

General Property Information

11 Lynwood Terrace, Nelson

Created: 7 March 2023

PLEASE NOTE –

THIS IS NOT A LAND INFORMATION MEMORANDUM (LIM)

If you require further information on this property you can request the following:

1. A copy of the property file. There is a charge for this if you are not the owner of the property. The file will be either electronic or hard copy depending on the address.
2. Land Information Memorandum (LIM). There is a charge for this. The report contains information that is held by the council regarding the land.

Any property file whether electronic or paper will not contain:

- confidential records
- building consents that have no Code Compliance Certificate
- resource consents that are still being monitored
- subdivision resource consents
- Land Information Memorandums (LIMs)
- Slip information



Contents

1. Nelson Resource Management Plan (NRMP)
Hazard Overlay Map
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information brochure
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5. General Property Information (GPI) Summary
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NRMP Hazard Overlay

11 Lynwood Terrace, Nelson



Created 07 March 2023

Hazard Study Information

It is part of Council's role to research and collect new information on a variety of local hazards so we can help to appropriately manage the risk to people and property. Council is required by law not only to investigate hazards, but to make the research available to anyone who is affected or interested.

The information below only relates to the areas covered by Council's recent research. It is important to note that there is potential for flooding, liquefaction, landslides and other natural hazards to happen in other areas around Nelson too.

Refer to the links for maps and information on the hazards below.

Fault Hazard

<http://www.nelson.govt.nz/environment/nelson-plan/natural-hazards/faults-line/>

Nelson Flood Models

<http://www.nelson.govt.nz/environment/nelson-plan/natural-hazards/flooding/>

Interactive map <http://nelson.govt.nz/river-flooding-map>

Liquefaction

<http://www.nelson.govt.nz/environment/nelson-plan/natural-hazards/liquefaction/>

Historic land use and potential soil contamination

<http://www.nelson.govt.nz/building-and-property/hail-sites>

Coastal Inundation

<https://shape.nelson.govt.nz/coastal-hazards>

Slope Instability Overlay

<http://www.nelson.govt.nz/environment/nelson-plan/natural-hazards/slope-instability/>

More information

Copies of all the latest reports and information that Council holds on hazards are available to download on our website at <http://nelson.govt.nz/environment/nelson-plan/natural-hazards/>

How can I find out if my soil is contaminated or not?

Inclusion on the HAIL site database does not mean that the soil must be tested. However, if you have reason to believe your soil is definitely contaminated or you want to know for your own information, you could get it tested.

Where the NESCS requires that a preliminary or detailed site investigation is done as part of a proposed change to land use or earthworks at a potentially contaminated site, that must be done by a "Suitably Qualified and Experienced Person" (SQEP).

This means that soil sampling done by anyone other than a SQEP can't be accepted as evidence of the contamination status of the site.

A SQEP has to be well qualified and have lots of experience assessing potentially contaminated land. Nelson City Council and Tasman District Council hold a joint list of SQEP's who can provide a contamination assessment. See a copy of the current list on the website.

More information

For more details about the HAIL, the Council database, soil testing, possible contaminants and the NESCS, please visit the Council website, nelson.govt.nz and search on HAIL.



H.A.I.L SITES



Hazardous Activities and Industries
List Information



Nelson City Council
te kaunihera o whakatū

Civic House, 110 Trafalgar Street, Nelson
03 546 0200 • nelson.govt.nz



Nelson City Council
te kaunihera o whakatū



What are HAIL sites?

HAIL sites are pieces of land where hazardous substances might have been used, stored or disposed of. These are identified by the Hazardous Activities and Industries List (HAIL), which is a group of activities and industries that are considered likely to cause land contamination. The list has been compiled by the Ministry for the Environment. The HAIL aims to identify most situations where hazardous substances could cause, and in many cases have caused, land contamination.

The fact that an activity or industry appears on the list does not mean that hazardous substances were used or stored on all sites occupied by that activity or industry. Nor does it mean that a site used by that industry will always have hazardous substances present in the land. The list just highlights that there is a greater probability of site contamination occurring than for other uses or activities.

You can download a copy of the HAIL on the Council website, nelson.govt.nz and search on HAIL.

Why is Council identifying HAIL sites?

By identifying sites where hazardous substances might have been used, stored or disposed of, we can ensure that the sites do not present a risk to human health when they are used or developed.

It helps Council and the community to comply with the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS).

It informs land owners that there is potential for the land to be contaminated and that further investigation would be needed before constructing new buildings or changing the land use. A resource consent may be needed in some cases.

Is a HAIL site the same as a contaminated site?

No. It's important to note that this is a land use assessment and no soil testing has been carried out by Council. Inclusion on the database does not mean that soil contamination is present.

Nelson City Council has made a database of all the areas of Nelson where our information shows that HAIL activities are taking or have taken place. Research has been done using historical photos, trade directories and property information to establish which areas of land in Nelson could be at risk of contamination because they are likely to have been used for HAIL activities in the past. For example, if the land was once an orchard and chemical sprays were used, or perhaps it was a farm that had a sheep dip or a fuel tank, there is a risk of soil contamination.

My property is listed as a HAIL site – what does that mean for me?

Inclusion on the HAIL site database does not necessarily mean that your soil is contaminated. Using a raised garden bed for growing vegetables can be helpful if you are concerned about soil contamination.

Also, if you want to build on your property, you will need to meet the requirements under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS). This could mean you may need a resource consent to carry out certain work.

If you are especially concerned or have reason to believe that your soil is definitely contaminated you can get it tested at your own expense. For more information about soil testing see our website, nelson.govt.nz and search on HAIL.

Can a property be removed from the database?

The only way to remove a property from the database is to show that HAIL activity has never taken place on that site.

However, if you have any soil testing or other relevant information, please let Council know as this can be included in the property file and used to update the status of the property on the database.

I am considering selling, buying a property or building on a HAIL site. What does that mean?

Information about whether a property is on the HAIL site database will be included on a Land Information Memorandum (LIM) for the property you are considering. A LIM is advisable when purchasing a property to ensure you are aware of the most accurate information we have relating to that property.

Information relating to HAIL status is also included on the Project Information Memorandum (PIM) for the property which you should request before doing any building project.

Be aware that if a property is included on the HAIL site database, and you wish to carry out any Building works, you will have to comply with the NESCS regulations (Sections 7 to 11). A resource consent may be required if the project cannot comply with the "permitted standards" in these regulations. The NESCS regulations are also triggered when a subdivision consent is applied for.

The requirements will vary from case to case, so it's important to talk to the Council early in the process for any activity that you're planning to carry out, including building, earthworks, subdivision etc.



Information about property files

Nelson City Council has made this information available under Sections 10 to 18 (inclusive) of the Local Government Official Information and Meetings Act 1987 only. Nelson City Council does not warrant its accuracy and disclaims all liability whatsoever for any error, inaccuracy or incompleteness of the information without seeking appropriate independent and professional advice. The information provided does not constitute a Land Information Memorandum or any similar document. All Property Records are the property of Nelson City Council.

Property information held on a property file is for completed applications only. Applications being processed are added to the property file once the process is completed or code compliance certificate issued.

Any property file whether electronic or paper may exclude:

- confidential records
- building consents that have no Code Compliance Certificate
- resource consents that are still being monitored
- subdivision resource consents
- Land Information Memorandums (LIMs)
- Slip information

Information regarding slip reports on a property can be obtained by purchasing a LIM.

Older plans may include microfiche records and be of poorer quality.

General Property Information: 1975044305

Property

Valuation No	1975044305
Location	11 Lynwood Terrace, Nelson
Legal Description	LOT 5 DP 303491
Area (Hectares)	0.0594

Rates

Government Valuation

Land	470,000
Improvements	400,000
Capital Value	870,000

Current Rates Year 2022 to 2023

Planning/Resource Management

5/09/00 RESOURCE CONSENT 005179 : Create 39 residential lots,3 access lots,1 reserve lot & two new streets : Section 224 Issued 21/05/03
(Found on related property: 1975044301)

Building

5/01/04 BUILDING CONSENT 031274 : Erect dwelling with internal garage : Code Compliance Certificate issued 26/01/05
(Found on related property: 1975044301)

1/05/02 BUILDING CONSENT 020391 : Erect new dwelling / internal garage : Code Compliance Certificate issued by Certifier 29/10/02

Licences

30/01/2001 ENVIRONMENTAL HEALTH NOTES Flammable Vegetation Legal Notice Issued
(Found on related property: 1975044301)

Sewer and Drainage

No information located

Land and Building Classifications

No information located

Transport

18/10/02 TRANSPORT NOTES Install vehicle crossing - 11 Lynwood Tce

12/09/02 TRANSPORT NOTES Notice - Vehicle crossing on property

Special Land Features

No information located

Swimming Pools

No information located

Other

No information located

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Conditions Report



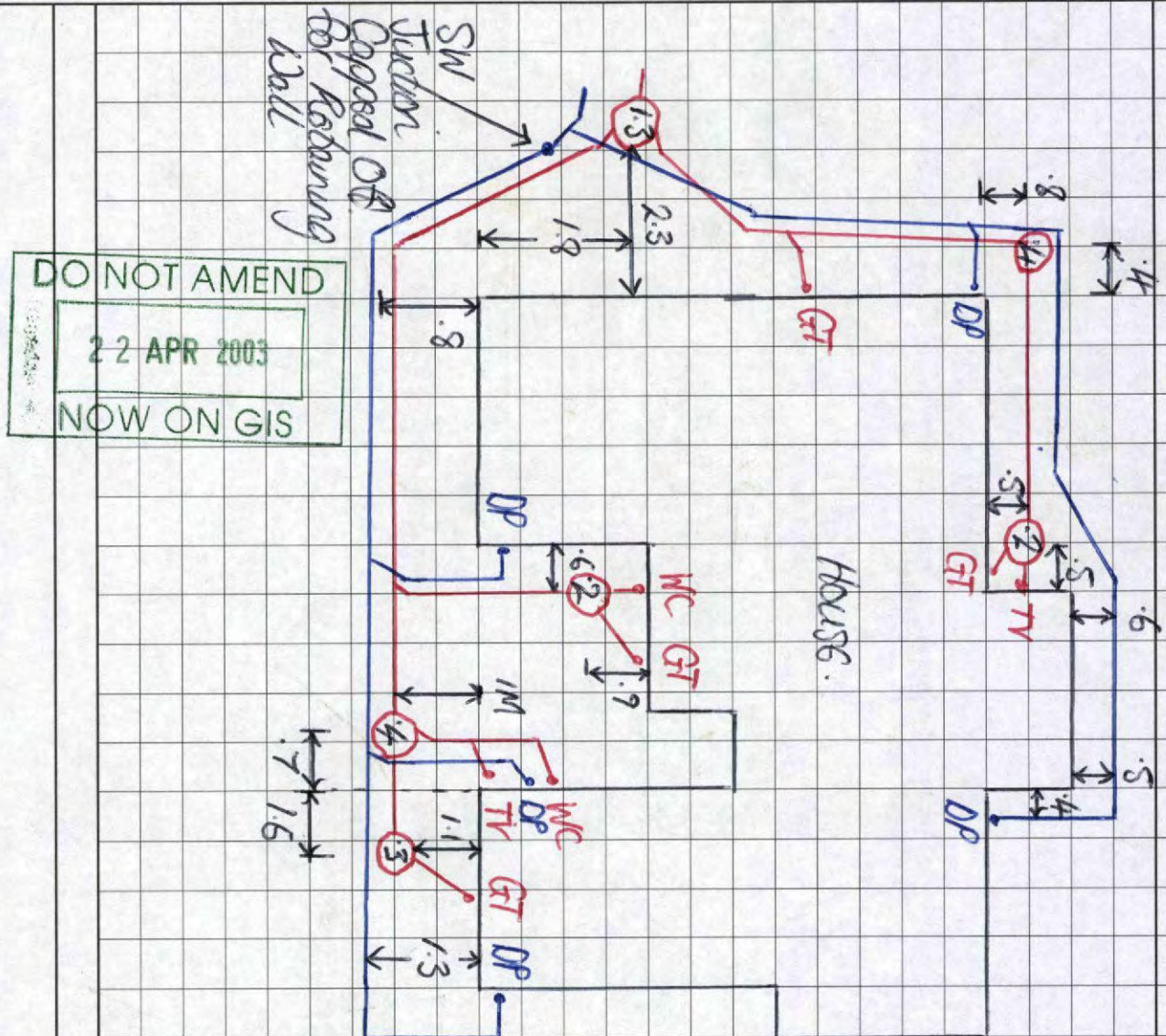
View All Conditions ([https://nelsoncity.sharepoint.com/sites/ecm-propertyhub/SitePages/NMapConditions.aspx?q=Filename:"Property Condition C1029" OR Filename:"Property Condition C1010" OR Filename:"Property Condition C0002" OR Filename:"Property Condition C1401"](https://nelsoncity.sharepoint.com/sites/ecm-propertyhub/SitePages/NMapConditions.aspx?q=Filename:\))

LINZ ID	Address	Condition Number	Condition Description	Diagram	Links
6549460	11 Lynwood Terrace, Nelson	C1029	Restricted Area and Stability	Y	Open in SharePoint (<a c1029\""="" condition="" href="https://nelsoncity.sharepoint.com/sites/ecm-propertyhub/SitePages/NMapConditions.aspx?q=Filename:\" property="">https://nelsoncity.sharepoint.com/sites/ecm-propertyhub/SitePages/NMapConditions.aspx?q=Filename:"Property Condition C1029")
6549460	11 Lynwood Terrace, Nelson	C1010	Access	N	Open in SharePoint (<a c1010\""="" condition="" href="https://nelsoncity.sharepoint.com/sites/ecm-propertyhub/SitePages/NMapConditions.aspx?q=Filename:\" property="">https://nelsoncity.sharepoint.com/sites/ecm-propertyhub/SitePages/NMapConditions.aspx?q=Filename:"Property Condition C1010")
6549460	11 Lynwood Terrace, Nelson	C0002	Uncertified Fill	N	Open in SharePoint (<a c0002\""="" condition="" href="https://nelsoncity.sharepoint.com/sites/ecm-propertyhub/SitePages/NMapConditions.aspx?q=Filename:\" property="">https://nelsoncity.sharepoint.com/sites/ecm-propertyhub/SitePages/NMapConditions.aspx?q=Filename:"Property Condition C0002")
6549460	11 Lynwood Terrace, Nelson	C1401	Air Plan	N	Open in SharePoint (<a c1401\""="" condition="" href="https://nelsoncity.sharepoint.com/sites/ecm-propertyhub/SitePages/NMapConditions.aspx?q=Filename:\" property="">https://nelsoncity.sharepoint.com/sites/ecm-propertyhub/SitePages/NMapConditions.aspx?q=Filename:"Property Condition C1401")

NELSON CITY COUNCIL

Address: 101 S Lynwood Estate Consent No. 020391
Owner: BeP Hocking 21 NOV 2002 Inspector: _____
Drainlayer: Leo Bartley NCC Date: 18 / 7 / 02

DRAINAGE PLAN



Building Consent No.	130291 ✓ 020391
Date Received	23/4/02

NELSON CITY COUNCIL

APPLICATION FOR BUILDING CONSENT

Section 33, Building Act 1991

(Insert a cross in each applicable box. Attach relevant documents in duplicate)

<p>APPLICANT* (See note below)</p> <p>Name: <u>B. P. HOSKING</u></p> <p>Mailing Address:</p> <p>Contact Name: <u>PRIME BUILDING COMPL LTD</u></p> <p>Contact Address: <u>9- 9/159 HARDY STREET</u></p> <p>Position: <u>CERTIFIER</u></p> <p>Phone: <u>545-7391</u> Fax: <u>546-7947</u></p> <p><u>*5456275</u></p>	<p>PROJECT</p> <p>New or Relocated Building <input checked="" type="checkbox"/></p> <p>Alteration <input type="checkbox"/></p> <p>Description of work (in detail): <u>NEW RESIDENTIAL GARAGE WITH INTERNAL ACCESS GARAGE</u></p> <p>Intended Life:</p> <p>Indefinite, but not less than 50 years <input checked="" type="checkbox"/></p> <p>Specified as years <input type="checkbox"/></p> <p>Demolition <input type="checkbox"/></p> <p>Being stage <u>1</u> of <u>1</u> stages</p> <p>Attach additional information if necessary to describe the project</p>
<p>PROJECT LOCATION</p> <p>Street Address: <u>11 LOTS, LYNNWOOD ESTATE</u></p>	<p>SIZE OF BUILDING</p> <p>Floor Number</p> <p>Area: <u>180-4</u> m² Dwelling Units <u>1</u></p> <p>Number of Storeys <u>1</u></p>
<p>LEGAL DESCRIPTION</p> <p>Valuation Roll Number:</p> <p>Lot: <u>5</u> DP: <u>13982</u></p> <p>Section: Block:</p> <p>Survey District:</p>	<p>VALUE OF WORK</p> <p>Building: \$ <u>115,000.00</u></p> <p>Plumbing & Drainage \$ <u>20,000.00</u></p> <p>Total: (Including GST) \$ <u>135,300.00</u></p> <p>Council charges for consent checking are based on the actual time spent checking plans and details plus an estimate of the number of site inspections required. Checking amendments to consents and extra inspections will be separately invoiced.</p> <p>This application is for</p> <p><input type="checkbox"/> Building consent only.</p> <p><input checked="" type="checkbox"/> Both building consent and a project information memorandum.</p>

Under Section 33 of the Building Act 1991 the applicant must be the owner of the land on which building work is contemplated or a person who or which has agreed in writing, whether conditionally or unconditionally, to purchase the land or any leasehold estate or interest in the land, or to take a lease of the land, while the agreement remains in force.

