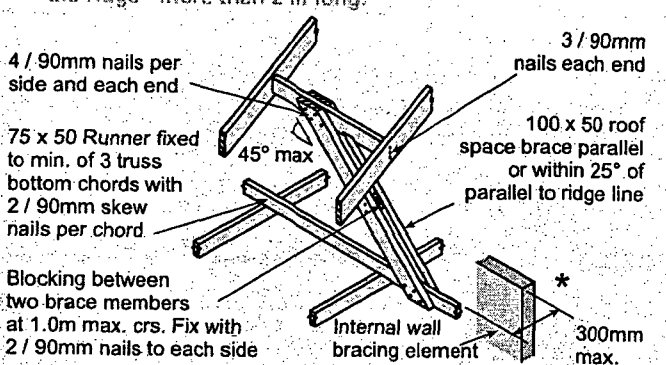
(B) ROOF SPACE BRACE - more than 2m long.



(C) ROOF SPACE BRACE - not directly under the ridge - less than 2 m long.



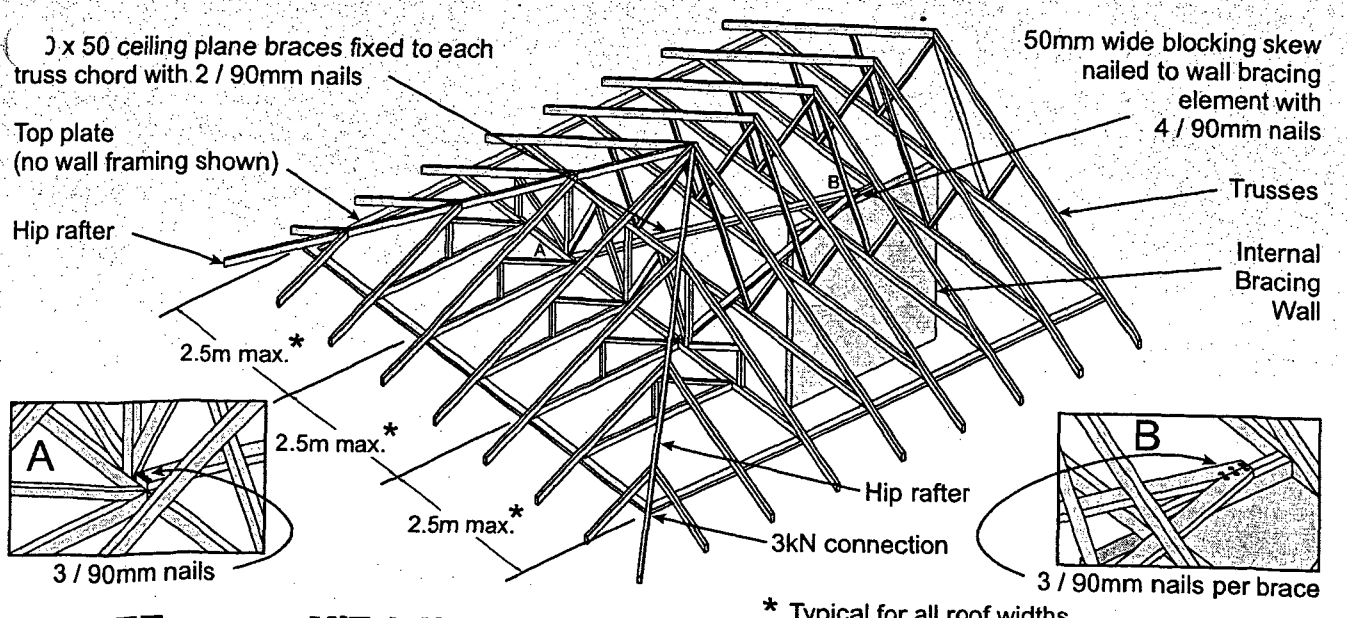
(D) ROOF SPACE BRACE - not directly under the ridge - more than 2 m long.



* Not required when a ceiling diaphragm complying with clause 13.5 of NZS 3604:1999 is used.

Ceiling Plane Brace Requirements

- Ceiling plane braces are required on HEAVY HIP roofs.
- Ceiling plane braces are fixed over top of ceiling joists or truss bottom chords, and are connected to wall bracing element parallel to them.
- Ceiling plane braces are not required where ceiling diaphragms complying with NZS 3604:1999, Clause 13.5 are used and the top plate is on the boundary of that diaphragm.
- Ceiling plane braces are not required on top plates where rafter trusses or jack trusses are installed at 1200mm crs.



* Typical for all roof widths

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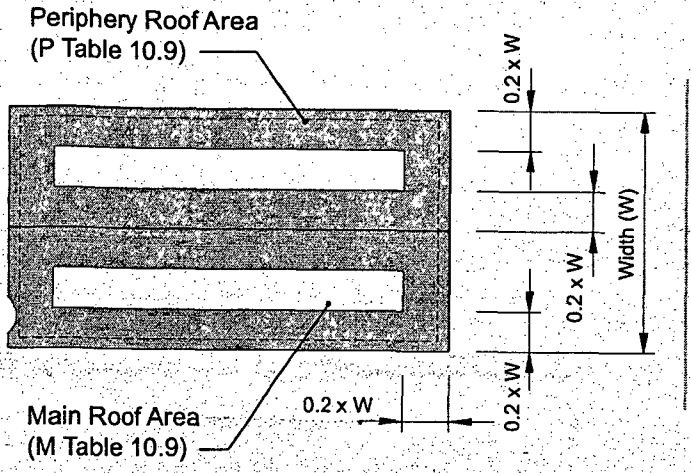
PURLIN & BATTEN FIXING CHART

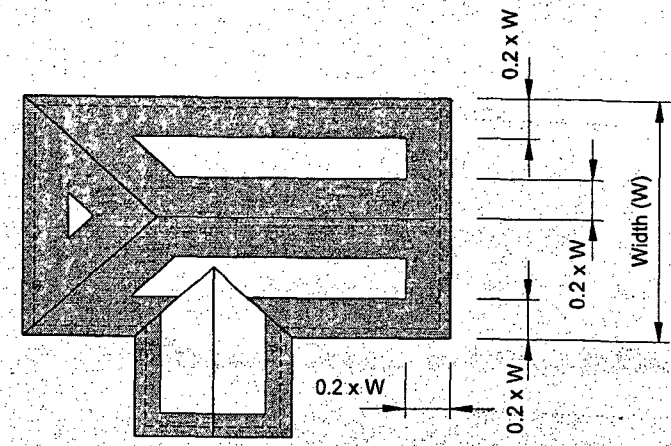
(COMPLIES WITH NZS 3604:1999 TABLE 10.10)

NOTE:

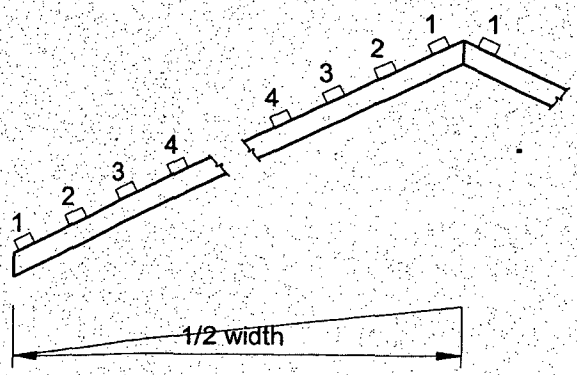
- ★ Max. truss overall roof span 12m
- ★ All purlin and batten sizes as NZS 3604:1999 Section 10.
- ★ These fixings assume purlin or battens are fixed over top of truss or rafter.



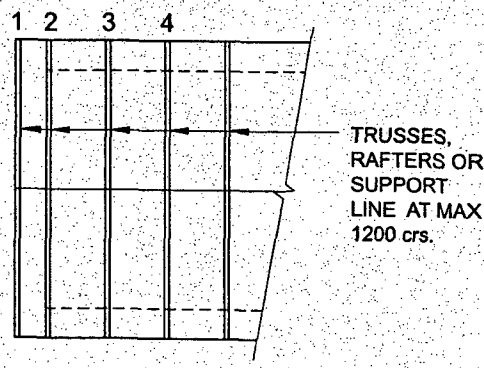
PLAN GABLE



PLAN HIP ENDS



PURLIN LAYOUT (MAX 1200 crs.)



LAYOUT ON GABLE END

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SELECTION CHART
(minimum fixing requirements)

1. HEAVY ROOFS

All purlins and/or battens use fixing Type A only on roof width (w) up to 12m.

2. LIGHT ROOFS

A. BATTENS - Max. span 1200
- Max crs. 400
- Roof width (w) up to 12m.

L & M wind loads use Type B fixing on all battens.

H & VH wind loads use Type C on all battens.

B. PURLINS - Max. span 1200, Max crs. 900 or
- Max. span. 900, Max crs. 1200

L & M wind loads use Type C fixing on purlin No.2 and Type B on all other purlins for all roof widths (w) up to 12m.

H & VH wind loads

1. On roof width (w) up to 8m; Use Type D fixing on purlin No. 2 and Type C on all other purlins.
2. On roof width (w) up to 12m; Use Type D fixing on purlins No. 2 & 3 and Type C on all other purlins.

C. PURLINS AND BATTENS ON GABLE END
- Max. span 1200, Max crs. 900 or
- Max. span. 900, Max crs. 1200

L & M wind loads use Type B fixing on support line No. 1, Type C on support lines No. 2, 3, & 4 and all other support lines as per Section A or B above.

H & VH wind loads use Type C fixing on support line No. 1, Type D on support lines No. 2, 3, & 4 and all other support lines as per Section A or B above.

STANDARD FIXING OPTIONS

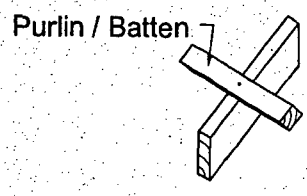
LUMBERLOK®

FIXING DEFINITIONS

NAIL = Either 90 x 3.15 Power driven
or 100 x 3.75 Hand driven
SCREW = 80 x 10 gauge **LUMBERLOK** Purlin screw (Blue Screw)
WIREDOG = Either left hand or right hand **LUMBERLOK** wiredog.

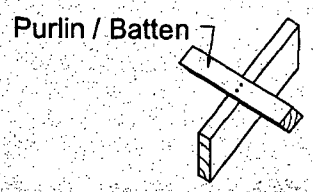
FIXING TYPE A
0.40kN

1 NAIL



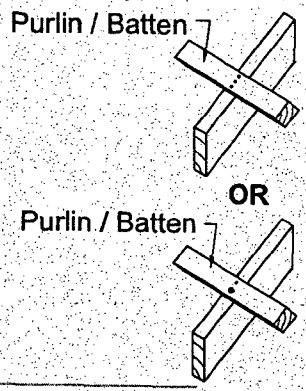
FIXING TYPE B
0.70kN

2 NAILS



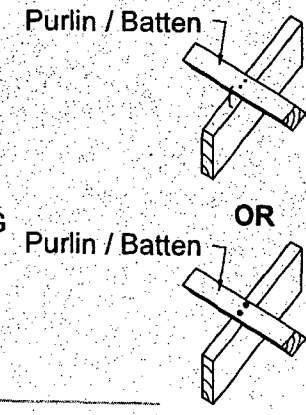
FIXING TYPE C
1.20kN

3 NAILS
OR
1 NAIL + 1 SCREW



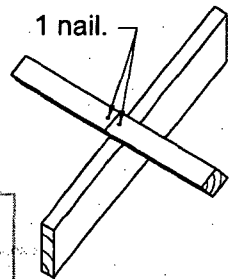
FIXING TYPE D
2.00kN

2 NAILS + 1 WIREDOG
OR
2 SCREWS

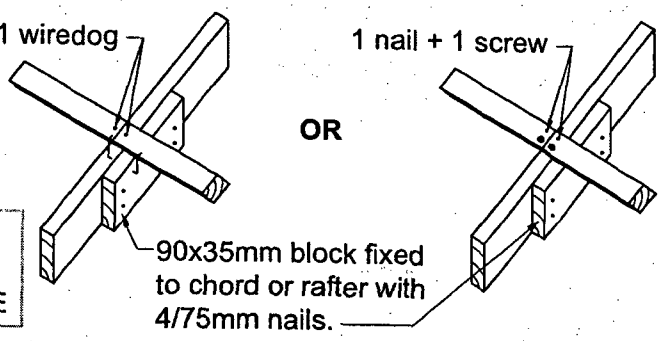


PURLIN / BATTEN SPLICE FIXING OPTIONS

NOTE:
Skew nail when fixing to 35mm rafter or truss.

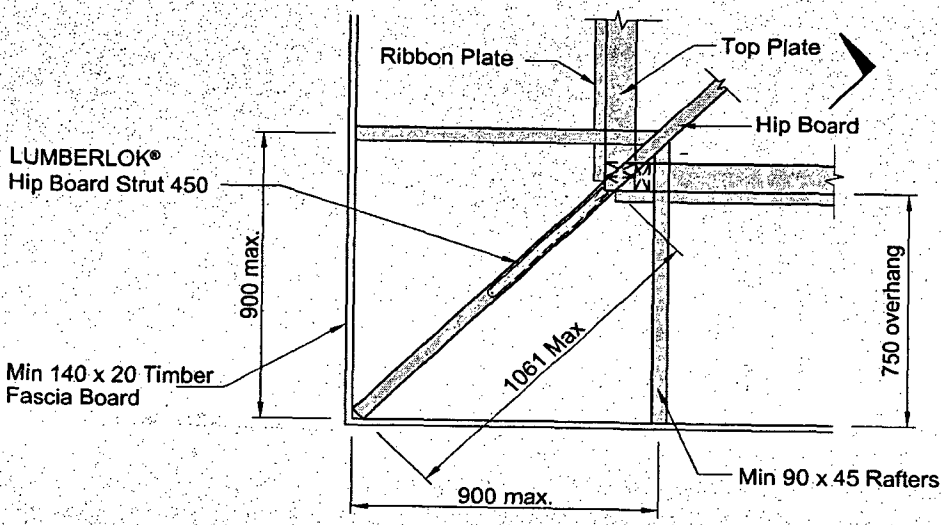


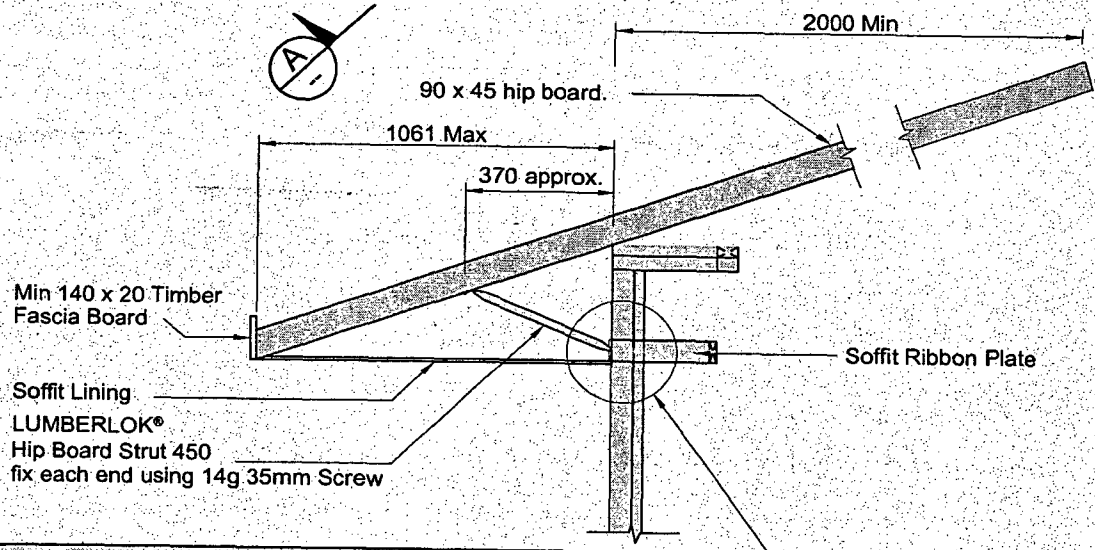
FIXING TYPE A & B OVER PURLIN SPLICE



FIXING TYPE C & D OVER PURLIN SPLICE

HIP BOARD STRUT



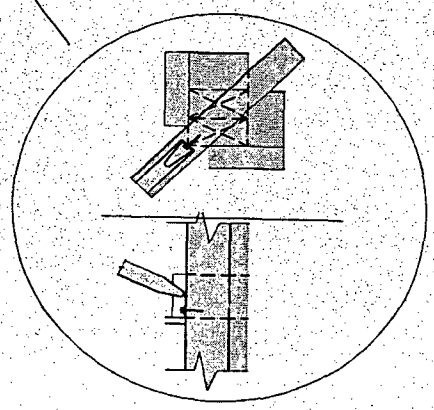


LOAD CONDITIONS:

• Wind:	Up To Very High
• Roof & Snow	Up to 0.5kPa
• Roof Material	Up to 0.65kPa (Heavy)
• Soffit:	Light (0.20kPa)
• Roof Pitch Range:	15° to 30°
• Truss Crs:	600 to 900mm

NOTES:

All other details as per
- NZS 3604:1999
- MiTek New Zealand Ltd Design software MiTek 20/20™



SECTION A
SCALE 1:20

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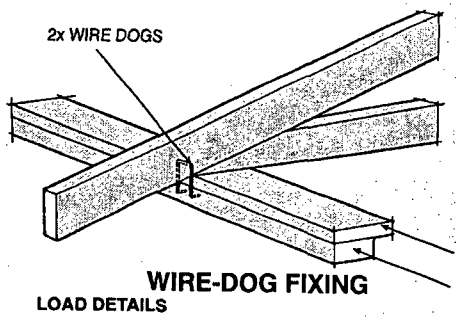
LUMBERLOK TRUSS FIXING CHART

RAFTER TRUSS TO TOP PLATE FIXINGS

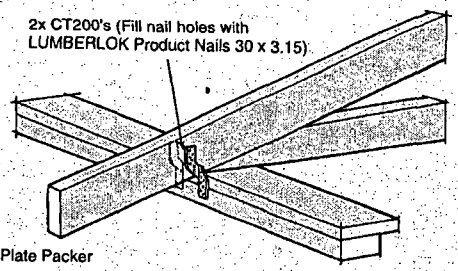
(All WIRE DOG & CT200 fixings are into the top plate **NOT** the packer)



WIRE-DOG FIXING

LOAD DETAILS

Truss Span	3000 - 10000 Low to Medium Wind 3000 - 5000 High to Very High Wind
Roof Weight	Heavy or Light
Truss Centres	900 max.
Snow Load	to 1.0 kPa



CT200 FIXING

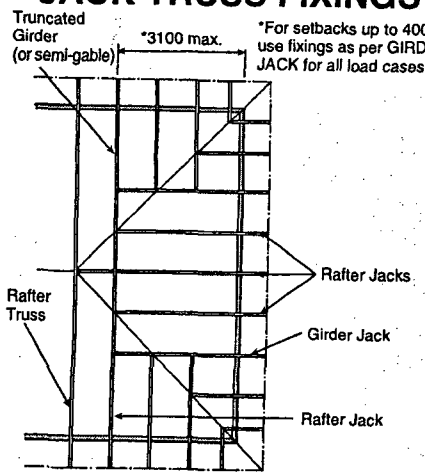
LOAD DETAILS

Truss Span	6000 - 15000
Wind	Low to Very High
Roof Weight	Heavy or Light
Truss Centres	900 max.
Snow Load	to 1.0 kPa

GIRDER TRUSS TO TOP PLATE FIXING

All girder trusses up to a span of 9000 and the above load details are to be fixed to the top plate using the CT200 FIXING shown above

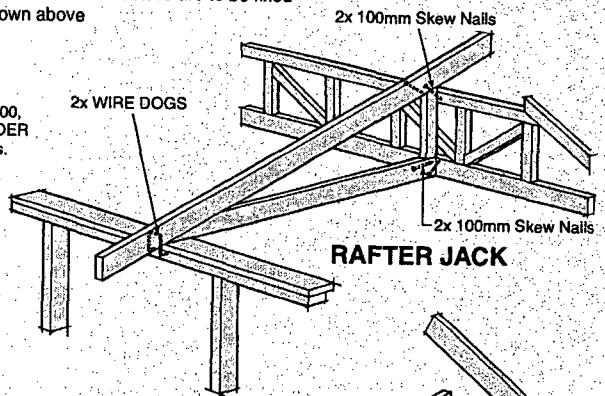
JACK TRUSS FIXINGS



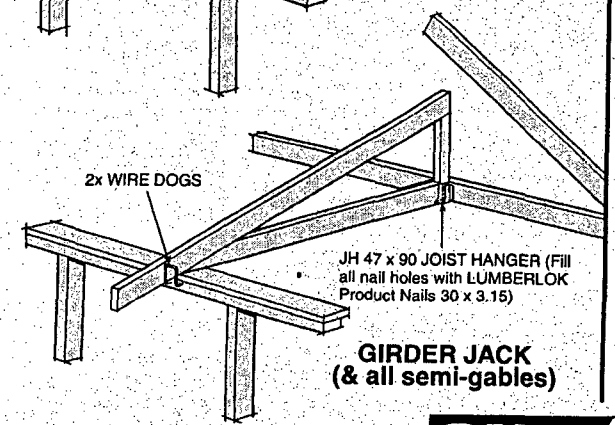
LOAD DETAILS

Truss Span	3100
Max. Wind	High
Roof Weight	Heavy or Light
Truss Centres	900 max.
Snow Load	to 1.0 kPa

*For Very High Wind, fix rafter jack as per GIRDER JACK



RAFTER JACK

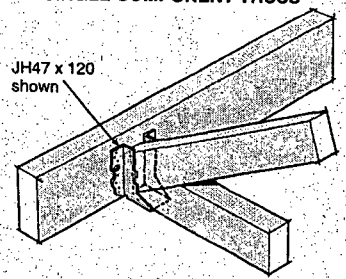


GIRDER JACK (& all semi-gables)

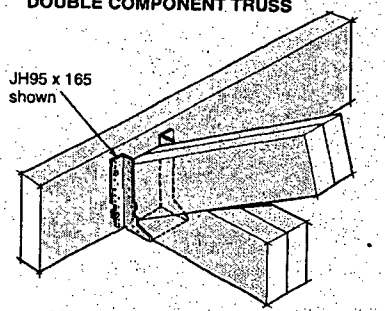
RAFTER TRUSS TO TRUSS FIXINGS

1. RIGHT ANGLE JOINTS

SINGLE COMPONENT TRUSS



DOUBLE COMPONENT TRUSS



LOAD DETAILS
SINGLE & DOUBLE COMPONENT TRUSS

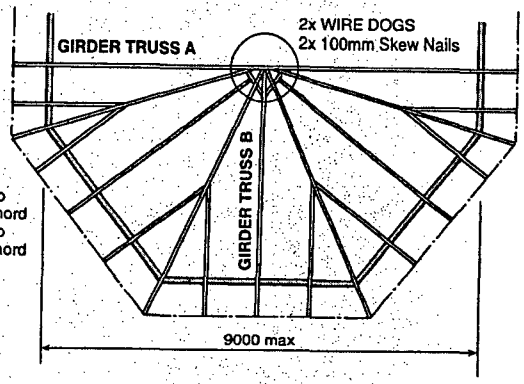
Wind	Low to Very High
Roof Weight	Heavy or Light
Truss Centres	900 max.
Snow Load	up to 1.0 kPa
Max. Supported Truss Span	12000

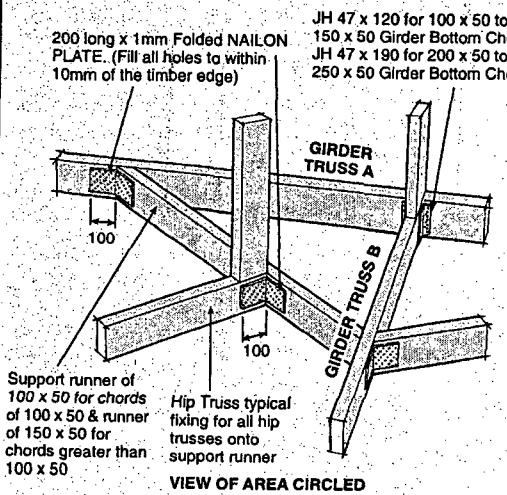
Joist Hanger Size Single Component Truss
JH 47 x 120 on Girder Bottom Chords up to **150 x 50** deep
JH 47 x 190 on Girder Bottom Chords of **200 x 50** deep and above
In all cases the max. area of roof supported (ie. setback x supported truss span) not to exceed 48m²
Joist Hanger Size Double Component Truss – JH 95 x 165
Fill all holes with LUMBERLOK Product Nails 30 x 3.15ø

2. ANGLE JOINTS - Octagonal Roof

LOAD DETAILS

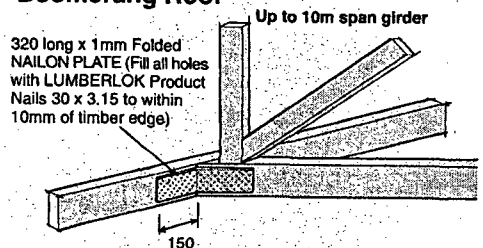
Max Supported Truss Span	9000
Wind	Low to Very High
Roof Weight	Heavy
Supported Truss Centres	900 max.
Snow Load	to 1.0 kPa





VIEW OF AREA CIRCLED

Boomerang Roof



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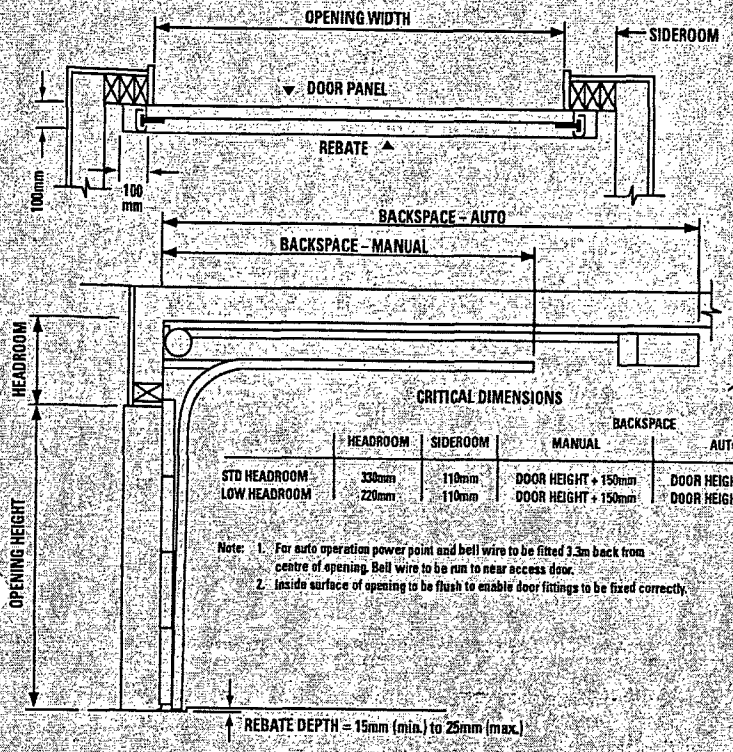
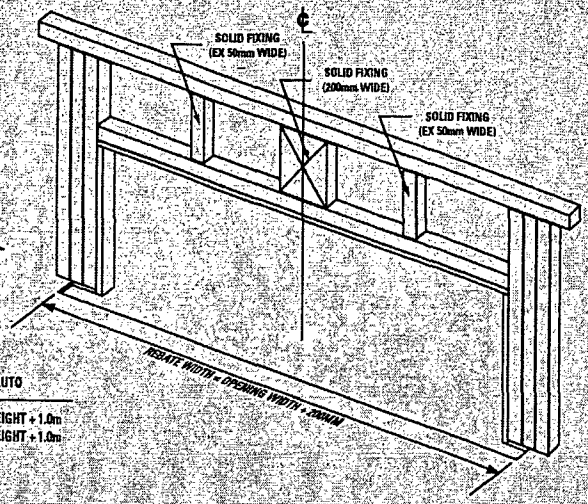
Your Garage Door Specialists

Planning & Installation Details



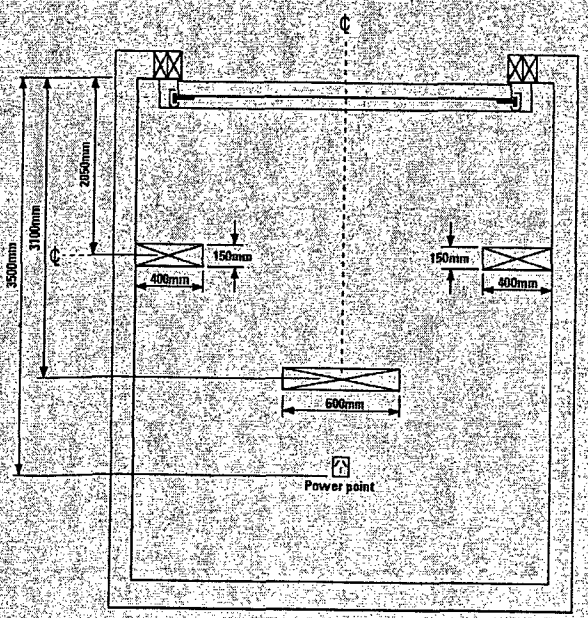


CRITICAL DIMENSIONS

	HEADROOM	SIDEROOM	BACKSPACE MANUAL	BACKSPACE AUTO
STD HEADROOM	330mm	110mm	DOOR HEIGHT + 150mm	DOOR HEIGHT + 1.0m
LOW HEADROOM	220mm	110mm	DOOR HEIGHT + 150mm	DOOR HEIGHT + 1.0m

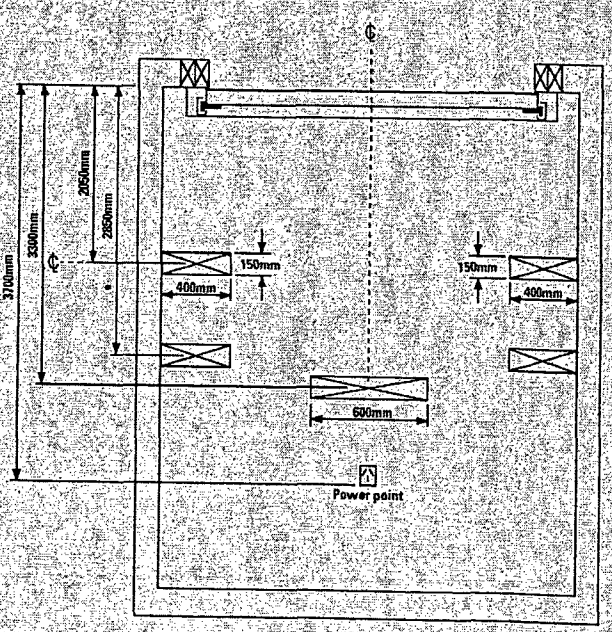
Note: 1. For auto operation power point and bell wire to be fitted 3.3m back from centre of opening. Bell wire to be run to near access door.
2. Inside surface of opening to be flush to enable door fittings to be fixed correctly.