Any person acting for or on behalf of the owner must be authorised in writing. Proof of authorisation is to be provided to Council.

The Nelson City Council will invoice the applicant for all costs associated with this Building Consent.

THE APPROPRIATE ITEMS IN THE FOLLOWING LIST OF INFORMATION MUST BE SUPPLIED TO THE COUNCIL, BEFORE YOUR APPLICATION WILL BE ACCEPTED

APPLICATION DETAILS:	Info supplied	Info required
1. Building Consent Application fully completed and signed by Owner/Applicant.		
2. Letter from Property Owner authorising application if Applicant is not owner.		
3. Copy of current search copy of Certificate of Title for building site.		
4. Details of any Resource Consent applications lodged or granted.		
PLANS AND SPECIFICATION:- (2 copies required)		
1. Fully detailed and dimensioned Site Plan , including site levels, floor height above finished ground level and all existing buildings.		
2. Fully detailed Drainage Plan with discharge points, i.e. Sewer and Stormwater, including levels, gutter & downpipe size and location. In rural areas provide Design Details of Septic Tank and effluent disposal system, including well location for water supply and any water test to show water potability.		
3. Fully detailed and dimensioned Floor Plans, Elevations, Cross Sections and Construction Details . Show position of all Sanitary Fittings and provide a Layout Plan of water supply pipes & Toby, waste pipes and soil pipe installations.		
4. Detailed Specification covering the building, plumbing and drainage works in accordance with the Building Code.		
5. Fully detailed Schedule of Materials . Must include Glazing details.		
6. Roof Truss Layout Plan and design details from an approved manufacturer.		
7. Wall and Subfloor Bracing calculations, schedule and layout plan, in accordance with NZS3604:1990. (NB. Subfloor bracing only for piled foundations)		
8. Hot Water System details: type, storage capacity and tempering valve details.		
9. Producer Statements for design and/or construction, i.e. Geotechnical, Structural, Specialist Systems OR detailed written report and calculations.		
10. Details of Proposed Storage of hazardous substances and/or processes.		
11. Fire Safety Design Summary and/or specific fire engineering design.		
12. Log Fire installation instructions. Indicate if wet-back is to be included.		

What materials will be used for the (tick boxes)

Floor

- 1 ☐ Timber
 2 ☒ Concrete
 3 ☐ Wood products

Insulation

- 1 ☒ Fibreglass
 2 ☐ Masserated paper
 3 ☐ Wool
 4 ☐ Foil
 5 ☐ Other

Framing

- 1 ☒ Timber
 2 ☐ Concrete
 3 ☐ Steel

Energy

- 1 ☒ Electric
 2 ☐ Gas
 3 ☐ Solid Fuel

Outer Walls

- 1 ☐ Brick
 2 ☐ Concrete
 3 ☐ Concrete block
 4 ☐ Cement board
 5 ☒ Plaster
 6 ☐ Timber
 7 ☐ Steel
 8 ☐ Aluminium
 9 ☐ Other

Roof

- 1 ☒ Steel
 2 ☐ Concrete tiles
 3 ☐ Steel tiles
 4 ☐ Shingles
 5 ☐ Aluminium
 6 ☐ Other

KEY PERSONNEL

(Please complete as far as possible in all cases. Give names, addresses and telephone numbers.
Give relevant registration numbers if possible)

Builder(s): G. J. GARDNER HOMES LTD, 199 QUEEN STREET

Designer(s): JAMES PATERSON, Ph. 544-4520

Building Certifier(s): PRIME BUILDING COMPL. LTD

9/159 HARDY STREET

Ph. 545-7391

Registered Drainlayer: LEO FEARNLEY LTD, Ph. 548-5455

Registered Plumber: TIM MILLER PLUMBING, Ph. 547-4532

Note: Registered Gasfitter and Electrician are required to be nominated only when:

- a) The work undertaken is to be covered by a Compliance schedule.
- b) The owner wishes to obtain a Building Consent for the energy work.
(the owner will incur additional cost of checking and certification).


Registered Gasfitter: NA

Registered Electrician: HOLMES BROTHERS, Ph. 547-1447

Registered Engineer(s):

Other:

Signed for and on behalf of the applicant:

Name:  Position: AGENT FOR PRIME Date: 19/4/07

COMPLIANCE SCHEDULE DETAILS

SYSTEMS NECESSITATING A COMPLIANCE SCHEDULE

(Please complete for all new buildings and alterations, except single residential dwellings)

The building will contain the following *(cross each applicable box and attach proposed inspection, maintenance and reporting procedures)*:

- ☐ Automatic sprinkler systems or other systems of automatic fire protection.
- ☐ Automatic doors which form part of any fire wall and which are designed to close shut and remain shut on an alarm of fire.
- ☐ Emergency warning systems for fire or other dangers.
- ☐ Emergency lighting systems.
- ☐ Escape route pressurisation systems.
- ☐ Riser mains for fire service use.
- ☐ Any automatic flow-back preventer connected to a potable water supply.
- ☐ Lifts, escalators or travelators, or other similar systems.
- ☐ Mechanical ventilation or air conditioning system serving all or part of the building.
- ☐ Any other mechanical, electrical, hydraulic or electronic system whose proper operation is necessary for compliance with the Building Code.
- ☐ Building maintenance units for providing access to the exterior and interior walls of the building.
- ☐ Such signs as are required by the Building Code in respect of the above-mentioned systems.
- ☒ None of the above.

E2: OTHER SYSTEMS AND FEATURES TO BE INCLUDED IN THE COMPLIANCE SCHEDULE

(Please complete only if the building contains one or more of the systems listed above)

The building will contain the following *(cross each applicable box and attach proposed inspection, maintenance and reporting procedures)*:

- ☐ Means of escape from fire.
- ☐ Safety barriers.
- ☐ Means of access and facilities for use by persons with disabilities which meet the requirements of Section 25 of the Disabled Persons Community Welfare Act 1975.
- ☐ Hand-held hoses for fire fighting.
- ☐ Such signs as are required by the Building Code or Section 25 of the Disabled Persons Community Welfare Act 1975.

BUILDING CONSENT

020391

NCC

Nelson City Council Building Consent Check Sheet

BC/PIM No: 020391

RC No:

DATE: 23.4.02.

Project: Erect new dwelling / internal garage
Applicant: B & P Hosking.
Location: 11 Lynwood Terrace.
Legal Description: Lot 5 DP ?
Special Conditions: 11, 2, 945, 1010, 1089

Administration

Z100 Z200 Z300 Z400 Z500

ZB02 Site Inspection

ZB04 ZB05 ZB06

ZC02 FoundationZC04 ZC06 ZC08 ZC10 ZC13
ZC14 ZC16 ZCE8**ZD02 Retaining Walls**ZD04 ZD06 ZD12 ZD14 ZD16
ZD18 ZDE0**ZE02 Building Structure**ZE04 ZE06 ZE08 ZE09 ZE10
ZE11 ZE12 ZE14 ZGE3**ZH02 Plumb/Drainage**ZH03 ZH04 ZH05 ZH06 ZH07
ZH08 ZH10 ZH12 ZH15 ZH16**ZI02 Exterior Cladding**

ZI04 ZI06 ZIO8

ZK02 Solid Fuel Heater

ZK04 ZK06

ZM02 Final InspectionZM05 ZM08 ZM10 ZM12
ZM14**ZO02 Safety Systems**ZO04 ZO06 ZO08 ZO10 ZO12
ZO14 ZO16 ZO18 ZO20 ZO22**ZU02 GIS Plan Update Req'd**ZU04 Footprint/Roof Outline
ZU06 Drainage Card Detail

Department	Date	Not	Date	App
Building				
Plumbing & Drainage				
Planning			30/4/02 TM	
Subdivision				
Services & Floor levels				
Dangerous Goods				
Health				
Other				

NOTES:

DATE:

CONDITION No: 11

STREET ADDRESS:

LEGAL DESCRIPTION:

PROPERTY OWNER
or SUBDIVIDER:

SCHEME PLAN No:

NCC PLAN No:

AUTHORITY:

REASON FOR CONDITION:
(Abbreviated)

CONDITION:

This land may be of suspect stability. Prior to the consideration by Council of a scheme plan of subdivision or a building permit application a report on the site by a Specialist in soils and foundation engineering (Geotechnical Engineer) shall be required. The report shall define on each lot where there is a suitable site for the erection of a residential building and if any special conditions should apply.

Date Entered:

DATE: -----

CONDITION No: 2

STREET ADDRESS:

LEGAL DESCRIPTION:

PROPERTY OWNER
or SUBDIVIDER:

SCHEME PLAN No:

NCC PLAN No:

AUTHORITY:

REASON FOR CONDITION:
(Abbreviated)

CONDITION:

This site has had uncertified filling placed on it. The plans accompanying all applications for Building Permits shall be signed by a Registered Engineer, stating that in his opinion the proposed excavations, foundations and drainage measures are satisfactory.

Date Entered: -----

DATE: 8-Dec-00 CONDITION No: 945
STREET ADDRESS: 177 Waimea Road
DIAGRAM: No
LEGAL DESCRIPTION Lot 30, 19 and 17 DP? (new lot at scheme plan stage)

PROPERTY OWNER
or SUBDIVIDER: NCC / Market Developments

SCHEME PLAN No:

NCC PLAN No: 36/1154, RC 005179

AUTHORITY: Shane Overend

REASON FOR CONDITION:
(Abbreviated) To preserve a secondary flood route

CONDITION:

A stormwater secondary flood route has been established within this property. The route is as detailed on NCC Eng. Plan 36/1154.

The landowner is responsible for ensuring that the secondary flood route remains in place and unrestricted at all times. A consent notice has been placed on this property accordingly.

Date Entered: 6-Mar-01

DATE: 26-Nov-01 CONDITION No: 1010

STREET ADDRESS: 177 Waimea Road, 5,7,9,11,13 Market Rd

DIAGRAM: No

LEGAL DESCRIPTION All Lots LT 303220

PROPERTY OWNER
or SUBDIVIDER: Market Developments Ltd

SCHEME PLAN No: RC 005179

NCC PLAN No: 36/1154

AUTHORITY: James Hopkins Infrastructural Assets

REASON FOR CONDITION:
(Abbreviated) Vehicle crossings not formed at the time of subdivision.

CONDITION:

Building consent can only be issued once a vehicle crossing has been approved in accordance with Nelson City Council Engineering standards 1993 and Nelson Resource Management Plan.

Date Entered: 27-Nov-01

DATE: 10-Apr-02 CONDITION No: 1029

STREET ADDRESS: Market Road/Lynwood Avenue

DIAGRAM:

LEGAL DESCRIPTION Lots 1, 2, 38 - 40 DP 303220; 3-6, 27 - 37 & 44 LT 303491

PROPERTY OWNER
or SUBDIVIDER: Market Developments Ltd

SCHEME PLAN No:

NCC PLAN No:

AUTHORITY:

REASON FOR CONDITION:
(Abbreviated)

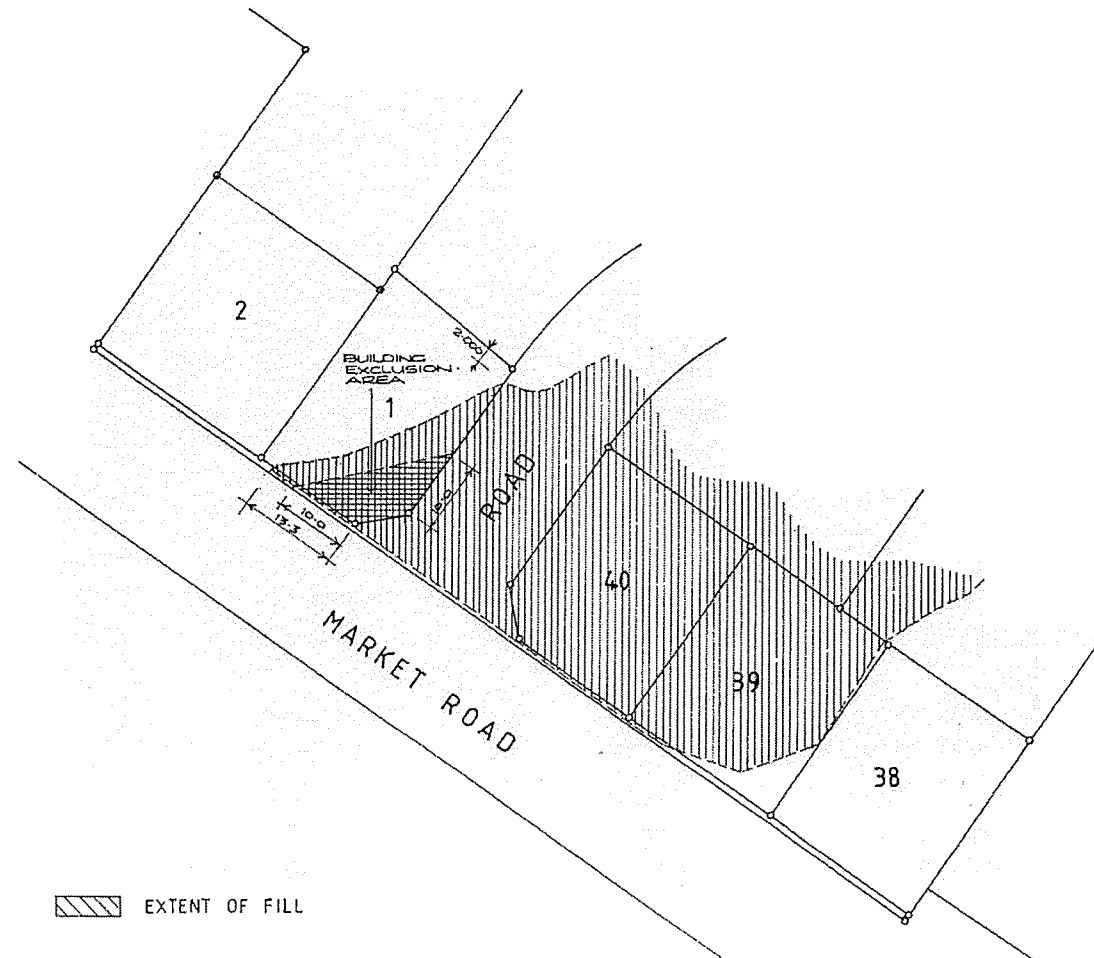
CONDITION:



GEOTECHNICAL CONDITIONS - STAGE 1 AND STAGE 2

- (i) With the exception of Lots 1 and 2 DP 303220 and Lots 4, 13 and 44, which contain building exclusion areas, all of the lots have been certified by Golder Associates (NZ) Ltd as suitable for residential buildings. The building exclusion area, involving uncertified filling, on Lot 1 is shown on Cameron Gibson & Wells drawing 9721 – Sheet 1 dated November 2001 and for Lots 2, 4, 13 and 44 the building exclusion areas, involving an excavated face, are shown on Golder Associates plan 01645640/3210 - Fig 1 dated February 2002 and as amended April 2002.
- (ii) Foundations shall penetrate topsoil, subsoil and loose fill to bear in competent natural ground or fill certified by Cameron Gibson & Wells as meeting the requirements of NZS 4431:1989 - *Code of practice for earthfill for residential development*. As the subdivision involves substantial cuts and fills areas of loose fill may be present on any of the lots.
- (iii) Foundation excavations for buildings meeting NZS 3604:1999 – *Timber framed buildings* shall be extended to penetrate into ground of good bearing capacity by a minimum of 200 mm. The excavations shall be inspected and approved by a registered engineer experienced in foundations who shall also confirm in writing to the Inspections Supervisor, Planning & Consents, Nelson City Council the suitability

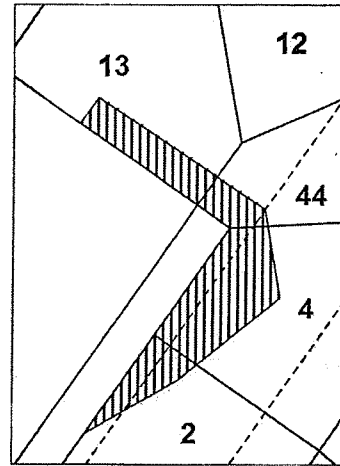
of the ground conditions for the building. Foundations for buildings not meeting NZS 3604 shall be specifically designed and constructed under the supervision of a registered engineer experienced in foundations.

- (iv) No cuts and fills in excess of 1.2 m in height or depth shall be undertaken without the prior approval of an experienced engineering geologist or a registered engineer practising in geotechnical engineering. The latter shall also design and supervise the construction of any retaining walls that may be necessary.
- (v) All structural fills shall be placed in accordance with NZS 4431:1989 – *Code of Practice for Earthfill for Residential Development*. Non-structural fills shall be placed in a competent manner with track rolling in thin incremental layers and shall include adequate stripping, benching and underdrainage of the underlying materials.
- (vi) All structures not founded in competent ground may be subject to differential settlement and allowance shall be made for potential settlement of all structures, including across cut/fill interfaces present on Lots 27, 29, 30, 31 33, 34, 35, 37 and 39. The approximate positions of the interfaces are shown on Cameron Gibson & Wells drawings 9721 – Sheet 1 dated November 2001 and Sheet 2 dated February 2002.
- (vii) Subsurface drains exist, as shown on Staig & Smith plan 6693M dated 15 February 2002, on Lots 30, 36 and 40. Foundations and lot development shall not affect the integrity of the drains.
- (viii) Stormwater from roofs and paved areas, discharges from drainage and retaining walls and overflows from standing water such as swimming pools and ponds shall be conveyed in a controlled manner to the Nelson City Council Stormwater System.
- (ix) Each lot, and in particular the steep slopes within Lots 2, 4, 13 and 44, shall be maintained in a vegetation cover that inhibits erosion and enhances slope stability.



Notes	
Verify all dimensions on site Do not scale from drawing	
	
App.	Rep.
No.	Date
Amendment	
Dm/Clk/Asp	
CAMERON GIBSON & WELLS LTD	
CONSULTING CIVIL & STRUCTURAL ENGINEERS P.O. BOX 10000, AUCKLAND, NEW ZEALAND	
	
Design R.W.	
Drawn A.D.	
Checked	
Approved YES	
Date NOV. 01.	
Job Title	
MARKET DEVELOPMENTS STAGE 1	
Drawing Title	
SITE PLAN EXTENT OF FILL	
C 1029-1	
Scale	Of Sheets
1:500	
Job No	Sheet
9721	1

Date Entered: 10-Apr-02



Enlargement
Scale 1:500



- Cross Section (refer Fig
- Lots referred
-

15 0 15 30
metres



CLIENT Cameron Gibson Wells Ltd		PROJECT MARKET DEVELOPMENTS	
DRAWN MCD	DATE February 2002	TITLE SUBDIVISION PLAN	
CHECKED	DATE	PROJECT NO 01645640	
SCALE 1:1250	FILE Plan.wor	A3	REPORT NO 01645640/0210
			FIGURE NO 1

C 029-2

20 NOV 2002
Nelson City Council

20 NOV 2002
Nelson City Council



Prime Building Compliance Ltd

Administrative Centre

211 High Street

PO Box 387, Rangiora

Phone 03-313 1640

Fax 03-313 1645

Call free 0800 724 2378

Email info@primebc.co.nz

Website www.primebc.co.nz

BUILDING CERTIFIER'S INSPECTION REPORT

Section 57(3)(a), Building Act 1991

For the period 1 October to 31 October 2002

Issued by PRIME BUILDING COMPLIANCE LTD, currently approved and registered as a building certifier.

To: Nelson City Council

This is to report that:

As detailed on the page headed "Scope of Building Certifier's Engagement No 24", attached to this report or a previous report in this series, the building certifier has been engaged to inspect:

☒ All of the building work

in relation to:

☒ All of the provisions of the building code

That building work:

☒ Has progressed to the extent specified in the attached page(s).

The building certifier is satisfied on reasonable grounds that to date that building work

☒ Has been undertaken in accordance with the plans and specifications attached to the above building consent

Signed by or for and on behalf of the building certifier

A handwritten signature in black ink, appearing to read "David Crawford".

Name: David Crawford

Position: Approved Signatory

Date 19 November, 02



10454

NOTICE OF INSPECTION

Building Act 1991 - Section 77 (1)

Owners Name: Haskings.
Site Address: 11 LOT 5 Lynwood Estate. Nelson

Local Auth. Consent No. 020391
Prime Job No. 20021763.
Officer: S. Dale

How Notified

☐ Notified Direct☐ Left on Site

To the Owner / Agent / Occupier / Contractor

Please take note that on the 12 / 9 / 02 at 4.30 am/pm this site was inspected pursuant to the Building Act 1991

The purpose of the inspection was ☐ Structure ☐ Plumbing ☐ Drainage

- ☐ Siting
- ☐ Foundation
- ☐ Slab / Sub Floor
- ☐ Mid Height Veneer
- ☐ Bond Beam
- ☐ Preline

- ☐ Pre Stop
- ☐ Drainage
- ☐ Effluent Disposal
- ☐ Compliance Schedule
- ☒ Final
- ☐ Warrant of Fitness

- ☐ Swimming Pool Fencing
- ☐ Dangerous Goods
- ☐ Complaint
- ☐ CCC Issue Y / N
- ☐ Other (Specify)
- ☐ Partial (Specify)

Heating Unit

Comments

Inspection Notes

Reinspection to concrete patios.

①. Rear patio tested with 150mm sphere for adequate fall. I am satisfied with drainage to this surface area.

②. Patio off Bed 1. tested with water and sphere. I identified as adequate fall. However the internal corner for approximately .3m² is holding water and needs to be addressed. A minor detail but should be rectified.

REINSPECTION REQUIRED

YES / ☒ NO

Signature



PRIME BUILDING COMPLIANCE LTD 211 High Street PO Box 387 Rangiora
Tel: (03) 313 1640 Fax: (03) 313 1645 Call Free 0800 724 2378 Email: info@primebc.co.nz

ENTERED 362

NOTICE OF FINAL INSPECTION

Building Act 1991 - Section 77 (1)

Owners Name: B. & P. Hoskings Local Auth. Consent No. 020391
Site Address: 11 BISHOPDALE Prime Job No. 20021763
Nelson Officer: S DALE

To the Owner / Agent / Occupier / Contractor

Please take note that on the 28/8/02 at 8 am/pm this site was inspected pursuant to the Building Act 1991

INTERIOR

PLUMBING

- ☒ SEISMIC RESTRAINT
- ☒ TEMPERING VALVE
- ☒ WATER TEMPERATURE 50°C
- ☒ HOT WATER DRAIN POINTS
- ☒ HOT WATER CYLINDER VALVING
- ☒ HEADER TANK RESTRAINED TRAY & OVERFLOW/LAGGING
- ☒ WETBACK MUST BE OPEN VENTED SYSTEM
- ☒ FLOOR WASTE GULLY WATER SEAL
- ☒ PLUMBING FINISH

GLAZING

- ☒ WINDOW RESTRAINTS
- ☒ SAFETY GLASS
- ☒ WINDOW IDENTIFICATION
- ☒ VENTILATION OF SPACES/NATURAL LIGHT
- ☒ FIRE RESISTANCE RATING

DOORS

- ☒ SMOKE
- ☒ FIRE

SWIMMING/SPA POOL

- ☒ FENCING
- ☒ TREES/SURROUNDS
- ☒ SELF CLOSING GATES
- ☒ SELF CLOSING DOORS
- ☒ PATIO BOLTS TO DOORS
- ☒ WINDOW RESTRAINTS
- ☒ DISCHARGE/BACKWASH
- ☒ BACK-FLOW PREVENTER

COMMERCIAL & INDUSTRIAL

- ☒ COMPLIANCE SCHEDULE ITEMS NOTED
- ☒ STATEMENT OF FITNESS
- ☒ SIGN ENGINEERS SITE NOTES
- ☒ CAR PARKING MARKED
- ☒ DOWNPIPE/RAINHEAD
- ☒ OVERFLOW
- ☒ GULLY TRAP/VENT
- ☒ INTERCEPTORS
- ☒ TRADE WASTE
- ☒ GLASS/SAFETY/VISIBILITY
- ☒ BARRIERS/STAIRRAILS
- ☒ TEMPERING VALVE PROVIDED
- ☒ VENTILATION (HVAC)
- ☒ FIRE RESISTANT RATING
- ☒ FIRE ALARM TYPE
- ☒ EGRESS SIGNAGE
- ☒ SURFACE WATER SUMPS
- ☒ SIGNAGE

ACCESSIBLE FACILITIES

- ☒ ROUTE/NON SLIP
- ☒ THRESHOLD
- ☒ TOILET/POSITION & HEIGHT
- ☒ GRAB RAILS
- ☒ HARDWARE
- ☒ DESK HEIGHT
- ☒ CARPARK SIGNAGE
- ☒ SIGNAGE

CEILING/ROOF SPACE

- ☒ INSULATION
- ☒ DOWN LIGHT RELIEF
- ☒ ROOF PENETRATIONS
- ☒ ROOF TRUSS I.D. Received
- ☒ CHIMNEY RESTRAINT
- ☒ ROOF FIRE BREAK

STAIRS & BALCONY

- ☒ TREADS & RISERS
- ☒ STAIRS/HANDRAIL
- ☒ BRACKET FIXING
- ☒ BALCONY/HANDRAIL/BARRIER
- ☒ OVERFLOW RELIEF

PRODUCER STATEMENTS

- ☒ STRUCTURAL ENGINEERING TRUSSES
- ☒ AS BUILT DRAINAGE PLAN
- ☒ HVAC
- ☒ FIRE ALARM INSTALLER
- ☒ FIRE ENGINEER
- ☒ EMERGENCY LIGHTING
- ☒ PRESSURISATION/EXTRACTION
- ☒ SPRINKLERS
- ☒ BACK FLOW
- ☒ LIFT
- ☒ ELECTRICAL CERTIFICATE
- ☒ GAS CERTIFICATE
- ☒ EIFS/CLADDING PRODUCER STATEMENT

SERVICE AREAS

- ☒ LAUNDRY FIXTURES SECURED
- ☒ WET AREAS SEALED
- ☒ VANITY TO WALL SEALED
- ☒ BATH/SHOWER TO WALL SEALED
- ☒ SAFETY GLASS
- ☒ VENTILATION

HEATING UNIT

- ☒ HEARTH SIZE
- ☒ WALL SCREEN
- ☒ SEISMIC RESTRAINT
- ☒ FLUE & FLUE SHIELD

HEATING UNIT (CONTINUED)

- ☒ MANTEL CLEARANCE
- ☒ CHIMNEY BREAST CLEARANCE
- ☒ MANUFACTURERS TOLERANCES
- ☒ WETBACK
- ☒ GAS/DIESEL STORAGE TANK SITING
- ☒ STORAGE PROTECTION
- ☒ CAPACITY
- ☒ RESTRAINT
- ☒ AUTOMATIC SHUT OFF

EXTERIOR

- ☒ FINISHED GROUND LEVEL Requires clearing
- ☒ LANDSCAPING rectify
- ☒ PAVED AREAS
- ☒ OVERFLOW RELIEF GULLY
- ☒ SURFACE STORMWATER & DISCHARGE POINTS
- ☒ STORMWATER SUMPS
- ☒ DRAINAGE FINISH HEIGHTS
- ☒ PIPEWORK SEALED
- ☒ RETAINING WALL/DRAINAGE finish
- ☒ VENTS
- ☒ WEEP HOLES
- ☒ BOFFITT SEALED
- ☒ KITCHEN/BATHROOM VENTS CONNECTED & VENTED
- ☒ ROOF CLADDING & FLASHINGS
- ☒ FLUE RESTRAINT
- ☒ ROOF PENETRATIONS SEALED
- ☒ CORRECT NO. OF DOWN PIPES TO APPROVED DISCHARGE POINTS/SNOW STRAPS
- ☒ MAINS PRESSURE SHUT OFF
- ☒ WEATHER TIGHTNESS
- ☒ WINDOW FLASHINGS
- ☒ OTHER MONOLITHIC CLADDINGS

SEPTIC TANK/ EFFLUENT FIELD

- ☒ SEPTIC TANK VENT
- ☒ SEPTIC TANK RISERS
- ☒ SEPTIC TANK PUMP SWITCH
- ☒ EFFLUENT FIELD VENTS
- ☒ HIGH LEVEL ALARM

ENERGY WORK COMPLIANCE CERTIFICATE

- ☒ ELECTRICAL
- ☒ GAS

Re-inspection Required... Yes/No Signature [Signature]

Final inspection notes

Owner to Seal ends of pergolas prior to finish of painting. Concrete patios must be cut away from structure and drainage installed. Owner must do this within 60 x days & phone for re-inspection. Owner to cut & install layback for drive & kerb within 60 x days

NB. This form is not a code compliance certificate.