NOGGING DETAIL FOR SECTIONAL UP TO 2.28M HIGH (TRACK AND MOTOR FIXINGS)



Note: The details shown are for 2.28m Maximum height Sectional Door with Standard 330mm Headroom. Also for Intermediate Headroom of 220mm with springing to front.

NOGGING DETAIL FOR SECTIONAL 2.3 - 2.75M HIGH (TRACK AND MOTOR FIXINGS)



Note: The details shown are for 2.75m Maximum height Sectional Door with Standard 330mm Headroom. Also for Intermediate Headroom of 220mm with springing to front. Measurements for motor with 2.5m C-Rail, add 1m when using a 1m extension.

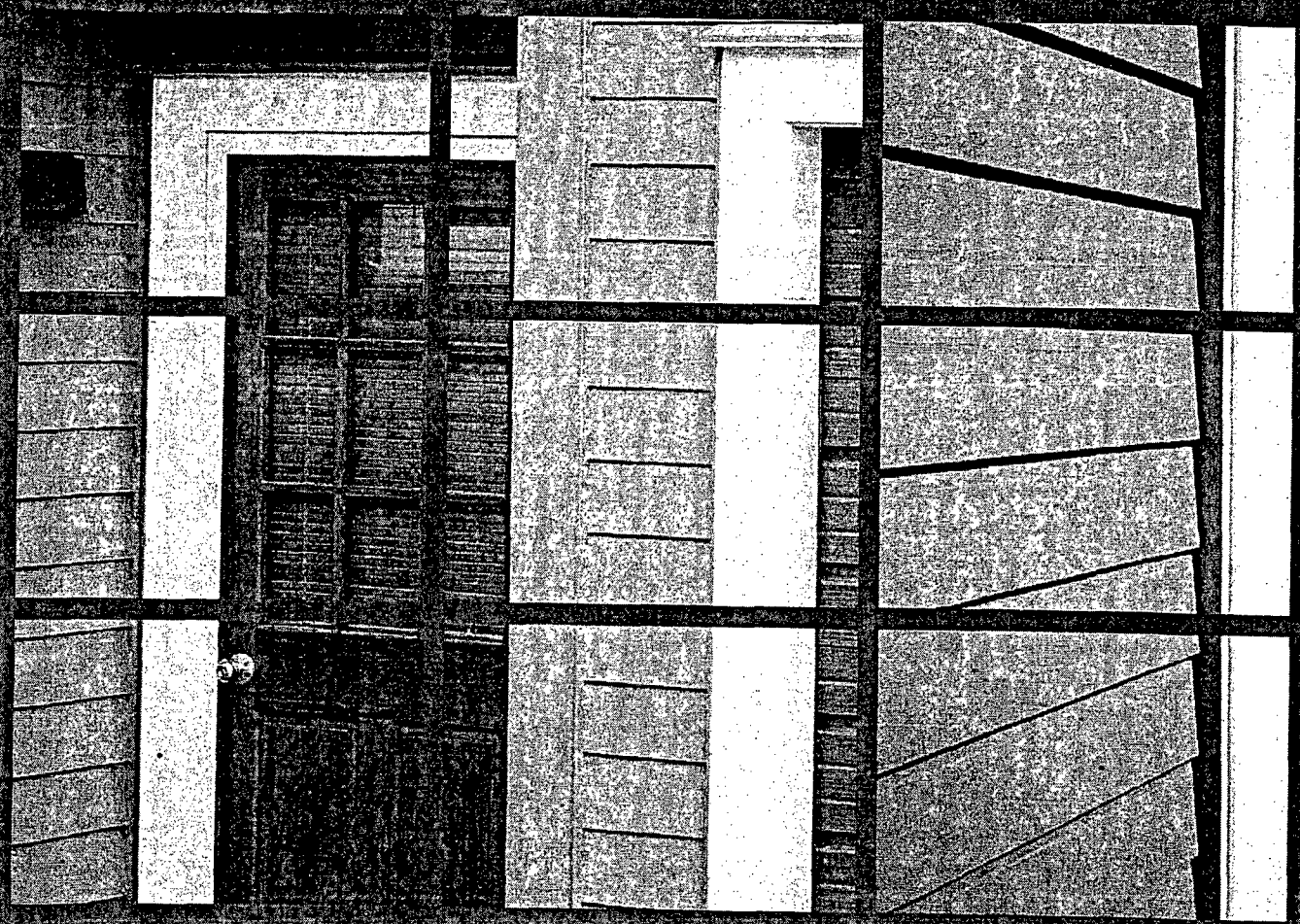
Sectional Panelift™

Note: With ongoing product developments, the manufacturers retain the right to change products and specifications without prior notification. If a specification is critical to the end use, please contact the manufacturer first.

JAMES HARDIE WEATHERBOARDS

NEW ZEALAND
APRIL 2006

TECHNICAL SPECIFICATION



James Hardie®

CONTENTS

WE VALUE YOUR FEEDBACK

To continue with the development of our products and systems, we value your input. Please send any suggestions, including your name, contact details and relevant sketches to:

James Hardie
Fax 0800 808 988
literaturefeedback@jameshardie.co.nz

1 APPLICATION AND SCOPE

1.1 APPLICATION

James Hardie Weatherboards are made of fibre cement and are pre-primed. They are categorised as a lightweight cladding product as per NZS 3604.

James Hardie Weatherboards are manufactured in different profiles ranging between smooth and patterned finishes such as;

SMOOTH WEATHERBOARD

Smooth Weatherboard (7.5mm) is available in three widths (180mm,240mm and 305mm) and has a smooth finish. It is 205mm wide.

RUSTICATED WEATHERBOARD

Rusticated Weatherboard (7.5mm) combines a rough- sawn texture with a smooth strip in the lap area. It is 205mm wide.

STYLELINE™ WEATHERBOARD

Styleline Weatherboard (7.5mm) has a texture of indented vertical and horizontal lines. It has a smooth strip in the area of the lap. It is 205mm wide.

COLONIAL® WEATHERBOARD

Colonial Weatherboard (7.5mm) reproduces the classic smoothness of traditional weatherboards. A recessed lap section provides a shadow line to enhance the horizontal definition of the finished cladding. It is 205mm wide.

FRONTIER WEATHERBOARD

Frontier Weatherboard (7.5mm) is available in two widths (245mm and 310mm). The board has a surface woodgrain texture.

SUMMIT WEATHERBOARD

Summit Weatherboard (9.0mm) gives a modern narrow look which is enhanced by the fine horizontal texture. It can also be concealed fixed. It is 150mm wide.

If you are a specifier

Or other responsible party for a project, ensure that the information in this document is appropriate for the application you are planning and that you undertake specific design and detailing for areas which fall outside the scope of these specifications.

If you are an installer

Ensure that you follow the design, moisture management and associated details and material selection provided by the designer. All the details provided in this document must be read in conjunction with the specifier's specification.

Make sure your information is up to date

When specifying or installing James Hardie products, ensure you have the current manual. If you're not sure you do, or you need more information, visit www.jameshardie.co.nz or Ask James Hardie on 0800 808 868.

1.2 SCOPE

This specification covers the use of James Hardie Weatherboard for buildings that fall within the scope of the NZBC Acceptable Solution 'E2/AS1', paragraph 1.1. This specification covers the use of James Hardie Weatherboards in both direct fixed and cavity construction methods. Please refer to 'E2/AS1' for further information regarding the selection of construction method for claddings.

1.3 DETAILS

Various James Hardie Weatherboard details are provided at the rear of this document. This specification and details in CAD file are also available to download from our web site at www.jameshardie.co.nz

1.4 SPECIFIC DESIGN

For use of James Hardie Weatherboards outside the scope of this document, the architect, designer or engineer must undertake specific design. For advice on designs outside the scope of this specification, Ask James Hardie on 0800 808 868.

2 DESIGN

2.1 COMPLIANCE

James Hardie Weatherboards comply with section 9.5.2 of 'E2/AS1'. Information contained in this document regarding the installation of James Hardie Weatherboards are aligned with 'E2/AS1' of NZBC.

2.2 RESPONSIBILITY

The specifier or other party responsible for the project must ensure that the information and details in this specification are appropriate for the intended application and that additional detailing is performed for specific design or any areas that fall outside the scope of this technical specification. For applications outside the scope of this literature and details which are not provided herein, the architect, designer or engineer must undertake specific design and it should be ensured that the intent of their design meets the requirements of the NZBC.

All dimensions shown are in millimetres unless noted otherwise.

All New Zealand Standards referenced in this manual are current edition and must be complied with.

James Hardie conduct stringent quality checks to ensure that any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure that the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

2.3 SITE & FOUNDATION

The site on which the building is situated must comply with the NZBC (New Zealand Building Code) Acceptable Solution 'E2/AS1' 'Surface Water'. Foundation design must comply with the requirements of NZS 3604 'Timber Framed Buildings' or be as per specific engineering design. The grade of adjacent finished ground must slope away from the building to avoid the possibility of water accumulating.

2.4 GROUND CLEARANCES

The bottom of claddings must comply with the NZBC Acceptable Solution 'E2/AS1', section 9.1.3. The floor must have a minimum clearance to paved or unpaved ground as required by NZS 3604. James Hardie Weatherboards must overhang the bottom plate on a concrete slab by a minimum of 50mm as required by NZS 3604. James Hardie Weatherboard must have a minimum clearance of 100mm from paved ground and 150mm from unpaved ground.

2.5 MOISTURE MANAGEMENT

It is the responsibility of specifier to identify moisture related risks associated with any particular building design.

Wall construction design must effectively manage moisture, considering both the interior and exterior environments of the building, particularly in buildings that have a higher risk of wind driven rain penetration or that are artificially heated or cooled. Walls shall include those provisions as required by the NZBC Acceptable Solution 'E2/AS1' (third edition) 'External Moisture'. In addition all wall openings, penetrations, junctions, connections, window sills, heads and jambs must incorporate appropriate flashing for waterproofing. The other materials, components and installation methods used to manage moisture in the walls, must comply with the requirements of relevant standards and the NZBC. For further information in relation to designing for weathertightness, refer to the Building Research Association of New Zealand (BRANZ) and the Department of Building and Housing (DBH) updates on the following websites, respectively www.branz.co.nz and www.dbh.govt.nz.

2.6 STRUCTURE

Timber-framed buildings must be designed in accordance with NZS 3604 (Timber Framed Buildings). When the framing is provided as per the specific engineering design, the framing stiffness must be equivalent to or more than the stiffness requirements of NZS 3604.

2.7 WIND LOADING

James Hardie Weatherboard cladding is suitable for use in all New Zealand wind zones up to and including VH as defined in NZS 3604. A specific design is required for all situations where a building falls in a specific design (SD) wind zone.

2.8 FIRE RATED WALLS

Walls clad with James Hardie Weatherboard using a direct fix or cavity construction method can achieve fire ratings of up to 60/60/60 when constructed in accordance with this literature, including the fire rated system requirements as specified in James Hardie 'Fire and Acoustic' Technical Specification Manual. Refer to the fire and acoustic technical literature for further information about fire rated systems.

2.9 ENERGY EFFICIENCY

The R-Value of walls constructed with James Hardie Weatherboard in accordance with this manual and using bulk insulation, will comply with the Section 3.1 - 'Schedule Method' of NZS 4218 (Energy Efficiency – Small Building Envelope) required under Table 1. To meet these insulation requirements, bulk insulation as mentioned in Table 1 of this specification must be used. This calculation is based on a timber framing member size of 90 x 45mm and internal linings of James Hardie Villaboard® Lining or plasterboard.

TABLE 1:

INSULATION CAPABILITY		
Climate Zone*	R-Value Requirement	Cavity Insulation Infill Requirement
1 & 2	1.5 m^2 °C/W	R1.8 Fibreglass batts.
3	1.9 m^2 °C/W	R2.2 Fibreglass batts.

*as defined in NZS 4218

3 FRAMING

3.1 GENERAL
This James Hardie Weatherboard technical specification is only suitable for timber-framed buildings. Other framing materials are outside the scope of this specification.

3.2 DIMENSIONS
A 35mm minimum stud width is required unless noted otherwise in this specification.

3.3 STRUCTURAL GRADE
Minimum timber grade requirements are No.1 framing grade in accordance with NZS 3631 'New Zealand Timber Grading Rules' or equivalent.

3.4 DURABILITY
To comply with the NZBC requirements the external framing must treated to a minimum H1.2 treatment. Refer to the NZBC Acceptable Solution B2/AS1 'Durability' for further information about the durability requirements.
For timber treatment information refer to NZS 3602 (Timber and Wood-Based Products for use in Buildings) and NZS 3640 (Chemical Preservation of Round and Sawn Timber) for minimum timber treatment selection and treatment requirements.
Also refer to framing manufacturer's literature for further guidance on timber selection. Framing must be protected from moisture at sites in accordance with the recommendations of framing manufacturer's.
Note: Refer to NZS 3602 for information about the allowable moisture contents in timber.

3.5 FRAME CONSTRUCTION
All timber framing sizes and set-out must comply with NZS 3604 and stud, nogs / dwangs centres as required by this specification. Use of timber framing must be in accordance with framing manufacturer's specifications.

3.5.1 DIRECT FIX CONSTRUCTION METHOD
The following framing must be provided for direct fixed construction thod:
- Studs must be provided at 600mm centres maximum.
- Nogs must be provided at 1200mm centres maximum.
- Double studs will be required at internal corners for fixing weatherboards without drilling the weatherboard ends.

3.5.2 CAVITY CONSTRUCTION METHOD
The following framing must be provided for cavity construction method:
- When studs are at 600mm centres the nogs must be provided at 800mm centres maximum.
- When studs are at 400mm centres the nogs may be provided at 1200mm centres maximum.
- Double studs are required at internal corners.
- Extra packers may be required at external corners.

3.6 TOLERANCES
In order to achieve an acceptable wall finish, it is imperative that framing is straight and true.
Framing tolerances must comply with the requirements of NZS 3604.

4 PREPARATION

4.1 BUILDING WRAP
Building wrap must be provided as per the requirements of the NZBC Acceptable Solution 'E2/AS1' 'External Moisture' and NZS 3604.
The building wraps must comply with Table 23 of 'E2/AS1'.
The building wraps must be fixed in accordance with 'E2/AS1', NZS 3604 and the wrap manufacturer's recommendations.
Walls which are not lined on the inside face e.g. garage walls or gable ends must include a rigid sheathing or an air barrier behind the cladding which complies with the requirements of the NZBC 'Acceptable Solution' 'E2/AS1'.

4.2 VENT STRIP
The James Hardie uPVC cavity vent strip has opening area of 1000m²/m length and must be installed at the bottom of all walls constructed using the drained and ventilated cavity construction method. It is important that the openings in the vent strip are kept clear and unobstructed to allow free drainage and ventilation of cavities.

4.3 CAVITY BATTENS
Buildings with a risk score of 7-20 calculated in accordance with the NZBC Acceptable Solution 'E2/AS1' Table 2 require James Hardie Weatherboards to be installed on a cavity.
The battens provide airspace between the frame and cladding and are considered a 'packer' only in this specification.
The timber battens must be minimum H3.1 treated in accordance with NZS 3640 (Chemical preservation of Round and sawn timber) to comply with the durability requirements of B2/AS1.
Cavity battens must comply with 'E2/AS1' and
- be minimum 18mm thick
- be minimum as wide as the width of studs
- be fixed by the cladding fixings to the main framing through the building wrap
- until claddings are fixed the battens need only to be tacked to framing.
  (Batten fixing is required temporarily to keep them straight on the wall during construction.)

The cavity battens are installed as described below:
- Fix cavity battens to studs.
- Battens must be fixed with 40mm x 2.8mm galvanised nails at 800mm centres maximum.

4.4 FLASHING
All wall openings, penetrations, intersections, connections, window sills, heads and jambs must be flashed prior to weatherboard installation. Please refer to moisture management requirements in Clause 2.5. The building wraps must be appropriately incorporated with penetration and junction flashings. Materials must be lapped in such a way that water tracks down to the exterior on the face of building wrap. James Hardie will assume no responsibility for water infiltration within the wall due to poor installation of flashings or building wraps.
The selected flashing materials must comply with the durability requirements of table 20 of Acceptable Solution 'E2/AS1'.

4.5 INTERMEDIATE SUPPORT

Where studs are at 600mm centres an intermediate means of restraining the building wrap and insulation from bulging into the cavity shall be installed. An acceptable method to achieve this is using a

- intermediate cavity batten between the studs
- 75 mm galvanized mesh
- polypropylene tape

No intermediate supports are required

- where studs are at 400mm centres or
- when rigid sheathings instead of building wraps are used.

4.6 CORNERS

Anticipated joist shrinkage must be allowed for in the design process. Do not run trims or aluminium extrusions continuously across solid floor joists.

4.7 EXTERNAL CORNERS

James Hardie Weatherboards can be finished at external corners using uPVC or aluminium corner mould, corner soakers and box corner. Refer to Figures 5, 6, 7 & 8.

4.8 INTERNAL CORNERS

James Hardie Weatherboards can be finished at internal corners using uPVC or aluminium 'W' mould. Refer to Detail 9, 10 & 11.

4.9 JUNCTIONS & PENETRATIONS

Refer to Clause 2.5 of this specification for moisture management requirements. All windows and doors must be detailed as per the requirements of this specification. James Hardie has developed the window details for James Hardie Weatherboards which meet the requirements of E2 'External Moisture' approved document of the NZBC. Refer to Figures 13, 14 & 15 and Figures 23 to 28.

5 FIXING JAMES HARDIE WEATHERBOARDS

5.1 GENERAL

The horizontal lap of James Hardie Weatherboards must be 30mm. James Hardie Weatherboards must be kept dry and under cover whilst in storage prior to and during fixing.

Cut ends which are exposed or where sealant is applied to the boards must be primed prior to installation. Dust and loose material must be removed before priming.

An H3.1 treated timber cant strip must be provided to support the bottom board on the wall. Refer to Figures 3 & 19.

5.2 FASTENER DURABILITY

Fasteners must meet the durability requirements of NZ Building Code. NZS 3604 specifies requirements for fixing material to be used in relation to the exposure conditions and are summarized in Table 2.

TABLE 2:

EXPOSURE CONDITIONS & NAIL SELECTION PRESCRIBED BY NZS 3604

NAIL MATERIAL		
Sea Spray Zones *	Zone 1 outside sea spray zone and Zones 2 – 4 & Geothermal hot spots	Bracing – All zones
Grade 316 Stainless	Hot-dipped galvanised or 316 stainless	Grade 316 Stainless

** (Zone 1 areas where local knowledge dictates that increased durability is required, appropriate selection shall be made)*

Also refer to the NZBC Acceptable Solution 'E2/AS1' Table 20 and 21 for information regarding the selection of suitable fixing materials and their compatibility with other materials.

5.3 NAIL SIZES AND FIXING METHOD

James Hardie Weatherboards must be fixed to studs with the types of nails specified in Table 3, in accordance with the following requirements

- All nails must be driven flush with the board surface.
- When fixing Summit Weatherboard using a concealed nailing method ensure at all corners and vertical edges of openings. Summit Weatherboards are face fixed.
- When fixing weatherboard at the ends, nail must be driven at a minimum distance of 20mm from the end.
- For nails driven 50mm or closer from the end edges of James Hardie weatherboards, holes must be pre –drilled using a 3mm Titanium drill bit.

TABLE 3:

NAIL REQUIREMENTS FOR JAMES HARDIE WEATHERBOARDS

DIRECT TO STUD FIXING	
Concealed Nailing (Summit Weatherboard only)	
40 x 2.8mm HardiFlex® nails	Finish flush with the board surface
Face Nailing	
50 x 2.8mm HardiFlex® nails	Finish flush with the board surface

CAVITY FIXING	
Concealed Nailing (Summit Weatherboard only)	
60 x 3.15 mm HardiFlex® nails	Finish flush with the board surface.
Face Nailing	
75 x 3.15 mm HardiFlex® nails	Finish flush with the board surface.

** Use a 3.0mm drill bit*

5.4 GUN NAILING

James Hardie weatherboard can also be gun-nailed for both concealed and face nailing fixing methods.
Round head nails must be used and the size of these nails must comply with the requirements of Table 3.
Nails must be fired at a minimum distance of 50 mm from the ends of boards when gun nailing is used – double studs will be required.
Note: Do not use 'D' head nails.

6 JOINTING

The ends of James Hardie Weatherboards are jointed off-stud using a back soaker. The joints may be located centrally between studs but no closer than 150mm from the studs. The joints must be staggered by 600mm minimum. Flexible silicon sealant must be used with back soakers for jointing. Refer to Figure 4.

7 FINISHING

Note: Protective coating of James Hardie Weatherboards is required in order to meet the durability requirements of the New Zealand Building Code.

7.1 PREPARATION

Remove any surface dirt, grime or other contaminants and ensure the James Hardie Weatherboards are dry before painting.

7.2 SEALANTS

All sealants must demonstrate the ability to meet the relevant requirements of the NZBC. Application and use of sealants must comply with manufacturer's instructions. Sealants, if coated, must be compatible with the paint system.

7.3 PAINTING

All James Hardie Weatherboards are pre-primed on their face and bottom edge with a factory-applied acrylic base coat.
James Hardie Weatherboards must be painted within 90 days of installation. All exposed faces, including the top edges under the sills and bottom edges of James Hardie Weatherboard and accessories must be finished with two coats of latex exterior paint system complying with any of parts 7, 8, 9, and 10 of AS 3730.
When using uPVC corner moulds or flashings, the light reflective value of the colour used must be more than 40% as required under section 4.3.1 of 'E2/AS1'. Dark colours cause excessive movements and deteriorate the cladding performance.
Some environments require special coatings. Painting selection and specifications is dependant on the paint system chosen. Refer to the paint manufacturer.

7.4 STAINING

Stains containing linseed oil are specifically designed for wood and may not be suitable for fibre cement cladding products, primed or unprimed. Semi-transparent stains can vary in uniformity of appearance depending on method of application and conditions and will require a high level of skill and craftsmanship to achieve a uniform appearance. Clear coats have not proven durable in exterior exposure and James Hardie considers them a maintenance item that may require application of a refurbishing sealer at regular intervals. James Hardie does not warrant the appearance and durability of the use of semi-transparent stains and clear coats.
For further information refer to stain manufacturer's recommendations.

8 STORAGE AND HANDLING

James Hardie Weatherboards must be laid flat on a smooth level surface. To ensure optimum performance, store weatherboards under cover and keep dry prior to fixing. If the weatherboards should become wet, allow to dry thoroughly before fixing.
Do not carry weatherboards on the flat, always carry in the vertical position to avoid excessive bending.

9 MAINTENANCE

It is the responsibility of the specifier to determine normal maintenance requirements to comply with the NZBC Acceptable Solution B2/AS1.
The extent and nature of maintenance will depend on the geographical location and exposure of the building.
As a guide, it is recommended that basic normal maintenance tasks shall include but not be limited to:

- Washing down exterior surfaces every 6-12 months*,
- Re-applying exterior protective finishes*,
- Maintaining the exterior envelope and connections including joints, penetrations, flashings and sealants.
- Cleaning out gutters, blocked pipes and overflows as required,
- Pruning back vegetation which is close to or touching the building.

**Refer to your paint manufacturer for washing down and recoating requirements related to paint performance.*

10 PRODUCT INFORMATION

10.1 MANUFACTURING & CLASSIFICATION

James Hardie New Zealand is an ISO 9001(2000) Telarc certified manufacturer. James Hardie Weatherboard is manufactured to meet the requirements of AS/NZS 2908.2: 2000 'Cellulose-Cement Products', James Hardie Weatherboard has a classification of Type A Category 3 in accordance with this standard.

The weatherboards are supplied pre-primed on their face and bottom edge with an acrylic primer. The bottom front edge is chamfered. The top covered edge is square water-jet trimmed. James Hardie Weatherboards are identified by the printing of the name at regular intervals on the back face.

10.2 DURABILITY

James Hardie Weatherboard, when installed and maintained as per the technical specification, will meet the durability requirements for claddings as required in the NZBC Approved Document B2 'Durability'.

10.2.1 RESISTANCE TO MOISTURE/ROTTING

James Hardie Weatherboard demonstrates resistance to permanent moisture induced deterioration (rotting) by passing the following tests in accordance with AS/NZS2908.2

- Water Permeability (Clause 8.2.2)
- Warm Water (Clause 8.2.4)
- Heat Rain (Clause 6.5)
- Soak Dry (Clause 8.2.5).

10.2.2 RESISTANCE TO FIRE

James Hardie Weatherboard has the following Early Fire Hazard Indices (tested to AS 1530 Part 3).

TABLE 4:

EARLY FIRE HAZARD INDICES	
Ignition Index	0
Flame Spread Index	0
Heat Evolved Index	0
Smoke Developed Index	0 -1

10.3 PRODUCT SIZES & MASS

Available sizes of James Hardie Weatherboards and their weights are given in Table 5 on the next page. James Hardie Weatherboards are classified as a light weight wall cladding (not exceeding 30kg/m^2) in accordance with NZS 3604.

11 SAFE WORKING PRACTICES

WARNING

DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA

James Hardie products contain respirable crystalline silica which is considered by some international authorities to be a cause of cancer from some occupational sources. Breathing excessive amounts of respirable silica dust can also cause a disabling and potentially fatal lung disease called silicosis, and has been linked with other diseases. Some studies suggest smoking may increase these risks. During installation or handling: (1) work in outdoor areas with ample ventilation; (2) minimise dust when cutting by using either 'Score and Snap' knife, fibre cement shears or, where not feasible, use a HardiBlade® Saw Blade and dust-reducing circular saw attached to a HEPA vacuum; (3) warn others in the immediate area to avoid breathing dust; (4) wear a properly-fitted, approved dust mask or respirator (e.g. P1 or P2) in accordance with applicable government regulations and manufacturer instructions to further limit respirable silica exposures. During clean-up, use HEPA vacuums or wet cleanup methods - never dry sweep. For further information, refer to our installation instructions and Material Safety Data Sheets available at www.jameshardie.co.nz. FAILURE TO ADHERE TO OUR WARNINGS, MATERIAL SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

JAMES HARDIE RECOMMENDED SAFE WORKING PRACTICES
CUTTING OUTDOORS
Position cutting station so that wind will blow dust away from user or others in working area. Use one of the following methods based on the required cutting rate: **BEST** ■ Score and snap ■ Hand guillotine ■ Fibreshear **GOOD** ■ Dust reducing circular saw equipped with HardiBlade® Saw Blade and HEPA vacuum extraction.
CUTTING INDOORS
■ Cut only using score and snap, hand guillotine or fibreshears (manual, electric or pneumatic). ■ Position cutting station in well-ventilated area
DRILLING/OTHER MACHINING
When drilling or machining you should always wear a P1 or P2 dust mask and warn others in the immediate area.

JAMES HARDIE RECOMMENDED SAFE WORKING PRACTICES

IMPORTANT NOTES:

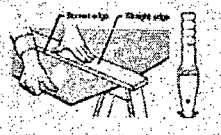
1. For maximum protection (lowest respirable dust production), James Hardie recommends always using "Best"- level cutting methods where feasible
2. NEVER use a power saw indoors
3. NEVER use a circular saw blade that does not carry the HardiBlade® logo
4. NEVER dry sweep – Use wet suppression or HEPA Vacuum
5. NEVER use grinders
6. ALWAYS follow tool manufacturer's safety recommendations

P1 or P2 respirators can be used in conjunction with above cutting practices to further reduce dust exposures. Additional exposure information is available at www.jameshardie.co.nz to help you determine the most appropriate cutting method for your job requirements. If concern still exists about exposure levels or you do not comply with the above practices, you should always consult a qualified industrial hygienist or contact James Hardie for further information.

WORKING INSTRUCTIONS

Refer to Recommended Safe Working Practices before starting any cutting or machining of product.

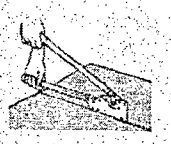
SCORE AND SNAP



Score and Snap is a fast and efficient method of cutting the product using James Hardie's special tungsten tipped Score and Snap knife.

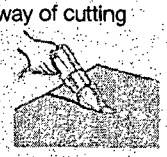
Preferably score on the face side of the product. Score against a straight edge and repeat the action to obtain adequate depth for clean break – normally 1/3 of sheet thickness. Snap upwards to achieve break. Smooth any rough edges with a rasp.

HAND GUILLOTINE



Make guillotine cut on the off-cut side of line to allow for the thickness of the blade.

FIBRESHEAR HEAVY DUTY



An electrically powered, fast, clean and effortless way of cutting James Hardie building products, especially around curves such as archways. Make Fibreshear cut on the "off-cut" side of the line to allow for the thickness of the shear.

HARDIBLADE® SAW BLADE

The HardiBlade® Saw Blade used with a dust-reducing saw is ideal for fast, clean cutting of James Hardie fibre cement products. A dust-reducing saw uses a dust deflector or a dust collector connected to a vacuum system. When sawing, clamp a straight-edge to the sheet as a guide and run the saw base plate along the straight edge when making the cut.

HOLE-FORMING

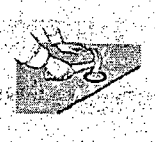
For smooth clean cut circular holes:

Mark the centre of the hole on the sheet.

Pre-drill a 'pilot' hole.

Using the pilot hole as a guide, cut the hole to the appropriate diameter with a hole saw fitted to a heavy duty electric drill.

For irregular holes:



Small rectangular or circular holes can be cut by drilling a series of small holes around the perimeter of the hole then tapping out the waste piece from the sheet face. Tap carefully to avoid damage to sheets, ensuring that the sheet edges are properly supported.

STORAGE AND HANDLING

All James Hardie building products should be stored to avoid damage, with edges and corners of the sheets protected from chipping. James Hardie building products must be installed in a dry state and be protected from rain during transport and storage. The product must be laid flat under cover on a smooth level surface clear of the ground to avoid exposure to water or moisture, etc.

QUALITY

James Hardie conducts stringent quality checks to ensure that any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure that the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

12 PRODUCT SIZES

TABLE 5:

PRODUCT INFORMATION

				COVERAGE INFORMATION				
Product	Length (mm)	Width (mm)	Thickness (mm)	Effective Cover (mm)	No. of planks/ metre height (approx.)	Mass kg/lineal m (approx. at EMC)	Mass kg/m² approx. at EMC)	Pallet weight kg (60/120 units/pack)
Smooth	4200	180	7.5	150	6.7	2.4	16.0	600/1170
	4200	240	7.5	210	4.8	2.6	13.7	770/1540
	4200	305	7.5	275	3.6	3.6	12.9	950 /1900
Rusticated	4200	205	7.5	175	5.7	2.6	14.9	700/1350
Styleline	4200	205	7.5	175	5.7	2.6	14.9	700/1350
Colonial	4200	205	7.5	175	5.7	2.6	14.9	700/1350
Frontier	4200	245	7.5	215	4.7	3.1	14.4	790/1580
	4200	310	7.5	280	3.6	3.8	13.6	970/1950
Summit	4200	150	9	120	8.3	2.4	19.8	593/1186

Note:All dimensions provided are based on nominal only and subject to manufacturing tolerances.

13 ACCESSORIES

ACCESSORIES SUPPLIED BY JAMES HARDIE FOR JAMES HARDIE WEATHERBOARDS

9MM WEATHERBOARDS

	ACCESSORY AND MATERIAL NUMBER		SIZE (MM)	MATERIAL / APPEARANCE
	External Box Corner - 2400 - 2700	 **300377** **300379**	 2400 long 2700 long	Etch Primed Aluminium Self colour
	Concealed Back Soaker - Aluminium	 **303937**	 150 long	Etch Primed Aluminium Self colour
	HardiFlex® nail - Jar - 5kg	**302781** **302782**	60 x 3.15 ø	316 Stainless Steel
	HardiFlex® nail - Jar - 5kg	**302783** **302784**	60 x 3.15 ø	Hot Dip Galvanised

7.5MM WEATHERBOARDS

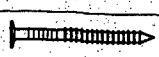
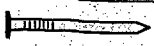
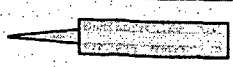
	External Corner Soaker - 310 - 245 - 180	 **303930** **303931** **303932**	 310 245 180	Etch Primed Aluminium Self colour
	Concealed Back Soaker - 310 - 245 - 205 - 180	 **303933** **303934** **303935** **303936**	 310 245 205 180	Etch Primed Aluminium Self colour
	External Flashing (box) - 3000 - 2700 - 2400	 **300852** **300851** **300850**	 3000 2700 2400	uPVC
	External Corner (box) mould - 3000 - 2700 - 2400	 **300380** **300378** **300376**	 3000 2700 2400	Aluminium
	External Corner Mould 135° - 2700	 **300375**	 2700	Etch Primed Aluminium
	Weatherboard Cap Mould - 3000	 **300995**	 3000	uPVC

ALL WEATHERBOARDS

	Internal 'W' Corner Mould - 2700	 **300870**	 2700 long	uPVC
	Internal Corner Mould 135° - 2700	 **300383**	 2700 long	Etch Primed Aluminium
	Corner Underflashing - 50 x 50	 **303745**	 3000 long	uPVC
	Vent Strip	**302490**	3000 long	PVC White
	Internal 'W' corner - 2400 - 2700	 **300385** **300386**	 2400 long 2700 long	Etch Primed Aluminium
	HardiFlex® nail - 500g Bag - 5kg	**304252** **304253**	75 x 3.15 ø	316 Stainless Steel
	HardiFlex® nail - 500g Bag - 5kg	**304250** **304251**	75 x 3.15 ø	Hot Dip Galvanised
	HardiDrive Screw - self drilling & embedding timber screw 100 jar	 **300928**	 7g x 30mm	 316 Stainless Steel
	Scoring Knife	**300914**		Tungsten Carbide

ACCESSORIES NOT SUPPLIED BY JAMES HARDIE FOR JAMES HARDIE WEATHERBOARDS

James Hardie recommends the following products for use in conjunction with its Weatherboards. James Hardie does not supply these products. Please contact component manufacturer for information on their warranties and further information on their products.

	ACCESSORY AND MATERIAL NUMBER	SIZE (MM)	MATERIAL / APPEARANCE
	HardiFlex® nail	40 x 2.8 ø & 50 x 2.8 ø	316 Stainless Steel
	HardiFlex® nail	40 x 2.8 ø & 50 x 2.8 ø	Hot Dip Galvanised
	Flexible sealant or expandable foam	Tube	Fosroc, Holdfast or similar
	PEF rod	Polyethylene foam	Fosroc or similar
	Flashing tape	Proprietary tape to adhere to building wrap	Tyvek, Protecto wrap or similar
	Flashing to table 20 'E2/AS1'	Refer Figure 13	Flashing fabricator
	Inseal 3109 Sealing Strip	19 x 10	Black compressible foam
	Timber Scriber	As required	H3.1 Treated Timber. Timber Merchant or cut on site

14 DETAILS

Various details outlined in the following table are available on Pages 11 to 42.

TABLE 7:

DETAILS

DESCRIPTION	DIRECT FIXED	CAVITY CONSTRUCTION
Framing Setout	Figure 1	
Sheet Fixing Setout	Figure 2	Figure 18
Concrete Footing	Figure 3	Figure 19
Weatherboard Fixing	Figure 4	Figure 20
PVC or Aluminium Box Corner (7.5mm Weatherboard)	Figure 5	Figure 21
Aluminium Box Corner (9.0mm Summit Weatherboard)	Figure 6	Figure 22
External Boxed Corner	Figure 7	Figure 23
External Corner Soaker	Figure 8	Figure 24
Internal 90° PVC or Aluminium 'W' Mould	Figure 9	Figure 25
Internal 90° Aluminium 'W' Mould	Figure 10	Figure 26
Internal 135° Aluminium 'W' Mould	Figure 11	Figure 27
Soffit Detail	Figure 12	Figure 28
Window Detail without Facings	Figure 13	
One Piece Head Flashing without Facings	Figure 14	Figure 30
Jamb Flashing without Facings	Figure 15	Figure 31
Batten Setout		Figures 16 & 32
Batten Fixing		Figure 17
Sill Flashings without Facings		Figure 29
Parapet Flashing		Figure 33
Pipe Penetration		Figure 34
One Piece Apron Flashing Joint		Figure 35

15 WARRANTY

JAMES HARDIE WEATHERBOARDS

PRODUCT WARRANTY

APRIL 2006

WARRANTY: James Hardie New Zealand Limited ("James Hardie") warrants for a period of 15 years from the date of purchase that the James Hardie Weatherboards (the "Product"), will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting, fire and damage from termite attacks to the extent set out in James Hardie's relevant published literature current at the time of installation. James Hardie warrants for a period of 12 months from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials.

Nothing in this document shall exclude or modify any legal rights a customer may have under the Consumer Guarantees Act or otherwise which cannot be excluded or modified at law.

CONDITIONS OF WARRANTY: The warranty is strictly subject to the following conditions:

(a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation.

(b) This warranty is not transferable.

(c) The Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice.

(d) The project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code ("NZBC"), regulations and standards.

(e) The claimant's sole remedy for breach of warranty is (at James Hardie's option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product.

(f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces).

(g) All warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law.

(h) If meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

DISCLAIMER: The recommendations in James Hardie's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. Further, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (eg quality of workmanship and design) James Hardie shall not be liable for the recommendations in that literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards.

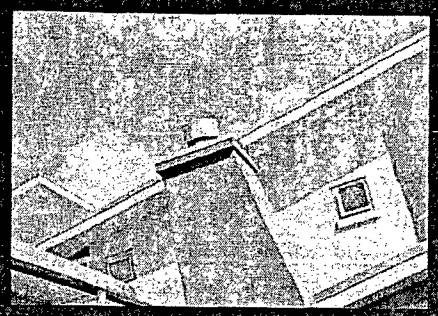
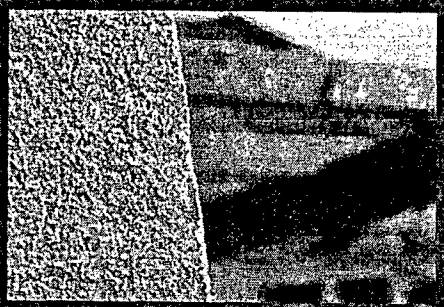
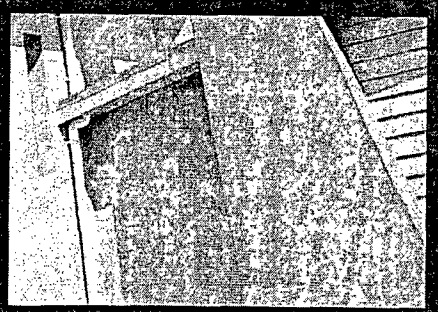
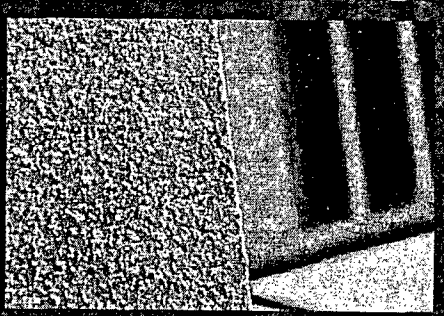
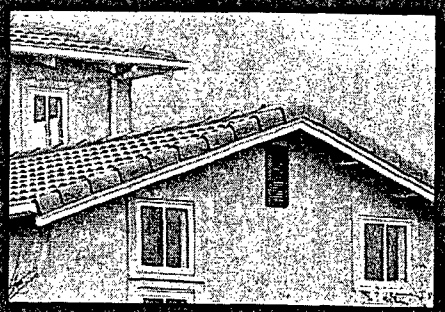
Ask James Hardie™
Call 0800 808 868
www.jameshardie.co.nz

James Hardie®

Monotek®
SHEET

NEW ZEALAND
APRIL 2006

TECHNICAL SPECIFICATION


James Hardie®

CONTENTS

WE VALUE YOUR FEEDBACK

To continue with the development of our products and systems, we value your input. Please send any suggestions, including your name, contact details, and relevant sketches to:

James Hardie
Fax 0800 808 988
literaturefeedback@jameshardie.co.nz

1 APPLICATION AND SCOPE

1.1 APPLICATION

Monotek® sheets are manufactured in New Zealand by James Hardie from fibre cement which is a composition of treated cellulose fibre, Portland cement, sand and water. Monotek® sheet is a suitable cladding material to achieve monolithic looks on external walls. Monotek® sheets are readily identified by its terracotta colour and the name printed on the reverse face of sheet. Monotek® sheets are manufactured in 7.5mm and 9mm thickness. Monotek® (9mm) sheet is more suitable for high impact areas.

If you are a specifier

Or other responsible party for a project ensure that the information in this document is appropriate for the application you are planning and that you undertake specific design and detailing for areas which fall outside the scope of these specifications.

If you are an installer

Ensure that you follow the design, moisture management and associated details and material selection provided by the designer. All the details provided in this document must be read in conjunction with the specifier's specification.

Make sure your information is up to date

When specifying or installing James Hardie products, ensure you have the current manual. If you're not sure you do, or you need more information, visit www.jameshardie.co.nz or Ask James Hardie on 0800 808 868.

1.2 SCOPE

The scope of this specification is for the use of Monotek® sheets when limited to buildings which fall within the scope of the NZBC Acceptable Solution 'E2/AS1'.

This specification also covers Monotek® sheets in cavity construction when used for buildings subject to specific design up to an ultimate limit state (ULS) wind pressure of 2500 Pa. Please refer to 'E2/AS1' for further information regarding the selection of construction methods for claddings. This document is intended for use by architects, designers and specifier who may be involved with the specification of Monotek® sheets.

This manual covers the use of Monotek® sheet for either construction methods i.e. direct fixed or cavity, used for external walls in timber framed buildings.

1.3 DETAILS

Various Monotek® sheet details are provided at the rear of this document. This specification and details in CAD file are also available to download from our web site at www.jameshardie.co.nz.

1.4 SPECIFIC DESIGN

For use of Monotek® sheets outside the scope of this document, the architect, designer or engineer must undertake specific design. For advice on designs outside the scope of this specification, Ask James Hardie on 0800 808 868.

2 DESIGN

2.1 COMPLIANCE

Monotek® sheet complies with section 9.7.2 of 'E2/AS1'.
Information contained in this document is aligned with the requirements of NZBC Acceptable Solution 'E2/AS1'.
Monotek® sheet cavity construction has also been BRANZ appraised. The BRANZ Appraisal No is 466 (2005) and can be viewed on www.branz.co.nz or www.jameshardie.co.nz. All design and construction must comply with the appropriate requirements of the NZBC regulations and standards.

2.2 RESPONSIBILITY

The specifier or other party responsible for the project must run through a risk matrix analysis to determine which construction method is to be used. The designer must also ensure that the information and details published in this specification are appropriate for the intended application and that additional detailing is performed for specific design or any areas that fall outside the scope of this specification. The designers should ensure that the intent of their design meets the requirements of the NZBC.
All dimensions shown are in millimeters unless noted otherwise.
All New Zealand Standards referenced in this document are current edition and must be complied with.
James Hardie conducts stringent quality checks to ensure that any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure that the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

2.3 SITE & FOUNDATION

The site on which the building is situated must comply with NZBC (New Zealand Building Code) Acceptable Solution E1/AS1 'Surface Water'. Foundation design must comply with the requirements of NZS 3604 'Timber Framed Buildings' or be as per specific engineering design. The grade of adjacent finished ground must slope away from the building to avoid any possibility of water accumulating.

2.4 GROUND CLEARANCES

The bottom edge of claddings must comply with NZBC Acceptable Solution 'E2 /AS1', Paragraph 9.1.3.
The floor must have a minimum clearance to paved or unpaved ground as required by NZS 3604.
Monotek® sheets must overhang the bottom plate on a concrete slab by a minimum of 50mm as required by NZS 3604.
Monotek® Sheets must have a minimum clearance of 100mm from paved ground and 150mm from unpaved ground.

2.5 MOISTURE MANAGEMENT

It is the responsibility of the specifier to identify moisture related risks associated with any particular building design.
Wall construction design must effectively manage moisture, considering both the interior and exterior environments of the building, particularly in buildings that have a higher risk of wind driven rain penetration or that are artificially heated or cooled.
Walls shall include those provisions as required by NZBC Acceptable Solution 'E2/AS1' 'External Moisture'. In addition all wall openings, penetrations, junctions, connections, window sills, heads and jambs must incorporate appropriate flashings for waterproofing.
The other materials, components and installation methods used to manage moisture in external walls, must comply with the requirements of relevant standards and the NZBC.
For further information in relation to designing for weathertightness, refer to BRANZ Ltd and the Department of Building and Housing (DBH) updates on the following websites, respectively www.branz.co.nz and www.dbh.govt.nz.

2.6 STRUCTURE

Timber framing must comply with NZS 3604 for buildings or parts of buildings within the scope limitations of NZS 3604. Buildings or parts of buildings outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and NZS 4203. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604. In all cases studs must be at maximum 600mm centres for buildings designed to NZS 3604 and at maximum 400mm centres for specifically designed buildings.

2.7 WIND LOADING

Monotek® sheet cladding is suitable for use in all New Zealand wind zones up to and including VH as defined in NZS 3604.
A specific design is required for all situations where the building falls in a specific design (SD) wind zone.

2.8 STRUCTURAL BRACING

Monotek® sheets can be used to achieve structural bracing required for timber framed buildings designed and constructed in accordance with NZS 3604. The Monotek® sheet must be installed as per specific bracing system details that are available separately. Monotek® Sheet bracing systems have been independently tested and assessed by BRANZ and are suitable for both construction methods i.e. direct fixed and cavity construction. Refer to the James Hardie Bracing information manual for details.

2.9 FIRE RATED WALLS

Monotek® sheet clad walls using a direct fix or cavity construction method can achieve fire ratings up to 60/60/60 when the walls are constructed in accordance with this literature and include the fire rated system requirements as specified in James Hardie 'Fire and Acoustic' Technical Specification Manual. Refer to fire and acoustic literature for further information on fire rated systems

2.10 ENERGY EFFICIENCY

The R-Value of Monotek® sheet walls constructed in accordance with this manual using bulk insulation, will comply with Section 3.1 - 'Schedule Method' of NZS 4218 (Energy Efficiency – Small Building Envelope) required under Table 1. To meet these insulation requirements, bulk insulation as mentioned in Table 1 of this specification must be used. This calculation is based on a timber framing member size of 90 x 45mm and internal linings of James Hardie Villaboard® Lining or plasterboard.

TABLE 1:

INSULATION CAPABILITY

Climate Zone*	R-Value Requirement	Cavity Insulation Infill Requirement
1 & 2	1.5 m^2 °C/W	R1.8 Fibreglass batts.
3	1.9 m^2 °C/W	R2.2 Fibreglass batts.

*as defined in NZS 4218

3 FRAMING

3.1 GENERAL

This Monotek® sheet technical specification is only suitable for timber-framed buildings. Other framing materials are outside the scope of this specification.

3.2 DIMENSIONS

A 45mm (nominal) minimum stud width is required at all flush jointed sheet edges. Double studs are required at vertical control joints. Intermediate studs 35mm minimum wide may be used.

3.3 TIMBER GRADE

Minimum timber grade requirements are No. 1 Framing grade as per NZS 3631 'New Zealand Timber Grading Rules' or equivalent.

3.4 DURABILITY

To comply with NZBC requirements the external framing must be treated to a minimum H1.2 treatment. Refer to the NZBC Acceptable Solution B2/AS1 'Durability' for further information about the durability requirements.

For timber treatment and allowable moisture content information refer to NZS 3602 (Timber and Wood-Based Products for use in Buildings) and NZS 3640 (Chemical Preservation of Round and Sawn Timber) for minimum timber treatment selection and treatment requirements.

Also refer to framing manufacturer's literature for further guidance on timber selection.

Framing must be protected from moisture at sites in accordance with the recommendations of framing manufacturers.

Note: Refer to NZS 3602 for information about the allowable moisture content in timber.

3.5 FRAME CONSTRUCTION

The framing must fully support all sheet edges. The framing must be rigid and not rely on the cladding sheet for stability.

All timber framing sizes and set-out must comply with NZS 3604 and as specified in this specification. Use of timber framing must be in accordance with framing manufacturer's specifications.

3.5.1 DIRECT FIXED CONSTRUCTION

For direct fixed construction method the following framing is required:

- Studs provided at 600mm centres maximum and
- Nogs provided at 1200mm centres maximum.

3.5.2 CAVITY CONSTRUCTION METHOD

For cavity construction method the following framing is required:

- When studs are spaced at 600mm centres maximum then the nogs / dwangs must be provided at 800mm centres maximum.
- When studs are spaced at 400mm centres then the nogs / dwangs may be provided at 1200mm centres.
- An extra stud is required in internal corners.

3.6 TOLERANCES

In order to achieve an acceptable wall finish, it is imperative that framing is straight and true. Framing tolerances must comply with the requirements of NZS 3604. All framing shall be made flush.

3.7 CURVED WALLS

Monotek® sheet can be used in a curved application. Refer to James Hardie technical support for further information.

4 PREPARATION

4.1 BUILDING WRAP

Building wrap must be provided as per the requirements of the NZBC Acceptable Solution 'E2/AS1' 'External Moisture' and NZS 3604. The building wraps must comply with Table 23 of 'E2/AS1'. The building wraps must be fixed in accordance with 'E2/AS1', NZS 3604 and the wrap manufacturer's recommendations.

Walls which are not lined on the inside face e.g. garage walls or gable ends must include a rigid sheathing or an air barrier behind the cladding which complies with the requirements of NZBC Acceptable Solution 'E2/AS1'.

4.2 VENT STRIP

The James Hardie uPVC cavity vent strip must be installed at the bottom of all walls constructed using the drained and ventilated cavity construction method. It is important that the openings in the vent strip are kept clear and unobstructed to allow free drainage and ventilation of cavities. James Hardie uPVC vent strip has an opening area of 1000mm²/m length.

4.3 CAVITY BATTENS

Buildings with a risk score of 7-20 calculated in accordance with NZBC Acceptable Solution 'E2/AS1' Table 2, require Monotek® sheets to be installed on a cavity.

The cavity battens provide airspace between the frame and the sheet and are considered a 'packer' only in this specification.

The timber battens must be minimum H3.1 treated in accordance with NZS 3640 (Chemical preservation of rough and sawn timber) to comply with the durability requirements of B2/AS1.

Cavity battens must comply with following requirements

- be minimum 18mm thick.
- be minimum as wide as the width of studs.
- be fixed at 300mm centres when studs are at 600mm centres.
- be fixed by the cladding fixings to the main framing through the building wrap.
- until claddings are fixed the battens only need to be tacked to the framing.