PRIME BUILDING COMPLIANCE LTD 211 High Street PO Box 387 Rangiora
Tel: (03) 313 1640 Fax: (03) 313 1645 Call Free 0800 724 2378 Email: info@primebc.co.nz

NOTICE OF FINAL INSPECTION

Building Act 1991 - Section 77 (1)

Owners Name: B. & P. Hoskings
Site Address: 11 Bishopdale
Nelson

Local Auth. Consent No. 020391
Prime Job No. 20021763
Officer: S. DALL

To the Owner / Agent / Occupier / Contractor

Please take note that on the 28/8/02 at 8 am/pm this site was inspected pursuant to the Building Act 1991

INTERIOR

PLUMBING

- ☒ SEISMIC RESTRAINT
- ☒ TEMPERING VALVE
- ☒ WATER TEMPERATURE 50°C
- ☒ HOT WATER DRAIN POINTS
- ☒ HOT WATER CYLINDER VALVING
- ☒ HEADER TANK/RESTRAINED/TRAY & OVERFLOW/LAGGING
- ☐ WETBACK/MUST BE OPEN VENTED SYSTEM
- ☒ FLOOR WASTE GULLY WATER SEAL
- ☒ PLUMBING FINISH

GLAZING

- ☒ WINDOW RESTRAINTS
- ☒ SAFETY GLASS
- ☒ WINDOW IDENTIFICATION
- ☒ VENTILATION OF SPACES/NATURAL LIGHT
- ☒ FIRE RESISTANCE RATING

DOORS

- ☐ SMOKE
- ☐ FIRE

SWIMMING/SPA POOL

- ☐ FENCING
- ☐ TREES/SURROUNDS
- ☐ SELF CLOSING GATES
- ☐ SELF CLOSING DOORS
- ☐ PATIO BOLTS TO DOORS
- ☐ WINDOW RESTRAINTS
- ☐ DISCHARGE/BACKWASH
- ☐ BACK-FLOW PREVENTER

COMMERCIAL & INDUSTRIAL

- ☐ COMPLIANCE SCHEDULE ITEMS NOTED
- ☐ STATEMENT OF FITNESS
- ☐ SIGN ENGINEERS SITE NOTES
- ☐ CAR PARKING MARKED
- ☐ DOWNPIPE/RAINHEAD
- ☐ OVERFLOW
- ☐ GULLY TRAP/T. VENT
- ☐ INTERCEPTORS
- ☐ TRADE WASTE
- ☐ GLASS/SAFETY/VISIBILITY
- ☐ BARRIERS/STAIR/RAILS
- ☐ TEMPERING VALVE PROVIDED
- ☐ VENTILATION (HVAC)
- ☐ FIRE RESISTANT RATING
- ☐ FIRE ALARM TYPE
- ☐ EGRESS SIGNAGE
- ☐ SURFACE WATER SUMPS
- ☐ SIGNAGE

ACCESSIBLE FACILITIES

- ☐ ROUTE/NON SLIP
- ☐ THRESHOLD
- ☐ TOILET/POSITION & HEIGHT
- ☐ GRAB RAILS
- ☐ HARDWARE
- ☐ DESK HEIGHT
- ☐ CARPARK SIGNAGE
- ☐ SIGNAGE

CEILING/ROOF SPACE

- ☐ INSULATION
- ☐ DOWN LIGHT RELIEF
- ☒ ROOF PENETRATIONS
- ☒ ROOF TRUSS I.D. - Received
- ☐ CHIMNEY RESTRAINT
- ☐ ROOF FIRE BREAK

STAIRS & BALCONY

- ☐ TREADS & RISERS
- ☐ STAIRS/HANDRAIL
- ☐ BRACKET FIXING
- ☐ BALCONY/HANDRAIL/BARRIER
- ☐ OVERFLOW RELIEF

PRODUCER STATEMENTS

- ☒ STRUCTURAL ENGINEERING Trusses
- ☐ AS BUILT DRAINAGE PLAN
- ☐ HVAC
- ☐ FIRE ALARM INSTALLER
- ☐ FIRE ENGINEER
- ☐ EMERGENCY LIGHTING
- ☐ PRESSURISATION/EXTRACTION
- ☐ SPRINKLERS
- ☐ BACK FLOW
- ☐ LIFT
- ☐ ELECTRICAL CERTIFICATE
- ☐ GAS CERTIFICATE
- ☐ EIFS/CLADDING PRODUCER STATEMENT

SERVICE AREAS

- ☐ LAUNDRY FIXTURES SECURED
- ☒ WET AREAS SEALED
- ☒ VANITY TO WALL SEALED
- ☒ BATH/SHOWER TO WALL SEALED
- ☒ SAFETY GLASS
- ☒ VENTILATION

HEATING UNIT

- ☐ HEARTH SIZE
- ☐ WALL SCREEN
- ☐ SEISMIC RESTRAINT
- ☐ FLUE & FLUE SHIELD

HEATING UNIT (CONTINUED)

- ☐ MANTEL CLEARANCE
- ☐ CHIMNEY BREAST CLEARANCE
- ☐ MANUFACTURERS TOLERANCES
- ☐ WETBACK
- ☐ GAS/DIESEL STORAGE TANK SITING
- ☐ STORAGE PROTECTION
- ☐ CAPACITY
- ☐ RESTRAINT
- ☐ AUTOMATIC SHUT OFF

EXTERIOR

- ☐ FINISHED GROUND LEVEL Requires slight clearing
- ☐ LANDSCAPING Y/N
- ☒ PAVED AREAS Too high
- ☒ OVERFLOW RELIEF GULLY
- ☐ SURFACE STORMWATER & DISCHARGE POINTS
- ☐ STORMWATER SUMPS
- ☒ DRAINAGE FINISH HEIGHTS
- ☒ PIPEWORK SEALED
- ☐ RETAINING WALL/DRAINAGE ?
- ☐ VENTS
- ☐ WEEP HOLES
- ☐ SOFFIT SEALED
- ☐ KITCHEN/BATHROOM VENTS CONNECTED & VENTED
- ☒ ROOF CLADDING & FLASHINGS
- ☒ FLUE RESTRAINT
- ☒ ROOF PENETRATIONS SEALED
- ☒ CORRECT NO. OF DOWN PIPES TO APPROVED DISCHARGE POINTS/SNOW STRAPS
- ☐ MAINS PRESSURE SHUT OFF
- ☒ WEATHER TIGHTNESS
- ☒ WINDOW FLASHINGS
- ☒ OTHER MONOLITHIC CLADDINGS Rockcote

SEPTIC TANK/ EFFLUENT FIELD

- ☐ SEPTIC TANK VENT
- ☐ SEPTIC TANK RISERS
- ☐ SEPTIC TANK PUMP SWITCH
- ☐ EFFLUENT FIELD VENTS
- ☐ HIGH LEVEL ALARM

ENERGY WORK COMPLIANCE CERTIFICATE

- ☐ ELECTRICAL
- ☐ GAS

Re-inspection Required... Yes/No Signature [Signature]

Final inspection notes

owner to seal ends of pergolas prior to painting. Concrete patios need to be lowered as per 3604 & Rockcote manual sheet 01.

owner to cut & install layback for drive & kerb.

NB. This form is not a code compliance certificate.



11 Lynwood

CODE COMPLIANCE CERTIFICATE NO: 20021763

Section 56(3), Building Act 1991

Issued by PRIME BUILDING COMPLIANCE LTD, currently approved and registered as a building certifier.

(Cross each applicable box and attach relevant documents)

To Nelson City Council

FAXED

Building Consent No: 020391

PROJECT	PROJECT LOCATION
New or relocated building <input checked="" type="checkbox"/>	Street address (if any): LYNWOOD TERRACE
Alteration <input type="checkbox"/>	NELSON
Intended use(s) (in detail): RESIDENTIAL	
Intended life:	Legal Description: LOT 5 DP 13982
Indefinite but not less than 50 years <input checked="" type="checkbox"/>	
Specified as years	
Demolition <input type="checkbox"/>	
Being stage 1 of an intended 1 stages.	

This is:

- ☒ A final code compliance certificate issued in respect of all the building work under the above building consent
- ☐ An interim code compliance certificate in respect of part only of the building work under the above building consent as specified in the attached ...1.. page(s) headed "Scope and Conditions of Code Compliance Certificate No 20002666....." (being this certificate)
- ☐ This certificate is issued subject to the conditions specified in the attached page(s) headed "Scope and Conditions of Code Compliance Certificate No" (being this certificate)

Signed by or for and on behalf of the building certifier:

Name: David Crawford

Position: Signatory

Date: 13 September 2002

FAXED



CODE COMPLIANCE CERTIFICATE NO: 20021763

30 SEP 2002

Section 56(3), Building Act 1991

Nelson City Council

Issued by PRIME BUILDING COMPLIANCE LTD, currently approved and registered as a building certifier.

(Cross each applicable box and attach relevant documents)

To Nelson City Council

Building Consent No: 020391

PROJECT	PROJECT LOCATION
New or relocated building <input checked="" type="checkbox"/>	Street address (if any): lot 5 Lynwood Terrace Nelson Legal Description: Lot 5 DP 13982
Alteration <input type="checkbox"/>	
Intended use(s) (in detail):	
Residential	
Intended life:	
Indefinite but not less than 50 years <input checked="" type="checkbox"/>	
Specified as years	
Demolition <input type="checkbox"/>	
Being stage 1 of an intended 1 stages.	

This is:

☒ An interim code compliance certificate in respect of part only of the building work.

Concrete patios require removal or rectification.

Signed by or for and on behalf of the building certifier:

Name: Peter Jessop

Position: Signatory

Date: 30 Aug 2002



RECEIVED

19 AUG 2002

Nelson City Council

Prime Building Compliance Ltd

Administrative Centre

211 High Street

PO Box 387, Rangiora

Phone 03-313 1640

Fax 03-313 1645

Call free 0800 724 2378

Email info@primebc.co.nz

Website www.primebc.co.nz

BUILDING CERTIFIER'S INSPECTION REPORT

Section 57(3)(a), Building Act 1991

For the period 1 July 02 to 31 July 02 2002

Issued by PRIME BUILDING COMPLIANCE LTD, currently approved and registered as a building certifier.

To: Nelson City Council

This is to report that:

As detailed on the page headed "Scope of Building Certifier's Engagement No 24", attached to this report or a previous report in this series, the building certifier has been engaged to inspect:

☒ All of the building work

in relation to:

☒ All of the provisions of the building code

That building work:

☒ Has progressed to the extent specified in the attached page(s).

The building certifier is satisfied on reasonable grounds that to date that building work

☒ Has been undertaken in accordance with the plans and specifications attached to the above building consent

Signed by or for and on behalf of the building certifier

Name: David Crawford
Position: Approved Signatory

Date 16 Aug 02



6507

NOTICE OF INSPECTION

Building Act 1991 - Section 77 (1)

Owners Name: Hosking
Site Address: 11 LOTS LYNWOOD TCE
BISHOPDALE
NELSON

Local Auth. Consent No. 020391
Prime Job No. 20021763
Officer: S. Dale

To the Owner / Agent / Occupier / Contractor

How Notified

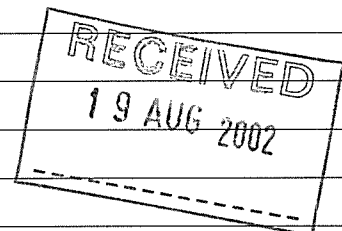
☒ Notified Direct☐ Left on SitePlease take note that on the 16 / 7 / 02 at 2:45 am/pm this site was inspected pursuant to the Building Act 1991The purpose of the inspection was ☐ Structure ☐ Plumbing ☒ Drainage

- | | | |
|--|--|--|
| <input type="checkbox"/> Siting | <input type="checkbox"/> Pre Stop | <input type="checkbox"/> Swimming Pool Fencing |
| <input type="checkbox"/> Foundation | <input checked="" type="checkbox"/> Drainage | <input type="checkbox"/> Dangerous Goods |
| <input type="checkbox"/> Slab / Sub Floor | <input type="checkbox"/> Effluent Disposal | <input type="checkbox"/> Complaint |
| <input type="checkbox"/> Mid Height Veneer | <input type="checkbox"/> Compliance Schedule | <input type="checkbox"/> CCC Issue Y / N |
| <input type="checkbox"/> Bond Beam | <input type="checkbox"/> Final | <input type="checkbox"/> Other (Specify) |
| <input type="checkbox"/> Preline | <input type="checkbox"/> Warrant of Fitness | <input type="checkbox"/> Partial (Specify) |

Heating Unit Comments

Inspection Notes

Adequate full to both sewer
and stormwater. 2x terminal vents
identified - back filled with pen gravel
gully traps sealed



REINSPECTION REQUIRED

YES / NO

Signature



RECEIVED

25 JUL 2002

Nelson City Council

Prime Building Compliance Ltd

Administrative Centre

211 High Street

PO Box 387, Rangiora

Phone 03-313 1640

Fax 03-313 1645

Call free 0800 724 2378

Email info@primebc.co.nz

Website www.primebc.co.nz

BUILDING CERTIFIER'S INSPECTION REPORT

Section 57(3)(a), Building Act 1991

For the period 1 June to 30 June 2002

Issued by PRIME BUILDING COMPLIANCE LTD, currently approved and registered as a building certifier.

To: Nelson City Council

This is to report that:

As detailed on the page headed "Scope of Building Certifier's Engagement No 24", attached to this report or a previous report in this series, the building certifier has been engaged to inspect:

☒ All of the building work

in relation to:

☒ All of the provisions of the building code

That building work:

☒ Has progressed to the extent specified in the attached page(s).

The building certifier is satisfied on reasonable grounds that to date that building work

☒ Has been undertaken in accordance with the plans and specifications attached to the above building consent

Signed by or for and on behalf of the building certifier

Name: David Crawford

Position: Approved Signatory

Date 23 July 02



Gardner

8403

NOTICE OF INSPECTION

Building Act 1991 - Section 77 (1)

Owners Name: HOSKINELocal Auth. Consent No. BC 020391Site Address: 11 Lynwood Estate.Prime Job No. 20021763Officer: S.M. Dale

How Notified

☐ Notified Direct☒ Left on Site

To the Owner / Agent / Occupier / Contractor

Please take note that on the 24 / 5 / 2002 at 5:30 am/pm this site was inspected pursuant to the Building Act 1991The purpose of the inspection was ☐ Structure ☐ Plumbing ☐ Drainage☐ Siting☐ Foundation☒ Slab / Sub Floor☐ Mid Height Veneer☐ Bond Beam☐ Preline☐ Pre Stop☐ Drainage☐ Effluent Disposal☐ Compliance Schedule☐ Final☐ Warrant of Fitness☐ Swimming Pool Fencing☐ Dangerous Goods☐ Complaint☐ CCC Issue Y / N☐ Other (Specify)☐ Partial (Specify)Heating Unit

Comments

* Provide .30m Rebate to garage door
* Extra D10 to Ring internal garage wall.

Inspection Notes

DPC in place and taped.
D12 ring beam tied to starter bars and lapped.
665 mesh supported on chairs at approx 1m²
Drainage pipes sleeved.

6 corners missing

* Place D10 bars to internal corners x2 each
* Cut D12 bar away from blockwork to North East corner
* Cut D12 bar away from blockwork at N-West corner.
* mesh where lapped on North side requires support.
* Starter bars bent down into DPC on North side need lifting

REINSPECTION REQUIRED

☒ YES ☐ NO

Signature



Sasha

1216

NOTICE OF INSPECTION

Building Act 1991 - Section 77 (1)

Owners Name: Hoskings
Site Address: 11 Lynwood Ave.

Local Auth. Consent No. BC 020391
Prime Job No. 20021763
Officer: S. Dale

To the Owner / Agent / Occupier / Contractor

How Notified

☒ Notified Direct

☐ Left on Site

Please take note that on the 14 / 6 / 02 at am/pm this site was inspected pursuant to the Building Act 1991

The purpose of the inspection was ☒ Structure ☐ Plumbing ☐ Drainage

- | | | |
|---|--|--|
| <input type="checkbox"/> Siting | <input type="checkbox"/> Pre Stop | <input type="checkbox"/> Swimming Pool Fencing |
| <input type="checkbox"/> Foundation | <input type="checkbox"/> Drainage | <input type="checkbox"/> Dangerous Goods |
| <input type="checkbox"/> Slab / Sub Floor | <input type="checkbox"/> Effluent Disposal | <input type="checkbox"/> Complaint |
| <input type="checkbox"/> Mid Height Veneer | <input type="checkbox"/> Compliance Schedule | <input type="checkbox"/> CCC Issue Y / N |
| <input type="checkbox"/> Bond Beam | <input type="checkbox"/> Final | <input type="checkbox"/> Other (Specify) |
| <input checked="" type="checkbox"/> Preline | <input type="checkbox"/> Warrant of Fitness | <input type="checkbox"/> Partial (Specify) |

Heating Unit

Comments

Inspection Notes DPC identified as under

bottom plates to shower bases.
Truss layout plan required.

REINSPECTION REQUIRED

YES / NO

Signature



Sandhu

1212

NOTICE OF INSPECTION

Building Act 1991 - Section 77 (1)

Owners Name: Hosking

Local Auth. Consent No. RC 020391

Site Address: 11 Lynwood Ave
Bishopdale
Nelson

Prime Job No. 20021763

Officer: S. M. Dale

To the Owner / Agent / Occupier / Contractor

How Notified

☐ Notified Direct

☒ Left on Site

Please take note that on the 13 / 6 / 02 at 4 am/pm this site was inspected pursuant to the Building Act 1991

The purpose of the inspection was ☐ Structure ☐ Plumbing ☐ Drainage

- | | | |
|---|--|--|
| <input type="checkbox"/> Siting | <input type="checkbox"/> Pre Stop | <input type="checkbox"/> Swimming Pool Fencing |
| <input type="checkbox"/> Foundation | <input type="checkbox"/> Drainage | <input type="checkbox"/> Dangerous Goods |
| <input type="checkbox"/> Slab / Sub Floor | <input type="checkbox"/> Effluent Disposal | <input type="checkbox"/> Complaint |
| <input type="checkbox"/> Mid Height Veneer | <input type="checkbox"/> Compliance Schedule | <input type="checkbox"/> CCC Issue Y / N |
| <input type="checkbox"/> Bond Beam | <input type="checkbox"/> Final | <input type="checkbox"/> Other (Specify) |
| <input checked="" type="checkbox"/> Preline | <input type="checkbox"/> Warrant of Fitness | <input type="checkbox"/> Partial (Specify) |

Heating Unit DPC membrane required under wall next to main shower.

Comments Bottom plates need more nailing.
lintels over 2.100 require strapping.

Inspection Notes * Additional nailing required to kitchen rib wall
* Ensure to strap down garage plate
lintel to jack studs plus strap gable
end to lintel.
moisture content to frame at 16%
to studs.
Bottom plate in areas - p to 20%
* Requires drying time.
* Truss supporting water tank requires
blocking under to carry load onto frame.
* Joist hangers appear to be missing
off garage area - please provide
layout plan.

REINSPECTION REQUIRED

YES / NO

Signature [Signature]



1180

NOTICE OF INSPECTION

Building Act 1991 - Section 77 (1)

Owners Name: P. HoskingsLocal Auth. Consent No. 020391Site Address: Lot 11 Lynwood Estate NelsonPrime Job No. 20021763Officer: S. Dale.

How Notified

☒ Notified Direct☐ Left on SiteTo the Owner / Agent / Occupier / ContractorPlease take note that on the 17 / 5 / 02 at 8 am/pm this site was inspected pursuant to the Building Act 1991The purpose of the inspection was ☒ Structure ☐ Plumbing ☐ Drainage☒ Siting☒ Foundation☐ Slab / Sub Floor☐ Mid Height Veneer☐ Bond Beam☐ Preline☐ Pre Stop☐ Drainage☐ Effluent Disposal☐ Compliance Schedule☐ Final☐ Warrant of Fitness☐ Swimming Pool Fencing☐ Dangerous Goods☐ Complaint☐ CCC Issue Y / N☐ Other (Specify)☐ Partial (Specify)Heating Unit Comments

Inspection Notes

Foundations excavated at 300mm in width. Ground to excavation apparent as firm. With additional D.12 bar placed into S.V. corner returning 2.0 x 2.0 for additional support. D.12 bar to base with D.10 starter bars tied at 600 centres steel well lapped and tied. Siting identified as correct.

REINSPECTION REQUIRED

☒ YES / NO

Signature



RECEIVED

21 JUN 2002

Nelson City Council

Prime Building Compliance Ltd

Administrative Centre

211 High Street

PO Box 387, Rangiora

Phone 03-313 1640

Fax 03-313 1645

Call free 0800 724 2378

Email info@primebc.co.nz

Website www.primebc.co.nz

BUILDING CERTIFIER'S INSPECTION REPORT

Section 57(3)(a), Building Act 1991

For the period 1 May to 31 May 2002

Issued by PRIME BUILDING COMPLIANCE LTD, currently approved and registered as a building certifier.

To: Nelson City Council

This is to report that:

As detailed on the page headed "Scope of Building Certifier's Engagement No 24", attached to this report or a previous report in this series, the building certifier has been engaged to inspect:

☒ All of the building work

in relation to:

☒ All of the provisions of the building code

That building work:

☒ Has progressed to the extent specified in the attached page(s).

The building certifier is satisfied on reasonable grounds that to date that building work

☒ Has been undertaken in accordance with the plans and specifications attached to the above building consent

Signed by or for and on behalf of the building certifier

Name: David Crawford

Position: Approved Signatory

Date 20 June 02



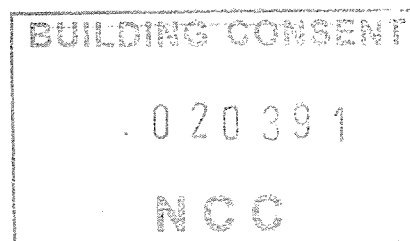
BUILDING CERTIFICATE NO: 20021763

Section 56(3), Building Act 1991

Issued by PRIME BUILDING COMPLIANCE LTD,
currently approved and registered as a building certifier.

To: Nelson City Council

Project Information Memorandum No:
Building Consent No:



PROJECT	PROJECT LOCATION
New Construction NEW DWELLING Intended use(s) (in detail): RESIDENTIAL Intended life: Indefinite, but not less than 50 years Being Stage 1 of an intended 1 Stages	Street address (if any): LOT 5 LYMWOOD ESTATE Legal Description: LOT 5 DP: 13982 Valuation Number: Property Identification Number:

This is to certify that:

The building certifier has been engaged to inspect specified building work in relation to listed provisions of the building code as detailed on the page headed "Scope of Building Certifier's Engagement No 24", attached to this notice.

The building certifier is satisfied on reasonable grounds that:

The proposed building work would comply with the listed provisions of the building code if properly completed in accordance with the listed plans and specifications.

Signed by authorised signatory

Name: Peter Jessop

Position: Signatory

Date: 17-4-02



SCOPE OF CERTIFIER ENGAGEMENT

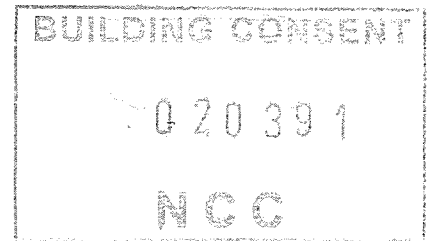
BUILDING INDUSTRY APPROVAL N° 24

Content of Engagement – Job No. 20021763 .

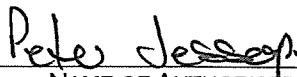
- ☒ Plan processing
- ☒ Site inspections
- ☒ Issue code compliance certificate

Exclusions

- ☒ Nil
- ☐ Septic tank & effluent discharge




SIGNATURE OF AUTHORISED SIGNATORY


NAME OF AUTHORISED SIGNATORY

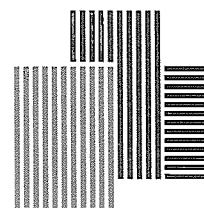
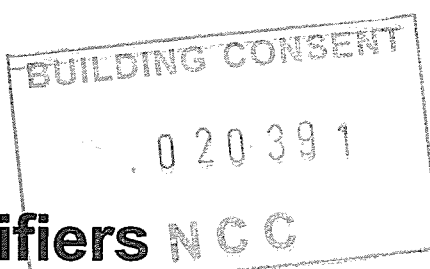
Dated: 17-4-02

This document is issued under section 53(4) of the Building Act 1991

No. 24

Register of Building Certifiers NCC

established under section 53
of the Building Act 1991



*B u i l d i n g
I n d u s t r y
A u t h o r i t y*

Name: Prime Building Compliance Ltd

Registration No: 24

Date of approval: 11/2/2000

Date of expiry of approval: 11/2/2003

Date of renewal: 11/2/2002

Address: 211 High Street, PO Box 387, Rangiora

Telephone 03 313 1640, 0800 724 2378, Fax 03 313 1645

Email info@primebc.co.nz, Website www.primebc.co.nz

Approved by the Building Industry Authority under Part VII of the Building Act 1991 in respect of the provisions of the building code listed below subject to the limitations listed below:

General limitations

Approval shall be in respect of all of the provisions of the building code without limitation except as detailed in (a) and (b) below:

(a) Approved in respect of:

Ordinary residential, community, and commercial buildings having not more than five storeys, and

Ordinary industrial buildings having not more than two storeys, and

Outbuildings and ancillary buildings associated with the above.

(b) Not approved in respect of:

Buildings for unusual uses, or involving unusual use of materials, or involving unusual methods of design or construction, and

Unusually complex buildings, and

Industrial buildings housing hazardous processes or storing hazardous substances (other than small storage rooms complying with F3/AS1), and

Dams, canals, highway and rail bridges, and other major civil engineering structures.

Provided that the building certifier may apply to the Authority for specific approval in respect of any particular building.

Any building certificate or code compliance certificate issued by Prime Building Compliance Ltd under the Act shall be signed personally by one of:

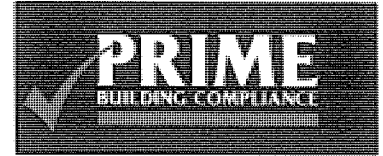
N G Burnby

D J Crawford

A J Ferris

P J Jessop

Those signatories personally and Prime Building Compliance Ltd as a corporate entity shall comply with the Prime Building Compliance Ltd Quality Manual dated 7 February 2000 approved by the Authority including any subsequent amendments to or revisions or replacements of that document which have been approved by the Authority in writing under the signature of the Authority's Chief Executive.

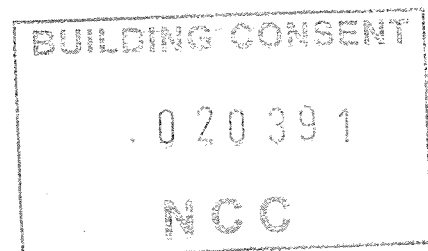


CONDITIONS SCHEDULE

- A. This consent is issued subject to the attached Building Inspection Works Schedule.
- B. Extra inspections required may be invoiced before a code compliance certificate is issued.
- C. Please note that any variation to the footprint and / or elevations of the approved plans may require a new building consent, and any other changes must be submitted and approved as an amendment to the approved Building Consent.
- D. The owner and the Builder are to locate and identify all boundary survey pegs prior to work commencing.
- E. Any special conditions endorsed on the Building Consent and / or documents MUST be drawn to the attention of the subcontractors.
- F. The duplicate copy of the approved consent documents and inspection schedule are to remain on site during construction.
- G. 24 HOURS NOTICE IS PREFERRED:
Prior to any inspection.
- H. To comply with the endorsements in red on the plan.
- I. Ensure sleeves in foundation are set to allow for correct grade of all wastes in or under concrete floors.
- J. A producer statement is required from the approved applicator. For the external plaster / render system to be applied to the external structure. All works shall be carried out by the approved applicator. Who shall submit a Certificate of Completion confirming works have been carried out in accordance with the specifications statement.

INSPECTION SCHEDULE:

- 1. FOUNDATIONS
- 2. SLAB
- 3. PRELINE / INSULATION IN PLACE / WITH PLUMBING UNDER TEST.
- 4. POST LINE
- 5. DRAINAGE
- 6. FINAL



20021763

NELSON CITY
COUNCIL

20021763

G.J. Gardner.

BUILDING CONSENT

020391

NCC

HOMES

Prime Building
Compliance Limited

These plans and specifications must
be read with the conditions attached
to the Building Consent.

SPECIFICATION OF WORK AND MATERIALS FOR THE
ERECTION AND COMPLETION OF THE NEW DWELLING

FOR THE OWNER G.J. GARDNER

LYNWOOD ESTATE, LOT 5, LYMWOOD TCE.

D.P. 13982

PREPARED FOR THE NELSON CITY COUNCIL

OWNERS PRESENT ADDRESS 199 QUEEN ST, RICHMOND

TELEPHONE 544 4520 FAX 5444509

*Note: All references to NZS 3604 are
to be taken as referring to NZS
3604:1999. Therefore clauses &
tables will differ from those quoted.*

This specification, in simplified form, is designed primarily for the use by
owners offering private housing contracts for tender. Read in conjunction with
the accompanying drawings, as its main objective is to convey to prospective
contractors the scope of work to be completed and the general requirement the
owner wishes to be covered in the contract price.

In omitting precise constructional directions and detailed dimension lists of
individual timbers, etc., it is not the intention of the owner to release the
appointed contractor from all restriction as to how the work shall be completed.

The attention of tenderers is drawn to the construction standards covered
under the heading "Workmanship, Methods and Materials".

Prime Building
Compliance Limited

All construction work and materials used shall
comply with the New Zealand Building Code,
notwithstanding any inconsistencies which
may occur in the drawings and specifications.

1 MAY 2002

PRELIMINARIES AND GENERAL

AREA	GROUND FLOOR	1ST FLOOR	DECKS	Total
SQUARE METRES	180.4	—	—	180.4

DEFINITIONS:

- a) **Owner** - people whom the Works are executed for and who own the site and building that is being worked on; they may be Principals
- b) **Principal**- people that the Contractor has a contract with
- c) **Provide** - supply and fix

GENERAL

The Contractor is required to provide all plant, tools, labour and materials to complete the work in the best trade manner in accordance with this Specification and its accompanying Drawings. Any apparent ambiguities in this specification or discrepancies between the requirements of the drawings and specification shall be referred to the Designer for interpretation. The required standard of finishes and workmanship for all work including construction, site works, hardware, joinery, plumbing, electrical, etc shall be confirmed with the owner by the contractor before commencing any work (See page L2 for types of gib stopping finishes available for each room).