(Note: Batten fixing is required temporarily to keep them straight on the wall during construction.)

No intermediate batten between studs is required:

- when studs are spaced at maximum 400mm centres and
- when rigid sheathings instead of building wraps are used.

(Note: 100 mm long cavity packers must be used where required to support fixings in this circumstance.)

Battens should be fixed with 40mm x 2.8 nails at 800mm centres maximum.

4.4 FLASHINGS

All wall openings, penetrations, intersections, connections, window sills, heads and jambs must be flashed prior to sheet installation. Please refer to moisture management requirements in Clause 2.5. The building wraps must be appropriately incorporated with penetration and junction flashings. Materials must be lapped in such a way that water tracks down to the exterior on the face of building wrap. James Hardie will assume no responsibility for water infiltration within the wall due to poor installation of flashing or building wrap. The selected flashing materials must comply with the durability requirements of table 20 of the NZBC Acceptable Solution 'E2/AS1'.

5 FIXING MONOTEK® SHEET

5.1 GENERAL

Monotek® sheets must be kept dry and under cover whilst in storage or during the installation. Framing moisture must not exceed a maximum of 24% prior to sheet installation. Every endeavour must be made to keep framing dry once sheet fixing commences. Site cut sheet edges must be sealed prior to installation. The site cut sheets edges around window / door openings and other penetrations, e.g. meter boxes etc. are also required to be sealed.

5.2 FASTENER DURABILITY

Fasteners must meet the minimum durability requirements of the NZ Building Code. NZS 3604 specifies the requirements for fixing material to be used in relation to the exposure conditions and are summarised in Table 2.

TABLE 2:

EXPOSURE CONDITIONS & NAIL SELECTION PRESCRIBED BY NZS 3604		
NAIL MATERIAL		
Sea Spray Zones *	Zone 1 outside sea spray zone and Zones 2 – 4 & Geothermal hot spots	Bracing – All zones
Grade 316 Stainless	Hot-dipped galvanised or 316 stainless	Grade 316 Stainless

** (Zone 1 areas where local knowledge dictates that increased durability is required, appropriate selection shall be made)*

Also refer to the NZBC Acceptable Solution 'E2/AS1' Table 20 and 21 for information regarding the selection of suitable fixing materials and their compatibility with other materials.

5.3 FASTENER - SIZE & LAYOUT

Monotek® sheets must be fixed to framing using the fixings as specified in Table 3 and in accordance with the following requirements:

- Nails must have a minimum clearance of 12 mm from sheet edges and a minimum of 75 mm vertically and 150 mm horizontally from sheet corners.
- The sheets must have a gap of 1-2mm at all flush finished joints.
- Nails must finish flush with the sheet surface.

TABLE 3:

SHEET FIXING	
DIRECT FIXED TO FRAME	
40 x 2.8mm HardiFlex® nails	Fix Sheet @150mm centres at all sheet edges as well as all intermediate framing.
CAVITY CONSTRUCTION	
60 x 3.15mm HardiFlex® nails	Fix sheet @ 200mm centres at all studs. Fix sheet @ 150mm centres at top plate and bottom plate.

Note: Special fixing arrangements are required for bracing and fire-resistance rated wall systems. For more information Ask James Hardie on 0800 808 868.

5.4 GUN NAILING

Monotek® sheets can be fixed using nail guns. The gun nails used must have a full round head to provide the required holding power. The length and gauge of nails must be a minimum as specified in this document. Check with nail gun manufacturer for more information.

Note: Do not use D Head nails. Do not use gun nailing for bracing applications.

5.5 SHEET LAYOUT

The framing layout must be checked to facilitate the construction of control joints prior to sheet installation.

- All sheet edges must be supported by the framing.
- All sheets must be fixed vertically.

6 JOINTING

6.1 GENERAL

The Monotek® sheets are supplied with 2 recessed edges. When the sheets are cut on site to suit the site requirements then the sheet edge cut on site must be recessed for flush jointing. The control joints are formed with square sheet edges.

6.2 FLUSH JOINTS

Monotek® sheets must have a gap of 1 – 2mm when joining them together for the flush joints.

- Monotek® sheets must be flush jointed with a proprietary flush jointing plaster system.
- Where a flush horizontal joint and a vertical control joint coincide on the wall, the vertical control joint must extend to full height of the wall.
- Flush joints must never be located on the corners of openings or at other high stress locations. Flush joint must be off set from the corners of opening by 200mm minimum.
- Flush joints must not be located along floor joists.
- In direct fixed applications a flashing tape, 50mm x 1.0mm Butyl or Polypropylene DPC must be used under the flush joint.

6.3 CONTROL JOINTS

Control joints are required as described in Table 4. Flush–finish joints are not control joints. Control joints are necessary to accommodate the minimal differential movement between framing and sheets due to normal cyclic changes in the environment.

TABLE 4:

CONTROL JOINTS	
VERTICAL	HORIZONTAL
5400mm centres max. & at all internal corners (standard detail is a control joint)	At all floor joist locations (Standard details are control joints) & 5400mm centres max. (Full height, continuous studs nogged at flush joint)

6.3.1 VERTICAL CONTROL JOINT

Vertical control joints must be provided at a maximum spacing of 5.4m from other control joints, the edge of the cladding, expansion joints or internal and external corners.
Vertical control joints may occur at the edge of window or door openings. Vertical control joints may be staggered across horizontal control joints.

6.3.2 HORIZONTAL CONTROL JOINT

At floor joist level, in addition to the movements outlined above, horizontal control joints are required to accommodate the movement resulting from timber joist shrinkage. Horizontal control joints must be provided at all solid timber floor joists. Elsewhere horizontal control joints are required at a maximum spacing of 5.4m where the studs are running full height.

6.4 EXPANSION JOINT

Expansion joints are provided to accommodate structural movement. They are generally only required for larger commercial buildings, and such buildings are outside the scope of this literature. Appropriate joint design shall be undertaken for the application.

6.5 OPENINGS

All openings in the cladding must be adequately flashed to prevent moisture ingress in to the wall. Horizontal and vertical flush joints must not be located along the sides of windows and doors. These must be located a minimum of 200mm from the corner of an opening or change in the height of the wall when required.

7 FINISHING

7.1 PREPARATION

Protective texture coating of Monotek® sheet is required in order to meet the durability requirements of the New Zealand Building Code. All sealants must demonstrate to meet the relevant requirements of the NZBC. The Monotek® sheets must be dry and free from dirt before jointing and texture coating. Monotek® sheets must be texture coated within 90 days of installation.

7.2 SEALANTS

All sealants must demonstrate to meet the relevant requirements of the NZBC. Application and use of sealants must comply with manufacturer's instructions and be compatible with texture coating. Check with sealant manufacturer prior to coating over sealants. Some sealant manufacturers do not recommend coating over their product.

7.3 JOINTING & TEXTURE COATING

The Light Reflectance Value (LRV) for coatings to be used with Monotek® sheet cladding must be minimum 40% or higher. Jointing and coating systems must comply with EM4 and meet the requirements of the NZBC Acceptable Solutions 'E2/AS1'.

8 STORAGE AND HANDLING

Monotek® sheets must be laid flat on a smooth level surface. Edges and corners must be protected from chipping.
To ensure optimum performance, store panels under cover and keep dry prior to fixing. If the sheets should become wet, allow to dry thoroughly before fixing.
Do not carry Monotek® sheets on the flat, carry in the vertical position to avoid excessive bending.

9 MAINTENANCE

It is the responsibility of the specifier to determine normal maintenance requirements to comply with NZBC Acceptable Solution B2/AS1. The extent and nature of maintenance will depend on the geographical location and exposure of the building. As a guide, it is recommended that basic normal maintenance tasks shall include but not be limited to:

- Washing down exterior surfaces every 6-12 months*
- Re-application of exterior protective finishes if necessary*
- Maintaining the exterior envelope and connections including joints, penetrations, flashings and sealants that may provide a means of moisture entry beyond the exterior cladding
- Cleaning out gutters, blocked pipes and overflows as required
- Pruning back vegetation that is close to or touching the building.

*Refer to your texture coating manufacturer for washing down and recoating requirements.

10 PRODUCT INFORMATION

10.1 MANUFACTURING & CLASSIFICATION

Monotek® sheets are a cellulose fibre reinforced cement building product. The basic composition is Portland cement, ground sand, cellulose fibre and water. The sheets are easily identified by the name 'Monotek®' or 'Monotek® 9mm' printed at regular intervals on the back face of sheet.
Monotek® sheets are manufactured to AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheets' (ISO 8336 'Fibre Cement Flat Sheets') in New Zealand. James Hardie New Zealand is an ISO 9001 'Telarc' certified manufacturer.
Monotek® sheets are classified Type A, Category 3 in accordance with AS/NZS 2908.2 'Cellulose-Cement Products'.
For Material Safety Data Sheets (MSDS) visit www.jameshardie.co.nz or Ask James Hardie on 0800 808 868.

10.2 PRODUCT MASS

Monotek® sheets are 7.5mm & 9mm thick and have a Mass of 10.7kg/m2 and 12.84kg/m² respectively at EMC.
Monotek® sheets are classified as a Light Weight Wall Cladding (not exceeding 30kg/m²) in accordance with NZS 3604.

10.3 SHEET SIZES

Available sizes of Monotek® sheets are specified in Table 5.

TABLE 5:

MONOTEK® SHEET SIZES - 7.5MM & 9MM	
TWO EDGES STEP RECESSED (2 LONG EDGES)	
Length (mm)	Width (mm)
2450	1200
2700	1200
3000	1200

10.4 PRODUCT TOLERANCES

Are specified in Table 6.

TABLE 6:

TOLERANCES	
Properties	At Equilibrium Condition
Approx. Moisture Content	3% - 5%
Width Tolerance	-2mm
Length Tolerance	+/- 2mm
Thickness Tolerance	-0.2/+0.4mm
Diagonal Difference	+/- 3mm

10.5 DURABILITY

Monotek® sheets, when installed and maintained as per the technical specification, will meet the durability requirements for claddings as required in the NZBC Approved Document B2 'Durability'.

10.5.1 RESISTANCE TO MOISTURE/ROTTING

Monotek® sheet demonstrates resistance to permanent moisture induced deterioration (rotting) by passing the following tests in accordance with AS/NZS2908.2:

- Water Permeability (Clause 8.2.2)
- Warm Water (Clause 8.2.4)
- Heat Rain (Clause 6.5)
- Soak Dry (Clause 8.2.5)

10.5.2 RESISTANCE TO FIRE

Monotek® sheet has the following Early Fire Hazard Indices (tested to AS 1530 Part 3).

TABLE 7:

EARLY FIRE HAZARD INDICES	
Ignition Index	0
Flame Spread Index	0
Heat Evolved Index	0
Smoke Developed Index	0 -1

11 SAFE WORKING PRACTICES

WARNING

DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA

James Hardie products contain respirable crystalline silica which is considered by some international authorities to be a cause of cancer from some occupational sources. Breathing excessive amounts of respirable silica dust can also cause a disabling and potentially fatal lung disease called silicosis, and has been linked with other diseases. Some studies suggest smoking may increase these risks. During installation or handling: (1) work in outdoor areas with ample ventilation; (2) minimise dust when cutting by using either 'Score and Snap' knife, fibre cement shears or, where not feasible, use a HardiBlade® Saw Blade and dust-reducing circular saw attached to a HEPA vacuum; (3) warn others in the immediate area to avoid breathing dust; (4) wear a properly-fitted, approved dust mask or respirator (e.g. P1 or P2) in accordance with applicable government regulations and manufacturer instructions to further limit respirable silica exposures. During clean-up, use HEPA vacuums or wet cleanup methods - never dry sweep. For further information, refer to our installation instructions and Material Safety Data Sheets available at www.jameshardie.co.nz. FAILURE TO ADHERE TO OUR WARNINGS, MATERIAL SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

JAMES HARDIE RECOMMENDED SAFE WORKING PRACTICES
CUTTING OUTDOORS
Position cutting station so that wind will blow dust away from user or others in working area. Use one of the following methods based on the required cutting rate: **BEST** ■ Score and snap ■ Hand guillotine ■ Fibreshear **GOOD** ■ Dust reducing circular saw equipped with HardiBlade® Saw Blade and HEPA vacuum extraction.
CUTTING INDOORS
■ Cut only using score and snap, hand guillotine or fibreshears (manual, electric or pneumatic). ■ Position cutting station in well-ventilated area
REBATING/DRILLING/OTHER MACHINING
When rebating, drilling or machining you should always wear a P1 or P2 dust mask and warn others in the immediate area.

JAMES HARDIE RECOMMENDED SAFE WORKING PRACTICES

1. For maximum protection (lowest respirable dust production), James Hardie recommends always using "Best"- level cutting methods where feasible
2. NEVER use a power saw indoors
3. NEVER use a circular saw blade that does not carry the HardiBlade® logo
4. NEVER dry sweep – Use wet suppression or HEPA Vacuum
5. NEVER use grinders
6. ALWAYS follow tool manufacturer's safety recommendations

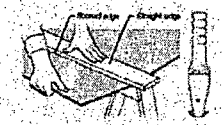
P1 or P2 respirators can be used in conjunction with above cutting practices to further reduce dust exposures. Additional exposure information is available at www.jameshardie.co.nz to help you determine the most appropriate cutting method for your job requirements. If concern still exists about exposure levels or you do not comply with the above practices, you should always consult a qualified industrial hygienist or contact James Hardie for further information.

WORKING INSTRUCTIONS

Refer to Recommended Safe Working Practices before starting any cutting or machining of product.

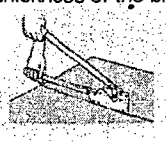
SCORE AND SNAP

Score and Snap is a fast and efficient method of cutting the product using James Hardie's special tungsten tipped Score and Snap knife. Preferably score on the face side of the product. Score against a straight edge and repeat the action to obtain adequate depth for clean break – normally 1/3 of sheet thickness. Snap upwards to achieve break. Smooth any rough edges with a rasp.



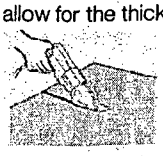
HAND GUILLOTINE

Make guillotine cut on the off-cut side of line to allow for the thickness of the blade.



FIBRESHEAR HEAVY DUTY

An electrically powered, fast, clean and effortless way of cutting James Hardie building products, especially around curves such as archways. Make Fibreshear cut on the "off-cut" side of the line to allow for the thickness of the shear.



HARDIBLADE® SAW BLADE

The HardiBlade® Saw Blade used with a dust-reducing saw is ideal for fast, clean cutting of James Hardie fibre cement products. A dust-reducing saw uses a dust deflector or a dust collector connected to a vacuum system. When sawing, clamp a straight-edge to the sheet as a guide and run the saw base plate along the straight edge when making the cut.

HOLE-FORMING

For smooth clean cut circular holes:
Mark the centre of the hole on the sheet.
Pre-drill a 'pilot' hole.
Using the pilot hole as a guide, cut the hole to the appropriate diameter with a hole saw fitted to a heavy duty electric drill.
For irregular holes:
Small rectangular or circular holes can be cut by drilling a series of small holes around the perimeter of the hole then tapping out the waste piece from the sheet face.
Tap carefully to avoid damage to sheets, ensuring that the sheet edges are properly supported.

STORAGE AND HANDLING

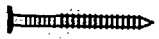
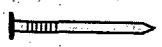
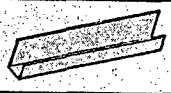
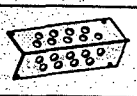
All James Hardie building products should be stored to avoid damage, with edges and corners of the sheets protected from chipping.
James Hardie building products must be installed in a dry state and be protected from rain during transport and storage. The product must be laid flat under cover on a smooth level surface clear of the ground to avoid exposure to water or moisture, etc.

QUALITY

James Hardie conducts stringent quality checks to ensure that any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure that the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

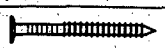
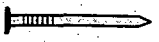
12 ACCESSORIES

ACCESSORIES SUPPLIED BY JAMES HARDIE FOR MONOTEK® SHEET

	ACCESSORY AND MATERIAL NUMBER		SIZE (MM)	MATERIAL / APPEARANCE
	Inseal 3259 1.5mm thick 50mm 80mm	 **300767** **300769**	 50 wide 80 wide	Black compressible foam
	HardiFlex® nail - Jar - 5kg	**302781** **302782**	60 x 3.15 ø	316 Stainless Steel
	HardiFlex® nail - Jar - 5kg	**302783** **302784**	60 x 3.15 ø	Hot Dip Galvanised
	HardiDrive Screw - self drilling & embedding timber screw 100 jar	 **300928**	 7g x 30mm	 316 Stainless Steel
	7.5mm Horizontal Flashing 9mm Horizontal Flashing	**302256** **302257**	3000 long 3000 long	uPVC/Bone colour uPVC/Bone colour
	Horizontal 180° Flashing Jointer	**301921**	100 long	uPVC/Bone colour
	Corner 90° Flashing Jointer	**301920**	50 x 50	uPVC/Bone colour
	Vent Strip	**302490**	3000 long	uPVC
	External Corner Mould 2400 2700 3000	**300667** **300668** **300669**	2400 long 2700 long 3000 long	uPVC
	Scoring Knife	**300914**		Tungsten Carbide
	Corner Underflashing	**303745**	3000 long	uPVC/Bone colour
	HardiBlade® Saw Blade	**300660**	4 tooth - 184mm	Diamond Tipped

ACCESSORIES NOT SUPPLIED BY JAMES HARDIE FOR MONOTEK® SHEET

James Hardie recommends the following products for use in conjunction with its Monotek® Sheet.
James Hardie does not supply these products. Please contact component manufacturer for information on their warranties and further information on their products.

	ACCESSORY AND MATERIAL NUMBER	SIZE (MM)	MATERIAL / APPEARANCE
	HardiFlex® nail	40 x 2.8 ø	316 Stainless Steel
	HardiFlex® nail	40 x 2.8 ø	Hot Dip Galvanised
	Flexible sealant or expandable foam	Tube	Fosroc, Holdfast or similar
	PEF rod	Polyethylene foam	Fosroc or similar
	Flashing tape	Proprietary tape to adhere to building wrap	Tyvek, Protecto wrap or similar
	Flashing to table 20 'E2/AS1'	Refer Figure 13	Flashing fabricator
	Inseal 3109 Sealing Strip	19 x 10	Black compressible foam

13 DETAILS

Various details outlined in the following table are available on Pages 11 to 41.

TABLE 7:

DETAILS

DESCRIPTION	DIRECT FIX	CAVITY CONSTRUCTION
Framing Setout	Figure 1	
Sheet Fixing Setout	Figure 2	Figure 19
Control Joint Setout	Figure 3	
Concrete Footing	Figure 4	Figure 20
Vertical Flush Joint Setout	Figure 5	Figure 21
Vertical Control Joint Setout	Figure 6	Figure 22
External Corner	Figures 7 & 8	Figures 23 & 24
Internal Corner	Figure 9	Figure 25
Soffit Detail	Figure 10	Figure 26
Window Sill	Figure 11	Figure 27
Window Head	Figure 12	Figure 28
Window Jamb	Figure 13	Figure 29
Horizontal Control Joint	Figure 14	Figure 31
'h' Mould Joiner & Corner	Figure 15	Figure 32
Base Detail on Treated Pile	Figure 16	
Framing and Batten Setout		Figure 17
Batten Fixing		Figure 18
Head Flashing Termination		Figure 30
One Piece Apron Flashing Joint		Figure 33
Enclosed Balustrade to Wall		Figures 34 & 44
One Piece Gutter/Wall Junction		Figure 35
Parapet Flashing		Figure 36
Deck Junction		Figure 37
Pipe Penetration		Figure 38
Meter Box at Head		Figure 39
Meter Box at Sill		Figure 40
Meter Box at Jamb		Figure 41
Enclosed Deck		Figure 42
Balustrade to Wall Junction		Figure 43
Drained Flashing Joint		Figure 45

14 WARRANTY

Monotek®
SHEET

PRODUCT WARRANTY
April 2006

WARRANTY: James Hardie New Zealand Limited ("James Hardie") warrants for a period of 15 years from the date of purchase that the Monotek® Sheet (the "Product"), will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting, fire and damage from termite attacks to the extent set out in James Hardie's relevant published literature current at the time of installation. James Hardie warrants for a period of 12 months from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials.

Nothing in this document shall exclude or modify any legal rights a customer may have under the Consumer Guarantees Act or otherwise which cannot be excluded or modified at law.

CONDITIONS OF WARRANTY: The warranty is strictly subject to the following conditions:

(a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation.

(b) This warranty is not transferable.

(c) The Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice.

(d) The project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code ("NZBC"), regulations and standards.

(e) The claimant's sole remedy for breach of warranty is (at James Hardie's option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product.

(f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces).

(g) All warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law.

(h) If meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

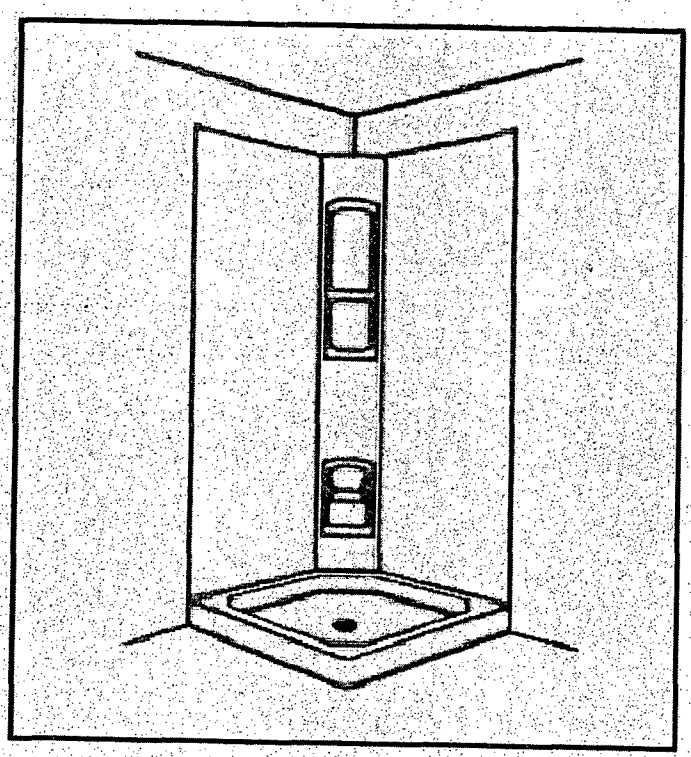
DISCLAIMER: The recommendations in James Hardie's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. Further, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (eg quality of workmanship and design) James Hardie shall not be liable for the recommendations in that literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards.

Ask James Hardie™
Call 0800 808 868
www.jameshardie.co.nz

James Hardie®

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 tilie application.

Dear Purchaser/Installer

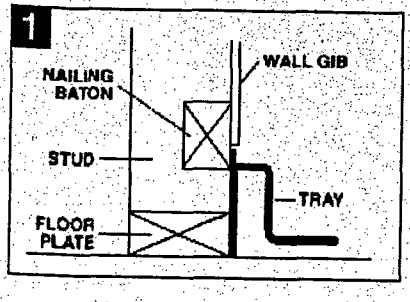
Thank you for purchasing a Clearlite Bathrooms product. We are proud to be 100% NZ owned and operated with over 30 years experience in the bathroomware industry. We hope you enjoy your Clearlite Bathroom experience.

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".

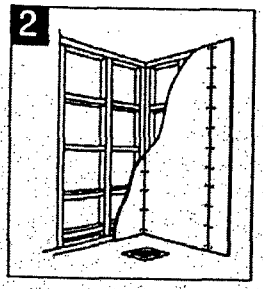
Please note that before wrapping this product it was cleaned and polished under bright lights.

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.

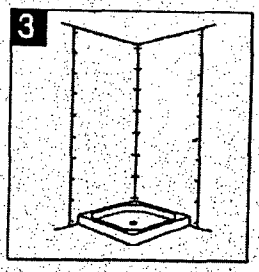
Important Note :- For ease of installation and best visual appearance you should ensure that the walls and floor are square, level and plumb.



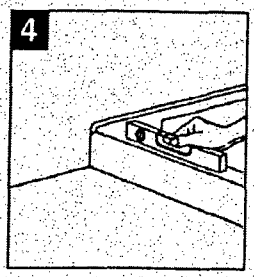
Please read the complete installation instructions before proceeding.



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.



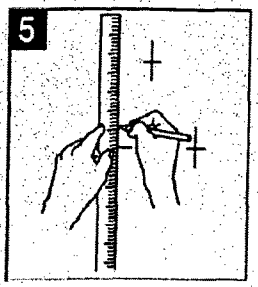
Place the shower tray into position, and mark around the tray. Cut away the gib 10mm above your pencil line and rebate the tray into the wall. Refer to diagram 1.
Note: Ensure walls are square and plumb and that the floor is level. If walls are not square, you may need to rebate the tray into the bottom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



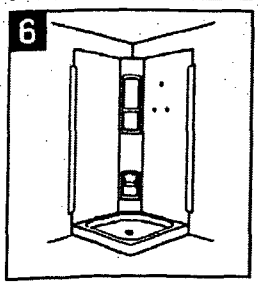
Place the tray into position and check that it is level and that the tray and floor waste holes line up. Remove tray, apply "no more nails" or similar product to PVC rings, and a bead of silicone along the bottom plate of the walls(this will prevent squeaking),place tray into position.

Warning

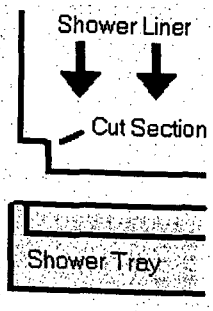
Warranty will be void if the base is not fully supported

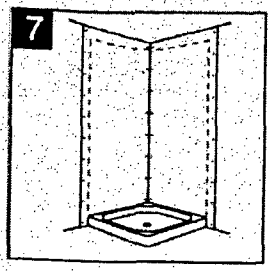


Have a plumber install the shower fittings, and then mark the position of the holes on the liner. Carefully drill holes in the liner for the shower fittings.
Refer to page 4 for drilling details.

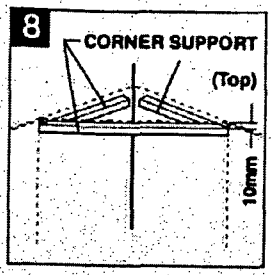


Trial fit the liner by taping it temporarily into position. If for any reason the liner requires cutting to the bottom corners (Pictured right) Use a fine tooth hacksaw and proceed with caution. Edges can be smoothed with a second cut file and medium fine sandpaper.

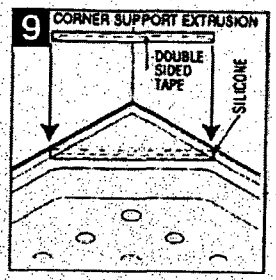




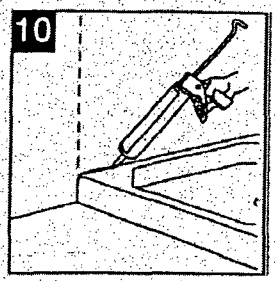
Mark around the liner before removing from wall.
Before gluing, ensure the gib surface is flat, clean and dry.
Any dust, protruding nails, loose paint or plaster will prevent the wall liner from adhering properly.



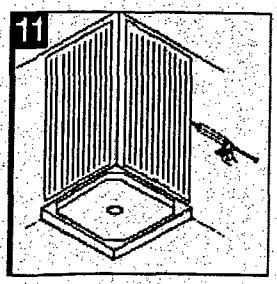
Steps 8 & 9 apply to **Millennium corner moulded liners only**.
Mark the wall where the liner cuts across the corner and fit top support extrusion strips (supplied with the liner) as shown in diagram 8. The diagonal strip should be fixed to the back of the liner. Once the liner is in position, fit and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



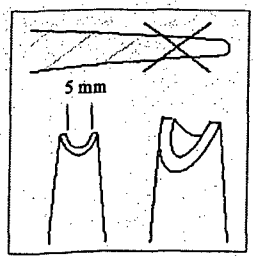
Before fitting the liner, ensure both surfaces to be bonded are clean, dry and grease free. Apply a bead of silicone sealant along the top of the shower trays upstand as illustrated on page 4. This includes the bottom corner support extrusion for Millennium corner moulded liners. (See over page for more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

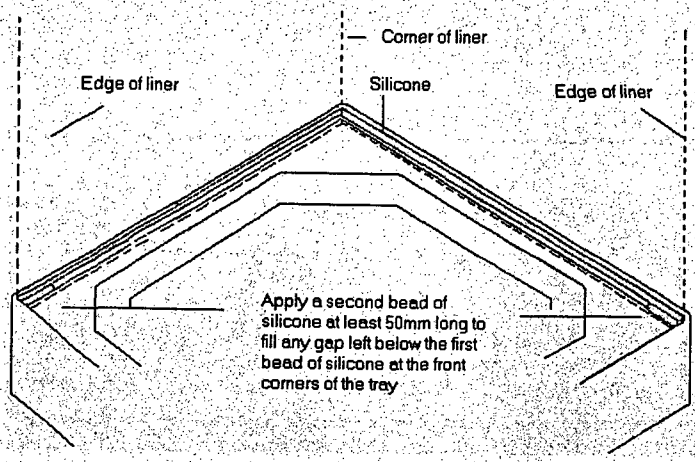


DETAIL APPLICATION OF SILICONE

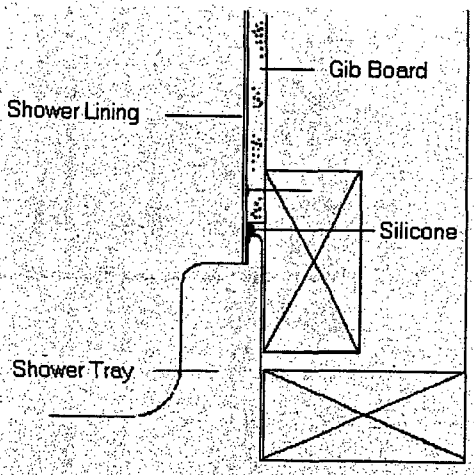
(Refer diagram 10 from page 3)

Note: No silicone should be visible inside shower.

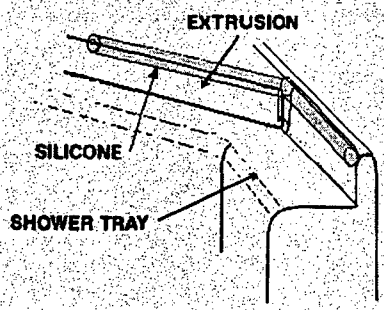
Silicone Application



Recessed Tray

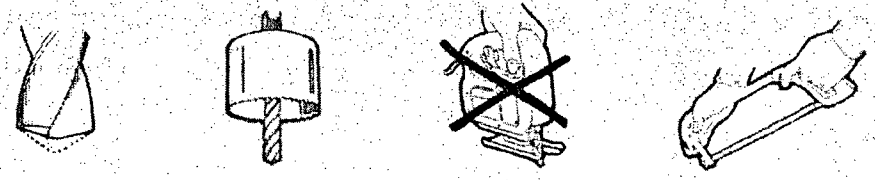


Corner Support Extrusion Millennium Corner Moulded



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
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CLEARLITE Bathrooms

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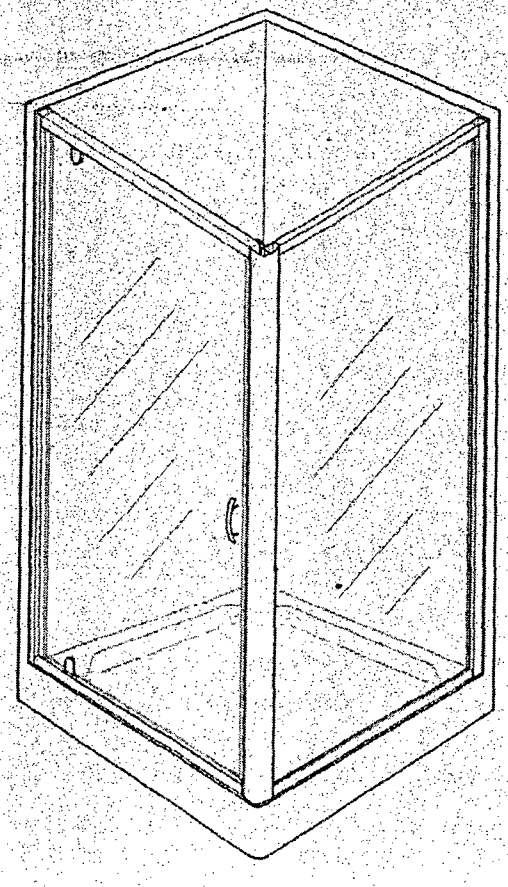
Issue Date:- Aug 06

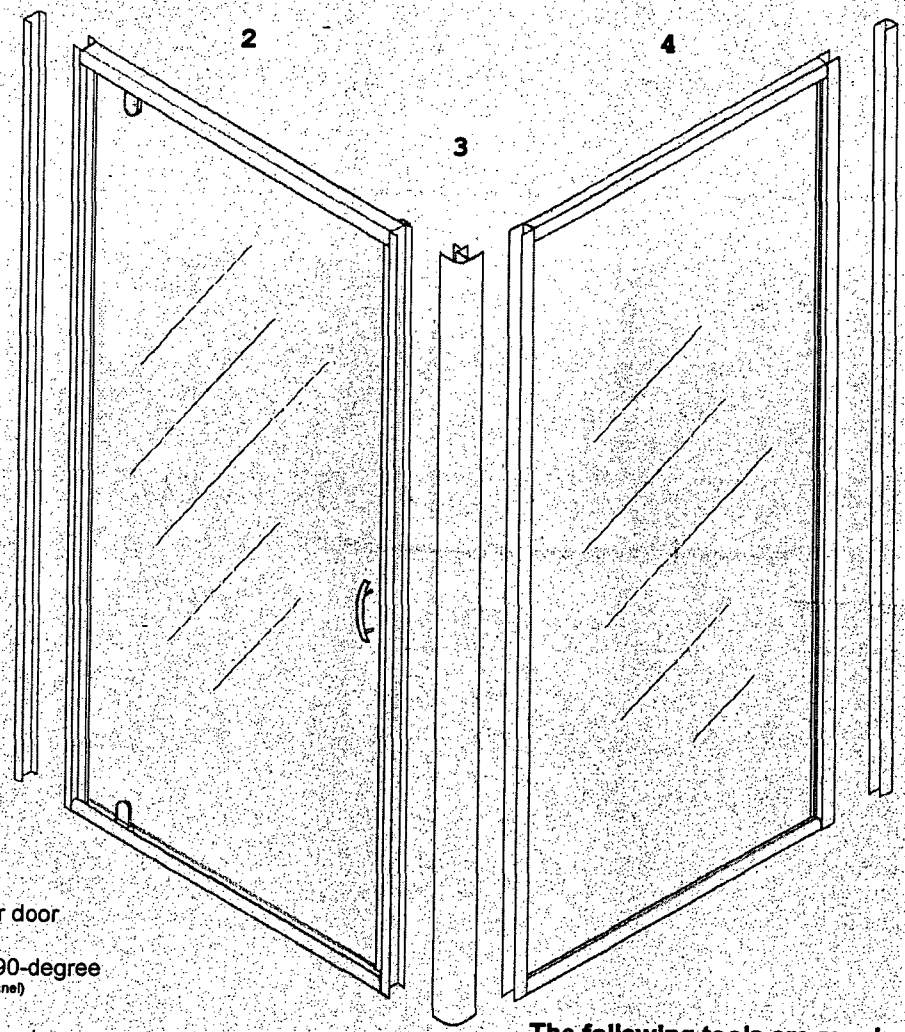
Installation Instructions



Door & Return

Note:
Please read these instructions carefully.

Door & Return
Component View



Components:

1. Wall receiver for door
2. Door
3. Corner section 90-degree
   (attached to return panel)
4. Return panel
5. Wall receiver for return
6. Cover trim (not shown)

Installation kit, which contains:

- 6 gauge x 38mm stainless steel screws (6) (Use 3.0mm drill)
- 6 gauge x 10mm stainless steel screws (15) (Use 3.0mm drill)
- Screw cover caps (15)
- Clamp block covers (2 plus 2 fitted to door)
- Chrome handle set (Luxury Only)
- Plastic drip strip

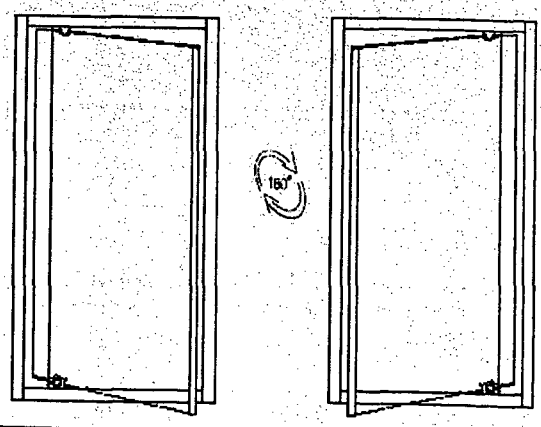
Note:

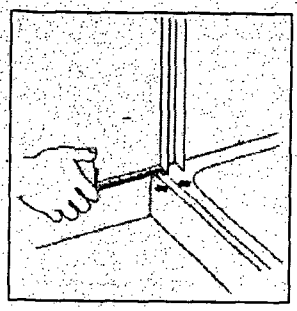
Your shower door can be installed to open from the left hand or right hand side by rotating the door 180 degrees, and the return panel can be fitted on either side. You must decide which way the door is to open before starting the installation.

For your safety, the door is designed to open to 90 degrees do not force it to open past this point.

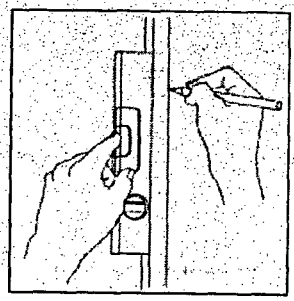
The following tools are required:

- Drill
- Spirit level
- Tape measure
- Silicone gun
- Masking tape
- Pencil
- Screwdriver (#1 square drive)
- Cleaning cloth
- Silicone sealant (supplied with liner)
- 3.0mm & 4.5mm drill bits

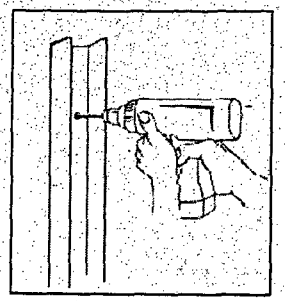




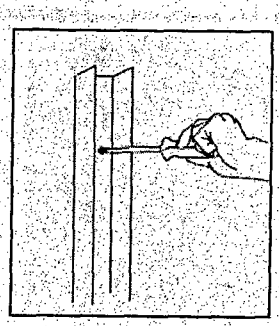
1) For Sureseal trays position wall receiver hard against the inside edge of the upstand of the tray.
For other trays you will need to set the doors parallel to the front edge of the tray.



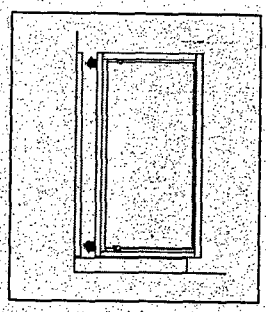
2) Mark 2 vertical lines up the shower wall receiver, using your spirit level to ensure that the wall receivers are plumb.



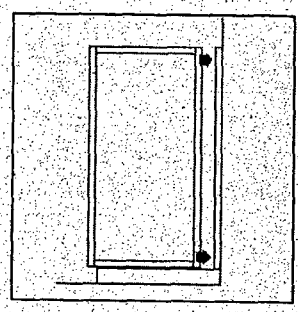
3) Pre drill three equally spaced clearance holes (i.e. top, bottom and centre) in your door & return wall receivers using 4.5mm drill bit. Reposition the wall receivers onto the wall. Drill into the wall through the clearance holes using the 3.0mm drill bit.
N.B. The holes preferably locate into a stud or nog. As an alternative, a toggler system can also be used.



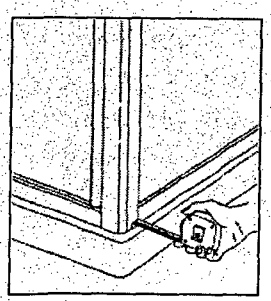
4) Fix the wall receivers to the walls using the 6 gauge x 38mm stainless steel screws provided.
NB As an extra precaution you can seal holes with silicone.



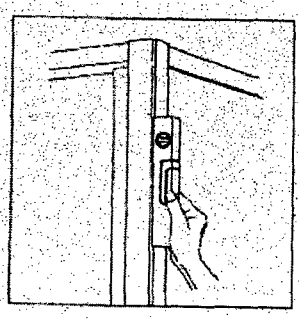
5) Lift the door onto the shower step and slide it into the wall receiver ensuring that the door opens out from the shower enclosure.



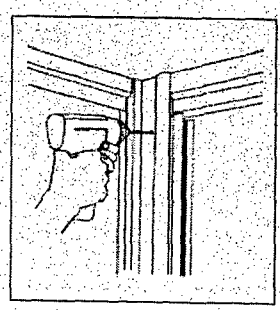
6) Position the return panel into the wall receiver ensuring the corner post engages over the door section, but do not fix in place at this time.



7) For Sureseal trays the door and return corner section should be hard against the inside edge of the upstand of the tray.
For other applications, check that the doors are parallel with the front edge of the tray.

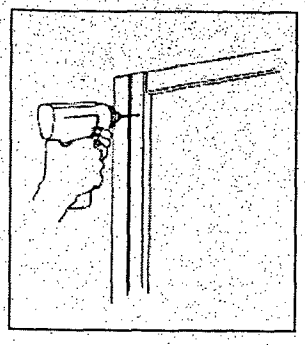


8) Ensure that each section is square to the shower base and plumb.
This is the most important part of the installation. Mark the plumb positions with your pencil.

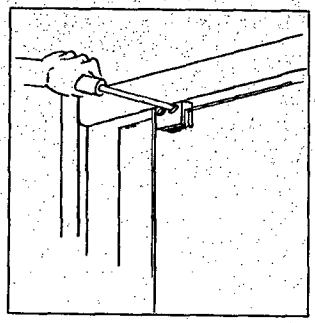


9) Using the 3.0mm drill bit, drill through the corner section and into the aluminium frame. (Use the "V" line as a guide)
Ensure that the return panel and door do not shift. Fix in place using the 6 gauge x 10mm screws. Cover screw head with cover caps provided.

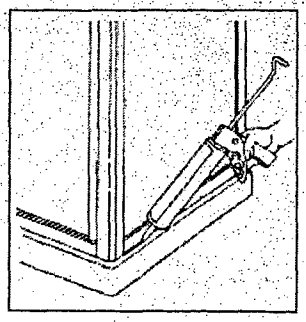
All fixing screws should be fitted from inside the shower



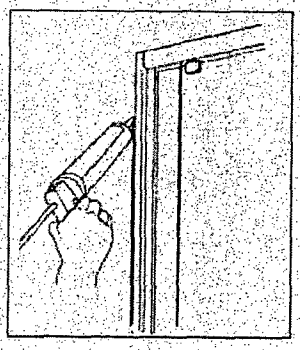
10) Now fix the panel and door to the wall channels. Using a 3.0mm bit, drill through the vertical section on the inside of the door and return, into the wall receivers. (The wall receivers are already fixed to the wall: Step 4). You must have a minimum of 10mm overlay and the holes must be drilled no more than 5mm from the edge of the vertical aluminium sections.
Fix in place using the 6 gauge x 10mm screws. Cover screw head with cover caps provided.



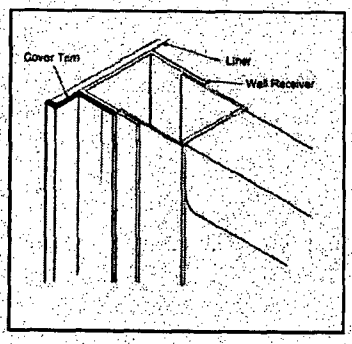
11) Using a screwdriver, adjust the door as required, by loosening the screws on each pivot block.
Once the door is adjusted ensure the screws are retightened. Cover the screws with the clamp block covers provided.
Note Now trim and fit the plastic water deflector along the bottom edge of the door before completing door adjustments.



12) Test the operation of your door and make a final check that everything is square and plumb. The door and return can now be sealed in place using silicone sealant. Seal between the tray upstand and your door set along the bottom outside edges Ensure all surfaces are cleaned first with dry clean cloth.
Note MASKING the area to be sealed will give you a better finish
DO NOT seal along the inside edge of your door set.



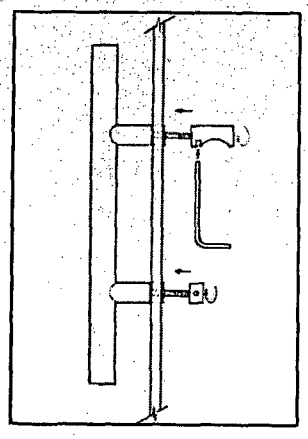
13) Seal the vertical edges of the door and liner. Ensure all surfaces are cleaned first with dry clean cloth.
Note MASKING the area to be sealed will give you a better finish
DO NOT seal along the inside edge of your door set.



14) The cover trim is provided to cover the vertical exposed edge of the wall liner and will need to be trimmed to the required length.
The trim is to be fitted after the shower installation is completed, it can be fitted in two ways

1) Embedded in the vertical bead of silicone or,
2) Fixed in place using the screws and cover caps provided

If your liner extends more than 10mm it will need to be trimmed prior to fitting the cover trim



Chrome Handle Model Only

Fitting Chrome handles can be done at any time. First take note of how they are pre-assembled.
Note the nylon washers must go between the handles and the glass on both sides of the door.
Fit the handle with the connecting rods through the holes from the front of glass door ensuring you have nylon washers between the handle and the glass. Repeat on the other side with the washers between the glass and the knobs. Tighten the knobs firmly onto washers with the allen key provided but don't over tighten.

Issue Date:- August 06

PinkBatts®
PINKFIT®

REGISTERED INSTALLERS OF
PINK® BATTS® INSULATION

Home Insulation Installation Guarantee

for new homes insulated in walls and/or ceilings

This is to certify that

this home has been insulated in the walls and/or ceilings with Pink®Batts® insulation by a Tasman Insulation approved Pink®Batts® installer. Pink®Batts® when properly installed satisfies the requirements of the Australian/New Zealand Standard 4859.1 and the durability requirement of the New Zealand Building Code B2.3.1(a). The PinkFit® installer guarantees that the Pink®Batts® have been properly installed. This guarantee is transferable to any subsequent owners of the home.

Signed..... M.A. ..... Date 14.12.07

Pink® Batts® Installer..... PinkFit Waikato .....

Registration Details:

Compliance Number: 28418

Builder Details:
GOLDEN HOMES

Site Details:
ANTRUM RESIDENTS
LOT 258 MERCURY COURT
HORSHAM ESTATE, HAMILTON

Date Printed: 14-Dec-2007
Install Date: 10-Dec-2007
Completion 10-Dec-2007

Product Details
Pink®Batts®Ceiling R2.6
Pink®Batts®Silencer®100mm
Pink®Batts®Wall R2.2

LES BOULTON
& ASSOCIATES LIMITED
MATERIALS AND CORROSION CONSULTANTS

Suite 2, 266 Onewa Road
Birkenhead Auckland
New Zealand
PB 101-261
North Shore Mail Centre
Telephone 09 419 8451
Facsimile 09 419 8492

11 January 2001

Gang-Nail Group Ltd
Lumberlok-Bowmac Division
PO Box 58-014
Greenmount
AUCKLAND

Attention: Mr T. Castledine

LBA Ref: 01372

Dear Mr Castledine

Corrosion of BOWMAC Hot-Dip Galvanized Steel Structural Connectors in Treated Timber

Further to your request, Les Boulton & Associates Ltd (LBA) has carried out an evaluation of the effect of contact between hot-dip galvanized steel BOWMAC structural building connectors and preservative-treated timbers, on corrosion of the metal fixings.

The BOWMAC Range of timber connectors is constructed from 5mm thick carbon steel protected against corrosion with a heavy-duty hot-dip galvanized coating. The hot-dip galvanized coating mass on the timber fixings is typically more than 600 g/m^2 zinc. The hot-dip galvanized (HDG) coating is applied to the steel fixings according to AS/NZS 4680 (1999): *Hot-dipped galvanized (zinc) coatings on fabricated ferrous articles*[1].

It has been determined that HDG steel BOWMAC timber connectors should easily meet the durability requirement of the NZ Building Code (Clause B2; 50 years), when the fixings are exposed to atmospheres classified as *Environmental Zones 1,2,3 and 4* (NZS 3604: 1999), but not including geothermal hot spots, and sea shore locations.

An issue which remains to be addressed is whether the BOWMAC range of HDG steel timber connectors will provide the required 50 years' service life, when used to connect preservative-treated timber building components in exposed or sheltered environments (Environmental Zones 1,2,3 and 4).

Two water-borne, pressure-applied, chemical timber treatments commonly used in New Zealand, are identified as follows:

[1] Report 00330: *Evaluation of Bracket Durability; NZS 3604*, L.H.Boulton, LBA, August 2000.

- ***CCA***: *Copper-Chrome-Arsenate* pressure-applied timber treatment;
- ***ACQ***: *Alkaline-Copper-Quaternary* pressure-applied timber treatment.

Preservatives based upon *copper salts*, such as employed in the CCA and ACQ chemical treatments, are commonly used in the building industry and have been the subject of many corrosion studies in the past twenty years[2]. Corrosion of the metallic fixing can occur when fasteners and/or brackets are embedded into timber, which has been freshly treated with chemical salts, and then used while the timber is still wet.

The universally accepted explanation for the corrosion of metal fixings (including HDG steel), in contact with treated timber containing copper salts, is that if timber-metal contact is made in the period before the copper ions (Cu^{2+}) become *fixed* to cellulose in the wood, then there exists a possibility that copper may be deposited onto the metal surface and conditions are created in which ***galvanic corrosion*** can occur on the metal substrate, at some time in the life of the timber structure.

The most significant attribute of CCA (and ACQ) treated timber – as far as corrosion of connectors is concerned – is that treatment allows an extension of the timber use in wet or damp conditions, where, without treatment the wood would be at risk from fungal attack. Water is an essential requirement for electrochemical corrosion processes and electrochemical corrosion reactions will virtually cease when the moisture content of the wood is below about 18%. Thus, there exists a contradiction, between the need to apply preservation chemicals for beneficial fungicidal properties, and the likelihood that the adsorbed chemicals may cause premature corrosion of connectors embedded in the timber.

Over the past twenty five years, experience using HDG connectors in pole house construction and in other structural timber applications, has shown that some straightforward guidelines to avoid connector corrosion problems work effectively.

The guidelines that have evolved for avoiding corrosion of metal connectors (including HDG steel) in treated timber, are as follows:

1. The moisture content of the timber should be as low as possible (less than 20%). For example, to minimise the risk of metal connector corrosion, fixings should be located at least 600mm above the ground in CCA-treated timber piles to avoid any upward *wicking effect* of ground water inside the treated timber piles. *Wicking* of moisture inside timber piles increases the wood moisture content and thus increases the corrosion risk for fixings.

2. Recognising that if moist conditions exist, preservatives used in the timber may introduce possible corrosion problems and necessitate the use of more corrosion-resistant fastener materials, or, taking extra corrosion protection measures on metal

[2] *Corrosion of Metal Fasteners Embedded in Timber*, J.R.Duncan, BRANZ, 1987.

connectors (e.g., applying grease to the metal, or using a heavy HDG coating on steel).

3. It is not good practice to employ recently treated timber (CCA or ACQ), because any *unfixed copper salts* which are mobile inside the wood pore structure, may initiate galvanic corrosion on metal fasteners in contact with wet timber. Allowing a *fixation period* of 2-3 weeks (the *curing time*) will lessen the likelihood of any galvanic corrosion occurring on metal connectors.

Once the timber has dried (*cured*) the chemical preservatives become *fixed* and the performance of HDG steel timber connectors in contact with the wood should be excellent, even when the timber is again wetted[3].

In addition, ACQ has the unique property that it is water-repellant, due to a proprietary chemical process. The ACQ *Product Information Sheet* produced by the USA-based owners of *Preserve*® (ACQ), Chemical Specialties Inc. (CSI), is attached to the report[4], (*Appendix 1*)

The ACQ *Product Information Sheet* states that depending upon the quality of the zinc coating on steel connectors, testing and research carried out at CSI in the USA showed that HDG zinc coatings on fasteners in contact with ACQ-treated wood does not give rise to a corrosion problem. An appropriate curing time for copper-fixation after ACQ treatment of timber (2-3 weeks) should ensure acceptable corrosion performance of the HDG coating on steel timber connectors, as it does for CCA-treated timber.

Furthermore, research carried out in the Canada, relating CCA wood fixation to the leaching of CCA components (copper, chromium and arsenic) from treated timber, has shown that the leachate concentrations after short exposure to a misting water spray (simulating wetting of the wood) decrease rapidly with increased degree of fixation[5]. Thus, the leaching rate of copper (and arsenic) from CCA preservatised timber drops dramatically as metal ion fixation proceeds.

Based upon this important leaching result from CCA-treated wood, the *galvanic corrosion risk* for embedded metal connectors in CCA (or ACQ) treated timber must diminish rapidly, if proper fixation practices are followed, post-chemical treatment.

Based upon this evaluation and a review of the various issues involved in premature galvanic corrosion of HDG steel fixings in contact with treated timber (CCA and ACQ), it is our considered opinion that premature corrosion of metal fixings is not a serious issue for HDG steel timber connectors. Following the standard industry practice for

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[3] *After-Fabrication Hot-Dip Galvanizing; Introduction to AS/NZS 4680,* Galvanizers Association of Australia, 1999, p.22.

[4] *Use of Metals in Contact with Preserve® Treated Wood,* Chemical Specialties Inc., USA, 1999.

[5] *Relating CCA Fixation to Leaching of CCA Components from Treated Products,* P.A.Cooper, et al, Paper No.IRG/WP 95-50045, University of Toronto, Canada, 1995, (source: Forest Research Institute, Rotorua, NZ).

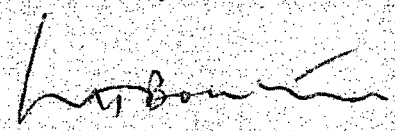
curing of treated timber (fixation time of about 2-3 weeks) will ensure that HDG steel timber connector corrosion problems do not arise in CCA or ACQ-treated timber.