Adhere strictly to the New Zealand Standards & Building Code as relevant to the particular work to be done. Keep a copy of NZS 3604: Light timber frame buildings (etc.), on site at all times.

Follow manufacturer's instructions and good tradesmen's practices.

Arrange for all temporary works and services necessary for the completion of the Works.

The work shall conform and progress according to the By-Laws of the pertinent local authorities and the Contractor shall be responsible for all damage to public and private property occasioned by the completion of the work.

Unless otherwise specified, the Contractor shall, when appointed, obtain all necessary consents and pay all dues and proceed with the work as soon as possible.

During a period of ninety days following completion of the work, the Contractor shall rectify all faults in workmanship and materials notified to him by the Owner, and after as required by NZBC.

Supply guarantees and as-built records as specified, to the Owners at the completion of the Works. Only on receipt of these will final payments be made.

PROTECT

Protect Works during the contract, from rain and unauthorised entry. Protect all parts of the Works liable to damage; adjoining property, and existing features to be retained until the completion of the contract.

GEO-THERMAL

If the site is in a geo-thermal area. The necessary Health precautions must be taken and all materials, especially metal fastenings, must be provided that withstand the corrosive effects.

SUBCONTRACTORS

The Contractor may appoint specialist sub-contractors to undertake sections of the work, but shall be responsible for their workmanship and their co-ordination with his own and other tradesmen.

Co-ordinate and attend on subcontractors to enable them to do their jobs effectively. ENSURE that they are aware of all requirements under this Contract.

This must not construe that the Owner is involved in separate contracts with those so appointed and the Owner in turn shall not directly negotiate with or instruct the sub-contractors unless he has the Contractor's authority to do so.

NOMINATED SUBCONTRACTORS AND SUPPLIERS are :

TIDY

Throughout the construction period, the contractor shall keep the site as tidy as possible and give due consideration to the occupants of neighbouring properties, particularly in the question of obstruction and noise. On completion of the work the whole site shall be left clear, remove temporary works etc. and protective wrappings. Leave everything in working order and the building, paths and steps etc. clean and ready for use.

BUILDING CONSENT

Building consents will be obtained by the

Where any alterations are required to the working documents by the Local Authority, the Designer must be notified. The Contractor is required to deal with the Inspections by the Local Authorities Representatives.

BRACING CALCULATIONS

Bracing calculations are enclosed; bracing panels are noted on the floor plans in the drawing set.

PROGRAMME

Supply a construction programme to the Project Manager directly after the Contract is let .

PROVISION OF CONTRACT

The contractor shall form a contract for services provided to owner as recognised by NZ STANDARDS, or MASTER BUILDERS, or other contract as agreed to by OWNERS SOLICITOR.

INSURANCE

Throughout the construction period, the contractor shall hold himself and the owner covered against all claims and losses that may arise in connection with the contract.

Insurance will be required to cover the structure as well as materials on site, for the insurable values of the respective interests of the Contractor and the Employer. The cover is required to be increased progressively as the structure proceeds. The amounts must at all times be sufficient to protect fully all payments and advances made by the Employer to the Contractor, as well as the value of materials (if any) provided by the Employer either directly or indirectly, and any interest the Contractor may desire to have covered.

Completed work shall be insured by the contractor for its full insurable value against loss or damage by fire and earthquake and shall be held covered until the owner formally takes possession. Policies shall nominate both contractor and owner as jointly insured and the owner shall be entitled to examine both policies and premium receipts upon demand.

Insurance for existing building structure will be arranged by the Principal.

HEALTH AND SAFETY in EMPLOYMENT ACT (HSEA)

The Contractor is to warrant to the Employer that the Contractor shall take all practicable steps to ensure that no act or omission :

- a) causes a hazard, significant hazard, harm or serious harm to any employee of the Contractor or any person at the place of work or in the vicinity of work; or
- b) is a breach of duty or obligation of the Contractor under the HSEA, or does, or is likely to give rise to the issue of an improvement or prohibition notice, enforcement proceedings or a prosecution under the HSEA against the Employer, the Contractor or Subcontractors. The words and phrase in this clause shall have the same meaning as is ascribed to them in the HSEA.
- d) Workers on site are required to wear protective earmuffs when noise exceeds **80 dB**.

SITE-MEETINGS

Site meetings should be allowed for at least weekly.

SITE INFORMATION

The information regarding levels, etc., shown by the accompanying drawings is approximate only and before submitting his estimate, the Contractor should visit the site to check its accuracy and generally familiarise himself with the conditions under which the work is to be undertaken. Due allowance in the contract price should be made for total connections to all services.

MATERIALS AND SUBSTITUTIONS

Any materials herein specified that are not procurable at the time they are required, thus tending to retard the progress of the contract, may be substituted with other similar materials, provided that the substituted materials conform to the local by-laws and with permission of the Designer and Owner. The contractor is first to notify the Designer and Owner of any change proposed at the completion of the contract and will adjust any difference in cost. Substituted materials are to comply with **NZBC** approved document B2.

PRIME COST SUMS

The owner reserves the right to select or purchase items having a lesser or greater value than the Prime Cost allowance, but shall consult the contractor before doing so and agree on the adjustment to be made in the final accounts.

OWNER'S MATERIALS

Should the owner obtain the contractor's permission to deliver to the site, before completion, fixtures and fittings not covered by the specification, then the contractor will assume responsibility for any loss or damage of such fittings whilst they are in his care.

INTERPRETATION

All figure dimensions shall be taken in preference to scale and all detail drawings shall supercede those to smaller scale. Specifications to be read in conjunction with drawings.

WORKMANSHIP METHODS AND MATERIALS

This specification does not seek to impose upon the Contractor construction methods alien to his normal working practice.

However, the methods of construction and the type, quality and sizes of materials used to complete the work shall not be less than laid down in **New Zealand Building Code, Approved Documents and means of compliance, inc. NZS 3604** and required by the local authority under whose jurisdiction the work falls. Further, the workmanship and general finishing to the work shall comply with the highest standards of the trades involved.

Disputes between the owner and contractor as to the standard of workmanship applied to any part of the work, or on the question of interpretation of the requirements of this specification and the accompanying drawings, shall be referred for arbitration to the body agreed upon and named in the contract.

On the following pages, divided into sections by trade, (and on the accompanying drawings), are noted the owner's specific constructional directions and material requirements. The use of alternatives to construction and materials so detailed shall be referred to the Designer and Owner for their consent.

Durability of materials and components shall be of a minimum standard as required by NZBC approved document B2.

The Contractor is responsible for obtaining durability certificates and guarantees required for materials and building elements to achieve durability performance.

Assembly methods, maintenance of materials and building elements shall comply with NZBC, approved documents, means of compliance and manufacturer's instructions so as to maintain durability certificates and guarantees.

The Contractor shall notify Local Territorial Authority, Building Certifiers, Engineers and other people involved in checking or approving works at required times for inspections.

The Contractor is required to provide a COMPLETION CERTIFICATE from the Local Territorial Authority to the owner, before settlement of final payment is made. This may exclude monies retained for the duration of the maintenance period and incomplete works.

CONTRACT AGREEMENT

Disputes between the owner and contractor as to the standard of workmanship & materials applied to any part of the work, or on the question of interpretation of the requirements of specification & scope of work. The building plans, documents & actual works shall be referred for arbitration to the body agreed upon and named in this contract. Both parties shall agree to be bound by any decision made by the arbitrator, and will not pursue other decisions outside the arbitrators. The party requesting the arbitration will make payment of the arbitrator's fees, unless the parties agree to different terms before engaging the arbitrator's services.

AGREED ARBITRATION BODY.....

THIS AGREEMENT is made on / / 20

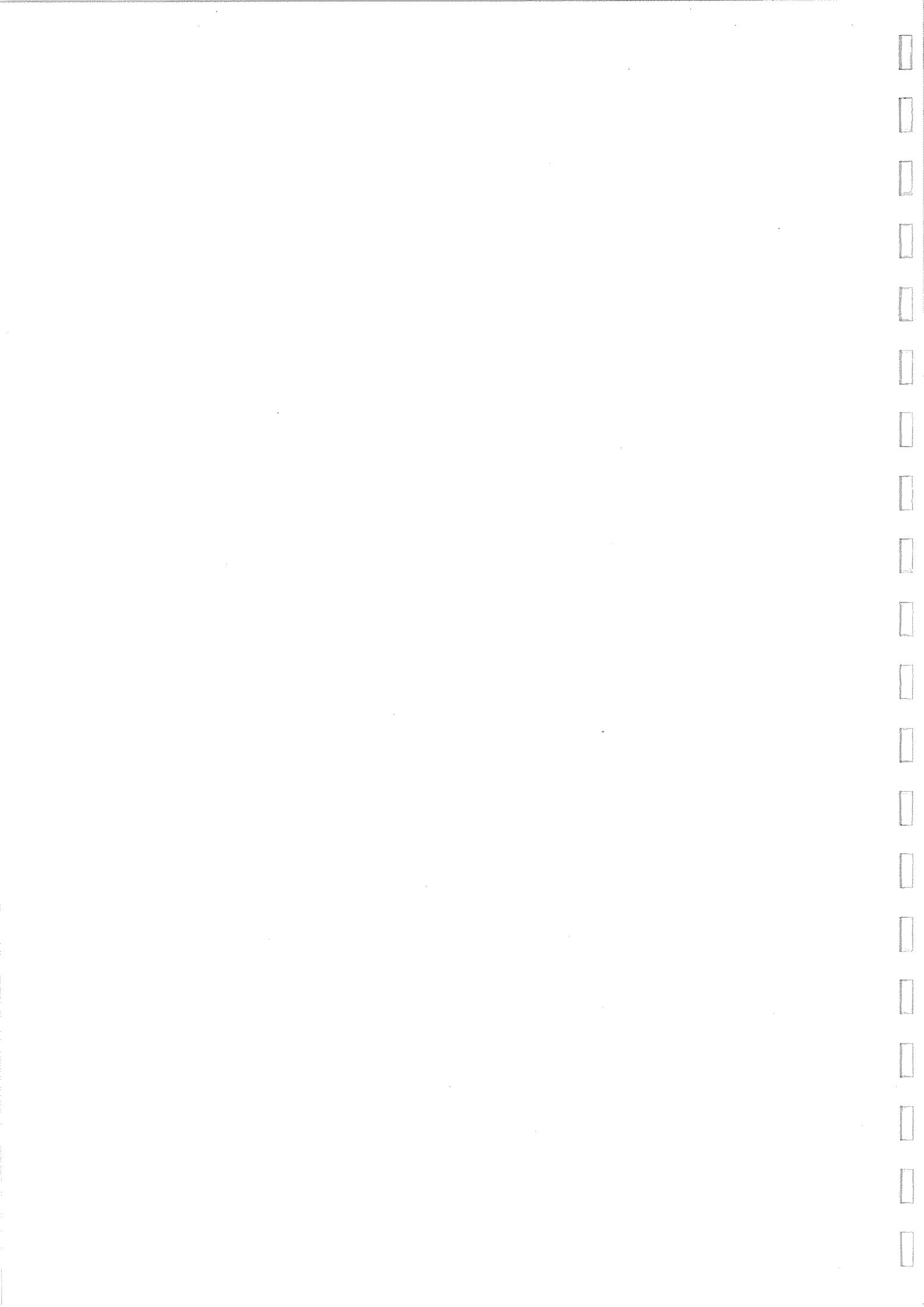
BETWEEN
 ("the Contractor")

AND.....

.....("the Principle")

WITNESS to the signature
Of the Contractor: Contractor

WITNESS to the signature
Of the Principal: Principal



DEMOLITION

SCOPE

Demolish portions of the building if indicated on the drawings.

STANDARDS

NZS 4403 Code of Practice for the storage, handling and use of explosives

BS 6187 - Code of Practice for demolition

AS 2601 - SAA Demolition Code

EXECUTE

the work according to current Safety Regulations. In the presence of asbestos, follow the Asbestos Regulations 1983.

NUISANCE

Take reasonable precautions to minimise nuisance caused by noise, dust, dirt, rubbish and water.

BURNING

Burning of materials is not permitted.

FOSSILS, ANTIQUITIES

The finding of fossils, antiquities and other objects of interest on the site, is to be notified to the Owners.

DEBRIS

Arrange for the temporary storage and removal of debris.

SALVAGE

Arrange for storage of salvageable items.

STRUCTURAL STABILITY

Ensure at all times structural stability by:

- a) Supporting structure temporarily, or
- b) Constructing final supports before taking away existing structural supports.

EXCAVATOR

CLEARING BUILDING AREA

Clean off all vegetation and sub-soil over building area.

BUILDING EXCAVATION

Excavate for all foundations to the minimum depth shown or as required by NZ Building Code and approved documents.

DOUBTFUL BEARING

Notwithstanding the provisions of the paragraph headed SITE INFORMATION, the owner shall be responsible for the cost of any work additional to that provided for by this specification and accompanying drawings, through encountering ground of doubtful bearing capacity and for land slides resulting from causes beyond the control of the contractor. All foundations shall be a min 300 into solid bearing or deeper where required by NZS3604 and or Drawings. Where doubtful bearing is encountered a REGISTERED ENGINEER shall inspect works and give contractor detailed instructions and provide a PRODUCER STATEMENT.

HARD FILLING

Under all concrete floors and footing, provide a minimum thickness of 150mm hard filling well compacted as drawn and noted. Remove all topsoil under concrete floors and foundations, compact hardfill in 150mm layers, without disturbing foundation walls. Hardfilling over 600mm deep shall be inspected and supervised by a REGISTERED ENGINEER who shall provide a PRODUCER STATEMENT for such works.

BLOCKLAYER

EXTENT OF WORKS

Refer to drawings for layout and extent of work. Build the whole of the reinforced and unreinforced 200mm concrete blockwork, building in as the work proceeds, reinforcing steel, bolts and all other lugs, conduits, sleeves, etc., required for the work of other trades. Keep surface clean and free from mortar; perpend true; and faces true to line, laying all blocks dry.

BOND

Blocks shall be laid in stretcher or stack bond as shown with blocks evenly spaced, faces true and vertical. 200mm blocks shall be free from all defects which would prevent a first class fair faced finish to both faces.

MORTAR

The mortar for all blockwork shall be composed and mixed according to the relevant clauses of the NZ Building Code.

ENGINEER'S DRAWINGS

If engineer's drawings are provided, they shall be read in conjunction with the above, and shall, if necessary, override. Notify Engineer at required times for inspections.

CONCRETE AND REINFORCING

STANDARDS

Workmanship and construction in general to comply with NZS 3109 and NZS 3604.

MATERIALS

Ready Mix concrete: Sheltered concrete not exposed to the exterior environment to be 17.5 MPa, exposed concrete & perimeter footings to be 25 MPa within the SEA SPRAY ZONE & 20 MPa to ZONES 1,2 & 3 (minimum strength), aggregate size 19mm (or as shown on drawings), complying with NZS 3109. All reinforcing deformed mild steel. When not otherwise shown, turn and lap reinforcing 500mm at all corners and intersections of foundation beams.