Appropriate heavy duty HDG zinc coating masses on the steel connectors, and employing the correct installation practice for the connectors through timber components, will help ensure that metal fastener corrosion does not occur.

If the appropriate Standards for manufacture and installation of HDG connectors in CCA or ACQ-treated timber are followed, it is our opinion that the BOWMAC range of HDG steel fixings will provide 50 years service life in sheltered and exposed environments.

Please do not hesitate to contact the writer if you have any queries, or if you require further information regarding this evaluation.

Yours faithfully



L. H. Boulton, MSc, FICorr, FNZIC,
ACA Corrosion Technologist, NACE Corrosion Specialist

Principal Consultant
Les Boulton & Associates Ltd

Attachment: ***Appendix 1 (ACQ Product Information Sheet)***

LES BOULTON
& ASSOCIATES LIMITED
MATERIALS AND CORROSION CONSULTANTS
Suite 2, 266 Onewa Road
Birkenhead Auckland
New Zealand
PB 101-261
North Shore Mail Centre
Telephone 09 419 8451
Facsimile 09 419 8492

9 August 2000

Gang-Nail Group Ltd
PO Box 58-014
Greenmount
AUCKLAND

Attention: Mr T. Castledine
Manager, Lumberlok/Bowmac Division

LBA Ref: 00330

Dear Sir

Evaluation of New Durability Table 4.1; NZS 3604(1999)

1. Introduction

Les Boulton & Associates Ltd (LBA) has carried out an evaluation of the recently issued year 2000 version of Table 4.1, NZS 3604(1999), "*Steel items such as bolts, brackets and plates used to connect timber members and requiring a 50-year durability (excluding nails and screws)*", as requested by Gang-Nail Group Ltd (*Appendix 1*).

Gang-Nail Group, Bowmac Division, requested an opinion on whether the new version of Table 4.1, promoted by BRANZ (*Appendix 2*), which recommends that **galvanized steel plus protection** be employed in **exposed environments, Zones 1,2,3 and 4**, (open to airborne salts and rain wetting), is fair, reasonable and practical. In the NZS 3604 1999 version of Table 4.1, **galvanised connectors without extra protection** (viz., 100 micron epoxy powder coating, or a high-build epoxy coating), were acceptable in **exposed environments, Zones 1,2,3 and 4** (*Appendix 3*).

The *Bowmac* range of structural brackets, manufactured by Gang-Nail Group, typically represented by a connector such as item B138 in the Bowmac brackets catalogue (*Appendix 4*), falls into this latter category. Bowmac structural building connectors have a minimum hot-dip galvanised coating mass of 500 g/m^2 of zinc for steel 3-6mm thick.

It was considered by Gang-Nail Group that this heavy hot-dip galvanized (HDG) zinc coating mass would comfortably provide a durability in exposed environments (Zones 1,2,3 and 4) of 50 years. For this reason, Gang-Nail Group issued (October 1999) a *Durability Flow Chart* (which was screened for accuracy by *LBA* before Public Issue), which encapsulated the durability requirements of Table 4.1, NZS 3604 (1999). The Gang-Nail Group *Durability Flow Chart* (*Appendix 5*) has been very well received by the Building Industry, Territorial Authorities, and other interested parties, as being an accurate document (re-NZS 3604; Table 4.1), and an excellent guide for users of structural building connectors (*Appendix 3*).

The recent version of Table 4.1, which was issued to the NZ Public at BRANZ workshops conducted throughout New Zealand in 2000 (*Appendix 2*), would no longer permit the use of some Bowmac options of structural HDG building connectors, if implemented, because the Bowmac range does not have an extra (very expensive) epoxy coating over the existing thick HDG coating (i.e., "plus protection" in Table 4.1, *Appendix 2*).

2. Zinc Coating Mass Determination on *Bowmac* Brackets

To determine the actual coating mass of HDG zinc on a typical *Bowmac* B138 structural galvanized steel bracket and on a typical B38 galvanized steel plate, two randomly selected *Bowmac* brackets were submitted to *Optimech Services* (Dr Jonathon Smith, BMet, PhD), for coating mass determination to AS/NZS 4680 (1999), *Hot-dipped galvanized (zinc) coatings on fabricated ferrous articles.*

The test method chosen for the evaluation was *gravimetric.* The analyst's report is attached as *Appendix 6.* The zinc coating mass results on the galvanized brackets obtained by *Optimech Services* are summarised in *Table 1.*

Table 1
Zinc Coating Mass (g/m^2) on HDG Bracket

Sample	Coating Mass g/m^2	Coating Thickness micron	Complies with AS/NZS4680
B38	982	137	Yes
B138	1029	144	Yes

It is apparent from the results in *Table 1* that the two typical Bowmac HDG brackets, which were tested, have approximately 1000 g/m^2 of zinc on the 5mm thick steel sections. The zinc coating mass requirement for 3-6mm carbon steel is 500 g/m^2 (AS/NZS 4650:1999). The *Bowmac* HDG brackets have a zinc coating mass of about twice the minimum requirement in the AS/NZS Standard. The owner of the *Bowmac* structural HDG brackets is provided (at no extra cost) with twice the zinc coating weight than is normally required for 5mm thick steel, for atmospheric corrosion protection.

It is expected that a zinc coating mass of approximately 1000 g/m^2 on structural steel brackets would comfortably provide a 50-year durability for exposed service in Zones 1,2,3 and 4.

3. Expected Life of HDG Coatings in Atmospheric Environments in New Zealand

Over the past twenty years there has been much research carried out in many countries around the World to determine the durability (and life expectancy) of galvanized zinc coatings on ferrous articles in atmospheric environments. Several research programmes have been carried out in New Zealand in this field, by BRANZ and by a private organisation. The final results of the studies in New Zealand have not been reported in

the open (refereed) scientific literature, until recently. Consequently, in the past there has been considerable debate over the interpretation of the available atmospheric corrosion rate data for common engineering materials that exists in New Zealand.

However, the results of a 10-year publicly-funded study of corrosion rates of galvanized steel in NZ have recently been presented by BRANZ, in a paper at the 14th International Congress on Corrosion[1].

The following are *quotations* of some key points (*verbatim*) from this BRANZ-prepared paper, regarding the corrosion rates of zinc (galvanized steel) in New Zealand environments:

(1) *"The test site at Judgeford (i.e., at BRANZ) was purposely established as a multiple sample exposure test site and recorded the corrosion rate results of* ***2.49 g/m²/year*** *with a range of 0.3 g/m²/year for galvanised steel".*

(2) *"Based on the International Organisation for Standardisation* ***(ISO 9223)****, which predicts corrosion rate classes for various materials including zinc, based on meteorological and pollution factors, the* ***"C2 Low"*** *classification is for zinc (galvanized steel) values in the range of* ***0.7 g/m²/year to 5 g/m²/year."***

(3) *"In New Zealand, the corrosion rate for zinc is generally in the* ***ISO 9223 "C2"*** *category for up to 100 km from the coastline, and substantially higher at geothermal and coastal areas".*

Based upon these now published galvanized steel (zinc) corrosion rate results in New Zealand, it can be deduced that any galvanized steel zinc coating (e.g., HDG structural building brackets) with a zinc coating mass in excess of approximately 125 g/m²/year will have a zinc coating durability of 50 years. This does not apply necessarily to special areas in New Zealand where it is already well known that zinc corrosion rates are higher (e.g., geothermal zones, and sea shore zones).

Furthermore, this corrosion rate only applies to the zinc coating on the HDG steel. It does not take into account the considerable corrosion resistance of the iron-zinc (Fe-Zn) alloy layers present at the *metallurgical bond* between the zinc and HDG steel. Nor does it allow for the residual structural integrity due to the thick carbon steel members themselves. It is known for example, that the typical corrosion rate of carbon steel in a severe marine environment is only about 0.1 mm/year. It would take many more years exposure in a corrosive atmosphere in order to destroy the structural integrity of a heavy duty steel member, which is 5mm thick.

Based upon the known corrosion rate data for galvanized steel (zinc and carbon steel), LBA has no hesitation in estimating the life expectancy of an unpainted 5mm thick hot-dip galvanized steel *Bowmac* structural bracket, exposed to an *ISO C2 environment* in

[1] *Environmental Corrosivity in New Zealand: Results after 10 Years Exposure*; by P.W.Haberecht (BRANZ) et al, Proceedings of the 14 ICC, Capetown, South Africa, October, 1999.

New Zealand, at over 100 years' service. This applies to exposed locations, where the connectors are *open to airborne salts and to rain wetting*. The estimated service life of 100 years for the galvanized steel structural brackets would not necessarily apply to applications in sheltered areas, where corrosion rates may be higher and less predictable. In sheltered locations it is still probable that the HDG brackets will give a durability of at least 50 years.

4. Galvanized Steel *Plus Protection*

Kerry Dalzell & Associates Ltd (Mr K. Dalzell, MSc, FTSC, FNZIC, MRSNZ, ACA-CIC; Protective Coatings Consultant), was requested to address the following question, which arises from the requirement of the *new Table 4.1* to make connectors out of "*galvanized steel plus protection*".

*"Is there any substance to the claim made or implied by other parties, arising from a modification to Table 4.1 of NZS 3604, subsequent to publication of the Standard, for publicity purposes, that for exposed items, **'galvanized steel plus protection'** is superior to **'galvanizing'** alone".*

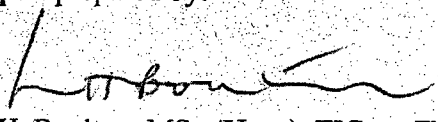
KDA's report is attached to the report as *Appendix 7*. The ***Conclusion*** reached by KDA was: "on the basis of your briefing, perusal of the documentation, and sighting of the items under discussion, the answer to the question is **no**".

5. Conclusions

There is no evidence available in the corrosion engineering field to support the claim in the new proposed version of Table 4.1 of NZS 3604(1999) that it is necessary to use "galvanized steel plus protection" (*meaning galvanized steel with an additional epoxy coating*) to ensure that hot-dip galvanized steel building brackets will give 50-year durability in an *exposed environment*.

It is probable that hot-dip galvanized steel brackets which have a coating mass defined as in AS/NZS 4650 (1999) will provide a 50-year service life in an *exposed* and in a *sheltered* environment.

Report prepared by:



L. H. Boulton, MSc (Hons), FICorr, FNZIC,
ACA Corrosion Technologist, NACE Corrosion Specialist

Principal Consultant
Les Boulton & Associates Ltd

Attachments: *Appendices 1-7*

the DESIGNER
ARCHITECTURAL DESIGNERS
P.O. Box 11081
Palm Beach
PAPAMOA
Ph 572 3389 fax. 572 3390

24 April 2007

Re: Golden Home Jobs Bracing Calculations

To whom it may concern,

For Golden Homes bracing calculations we use the H-Brace software program which calculates the bracing in accordance with NZS.3604.1999.
The figures are derived by the program, which actually interpolates Table 5.6 of NZS.3604.1999.

For example :

Table 5.6 stipulates 64 BU's/M for 2m roof height and 78 BU's/M for 3m roof height, therefore where we have a roof height of 2.1m we require 65.4 BU's/M.
((78-64)/10)+64.
So for a building length of 20.0m we have 20.0x65.4 = 1308BU's.

Obviously all this process is done "behind the scenes" within the program.

The bracing schedule provided includes, Wind zone, Earthquake zone, Building length / width, Floor area, Roof Cladding weight, Wall cladding weight, Roof pitch, Roof height to apex, and Roof height above eaves.
Therefore I can assure you that if these items are noted correctly on the schedule, the total BU's required will also be correct.

With drawing over 1000 homes per year for Golden Homes the H-Brace program is a very accurate and efficient part of the draughting process for us, and is widely accepted throughout the country by all Territorial Authorities.

I hope that this explanation can eliminate any further issues in regards to the bracing calculations.
Please do not hesitate to contact me if you have any further queries or would like to discuss the information above.

Thank you

Jeremy Moloney

HBrace 4.0: Bracing Design to NZS 3604:1999

PROJECT DETAILS

Project Name:	***Antram Residence***		
Street Address:	***Lot 258***		
City/Town:	***Hamilton***	Job Number:	***6601***
Legal Description:	***Lot 258, DP 356028***		
Read with:	***Sheet 7***		

WIND ZONE - High Wind Zone

(Wind Zone was supplied by the Local Authority.)

EARTHQUAKE ZONE

Earthquake Zone (from NZS 3604 map): ***B***

BUILDING DETAILS

Number of Levels:	***Single Storey structure (Concrete Ground Floor).***		
Dimensions:	Ground Floor: ***23.2 x 11.4m***		
Floor Areas:	Ground Floor: ***202.3m²***		
Typical Stud Height:	***2.4m***	Height to Roof Apex:	***4.8m***
Roof Pitch:	***0-25°***	Roof Height Above Eaves:	***2.4m***
Roof Cladding:	***Heavy***	Wall Cladding:	***Heavy***

WALL BRACING - Ground Floor - Along

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
A	232	1	SP2C	1.2m	2.4m	90	108	**105**	**126**
		2	SP2C	0.9m	2.4m	90	81	**105**	**94**
		3	SP2C	0.9m	2.4m	90	81	**105**	**94**
B	70	1	SP2C	0.6m	2.4m	90	54	**105**	**63**
		2	GS1a1.8	3.0m	2.4m	65	195	**55**	**165**
		3	GS22.4	3.0m	2.4m	90	270	**80**	**240**
		4	GS1a2.4	2.7m	2.4m	75	203	**65**	**176**
C	70	1	SP4	0.5m	2.4m	70	32	**85**	**38**
		2	SP2C	0.6m	2.4m	90	54	**105**	**63**
		3	SP2C	0.6m	2.4m	90	54	**105**	**63**
D	114	1	SP2C	1.2m	2.4m	90	108	**105**	**126**
		2	GS1a1.8	1.9m	2.4m	65	124	**55**	**105**
					Total Achieved BU's		1363 BU's		**1353 BU's**
					Total Required BU's		793 BU's		**1194 BU's**

WALL BRACING - Ground Floor - Across

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
M	75	1	SP2C	1.2m	2.4m	**90**	**108**	105	126
		2	SP2C	1.2m	2.4m	**90**	**108**	105	126
		3	SP2C	1.2m	2.4m	**90**	**108**	105	126
N	70	1	GS1a2.4	2.4m	2.4m	**75**	**180**	65	156
		2	GS1a2.4	2.4m	2.4m	**75**	**180**	65	156
O	70	1	GS1a1.8	1.9m	2.4m	**65**	**124**	55	105
		2	SP2C	1.2m	2.4m	**90**	**108**	105	126
P	70	1	GS1a2.4	2.4m	2.4m	**75**	**180**	65	156
		2	GS1a2.4	2.4m	2.4m	**75**	**180**	65	156
		3	SP2C	1.2m	2.4m	**90**	**108**	105	126
Q	70	1	SP2C	0.6m	2.4m	**90**	**54**	105	63
		2	GS1a1.8	1.9m	2.4m	**65**	**124**	55	105
		3	SP2C	1.2m	2.4m	**90**	**108**	105	126
R	70	1	GS1a1.8	2.0m	2.4m	**65**	**130**	55	110
		2	GS1a1.8	2.0m	2.4m	**65**	**130**	55	110
					Total Achieved BU's		**1930 BU's**		1872 BU's
					Total Required BU's		**1476 BU's**		1194 BU's

Details of Brace Types used in the Design.

Ecoply PlyBrace - SP4 Minimum Length: 450mm Maximum Length: N/A.

Description:

7mm Plywood one side only with 6 KN hold down connections at each end of panel. Stud spacing at 450crs.

Fixings Required:

Nails at 75mm centers to edges of all sheets. Elsewhere nails at 300crs. Additional nailing at corners of bracing element - see brochure.

Wind Bracing Capacity: 70 BU/m. Earthquake Bracing Capacity: 85 BU/m.

Manufacturer: Carter Holt Harvey - ph.0800 ECO PLY

Ecoply PlyBrace - SP2C Minimum Length: 600mm Maximum Length: N/A.

Description:

7mm Plywood one side only with 6 KN hold down connections at each end of panel. Stud spacing at 600crs. Concrete floor only.

Fixings Required:

Nails at 150mm centers to edges of all sheets. Elsewhere nails at 300crs. Additional nailing at corners of bracing element - see brochure.

Wind Bracing Capacity: 90 BU/m. Earthquake Bracing Capacity: 105 BU/m.

Manufacturer: Carter Holt Harvey - ph.0800 ECO PLY

Gib Board 2006 - GS1a1.8 Minimum Length: 1800mm Maximum Length: N/A.

Description:

10mm standard Gibboard on one side only. Gib sheets fixed horizontal or vertical.

Fixings Required:

Details as per the Winstones Bracing Systems Manual.

Wind Bracing Capacity: 65 BU/m. Earthquake Bracing Capacity: 55 BU/m.

Manufacturer: Winstone Wallboards Ltd. - ph.0800 100 GIB

Gib Board 2006 - GS1a2.4 Minimum Length: 2400mm Maximum Length: N/A.

Description:

10mm standard Gibboard on one side only. Gib sheets fixed horizontal or vertical.

Fixings Required:

Details as per the Winstones Bracing Systems Manual.

Wind Bracing Capacity: 75 BU/m. Earthquake Bracing Capacity: 65 BU/m.

Manufacturer: Winstone Wallboards Ltd. - ph.0800 100 GIB

Gib Board 2006 - GS22.4 Minimum Length: 2400mm Maximum Length: N/A.

Description:

10mm standard Gibboard on each side. Gib sheets fixed horizontal or vertical.

Fixings Required:

Details as per the Winstones Bracing Systems Manual.

Wind Bracing Capacity: 90 BU/m. Earthquake Bracing Capacity: 80 BU/m.

Manufacturer: Winstone Wallboards Ltd. - ph.0800 100 GIB

Mark T Mitchell Ltd

Consulting Geotechnical Engineers

1150 Victoria Street
P O Box 9123
Hamilton, New Zealand
Facsimile 07 839 3125
Telephone 07 838 3119
email: mtm@geocon.co.nz

Ref: W – 10421
29 September 2007

The Building Control Manager
Hamilton City Council
Private Bag 3010
Hamilton 3240

Dear Sir,

Re: Foundation Completion Report – Proposed New Residential Dwelling
Owner: Murray Antrim Builder: Golden Homes
Location: Lot 258 Mercury Lane, Hamilton

We wish to advise that we were retained by the Owner of the above referenced project to carry out the inspection of foundation soils which underlie the proposed new dwelling.

Our staff have visited the site in order to assess that the foundation soils were being prepared in accordance with sound engineering practice. Records taken on the site at the time of our inspections are indicative of a satisfactory foundation having been constructed. These records and test results indicate that the pit sand backfill and natural soils below are adequate to support the structural load from the building as designed.

A Plan, Drawing No. 10421-10 indicating the depth of excavation is attached. Note that depths indicated on the plan are approximate excavation depths below the original ground level.

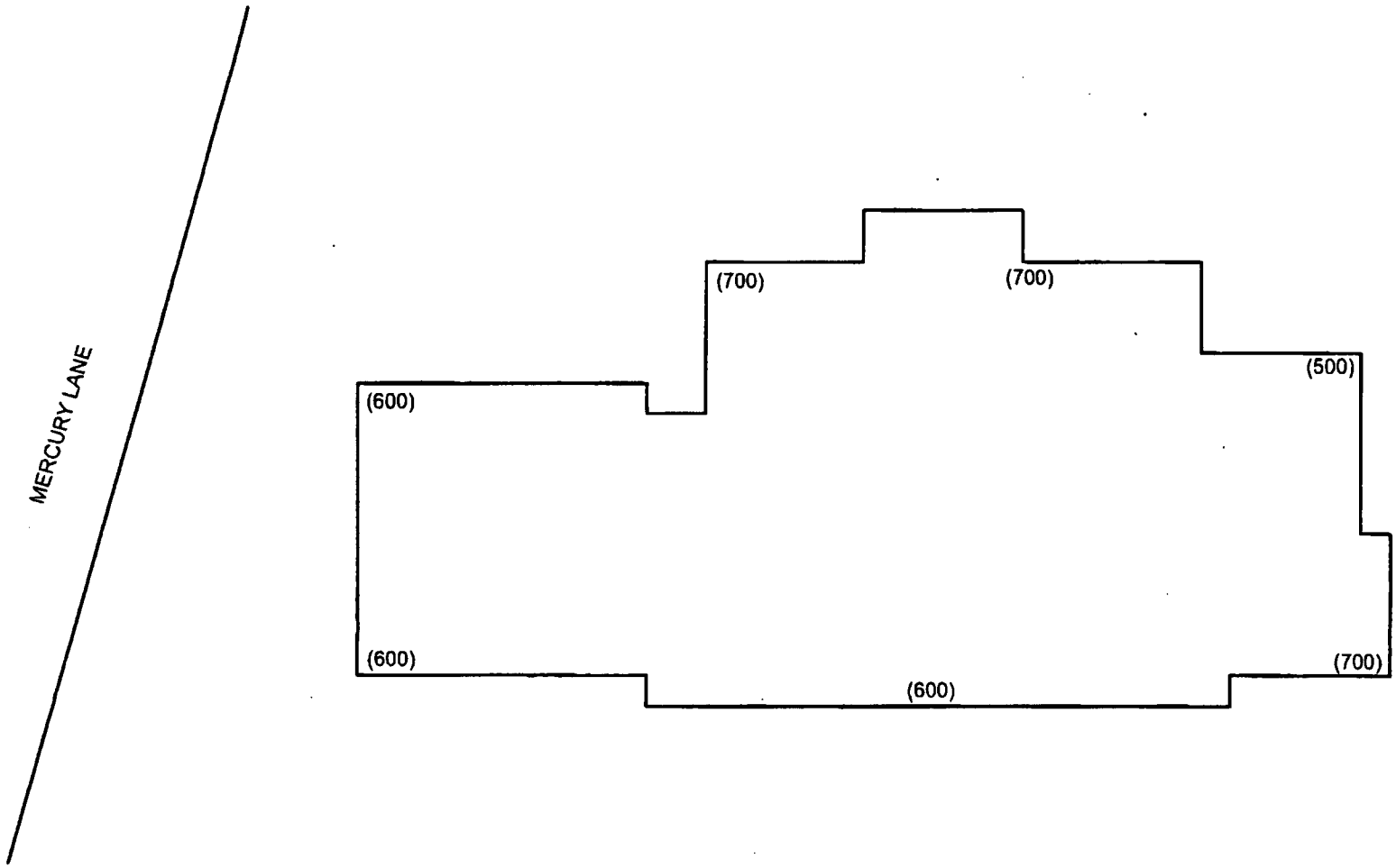
We understand that the inspection of the perimeter footing steel, bond beam steel and concrete slab reinforcement was carried out by the Area Building Inspector.

Yours faithfully

Mark T Mitchell Ltd

Mark T Mitchell
Director

c.c. Murray Antrim
c/- Alto Packaging
Private Bag 3044
Hamilton 3240



LEGEND

(500) denotes depth of excavation (mm) below ground level

NOT TO SCALE

Mark T Mitchell Ltd Geotechnical Engineers 1150 Victoria Street, P.O. Box 9123, Hamilton	**MURRAY ANTRIM** Proposed New Residential Dwelling Lot 258 Mercury Lane, Hamilton	**SITE PLAN**	DRAWING No. 10421-10 DATE September 2007 ISSUE One

\\Central1\data (d)\00 Working Folder 2007\01 Geocon CADD\Completion Letter Drawings\10421_ANTRIM_258 Mercury Ln, Ham - Comp. Ltr. Dwg..VCD 9/26/2007

Mark T Mitchell Ltd

Consulting Geotechnical Engineers

1150 Victoria Street
P O Box 9123
Hamilton, New Zealand
Facsimile 07 839 3125
Telephone 07 838 3119
email: mtm@geocon.co.nz

Ref: W –10421
3 August, 2007

The Building Control Manager
Hamilton City Council
Private Bag 3010
Hamilton 3240

Dear Sir,

Re: Foundation Preparation – Proposed New Dwelling
Owner: Murray Antrim Builder: Golden Homes
Location: Lot 258 Mercury Court, Hamilton

We wish to advise that we have been retained by the Owner of the above referenced project to carry out the inspection of foundation soil preparation prior to concrete floor construction for the proposed new dwelling.

Our staff will carry out inspections of the site in order to verify that all soft and loose soils have been removed from within the critical foundation areas and replaced where necessary with more competent soils. We will also investigate the subsoils below the building envelope to determine whether any soft layers occur at depth.

The purpose of our inspections will be to ensure that foundations for the proposed residential dwelling are installed in accordance with sound engineering practice and to the design requirements of the project.

At the conclusion of our work, a foundation completion report will be forwarded to the Hamilton City Council.

Yours faithfully

Mark T Mitchell Ltd

pp Mark T Mitchell
Director

cc Murray Antrim
c/ Alto Packaging
Private Bag 3044
Hamilton 3240

Job: TD1492

Client: Golden Homes
Phone:

Site: QBT Homes Ltd
6601 Antram
Horsham Estate Lot 258
Hamilton

Phone:

Description:
Building Consent No.:

PRODUCER STATEMENT
MiTek 2000™ TRUSS DESIGN PROGRAM

Certification of Mitek 2000™ Truss Design Program

The MiTek 2000™ truss design program has been developed by Gang-Nail Group Ltd for the design of Gang-Nail timber roof, floor and attic trusses in New Zealand. The truss designs computed by this program are prepared using sound and widely accepted engineering principles, and in accordance with NZS 4203, NZS 3603 and NZS 3604 as verification methods and acceptable solutions of the approved documents issued by the Building Industry Authority to satisfy the requirements of Clause B1:Structure of the Building Regulations 1992. This computer design for the proposed building complies with the relevant provisions of the NZ Building Code. This is subject to all proprietary products meeting their performance specification requirements, the provision of adequate bracing, fixings and the correct input of design data carried out by suitably trained personnel.

Summary of MiTek 2000™ Truss Design Data and Output

The MiTek 2000™ computer design output for this job titled and located at the site identified on the top of this page is based on the following parameters entered into the program. The owner must ensure that the following job details below are current and relevant to the project before fabrication and erection of the Gang-Nail trusses.

Job Details

Roof Truss

Timber Group:	ATDCF	Pitch:	22.500 deg	Std Overhang:	740 mm
Roof		**Ceiling**		**Wind**	
Material:	Monier Concrete Tiles	Material:	Gib Board 12mm	Area:	High (44.0 m/s)
Dead Load:	0.600 kPa	Dead Load:	0.200 kPa	Pressure Coeff:	Cpe = varies; Cpi = -0.30, 0.20
Restraints:	400 mm centres	Restraints:	600 mm centres		
Live Load:	Qur = 0.250 kPa Qc = 1.000 kN				

These trusses must be fabricated and erected in accordance with the Gang-Nail manual. Proper erection bracing must be installed to hold the components true and plumb and in a safe condition until permanent bracing is fixed. All permanent bracing and fixing must be installed before any loads are applied. The specifications for timber shall be as shown on the output. The timber shall be standard gauged and treated to the requirements of NZMP 3640. Unless otherwise noted, this design assumes that the steel fixings and timber connectors are situated in a closed environment, as defined by NZS3604:1999 Section 4.