Site mixed concrete: Site mixed concrete is not to be used in the SEA SPRAY ZONE, Obtain approval before using site mixed concrete. Comply with the requirements of NZS 3108 for 20MPa ordinary grade concrete. Use a mixer of at least 55 litres (1 barrow) capacity. Pre-weigh cement quantity for each mix into plastic bags using a spring balance. Use all-in aggregate complying with the grading envelope set out in NZS 3108, volume batched using gauge boxes or measuring buckets of known capacity. Use only sufficient water to obtain desired slump. Prepare trial mixes for approval at the commencement of the work. As a guide for initial mixing, the following proportions should be used for a 55 litre mixer:

cement	18kg
aggregate	47 litres
slump	80mm
water	6-10 litres depending on aggregate moisture.

FORMWORK

Form work is to be well braced, hosed out, and kept wet before and after concrete is placed.

FOUNDATION

Foundation footings, floors, walls and reinforcing shall be to sizes on drawing and in accordance with NZBC, approved documents, and means of compliance.

REINFORCEMENT

Reinforcing to comply with NZS 3402P. All bends are to be made cold, without fracture. All reinforcing is to be accurately placed and well secured against displacement. Do not weld reinforcement. Ensure during the concrete pour that reinforcing mesh ends up in the position detailed on the drawings.

The slab shall be reinforced with 665 HRC mesh. The steel shall be continuous through all joints. Sheets to be lapped 200mm and tied.

VAPOUR BARRIER

Apply Duroid's "Ultrathane 2000" concrete underlay or equivalent, with 150mm laps, tape sealed to laps and penetrations and complying with NZS 3604 Appendix E 8. Sheets shall be laid to form as few joints as possible, and care shall be taken to avoid punctures to DPC. Repair DPC as per manufacturer's instructions.

All timber supported on or in contact with brick, stone or concrete shall be protected by an approved damp proof course.

CASTING IN

Provide in concrete for openings for vents, wastes, pipes, etc., or as required by other trades and for holding down bolts in accordance with NZS 3604 Ch. 4, 7, 2. Power tool fixings can be used where appropriate.

FLOOR SLAB

To be laid true and with straight surface, screeded, and finished to a fine finish. Tolerance on flatness to be within 5mm measured from a 3m straight-edge.

SAWCUTS

Saw cut slabs within 36 hours of concrete pour. Where sawcuts are to be made, cut out 100 mm of every second wire of the mesh for a length of 50 mm each side of the sawcut position. Clean out the sawcuts after not less than 6 weeks, and fill with cement grout.

CURING OF CONCRETE

Protect fresh concrete from premature drying and extremes of temperature. Use suitable methods to limit evaporative drying and keep damp for not less than seven days. Ensure curing controls on slabs commence as soon as possible after final finishing, by use of continuous water sprays, ponding, or the application of a curing membrane. Ensure any membrane use will not affect subsequent applied finishes.

EXPOSED CONCRETE

provide formwork with smooth ply or hardboard linings where the finish is exposed. The surface required is fairfaced smooth finish without significant airholes, defects or honeycomb areas. Should defects occur, repair to the approval of the Designer and Owner.

INSPECTION

No concrete is to be placed until all excavations, boxing and reinforcing has been inspected and passed by the building inspector and if required Registered Engineer. Notify Project Manager before concrete is placed.

BRICKLAYER

SCOPE

provide on exterior and interior framing as shown on the drawings

STANDARDS

Comply with NZS 3604 Appendix F "Masonry Veneer Exterior Wall covering"
NZS 4210 Code of Practice for Masonry Materials and Workmanship

BRICKLAYERS

are to be certified by the NZ Masons Registration Committee. Liaise with Carpenter for installation of items in wall, and with Plumber for flashings and DPC.

MATERIALS

bricks:

colour:.....

mortar: cement and sand mix, with water-proofing additive (for first 400 mm above ground)

colour:.....

Lintels: galv.. mild steel for lintels

Ties: galv. ties

Mortar joint:

BRICK OR STONE VENEER

Construct brick or stone veneer as shown on the drawings. An air space of at least 40mm shall be maintained between timber frame and the veneer and where necessary weep holes shall be left every third joint for the discharge of water. Care shall be taken to maintain the air space and upstand free of any mortar droppings, protruding joints or pipes or electrical wire, junction boxes, etc. Incorporate galvanised vermin proofing. Build in brick size concrete vents as required. All facing work shall be kept clean as the work proceeds. On completion all brickwork shall be left in a clean state.

Use stretcher bond. Set bricks out neatly. Where bricks need to be cut, set out in visually pleasing way as discussed with Designer, or place in inconspicuous position.

SILLS

Sills to be brick or quarry tile as selects by owner. Junction of brick and timber to be sealed with Mastic.

BUILDING PAPER

Building paper, where used on outside face of studs, shall be of a bituminous or fire resistant breather type, and metal ties shall be of a sheet metal type fixed to face of studs.(Duroid Greenwrap Heavyweight or equivalent).

VERMIN PROOFING AND BRICK TIES

Build in 100mm wide strips of approved galvanised wire mesh secured to bottom of wall plates with 20mm galvanised wire staples carried across cavity and taken 25mm into work.

Wall veneer shall be securely attached to the framework with purpose made corrosion resistant ties at spacings required by the relevant clauses of **NZS F4.5**.

HEATING APPLIANCE AND CHIMNEY

To be selected by owner. Installation to comply with manufacturer's specifications and local authority by-laws and **NZBC C1/AS1**.

COMPLETION

Clean down the face of all brickwork as the work proceeds and upon completion.

CONTROL JOINTS

Concrete bricks to be constructed with control joints as required by **NZS4210** and Manufacturers instructions. Clay bricks to be as per Manufacturers requirements.

CARPENTER AND JOINER

TIMBER GENERALLY

All timber must be the best of its class, free from large loose or dead knots and waney edges, suitable for its purpose and in as long lengths as possible in keeping with NZBC classification and grading of New Zealand building timbers.

SEASONING (see pages T1, T2, T3)

All timber must be as well seasoned. All joinery and dressing timbers should be thoroughly air-seasoned or kiln-dried (provided it is not air-dried), and all machined stuff shall be dry run. Timber must be stacked on the site in a manner to allow a maximum circulation of air and shedding of water as soon as possible after the signing of the contract and must be suitably protected from the weather. See NZBC: 'Kiln drying of timber. Use kiln dried framing.

WORKMANSHIP

The whole of the carpenter's and joiner's work must be framed, trussed, braced and assembled in a workman-like manner and in accordance with the best trade practice. See NZBC and NZ 3604. All joinery must be constructed according to best joinery practice by mortice and tenon, dove-tail, tongue and groove mitres, etc. All exposed nailing must be well punched. The cutting or checking of framing timbers must be reduced to a minimum.

BUILDER'S IRONMONGERY

The contractor shall provide all nails, brads, screws, bolts and other ironmongery required. Nails for weatherboarding shall be 75mm and those for flooring shall be 60mm floor brads. Galvanised nails must be used externally and in redwood, cedar or totara timbers. All interior and exterior finishing work shall be nail punched. All nails used in framing to be sufficient length to penetrate the holding of second timber to at least half length. All bolts, screws, etc., to be adequate for their respective purposes.

DAMP PROOFING

All timber to be protected from dampness with 3 ply bituminous felt or other approved damp proofing materials (Duroid DPC or equivalent) when in contact with concrete or brickwork and between piles and bearers.

PRIMING

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

BUILDING PAPER

Provide and fix green wrap building paper to outside surface of all timber framed walls. Fix building paper to the face of the framing by close stapling as required to keep building paper taut and secure. Repair any puncturing immediately prior to fixing over linings.

FLOORING

a) Timber floor: Unless otherwise shown on drawings the flooring shall be 20mm particle board of approved manufacture, laid in large sheets with all edges supported by nogs, joist or Posi struts. Seal all edges before nailing with 3 coats of polyurethane sealer or varnish. Use galv screw fixings at 100mm centres recessed for sanding. Sand between all coats. Apply construction adhesive between joists, solid blocking, nogging etc, and particle board flooring.

b) Concrete floor: Garage flooring to be 100mm concrete slab reinforced with 668 HRC mesh (665 HRC mesh to garage area) and on Duriod Ultrathane vapour barrier. Pour slab onto a well prepared and compacted hard filling 150mm minimum thickness. Concrete to be 17.5 MPa (minimum strength) premixed.

RETAINING WALLS

Retaining walls should be backfilled and allowed to settle before light weight construction is built on or against retaining walls. Be careful when backfilling to prevent disturbing walls. Where retaining walls are over 1200mm high or as otherwise required by Local Territorial Authority a REGISTERED ENGINEER is required to design retaining wall and provide a PRODUCER STATEMENT. The contractor shall notify the Engineer at required times for inspections of works. Provide novaflo 100mm diameter drains with min 75mm drainage metal surround behind all retaining walls at both base of wall and at top of backfill, with drains run into a sump before connection to Public Storm Water System. Tanking to retaining walls is to be done with the highest standard of care and workmanship. Unless a greater requirement is shown on drawings or required, coat concrete walls with three coats of mulseal to manufacturers instructions (do not leave exposed to sun light or weather longer than manufacturers recommendations). Install approved DPC over with all joints lapped 150mm and sealed with approved tape. Protect DPC with sheet material before backfilling with drainage metal.

INTERNAL WALL LININGS

Gibraltar board: Line interior wall with 9.5mm gibraltar board sheets. Fix with appropriate "Gib Grabber" screws and Gibfix Multipurpose water based construction adhesive. Apply glue daubs at 300mm crs on each stud in the field of each sheet and in the centre dwang. The perimeter of each sheet to be screwed at 300 crs. All joints must be taped. Stopping to be done with best quality Plaster of Paris, filled to an even surface and all spots and rises removed. (see table 1 page L2 in appendix at rear of specification).

Plywood: Line interior wall with 12mm plywood to owner's choice over sisalation with 30mm galv panel pins punched below surface at 300 crs around perimeter and centre dwangs.

Hardiflex: Line interior wall with 18mm Hardiflex fixed to timber framing with 30 mm counter sunk stainless steel screws. Finish walls with plaster as for blockwork.

Hardiglaze Smooth: Fix 4.5 mm Hardiglaze to timber framing with a good quality solvent based wall board contact adhesive. A suitable wallboard adhesive is Expandite construction adhesive. Place dabs of wallboard adhesive on immediate studs and nogs at 200 crs. Fit PVC sheet holders to both sides of Hardiglaze sheet. Align the sheet and nail or screw it to the frame through the wide edges of the sheet holders at 250 crs. For wet areas all sheet edges should be sealed into Hardiglaze PVC jointers. Also see manufacturer's instructions.

Styrogib: Line interior walls where shown on plan with styrogib fixed according to manufacturer's specifications. All joints must be taped. Stopping to be done with best quality Plaster of Paris, filled to an even surface and all spots and rises removed.

Sarking: Line walls where indicated on plan with ex 150x25 Douglas Fir TG&V. Fix using secret nailing method.

EXTERIOR WALL LININGS

Harditex: Line exterior walls with 7.5 mm Harditex, ensuring all edges to be tapered and fixed with 40 mm galv clouts to framing over building paper. All joints to be reinforced and flushed as per Hardies specification, Nuplex SJ jointing system or Resene jointflex system. Provide an approved finishing application over Harditex with a minimum 3 mm thickness e.g. Reidpaint trowel coat or Nuplex flexitrowel. Refer to their specifications.

Concrete Block: Lay concrete blocks as shown on drawing and as specified under blocklayer. Using construction adhesive, adhere over concrete block, 7.5 mm Hardiflex to ground level to provide a uniform look and fix as per Hardies specification (see Hardies Hardiglaze specification. All joints to be reinforced and flushed as per Hardies specification, Nuplex SJ jointing system or Resene jointflex system. Provide an approved finishing application over Harditex with a minimum 3 mm thickness e.g. Reidpaint trowel coat or Nuplex flexitrowel. Refer to their specifications

Shadowclad: Fix Shadowclad sheathing to ground floor exterior walls as and where shown on drawing to timber framing with 30mm flat head galvanised clouts. All exterior cladding to have breather type builder paper behind. Exterior cladding to be finished with timbacryl or Gold-X oil stain.

Weatherboard: Where shown on drawings, fix ex 200 x 25 over a good quality building paper, laid horizontally with a lap of 50mm. Mitre all joints and avoid joining weatherboards along wall by selecting length where possible.

Hardiflex: Where shown on drawing, fix 6mm hardiflex to timber framing with 30mm flat head galvanised clouts. All exterior cladding to have breather type builder paper behind. Exterior cladding to be finished with revertex as specified under Painter.

Rusticated Hardiplank: Line exterior walls with Rusticated Hardiplank over a good quality breather type building paper laid horizontally with laps of 100mm minimum. Fix Hardiplank with 30mm flathead galv clouts ensuring all joints are staggered and joined with required PVC mould.

Insulclad: All exterior walls are to be lined with insulclad and finish with Rockcoat plaster finish. Lay insulclad over flame proof building paper.

Board and Batten: Where shown on drawings, fix ex 200 x 25 bandsawn timber over a good quality building paper, laid horizontally with a lap of 50mm. Avoid joining weatherboards up wall by selecting length where possible. Fix 75 x 25 battens over all joints.

Concrete Block: Lay concrete blocks as shown on drawing and as specified under blocklayer. Finish with Revertex or Muralflax spray-on coating with rough cast finish.

Styro/Crete: Fix styrofoam over flame stop building paper to framing with galv flat head clouts as per manufacturer's specification. Fix reinforced woven mesh over the styrofoam making certain mesh joints overlap. Mesh is to be secured to framing by mechanical fasteners with washer spacings at 600 crs horizontally and 300 crs vertically. Fix U channels, reinforcing mesh and corner reinforcements before applying styro/crete base coat modifier and styro/crete texture coat in accordance with manufacturer's specifications to the best trade practice. Paint finish to be of high quality e.g. Rockcoat.

Plaster: Fix a permeable building paper with laps of 75 mm to timber framing. Lay Riblath horizontally with the raised ribs against the studs and fix with 40 mm x 25 mm galv clouts. Fasten the Riblath to studs on every rib at end laps and every second rib elsewhere. On side laps overlap the Riblath rib and secure together along the ribs every 150 mm with self-drilling stitching screws. Lap ends 50 mm if over stud and fasten every rib to stud or if join is between studs, lap ends 150 mm and secure together on each rib with two stitching screws. Stagger joints to avoid a four sheet build-up. Use sealant around openings between coats of plaster. Trowel plaster over Riblath and ensure correct plaster mixtures in which each plaster coat is no stronger than the preceding one. Keep plaster coats damp after applying to ensure proper curing. Refer to Dimond Riblath brochure section 06-1.

Brick Veneer: Fix breather type building paper over timber framing and brick veneer to be laid and fixed by bricklayer in accordance with specification (see bricklayer specification).

Solid Plaster Rigid Backing (150 x 25 diagonal boards): Reinforce plaster with 18 gauge netting stapled over building paper into studs @ 150 crs through spacers & 25 x 150 H3 boards diagonal, spaced 25 mm min to 150 mm max gaps between boards. Install netting horizontal with 150 mm laps. Install 600 x 600 netting bandage on a 45 degree angle at each corner of every opening, also install a bandage extending 400 mm wrapped around each corner. Plasterer to fix own netting. Building paper to be "Duroid" heavy weight building paper. Ensure materials for plaster mix are measured correctly. Scratch coat to have six parts sand, one part cement, one part lime & mixed with shredded fibreglass & water proofing agent. Follow the sun when applying each plaster coat. Cure first coat (deep scratched) by water for 5 days before applying next coats. Complete all framing & internal linings before plaster is applied. Ensure plaster is sealed where it meets soffits etc. Provide

control joints by cutting or physical separation @ 4.0 m crs both vertically & horizontally. Solid plaster to comply with NZS 4251, NZS 3101, NZS 3604 appendix G & NZBC. Provide support to solid plaster with steel angles or timber plates where not seated directly into foundation rebate. Provide flashings around all openings & penetrations. Paint over solid plaster finish with 3 coat low sheen 100% acrylic latex paint system (between 80 and 120 micrometres thick).