Truss List

Legend: detail only, ? = input only, ~~Txx~~ = failed design, Unmarked trusses = designed successfully, LB = lateral bracing required

Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)
CJ01	1	3457	22.500	900	J03	1	2857	22.500	900	*R01A	1	1810	22.500	900	T01A	1	9360	22.500	900
CJ01A	1	3457	22.500	900	J03A	1	2857	22.500	900	*R01B	1	1810	22.500	900	T01B	2	9360	22.500	900
CN1	40	855	0.000	900	J03B	1	2857	22.500	900	*R02	5	913	22.500	900	T02	1	9360	22.500	900
ETB01	1	2238	22.500	900	J04	1	2457	22.500	900	*R02A	1	913	22.500	900	T03	1	6760	22.500	900
HB01	1	7611	16.325	900	J04A	1	2457	22.500	900	*R02B	4	913	22.500	900	T04	2	6760	22.500	887
HB02	2	7611	16.325	900	J04B	1	2457	22.500	900	*R03	1	1410	22.500	900	T05	2	5960	22.500	887
HB03	1	2460	16.325	900	J04C	1	2457	22.500	900	*R03A	1	1410	22.500	900	T06	3	5558	22.500	887
HB04	2	5772	16.325	900	J04D	1	2457	22.500	900	*R04	1	963	22.500	900	T07	1	1820	22.500	900
HB05	2	3368	16.325	900	J05	1	1557	22.500	900	*R04A	1	963	22.500	900	T07A	1	1820	22.500	900
J01	1	2857	22.500	900	J05A	1	1557	22.500	900	*R05	1	963	22.500	900	TG01	1	9360	22.500	900
J01A	1	2857	22.500	900	J05B	1	1557	22.500	900	*R05A	1	963	22.500	900	TG02	1	6760	22.500	900
J01B	1	2857	22.500	900	J05C	1	1557	22.500	900	*R06	1	1756	22.500	900	TG03	1D	3360	22.500	900
J01C	1	2857	22.500	900	J06	1	1110	22.500	900	*R07	1	869	22.500	900	TR01	1	9360	22.500	900
J01D	1	2857	22.500	900	J06A	1	1110	22.500	900	*R08	1	955	22.500	900	TR01A	1	9360	22.500	900
J02	2	1957	22.500	900	J06B	1	1110	22.500	900	*R09	1	1605	22.500	900	V01	1	2354	22.500	900
J02A	1	1957	22.500	900	*OR1	8	1305	0.000	900	*SB1	90	705	0.000	900	V02	1	1154	22.500	900
J02B	1	1957	22.500	900	*OR2	6	855	0.000	900	*SB2	6	2075	0.000	900	V03	1	962	22.500	900
J02C	2	1957	22.500	900	*R01	1	1810	22.500	900	T01	4	9360	22.500	900	V04	1	800	22.500	900

Total quantity : 237

The computer design input has been carried out by: Warren Edwards

Signed: ....

Dated: Thursday, 19 July 2007

Name of Computer Operator: Warren Edwards

Qualifications and Title: Truss Detailer

Company: **The Detailer**

futurebuild

A Carter Holt Harvey Business

640 Great South Road
Manukau City
Private Bag 92-106
Auckland
New Zealand
Telephone
64 9 262 6000
Facsimile
64 9 261 1841

Structural Certification: Producer Statement

hy90 Enhanced Wide-Opening Solution For Golden Homes

I certify that the hy90 enhanced wide-opening lintel solution has been designed in accordance with sound and widely accepted engineering principles. When installed in accordance with the specifications, details and limitations of the hy90 brochure for installation and design, it will comply with the requirements of the New Zealand Building Code Section B1 Structure and B2.3 (a) Durability.

4.5m wide x 2.1m high enhanced opening (supporting girder truss)
(note: maximum roof slope 30°)

hy90 section D X B (mm)	Side panel configuration		Supported roof span (m)	Light roof & ceiling		Heavy roof & ceiling	
				Side panel width (mm)			
	Outside	Inside		400	600	400	600
				Maximum girder truss span (mm)			
360 x 90	7 mm F11 plywood	7 mm F11 plywood	3	13.0	15.0	6.5	7.5
			5	9.5	11.0	4.5	5.5
			7	7.5	8.5	3.5	4.0
			9	6.0	7.0	2.5	3.0

Lintel A

4.8m wide x 2.1m high enhanced opening (supporting girder truss)
(note: maximum roof slope 30°)

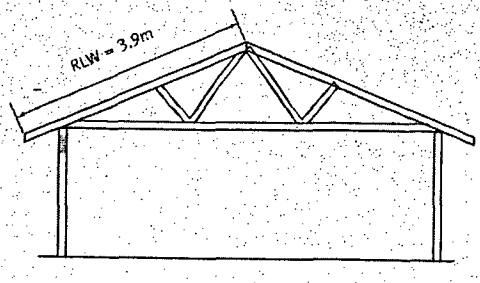
hy90 section D X B (mm)	Side panel configuration		Supported roof span (m)	Light roof & ceiling		Heavy roof & ceiling	
				Side panel width (mm)			
	Outside	Inside		400	600	400	600
				Maximum girder truss span (mm)			
360 x 90	7 mm F11 plywood	7 mm F11 plywood	3	10.0	12.0	5.0	5.5
			5	7.0	8.5	2.0	4.0
			7	5.5	6.5	-	3.0
			9	4.5	5.5	-	-

Refer to the hy90 brochure for span diagrams and typical construction details.

Warwick Banks
BE (Civil), MIPENZ
18th April 2007

Example – enhanced wide-opening lintel

Door opening 4.8m wide x 2.1m high
Light roof and ceiling, RLW = 3.9m



Standard lintel:

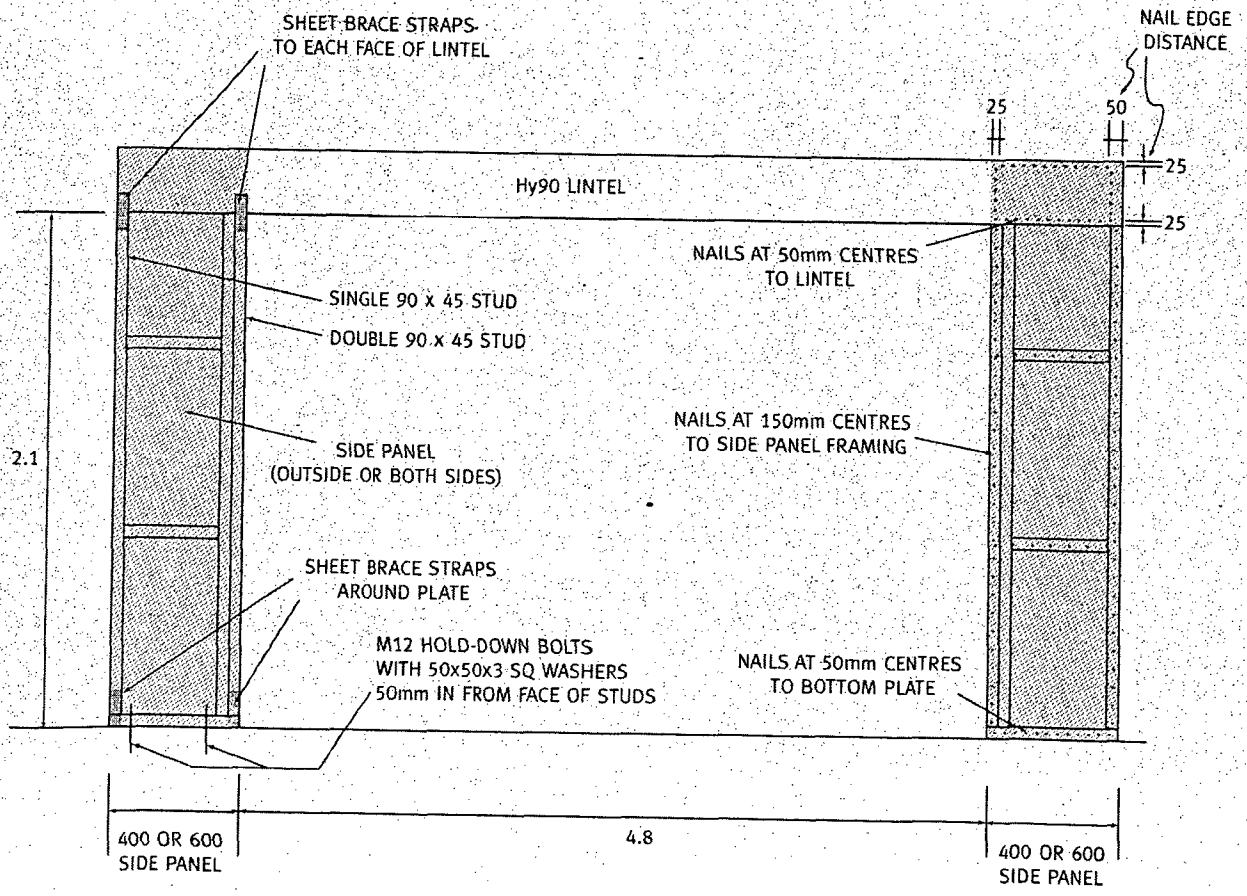
From page 5, 360 x 90 Hy90 required
max. lintel span = 5.0m by interpolating between
RLW 3.6m (max. span = 5.1m) and RLW 4.2m (max. span = 4.9m).

Enhanced lintel:

From page 16, 300 x 90 Hy90 required, with 600mm wide side panels, 7mm plywood on outside and 9mm plywood on inside. This configuration allows a RLW of 3.9m.

A similar scenario for a heavy roof and ceiling would not be possible with a standard Hy90 lintel (a 400 x 90 can span 4.4m – see page 5), but could be achieved using a 400 x 90 enhanced lintel with a 400mm wide side panel with plywood both sides (max. RLW = 4.1m – see page 16).

Construction details – enhanced wide-opening lintel



Notes:

- **Details shown on the left of the diagram apply to the right and vice versa**
- Sheet brace straps fixed to framing with 6 – 30 x 3.15Ø galv FH nails each end
- Plywood is F8 structural DD grade
- Plywood fixed with 50 x 2.8Ø galv FH nails
- Fibre-cement is 7.5mm thick, fixed with 30 x 2.5Ø galv clouts and washers
- Framing timber is 90 x 45 kiln-dry, stress graded to F5 or better

GANGLAM LINTELS

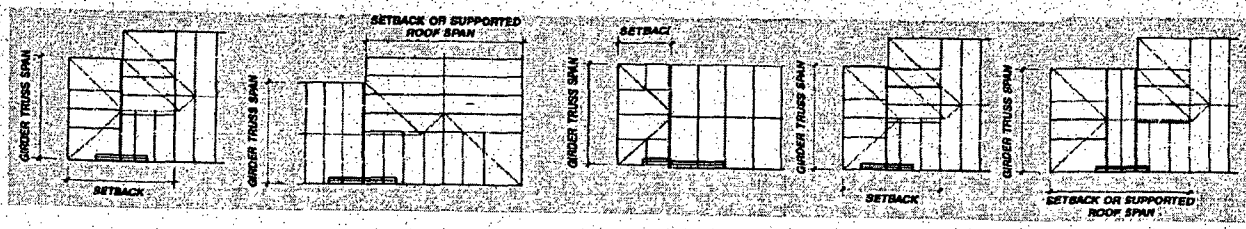


TABLE 7B:

GANGLAM LINTEL SUPPORTING GIRDER/SETBACK TRUSSES WITH HEAVY ROOF

Lintel C

Lintel D

Lintel B

SOLID TIMBER

GANGLAM

LINTEL SIZE	SETBACK (m)	MAXIMUM LINTEL SPAN (m) GIRDER TRUSS SPAN (m) 5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0
150 x 100	1.2	1.68	1.59	1.52	1.45	1.36	1.27	1.20	1.13	1.08	1.02	0.98
	2.4	1.44	1.28	1.15	1.05	0.96	0.88	0.82	0.76	0.71	0.67	0.63
	3.6	1.15	1.00	0.88	0.79	0.72	0.66	0.60	0.56	0.52	0.49	0.46
	4.8	0.94	0.81	0.71	0.63	0.57	0.52	0.47	0.44	0.40	0.38	0.35
200 x 100	1.2	2.38	2.26	2.16	2.08	2.01	1.93	1.83	1.74	1.65	1.58	1.51
	2.4	2.13	2.01	1.83	1.68	1.55	1.44	1.34	1.26	1.19	1.12	1.06
	3.6	1.86	1.64	1.47	1.33	1.22	1.12	1.03	0.96	0.90	0.84	0.80
	4.8	1.58	1.37	1.22	1.09	0.99	0.90	0.83	0.77	0.71	0.67	0.63
250 x 100	1.2	2.88	2.78	2.70	2.62	2.56	2.50	2.44	2.36	2.25	2.16	2.08
	2.4	2.69	2.58	2.49	2.35	2.19	2.04	1.92	1.81	1.71	1.62	1.54
	3.6	2.54	2.35	2.12	1.94	1.78	1.65	1.53	1.43	1.34	1.26	1.20
	4.8	2.28	2.01	1.80	1.62	1.48	1.36	1.26	1.17	1.09	1.02	0.96
300 x 100	1.2	3.35	3.24	3.14	3.06	2.98	2.92	2.85	2.80	2.75	2.70	2.66
	2.4	3.15	3.03	2.93	2.84	2.76	2.69	2.63	2.57	2.49	2.37	2.26
	3.6	2.99	2.87	2.76	2.67	2.59	2.45	2.29	2.15	2.03	1.92	1.82
	4.8	2.85	2.73	2.62	2.45	2.25	2.08	1.93	1.81	1.69	1.59	1.51
	6.0	2.74	2.61	2.37	2.14	1.95	1.79	1.66	1.54	1.44	1.35	1.27
	7.5	2.61	2.30	2.04	1.83	1.66	1.52	1.40	1.30	1.21	1.13	1.06
	10.0	2.18	1.88	1.65	1.46	1.32	1.20	1.10	1.01	0.94	0.88	0.82
350 x 100	1.2	3.98	3.85	3.74	3.64	3.55	3.48	3.40	3.34	3.28	3.22	3.17
	2.4	3.77	3.63	3.52	3.41	3.32	3.24	3.16	3.10	2.98	2.85	2.72
	3.6	3.60	3.45	3.33	3.23	3.13	2.97	2.79	2.63	2.48	2.35	2.24
	4.8	3.45	3.30	3.18	2.99	2.76	2.56	2.38	2.23	2.10	1.98	1.88
	6.0	3.32	3.17	2.91	2.64	2.42	2.23	2.07	1.93	1.80	1.70	1.60
	7.5	3.18	2.85	2.54	2.29	2.08	1.91	1.76	1.63	1.52	1.43	-
	10.0	2.71	2.35	2.07	1.85	1.67	1.52	1.40	1.29	-	-	-
400 x 100	1.2	4.45	4.31	4.18	4.08	3.98	3.89	3.81	3.74	3.68	3.62	3.56
	2.4	4.24	4.08	3.95	3.84	3.74	3.65	3.57	3.49	3.42	3.36	3.30
	3.6	4.06	3.90	3.76	3.64	3.54	3.45	3.37	3.24	3.07	2.92	2.78
	4.8	3.90	3.73	3.60	3.48	3.37	3.18	2.98	2.80	2.64	2.49	2.36
	6.0	3.76	3.59	3.46	3.30	3.03	2.81	2.61	2.44	2.29	2.16	2.04
	7.5	3.61	3.44	3.19	2.89	2.64	2.43	2.25	2.09	1.96	1.84	1.73
	10.0	3.40	2.98	2.64	2.37	2.15	1.96	1.81	1.67	1.56	-	-
450 x 100	1.2	4.90	4.75	4.62	4.50	4.39	4.30	4.21	4.13	4.06	3.99	3.93
	2.4	4.69	4.52	4.38	4.26	4.15	4.05	3.96	3.88	3.80	3.73	3.67
	3.6	4.50	4.33	4.18	4.05	3.94	3.84	3.75	3.66	3.59	3.50	3.34
	4.8	4.33	4.16	4.01	3.88	3.76	3.66	3.57	3.38	3.20	3.03	2.88
	6.0	4.19	4.01	3.86	3.73	3.61	3.41	3.18	2.98	2.81	2.65	2.51
	7.5	4.03	3.85	3.69	3.53	3.23	2.98	2.77	2.58	2.42	2.28	2.15
	10.0	3.80	3.62	3.26	2.93	2.67	2.44	2.25	2.09	1.95	1.83	-
500 x 100	1.2	5.34	5.18	5.03	4.91	4.79	4.69	4.60	4.51	4.44	4.36	4.30
	2.4	5.12	4.95	4.79	4.66	4.54	4.43	4.34	4.25	4.17	4.09	4.03
	3.6	4.93	4.75	4.59	4.45	4.33	4.22	4.12	4.03	3.95	3.87	3.80
	4.8	4.76	4.57	4.41	4.27	4.14	4.03	3.94	3.85	3.75	3.56	3.39
	6.0	4.61	4.42	4.25	4.11	3.98	3.88	3.75	3.52	3.32	3.14	2.98
	7.5	4.44	4.24	4.08	3.94	3.81	3.54	3.29	3.08	2.89	2.72	2.58
	10.0	4.20	4.01	3.84	3.50	3.19	2.93	2.71	2.52	2.35	2.21	2.08
550 x 100	1.2	5.77	5.60	5.44	5.31	5.19	5.08	4.98	4.88	4.80	4.72	4.65
	2.4	5.55	5.36	5.20	5.06	4.93	4.81	4.71	4.61	4.53	4.45	4.37
	3.6	5.35	5.16	4.99	4.84	4.71	4.59	4.48	4.39	4.30	4.22	4.15
	4.8	5.18	4.98	4.80	4.65	4.52	4.40	4.29	4.20	4.11	4.03	3.91
	6.0	5.02	4.81	4.64	4.48	4.35	4.23	4.13	4.03	3.85	3.65	3.47
	7.5	4.85	4.64	4.46	4.30	4.17	4.05	3.83	3.59	3.38	3.19	3.02
	10.0	4.60	4.38	4.21	4.05	3.73	3.43	3.18	2.96	2.77	2.60	2.46
600 x 100	1.2	6.19	6.01	5.84	5.70	5.57	5.45	5.34	5.25	5.16	5.07	5.00
	2.4	5.97	5.77	5.59	5.44	5.31	5.18	5.07	4.97	4.88	4.79	4.72
	3.6	5.77	5.56	5.38	5.22	5.08	4.95	4.84	4.74	4.65	4.56	4.48
	4.8	5.59	5.37	5.19	5.03	4.88	4.76	4.64	4.54	4.45	4.36	4.28
	6.0	5.43	5.20	5.02	4.85	4.71	4.58	4.47	4.37	4.27	4.16	3.96
	7.5	5.24	5.02	4.83	4.67	4.52	4.40	4.28	4.11	3.87	3.66	3.47
	10.0	4.98	4.76	4.56	4.40	4.26	3.95	3.67	3.42	3.21	3.02	2.85

regular = regular duty plating heavy = heavy duty plating super = super heavy duty plating

GANGLAM Tables Updated for NZS 3603:1993 (Amendment No.4)

Producer Statement - Technical basis for structural design methodology contained in designIT for houses -New Zealand version.

DesignIT for houses (New Zealand version) software, has been developed by Timberbuilt Pty Ltd for Carter Holt Harvey Ltd to assist designers select appropriate sizes of hySPAN, hyJOIST or hyBEAM (and some stress-grades of timber and glue-laminated timber) for use in the construction of buildings that fall within the scope and limitations of NZS 3604.

Timberbuilt certifies that the design methodology used for the software includes compliance with the loading and general design requirements contained within AS/NZS 1170:2002 and with timber structural design in accordance with NZS 3603:1993, including Amendment No. 4 (Verification method B1/VM1, 6.1).

Serviceability and other criteria for design have been selected using the most up to date information available from joint Australian/New Zealand standards technical committees to ensure designIT solutions correspond to performance levels implied by design solutions given in NZS 3604:1999 (Acceptable Solution B1/AS1, 4.1).

Components installed in accordance with the specifications, details and limitations given by the designIT software, NZS 3604 or in relevant product literature published by Carter Holt Harvey as appropriate will comply with the requirements of the New Zealand Building Code.

References

NZS 3603:1993 Timber Structures Standard.
NZS 3604:1999 Timber Framed Buildings.
AS/NZS 1170:2002 Structural design actions, Parts 0, 1 and 2
AS 1684.1 - 1999 Residential timber framed construction. Part 1: Design criteria.
AS 1720.1 - 1997 Timber structures. Part 1: Design methods.

8th May, 2006

For further information or advice please contact either of the following:

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Telephone (613) 9793 9997.
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CHH futurebuild
640 Great South Road, Manukau City
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Specifier details:

Specifier:	Warren Edwards	
Business name:	The Detailer Tauranga Ltd	
Address:	Unit 1/23 Tokorako Drive	
Phone: 075740138	**Mobile:** 027 564 6621	**Facsimile:** 07 574 0139

Project & Site details:

Project:	6601 Antram	**Drawing reference:**
At (address):	Lot 258 Horsham Estate. Hamilton	
For (owner/s):		
Wind Zone:	HIGH	

MEMBER DESIGN DETAILS

Member 1

1) Member code and description L1 - Lintels - In single or upper storey load bearing walls

2) Design Inputs

Span	3.6 m
Roof load width 'RLW'	2.1 m

Continued 2/

2) Design inputs

Roof type and mass	Heavy roof & ceiling - 90 kg/m²
Serviceability criteria	AS 1684.1-1999

3) Member specification

Size, stress grade/product	Use 240 x 90 hy90
Material type	Structural Laminated Veneer Lumber to AS/NZS 4357

4) Installation requirements

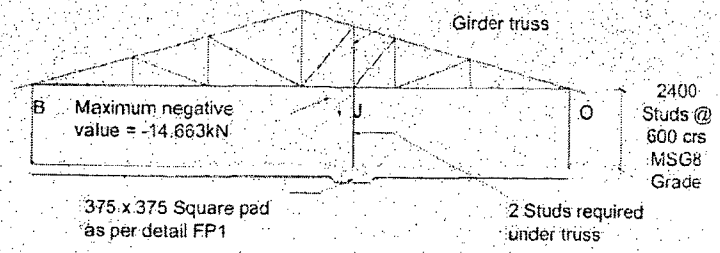
Provide at least 30 mm bearing at end supports

ESTABLISHING THICKENING & STUD REQUIREMENTS

GANG-NAIL®

EXAMPLE SELECTION

1. Establish the type of load applied to the floor as being either a UDL (uniformly distributed load) or a concentrated load. Girder trusses will always be concentrated loads and a run of 2 or more trusses with the same loads will be a UDL.
2. Establish the maximum load value via the MiTek 20/20™ Truss Design Software under the Bearing Reactions report, (see example below). Choose the maximum negative value in kN.
3. Go to the Slab Thickening And Stud Requirements table contained within this brochure and choose from the appropriate section, either no change for up to 10kN, FP1 & FS1 for up to 20kN or FP2 & FS2 for up to 30kN.
4. Choose from the selection of stud options (height, centres and grade).
5. Apply the relevant slab & stud requirements as specified and detailed in this brochure.
6. Where the maximum positive bearing reaction exceeds 10kN (uplift), refer to MiTek for Special Design.

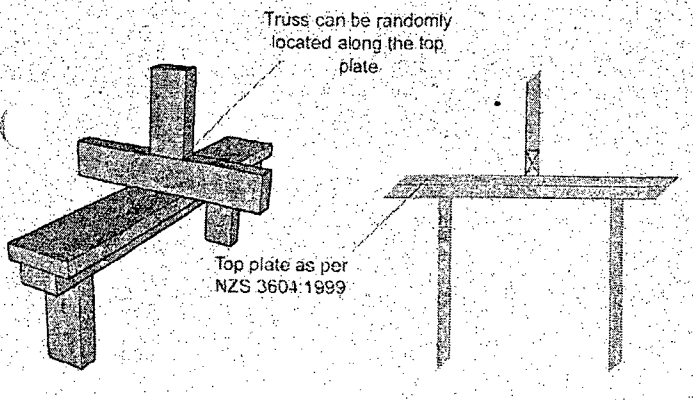


MiTek 20/20™ BEARING REACTION EXAMPLE

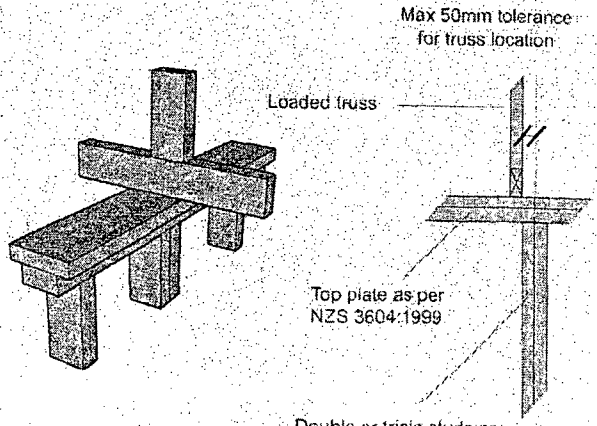
Bearing Reactions

Load Case	--- Joint B --- Vert (kN)	Horiz (kN)	--- Joint J --- Vert (kN)	Horiz (kN)	--- Joint O --- Vert (kN)	Horiz (kN)
G	-14.857	0.000	-14.663	0.000	-4.042	0.000
G + Qur	-14.481	-0.000	-14.293	0.000	-3.918	0.000
G + Qc	-13.645	-0.000	-13.836	0.000	-3.526	0.000
G + W (from left)	-10.237	2.067	-8.832	-0.000	-2.974	0.000
G + W (from right)	-9.033	-2.067	-10.159	0.000	-2.852	0.000
G + W (along ridge)	-3.956	-0.000	-3.906	-0.000	-1.057	0.000
G + Quf + S	-14.306	-0.000	-14.121	0.000	-3.872	0.000

SINGLE STUD OPTION



DOUBLE & TRIPLE STUD OPTIONS



TIMBER SPECIFICATIONS

Timber properties based on NZS 3603:1999 Amendment No.4 March 2004.
Minimum grade specified is MSG8 / VSG8 unless otherwise noted.
For MSG6 and non-verified No 1 Fr Grade, use the studs for the next higher 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 & STUD REQUIREMENT SELECTION CHART

GANG-NAIL®

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).

SD = Special Design.
Max truss span 12m.
All timber Min Grade MSG8 or VSG8.
For MSG6 or Non-Verified No1 Fr Grade refer to Timber Specs on page 2.

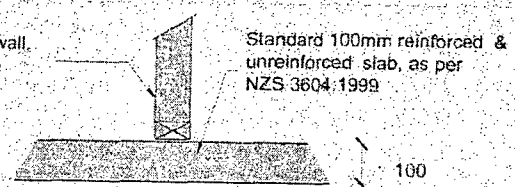
TRUSS BEARING REACTION	SLAB THICKENING DETAIL		STUD REQUIREMENTS UNIFORM DIST LOADS OR CONCENTRATED LOADS	
	CONCENTRATED LOAD	UNIFORM DIST LOAD	STUD HEIGHT	STUD REQUIREMENTS
Bearing reaction up to & including **10kN**	**STANDARD** unreinforced or reinforced slab as per NZS 3604:1999	**STANDARD** unreinforced or reinforced slab as per NZS 3604:1999	2400 2700 3000	**Refer to NZS 3604:1999**

Bearing reaction up to & including **20kN**	**TYPE FP1** 375 x 375 PAD	**TYPE FS1** 300 STRIP THICKENING	STUD HEIGHT	STUD NO's UNDER TRUSS	MIN TIMBER SIZE
			2400	2	90 x 35
			2700	2	90 x 45
			3000	3	90 x 45

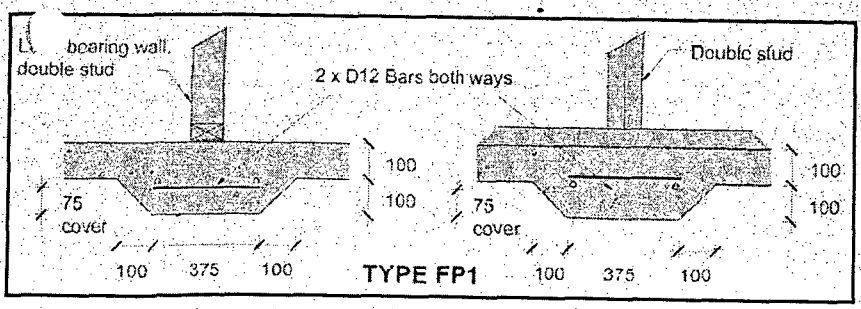
Bearing reaction up to & including **30kN**	**TYPE FP2** 450 x 450 PAD	**TYPE FS2** 450 STRIP THICKENING	STUD HEIGHT	STUD NO's UNDER TRUSS	MIN TIMBER SIZE
			2400	3	90 x 45
			2700	3	90 x 45
			3000	4	90 x 45

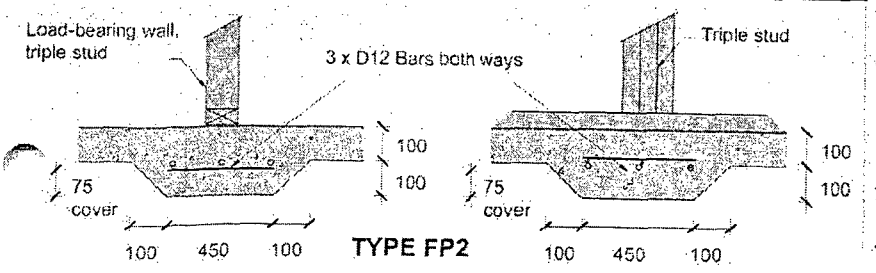
SLAB THICKENING DETAILS

CONCRETE PAD OPTIONS (for concentrated loads)

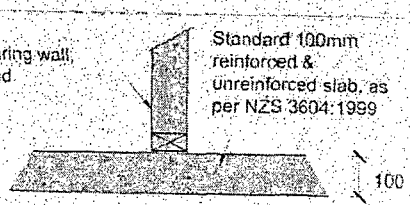


STANDARD 100MM SLAB

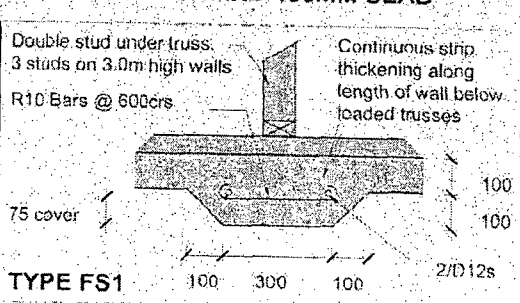


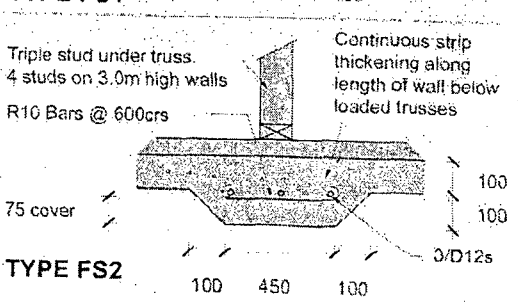


CONTINUOUS CONCRETE THICKENING OPTIONS (for uniformly distributed loads)



STANDARD 100MM SLAB





NOTE: FP = Foundation Pad FS = Foundation Strip

GANGLAM LINTELS

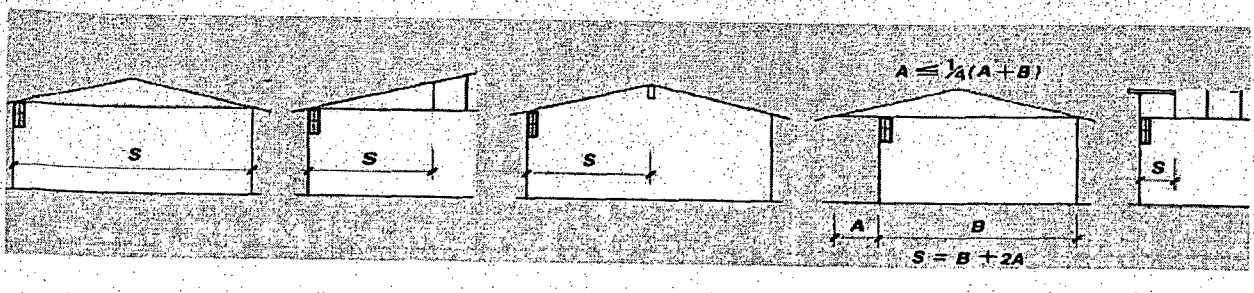
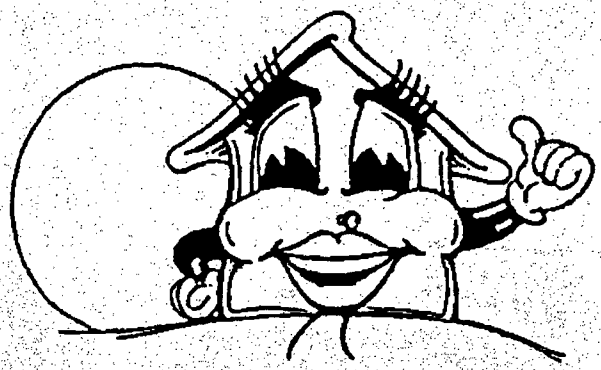


TABLE 1:
LINTEL SUPPORTING ROOF AND CEILING ONLY

		LINTEL SIZE	MAXIMUM LINTEL SPAN (m) SUPPORTED ROOF SPAN 'S' (m)										
			5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0
LIGHT ROOF	SOLID TIMBER	100 x 100	1.38	1.32	1.27	1.22	1.18	1.14	1.11	1.06	1.03	0.99	0.96
		125 x 100	1.85	1.76	1.69	1.63	1.57	1.53	1.47	1.42	1.37	1.32	1.28
		150 x 100	2.15	2.05	1.97	1.90	1.84	1.78	1.72	1.65	1.60	1.54	1.50
		200 x 100	2.92	2.79	2.67	2.58	2.49	2.42	2.33	2.25	2.17	2.10	2.03
		250 x 100	3.51	3.39	3.29	3.20	3.12	3.05	2.95	2.84	2.74	2.65	2.57
		300 x 100	3.94	3.81	3.69	3.59	3.50	3.42	3.35	3.29	3.19	3.09	2.99
	GANGLAM	350 x 100	4.76	4.60	4.45	4.33	4.22	4.13	4.04	3.97	3.90	3.83	3.77
		400 x 100	5.29	5.11	4.95	4.82	4.70	4.59	4.50	4.41	4.33	4.26	4.19
		450 x 100	5.81	5.60	5.43	5.28	5.15	5.04	4.93	4.84	4.75	4.67	4.60
		500 x 100	6.31	6.09	5.90	5.74	5.60	5.47	5.36	5.26	5.16	5.08	5.00
		550 x 100	6.80	6.56	6.35	6.18	6.03	5.89	5.77	5.66	5.56	5.47	5.38
		600 x 100	7.27	7.02	6.80	6.61	6.45	6.30	6.17	6.06	5.95	5.78	5.60
HEAVY ROOF	SOLID TIMBER	100 x 100	1.12	1.07	1.02	0.99	0.95	0.93	0.90	0.88	0.86	0.83	0.81
		125 x 100	1.49	1.42	1.37	1.32	1.27	1.23	1.20	1.17	1.14	1.11	1.08
		150 x 100	1.74	1.66	1.59	1.54	1.48	1.44	1.40	1.37	1.33	1.30	1.26
		200 x 100	2.36	2.25	2.16	2.08	2.01	1.95	1.90	1.85	1.81	1.76	1.70
		250 x 100	2.99	2.85	2.73	2.63	2.55	2.47	2.40	2.34	2.29	2.22	2.15
		300 x 100	3.36	3.25	3.15	3.06	2.97	2.88	2.80	2.73	2.67	2.59	2.51
	GANGLAM	350 x 100	4.06	3.92	3.80	3.70	3.60	3.52	3.45	3.38	3.32	3.27	3.19
		400 x 100	4.52	4.36	4.22	4.11	4.01	3.92	3.84	3.76	3.70	3.63	3.58
		450 x 100	4.96	4.78	4.63	4.51	4.40	4.30	4.21	4.13	4.05	3.99	3.93
		500 x 100	5.38	5.19	5.03	4.89	4.77	4.67	4.57	4.48	4.40	4.33	4.26
		550 x 100	5.80	5.59	5.42	5.27	5.14	5.03	4.92	4.83	4.74	4.66	4.59
		600 x 100	6.20	5.98	5.80	5.64	5.50	5.38	5.27	5.17	5.07	4.99	4.91

regular = regular duty plating heavy = heavy duty plating super = super heavy duty plating

BUILDING SPECIFICATION



QBT HOMES LTD.
Job No.6601

Tuesday, 24 July 2007

QBT HOMES

HAMILTON CITY COUNCIL
APPROVED
SUBJECT TO CONDITIONS
TO BE KEPT ON SITE

Antram Residence
Lot 258, DP 356028
Horsham Estate
HAMILTON

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BUILDING SPECIFICATION

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BUILDING SPECIFICATION

GENERAL

1. Approximate ground lines are shown on the drawings but the Contractor is advised to visit the site to ascertain any variations regarding levels for foundations, boundaries, etc. The Contractor shall perform all setting out work and shall be responsible for the accuracy thereof.

2. Unless specifically noted in the contract documents, all work shall conform to the NZ Building Code Handbook and approved documents. The Contractor and all Sub-contractors shall observe and adhere to all requirements as set out in the NZ Building Code and in the Building Act 2004.

3. The Contractor shall supply all materials and labour necessary to complete the construction of the work, including attending on sub-contractors as required.

4. All materials shall be the best of their respective kinds and shall conform to their respective N.Z. Building Code and relevant New Zealand standards. Any labour or materials not covered in this specification or on the drawings, but which is necessary for the proper and effectual completion of the work, shall be taken as part of the drawings and specification, and shall be carried out according to the best trade practice.

5. All work shall be carried out under the supervision of qualified and experienced tradesmen and shall be executed in accordance with the best trade practices. All work shall comply with the New Zealand Building Code and relevant New Zealand standards.

6. The Contractor shall check all dimensions on site before starting work and shall report any discrepancies to The Designer for clarification.

7. Where any discrepancies occurs between the specification and the drawings, the Contractor shall notify The Designer for clarification before proceeding with the section of work affected.

8. The building shall be founded on firm ground with a minimum allowable bearing capacity of 100kPa unless noted otherwise.

9. All proprietary building materials shall be used strictly in accordance with the manufacturers recommendations.

10. Manufacturers & Suppliers requirements, instructions, specifications and / or details are those issued by them for their particular material, product or component and are the latest edition.

11. The Contractor shall ensure that all employees and sub-contractors fully comply with the Occupational Safety and Health Regulations, including all amendments.

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EARTHWORKS

1. The Earthworks Contractor shall excavate the building site down to the underside of the foundations and base-course level, and excavate any soft ground as directed by the engineer. All topsoil is to be removed from beneath the foundations and floor. and conform to NZS.3604.1999 section 3.5.

2. Any low areas shall be filled and compacted with hardfill.

3. Hardfill shall be clean, evenly graded rock-fill.

4. Base-course shall be 20mm standard base-course of 100mm compacted thickness.

5. The excavated sub-base shall be compacted prior to the placement of hardfill, base-course or concrete.

6. Hardfill and Base-course shall be compacted to achieve a dense, tightly compacted fill.

7. The top surface of the hardfill shall be blinded with a 10mm maximum thickness layer of clean, washed sand **(when required by Local Authority)** to allow for the laying of a damp proof membrane under the floor slab.

WATER PROOFING

1. Provide a 0.25mm Polyethylene damp proof membrane with all joints lapped 150mm and fully taped to the underside of the floor slab and foundations. Where pipes etc. penetrate the membrane, adequate waterproofing shall be provided by sealing the membrane to the penetration with tape, to ensure a complete waterproof barrier is formed.

CONCRETE & REINFORCING STEEL

1. All concrete construction shall comply with NZS 3109.

2. Concrete shall be ordinary grade in accordance with NZS 3109, having a compressive strength of 20Mpa (or 25Mpa for Sea Spray Zones) at 28 days using standard cured using standard cured 300x150mm diameter cylinders.

3. Concrete surface finishes shall comply with NZS 3114 and shall be:

Foundations	concealed	F1
	Revealed	F3
Floor Slabs	formed	F3
	Unformed	U2 + Kelly float

4. The Concretor shall allow to accurately position, level and secure all bolts, proprietary fixings etc. before pouring concrete.

5. Formwork shall be securely braced and held in position. Use an approved release agent for all formwork.

6. The floor shall be cut within 36 hours using a 30x5mm cut. The reinforcing mesh shall not be cut. Cuts to be positioned as per NZS.3604.1999, Section 7.5.8

7. Reinforcing bars shall be round and deformed Grade 300 MPa mild steel or Grade 430 MPa high yield steel bars complying with AS/NZS 4671:2001.

8. Reinforcing mesh shall be Grade 485 MPa high yield welded steel wire mesh complying with AS/NZS 4671:2001.

9. All bends, laps and covers to steel reinforcing shall comply with AS/NZS 4671:2001.

10. Reinforcing steel and mesh shall be tied at each intersection with black soft mild steel wire (1.2mm dia. Minimum), with ends turned away from the concrete surface.

11. Reinforcing steel and mesh shall be supported on plastic chairs at spacings appropriate to the bar and mesh size to maintain the specified concrete cover.

CONCRETE BLOCKWORK

1. Masonry blockwork shall be carried out in accordance with NZS 4229 by a qualified and experienced blocklayer.

2. Mortar joints shall be straight, clean, and uniform in thickness.

3. The masonry contractor shall allow for chases, openings, framing anchors, and pipework.

4. At the conclusion of masonry work the contractor shall clean down masonry and clean up surplus materials and debris.

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BUILDING SPECIFICATION

CARPENTRY

1. All timber construction shall comply with NZS 3604.1999
2. Timber grading shall comply with NZS 3631 – New Zealand National Timber Grading Rules and treated to NZMP 3640.
3. Timber shall comply with NZS 3602 – Code of Practice for Specifying Timber and Wood Based Products for use in Building.
4. **TIMBER FRAMING** - Kiln Dried, MSG8. Radiata pine to AS/NZS 1748 with an average moisture content at supply of 16% or less
5. **TIMBER FRAMING TREATED FOR INTERIOR USE** - Kiln Dried, MSG8. Radiata pine to AS/NZS 1748, treated H1.2 or H3.1 where shown on plans with an average moisture content at supply of 16% or less.
6. **TIMBER TRUSSES** - Kiln Dried, MSG10. Radiata pine with an average moisture content at supply of 16% or less.
7. **EXTERIOR WALL BATTENS/STRAPPING** - Merchantable grade or better, treated H3.1 to NZS 3602, table 1, reference 1D.10.
8. **PLYWOOD** – Ecoply structural Plywood to AS/NZS 2269 for Bracing
9. All Timber shall be treated as shown on plans
10. Provide a bituminous damp proof course between all timber and concrete surfaces.
11. Timber framing shall be erected plumb and true to line and level.
12. NAILS - Steel, stainless steel and galvanized steel of pattern to suit the location and to BRANZ Bulletin 453 Fasteners selection.Type to NZS 3604, section 4 Durability, and of the size and number for each particular types of joint as laid down in the nailing schedules of NZS 3604.
13. BOLTS & SCREWS – Steel, Galvanised Steel, and Stainless Steel of pattern to suit the location and to BRANZ Bulletin 453 fasteners selection. Galvanised bolts in contact with H5 timber posts are to greased prior to installation..
14. NAIL PLATES - Galvanised Steel and/or Stainless Steel toothed or nail plates to the plate manufacturers design for location as shown on plans.
15. CONNECTORS - Galvanised Steel and/or Stainless Steel connectors and structural brackets to the connector manufacturers design for location as shown on plans

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JOINER

1. Aluminium Doors & Windows shall be from an approved manufacturer, and shall conform to NZS 3504 – Specification for Aluminium Windows. All units are to have grooved H3.1 treated Finger jointed pine reveals.

2. Interior Doors shall be as shown on plan, hung on three loose pin butt hinges. Frames shall be Finger jointed Pine.

3. Glass and Glazing shall be in accordance with the NZ Building Code Handbook and NZS.4223 Parts 1, 2 and 3 – Code of Practice for Glazing in Buildings.

4. Kitchen Joinery shall be as indicated on the drawings. Final design shall be by an approved manufacturer as per client's individual requirements.

BRICK VENEER CLADDING

1. All bricks shall be from Austral bricks and shall conform to the following:
   AS/NZ4455: 1997 - Clay Building Bricks
   Materials for mortar shall conform to the following:
   NZS 3103:1991- Specifications for Sands for Mortars and Internal and External Renderings.
   NZS 3122-1995 - Specifications for Portland Cement.
   Natural Stone shall be approved for use as in NZS 4210.

2. All brickwork shall be carried out by qualified and experienced tradesmen and the work shall conform to the following
   NZS 3604.1999 - Code of Practice for Light Timber Framed Buildings not Requiring Specific design.
   NZS 4210 - Code of Practice for Masonry Construction: Materials and workmanship.
   Masonry Manufacturers codes of practice.

3. If bricks are laid above openings they shall be supported on steel angles as noted in NZS 3604.1999. Sizes shown on Plans.

4. Brickwork shall be tied to the timber frame as per manufacturers recommendations and in accordance with NZS.3604.1999 Section 4. Durability, for specific corrosion zones.

5. Weepholes shall be a minimum of 75mm high at the bottom course, and spaced at no more than 800c/s. Vent space of 10mm between top course and soffit board.

GIB PLASTERBOARD LININGS & FINISHES

To be in accordance with AS/NZS 2588, AS/NZS 2589, AS/NZS 2753, NZS.3604.1999

1. 10mm Gib Plasterboard wall linings shall be fixed to the framing in accordance with the manufacturer's specifications.

2. 13mm Gib Plasterboard ceiling linings shall be fixed to the framing in accordance with the manufacturer's specifications.

Location	Plasterboard type / Lining requirements	Thickness	Finish level
Walls	GIB® Standard Plasterboard	10 mm	4
Ceilings	GIB® Standard Plasterboard	13 mm	5
Walls – wet areas	GIB Aqualine® Plasterboard	10 mm	4
Ceilings – wet areas	GIB Aqualine® Plasterboard	13 mm	5

3. All stopping shall be carried out using the manufacturer's recommended products and to the manufacturer's recommendations for the finishing required by the customer.

4. Skirtings, cornices, doors, trim, etc. shall be as specified in the Drawings and Variation Schedule.

EXTERIOR LININGS & FINISHES

1. James Hardie Monotek cladding to gables fixed as per James Hardie Specifications for cavity construction.

2. James Hardie smooth weather board to window heads fixed as per the drawings.

3. Soffits shall be lined with 4.5mm Hardiflex with UPVC jointers

4. Aluminium Doors and Windows shall be securely fixed in place, install all necessary flashings and scribers to weatherproof

PLASTERER

1. Plastering shall be carried out by qualified and experienced tradesmen and conform to their associated Codes of Practice.

2. Stopping shall be carried out to the finish level required in accordance with Gib Living Solutions recommendations.

3. External Texture System to be Dulux Acratex in accordance with Manufacturers Specifications

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ROOFING

1. All roofing is to be fixed in accordance with manufacturers recommendations and by an accredited fixing agent or if the manufacturer does not require this, by a qualified roofing tradesman

2. Roofing underlay shall be provided when required by the manufacturer and shall comply with AS/NZS 4200

3. **Concrete Tile** – shall be Rosscrete Brand , fixed in accordance with manufacturers recommendations and comply with NZS.4206 for interlocking concrete tiles

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BUILDING SPECIFICATION

SANITARY PLUMBING

1. All plumbing work shall comply with the New Zealand Building Code Sections G13/AS1 & G1 with all work being carried out by or under the supervision of qualified and currently Craftsman Plumber.

2. All installations shall be carried out strictly in accordance with the manufacturer's specifications and complying with the NZ Building code and its approved documents.

3. UPVC Waste, Soil, and vent pipes shall be complete with fittings brand matched to the pipe manufacturers requirements in accordance with NZBC G13 Foul Water and it's approved documents. Install back vents as required.

4. Sanitary fixtures and accessories as selected.

5. Install traps, wastes, and vent pipes to New Zealand Building Code Sections G12 & G1, Discharge wastes into the drainage system soil pipe or gully trap as shown. Bird proof mesh to roof vents and vermin proof mesh to untrapped waste pipes. All waste pipes to be of approved PVC. Run waste pipes from all fittings to gully traps. At penetrations through construction provide and fit collars and escutcheon plates to match pipework.

6. Test soil and waste disposal systems to ensure no leakage exists and leave in working order.

7. Ensure all sanitary plumbing fittings and pipework are complete and operational.

RAINWATER SYSTEM

1. **Bildon** pre-painted steel spouting. Profile, jointing, brackets and fittings brand matched and complete to the Bildon specifications. Set falls to outlets, spouting joints to be silicone sealed and pop-riveted.

2. UPVC Downpipes – tubes, stand off brackets and fittings brand matched and complete to the spouting manufacturers specifications. Screw fix stand off brackets, set pipes plumb and clear of wall, discharge into stormwater bends, install mesh domes to top of downpipes.

3. Rainwater heads, droppers and overflows to be installed as per manufacturers specifications

4. Ensure all rainwater services are operational, flashings complete and the building weathertight.

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WATER

1. All water supply work to comply with G12 of the NZ building code. All piping is to be an approved polyethylene system. Size the piping to eliminate loss of pressure at any point by simultaneous draw off. Run pipes in straight runs, firmly fixed with long radius bends. Pressure test before wall linings are fixed.

2. Supply and install Hot water cylinder complete with element, thermostat, and associated connections and valves as per manufacturers recommendations. Support cylinder as detailed in the NZ Building Code suitable seismic restraint.

3. Avoid Electrolytic action by eliminating contact or continuity of water between dissimilar metals.

4. At penetrations through construction provide and fit collars and escutcheon plates to match pipework.

5. Install taps and faucets in accordance with the manufacturers requirements, flush out on completion. Check that washers and/or ceramic discs are operating correctly.

6. Upon completion pressure test to ensure no leakage and leave in proper working order. Clean tapware and fittings.

DRAINAGE

1. All Drainage work to comply with G13/AS2 (foul water) and E1 (Stormwater)
2. UPVC pipes, bends, junctions, fittings and joints to be brand matched and complete to the manufacturers specifications.
3. Excavate for drains to a firm even base with correct gradients set in straight runs.
4. Install Gully traps to NZBC acceptable solution G13/AS2, 3.2 complete with grating 50mm above ground.
5. Lay Foulwater drains in straight lines to correct gradients, to discharge into the network utility sewer system . Set Inspection fittings on a concrete base.
6. Lay Stormwater drains in straight lines to correct gradients, to discharge into the network utility stormwater system. Confirm the required location of downpipes and finished ground levels before commencing pipework.
7. Field test drains for watertightness to the satisfaction of Territorial Authority inspector. Provide 1:100 as built drawing to the Territorial Authority and owner upon completion.

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ELECTRICAL

1. Carry out work by or under the direct supervision of a holder of a practising licence under the Electricity Regulations 1997.
2. Comply with the Electricity Regulations 1997, AS/NZS 3000, AS/NZS 3008.1.2 and the New Zealand electrical codes of practice for listed and prescribed work and with the utility network operator's requirements.
3. Provide fittings and connections as shown on the plan and the variation schedule and install as per manufacturers recommendations.
4. Install main earth to the installation and bond all exposed and accessible metal to earth continuity conductor.

GAS

1. All gas work to be carried out by experienced competent craftsman gasfitters, or registered gasfitters working under the direction of a craftsman gasfitter familiar with the materials and techniques specified.
2. All gas work shall comply with the Gas Regulations and other network utility operator's requirements. Give notices for inspections and carry out tests as required.
3. Provide a Gasfitting Certification Certificate as required by Regulation 24 of the Gas regulations Act 1993.
4. Design the piping system with pipe sizes to give a minimum pressure at any appliance inlet of 1.13kPa for natural gas when all appliances are in use, and with a maximum design pressure drop from meter outlet to any appliance of 80 Pa. All to NZS 5261.
5. Install all piping, joints, and fittings in accordance with NZS 5261
6. Pressure test the system for leakage to NZS 5261 prior to lining.
7. Submit the work for inspection and test and prove to the satisfaction of the gas retailer that the installation complies with all Acts and regulations.
8. Install gas appliances, complete with flues where required to manufacturers specifications and in accordance with NZS 5261.
9. Install Gas Hot water Heater to manufacturers specifications and in accordance with NZS 5261.
10. Upon completion leave the installation including the appliances clean and in full working order.

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PAINTING

1. All Painted surfaces shall be prepared in accordance with manufacturers specifications.
2. All paints used shall be from an approved manufacturer and applied in accordance with manufacturers specifications
3. Wet area wall linings to be finished with semi-gloss or gloss coating.
4. Work shall only be carried out by competent tradesman, all surfaces shall be checked prior to commencing work to ensure that they are ready to receive paint or paper.
5. Cleaning, On completion of work, clean down all areas where paint has been splashed or spilled, Clean off all paste marks from paintwork.

FLOOR LININGS

CARPETING

1. All carpet to be in accordance with The New Zealand Carpet Manufacturers Association (NZCMA) Conditions of Warranty and installation guide. To be installed by a competent, experienced layer familiar with the NZCMA instructions for the specified carpet.
2. Protect adjoining work surfaces and finishings during installation and make good any damage.
3. Upon completion thoroughly vacuum the finished carpet.

VINYL FLOOR LININGS

1. Preparation - Check that each colour supplied is from the same batch, ensure floor surface is free of dust and debris.
2. Apply approved adhesive as required by the vinyl manufacturer without trowel marks, Follow the requirements for open time, noting the substrate porosity, ambient temperature and relative humidity. Remove excess adhesive as work proceeds.
3. Roll out and cut vinyl to the manufacturers requirements, ensure no air bubbles or twisting, keep seams clear of adhesive.
4. Upon Completion thoroughly ensure surface is free of dust and debris, vacuum off, damp mop with a low foam neutral detergent.

TILES

All tiles to be installed as per manufacturers requirements, ensuring correct use of adhesive and grouts for the specific tile and situation.
To comply with AS 2358, AS 3740, AS 3958, BS 6431 and BRANZ Good practice guide - Tiling