Solid Plaster Rigid Backing (Hardibacker): Reinforce plaster with 18 gauge netting stapled over building paper into studs @ 150 crs through spacers & 4.5 mm "HARDIBACKER" installed to manufacturers specifications with an 8mm gap between sheets over 47mm min width of stud. Install netting horizontal with 150 mm laps. Install 600 x 600 netting bandage on a 45 degree angle at each corner of every opening, also install a bandage extending 400 mm wrapped around each corner. Plasterer to fix own netting. Building paper to be "Duroid" heavy weight building paper. Ensure materials for plaster mix are measured correctly. Scratch coat to have six parts sand, one part cement, one part lime & mixed with shredded fibreglass & water proofing agent. Follow the sun when applying each plaster coat. Cure first coat (deep scratched) by water for 5 days before applying next coats. Complete all framing & internal linings before plaster is applied. Ensure plaster is sealed where it meets soffits etc. Provide control joints by cutting or physical separation @ 4.0 m crs both vertically & horizontally. Solid plaster to comply with NZS 4251, NZS 3101, NZS 3604 appendix G & NZBC. Provide support to solid plaster with steel angles or timber plates where not seated directly into foundation rebate. Provide flashings around all openings & penetrations. Paint over solid plaster finish with 3 coat low sheen 100% acrylic latex paint system (between 80 and 120 micrometres thick).

Solid Plaster on Non-Rigid Backing: Reinforce plaster with 18 gauge netting clipped onto Number 8 wire at 150 crs. Number 8 wire to be stapled to studs at 150 crs through spacers on building paper on 25mm H3 battens. Install netting horizontal with 150 mm laps. Install 600 x 600 netting bandage on a 45 degree angle at each corner of every opening, also install a bandage extending 400 mm wrapped around each corner. Plasterer to fix own netting. Non rigid backing on 25 mm H3 battens. Fix battens vertically on building paper on studs at 400 crs. Both non rigid backing and building paper to be "Duroid" heavy weight building paper. Ensure materials for plaster mix are measured correctly. Scratch coat to have six parts sand, one part cement, one part lime & mixed with shredded fibreglass & water proofing agent. Follow the sun when applying each plaster coat. Cure first coat (deep scratched) by water for 5 days before applying next coats. Complete all framing & internal linings before plaster is applied. Ensure plaster is sealed where it meets soffits etc. Provide ventilation top and bottom, with bottom vents to serve also as weep holes. Provide control joints by cutting or physical separation @ 4.0 m crs both vertically & horizontally. Solid plaster to comply with NZS 4251, NZS 3101, NZS 3604 appendix G & NZBC. Provide support to solid plaster with steel angles or timber plates where not seated directly into foundation rebate. Provide flashings around all openings & penetrations. Paint over solid plaster finish with 3 coat low sheen 100% acrylic latex paint system (between 80 and 120 micrometres thick).

Harditex: Line exterior walls with 7.5 mm Harditex, ensuring all edges to be tapered and fixed with 40 mm galv clouts to framing over building paper. All joints to be reinforced and flushed as per Hardies specification, Nuplex SJ jointing system or Resene jointflex system. Provide an approved finishing application over Harditex with a minimum 3 mm thickness e.g. Reipaint trowel coat or Nuplex flexitrowel. Refer to their specifications.

Cedar Shingles: Fix cedar wood shingles to gable and walls where shown on elevations. Fix over building paper with galvanised clouts (Any exposed nails to be silicon bronze) to 50 x 25 battens at 133 crs which are fixed horizontally to wall framing. Ensure nails do not penetrate underside of batten.

CEILINGS

Where shown, install trusses at 900 crs. Fix 75 x 40 ceiling battens to underside of truss at 400 crs.

Michelangelo tiles: Fix Michelangelo tiles to ceiling battens with staples every 100mm through the back flange making sure end staples are no more than 50 mm from panel ends. See manufacturer's instructions.

Gibraltar board: Line ceiling with 9.5mm gibraltar board sheets. Fix with appropriate "Gib Grabber" screws and Gibfix Multipurpose water based construction adhesive. All joints must be taped. Stopping to be done with best quality Plaster of Paris, filled to an even surface and all spots and rises removed. (see table 1 page L2 in appendix at rear of specification).

Pinex softboard: Fix pinex softboard to trusses with 30mm flat head galv clouts, with nails punched and stopped, and all joints to be finished with PVC mouldings. Ceiling to be finished with paint.

Strapping: Fix 100 x 75 rough sawn d/f strapping to underside of ceiling spaced evenly both directions at 1200mm crs minimum. Stain and seal before fixing. Also use 100 x 40 cornice if required.

Strapping: Fix 100 x 15 rough sawn d/f strapping to underside of ceiling spaced at 15mm. Stain and seal before fixing. Fix over 2.5 thinline painted black.

Sarking: Where shown on plan fix ex 150x25 rimu sarking to underside of rafters with 50mm stainless steel brads.

Particle Board Diaphragm: Fix 10 mm particle board ceiling diaphragm on top of ex 250 x 75 d/f rafters with 30 mm clouts.

Woodtex: Fix 25 mm Woodtex over rafters where shown on plan. Fix in accordance with manufacturer's specifications.

Strapping: Fix 86 x 18 run macrocarpa strapping to underside of gibraltar board ceilings spaced evenly both directions at 1200mm crs minimum. Halve all intersections and house into surrounds 10mm. Seal before fixing. Also fix 55 x 55 macrocarpa cornice to surround.

Particle Board: Fix 10 mm particle board ceiling on top of ex 100 x 25 stringers, which are fixed to rafters, with 30 mm clouts.

DOOR AND DOOR JAMBS

a) Interior doors are to be hollow core flush panel paint quality with clashing strip on one edge. Hang doors on 1.5 pairs AC loose pin Butt hinges. Interior door frames to be solid rebated grooved 35mm pine.

b) As supplied pre-hung on frames by joiner, (see Joinery section) the carpenter shall take delivery of and correctly store and protect until required. To the best trade practice, neatly fit, adjust, ease and fit up with all necessary hardware as specified in door schedule.

WARDROBES

To be lined full height. Provide inside each with 300 x 25mm full width shelf at 1700mm from floor and 20mm galv pipe coat rail at 75mm below shelf.

LINEN CUPBOARDS

Provide five full width depth shelves from 25mm timber supported on 50 x 25mm framework.

MANHOLE AND ACCESS DOOR

Provide 500 x 500mm manhole in ceiling of Hall or as shown, and provide cover.

FINISHES

Provide to windows, doors, floors and ceilings, respective sillboards, aprons, architraves, skirtings and cornices as selected by owner. All nails to be punched below the finished surface.

ALUMINIUM JOINERY

All exterior window frames, sashes, door frames and doors to be powdercoated aluminium, fixed in accordance with the manufacturer's specification. Sizes shown on plans. Liners to be grooved 35mm pine or as noted on plans.

INSULATION

Insulate all ceilings except garage with R 2.2 Terralana wool batts, and exterior walls with R 1.8 Terralana wool batts (including between house & garage).

Insulate all ceilings with R 2.5 SUPERFLUFF and exterior walls with R 2.5 SUPERFLUFF

Insulate all ceilings with 100mm Rockwool .

Insulate all ceilings with R 2.4 Batts and all exterior walls with R1.8 Batts.

Insulate all exterior walls with 30mm Styrofoam and all ceilings with R2.4 Batts (walls clad with other than styrofoam to be insulated with R1.8 Batts).

ROOFING

Colour steel roofing to be fixed by roofing contractor in accordance with manufacturer's specification and building paper to be laid under roofing with laps of 100mm minimum on galvanised netting to manufacturers specification. (Use duroid "Greenwrap heavy weight" building paper).

Butynol is to be laid over 20 mm H3 plywood (waterbased), screw fixed to manufacturers instructions. Lay butynol to manufacturers specifications. Finish decks off with a ceramic tile chosen by owner. Lightly grout ceramic tiles if necessary. Substrate, venting, flashings etc to comply with manufacturers. Provide fall and drainage to comply with NZBC approved documents and NZS 3604.

Decrabond: Decrabond roofing to be fixed to 50x40 purlins at centres specified by roofing manufacturer and to be fitted by an approved fixer. Provide roofing underlay over the top of rafters.

Concrete Tile: Monier concrete tile to be fixed to 50 x 40 purlins at 362 crs fixed by an approved Monier tile applicator in accordance with manufacturer's specification. Provide roofing underlay on rafters where roof pitch is under 27.5 deg.

Bardoline Roofing: Fix 75x40 mm purlins to trusses and rafters at 600 crs. Fix a 600 wide strip of 15 mm tanalised plywood around all eaves and barges and then fix 15 mm plywood to purlins with 35 mm galv jolt heads at 150 crs. Lay building paper over plywood then fix Bardoline roofing tiles to plywood with 20 mm galv flathead clouts. Fix all ridge, barge and hip cappings as per manufacturer's specification.

FASCIA, GUTTERS AND DOWNPIPES

Supplier to fix fascia to rafters/trusses with purpose made brackets. pop rivet gutter brackets to fascia and install gutters, seal all joins and ends. Ensure gutter top edge is at least level with end of roofing. See eaves details on drawings for specific instructions. Install as per manufactures instructions, leaving gutters and fascias free from buckle, dents and scratching. touch up bracket footing with matching paint.

Install 65 x 50 marley downpipes in accordance with manufacturers instructions.

NOTE

All fitments, hardware, appliance and joinery to be selected by owner and installed by contractor. Allow a PC SUM.

EAVE OVERHANGS

Line all eave overhangs with 4.5 hardiflex fixed to underside of rafters, or as noted on plans.

STAIRS

All treads and risers to be constructed from 20 mm customwood and rimu runners or as noted on plans. Site measure and check. All balustrades and hand rail types to be discussed with owner. Balustrades to be 915 mm high from centre of tread and to comply with **NZBC D1/AS1**.

SUBFLOOR VENTILATION

Ventilators to be spaced regularly around foundation at max 1800 mm centres and starting 750 mm from each corner. Cover ground with 0.25 mm polythene where subfloor airflow is obstructed, or subfloor space is more than 7.5 metres from nearest ventilation. Lap polythene 150 mm and hold down with rocks or bricks to comply with clause 4.8.2(f). Tape all joins.

SHOWER

a) Prefinished shower systems to be installed to manufacturers specifications.

b) Site built shower only when noted on plans or required by owner. Line shower walls with formica aqua panel fixed to studs and dwangs with construction adhesive as per manufacturer's specification. Shower sides without walls to be laminated glass in aluminium frame, to match glass sliding doors in aluminium frames. Shower tray to be stainless steel.

KITCHEN

Joiner to construct all kitchen fittings in accordance with best trade practise and to the complete satisfaction of the owner. All corner cupboards to be fitted with one double bifold corner cupboard door with piano hinge. All finishing and materials to be discussed with owner. Bench tops to be formica with tile inserts. Note: site measure before commencing job. Joiner to construct all kitchen fittings in accordance with best trade practise and the carpenter shall take delivery of and correctly store and protect until required. To the best trade practice, neatly fit, adjust, ease and fit up with all necessary hardware

HEATING APPLIANCE AND CHIMNEY

Solid fuel stove chosen by owner to be installed by contractor on 50 mm concrete slab hearth. Installation to comply with manufacturers specification and local authority by-laws and **NZBC, C1/AS1, NZS 7421**. Also secure to floor for seismic resistance by a bolt fixture complying with **NZS 4102** and **NZS 7421**. Allow one Scope electric heater to be fitted in the lounge and hallway.

Marshall heater and Franklin stove chosen by owner to be installed by contractor on concrete floor with cobble and stone hearth. Installation to comply with manufacturer's specification and local authority by-laws and **NZBC C1/AS1** complete with seismic restraints.

Pre cast Firth superlog burner to be installed by contractor on a concrete slab hearth. Installation to comply with manufacturer's specification and local authority by-laws and **NZBC C1/AS1**. See rear of specifications.

Allow one Scope electric heater to be fitted in lounge.

Note: All construction to comply with **NZBC**, approved documents inc. **NZS 3604** and local authority bylaws. Read specifications in conjunction with plans.

FRAMES AND TRUSSES

Preframers to site measure foundations etc before commencing work, and coordinate with truss manufacturer . Truss manufacturer to site measure frames etc before commencing work and coordinate with preframer/builder. Truss manufacturer to advise preframer/builder and designer of any loads from roof that would be too great for framing, top plates,lintels, beams etc shown on plan, and of girder trusses, point loads, or large spans that are not expected at design stage which would cause problems or failure with supporting members. Truss manufacturer is required to size special trusses such as coved trusses etc and coordinate information with preframer/builder for frame heights etc. Truss manufacturer is to provide a truss design and design certificates for all trusses to local Territorial Authority before installation. Truss manufacturer and preframer are to advise builder of fixing and installation requirements of their products. Special fixing methods not normally used should also be advised to local Territorial Authority for approval. Preframer is responsible to check plans and guarantee their product and work complies with NZBC, NZS 3604 and other means of compliance. Truss manufacturer is responsible to check plans for correct frames, lintels, beams etc, supporting trusses, that they are able to support loads from finished roof, and should advise preframer /builder and designer of any problems or changes required. The main contractor of building project is responsible to check that preframer/builder and truss manufacturer have finished checking plans and truss and beam designs etc before construction begins.

Note: All construction to comply with NZBC, approved documents and means of compliance including NZS 3604 and local authority bylaws. Read specifications in conjunction with plans.

PLUMBER

GENERAL

Provide all materials, labour and plant necessary to complete the work as set out in this specification and shown on the drawings.

All work shall be left in a thoroughly sound and watertight condition and in perfect working order as the case may be.

All sanitary connections, etc., shall be in accordance with the requirements of the local authorities. The work shall be carried out by a competent tradesman possessing the qualifications as laid down in the specification NZBC and approved documents and in accordance with this specification, using materials consistent with sound trade practice.

The plumber shall give all the necessary notices to the local authority and shall ensure the plumbing consent is granted before starting work. Waterpipes and tubes shall be set out in straight runs of even gradients, avoiding all places where airlocks are likely to occur. Use easy bends and avoid elbow fittings. Copper tubing is to be secured in position by copper straps. All piping is to be concealed. In the event of any piping being exposed, such piping is to be 12mm diameter chrome plate on copper pipe with chrome fittings where visible.

FLASHINGS

Flash as necessary to render building watertight. All flashings shall be accurately fitted to work and shall be machine bent and cut in lengths as long as possible.

All joints shall be well lapped and fixed with 19mm flat head nails at 450 centres.

Seal all penetrations allowing for expansion and shrinkage of materials.

VALLEYS

Valleys shall be formed out of *color steel* to form a 100x50 mm trough at intersections of angle roofs. *use butynol installed to manufacturers specifications where Valley/gutter is curved or below eight degrees.*

SPOUTING AND DOWNPIPES

Fit spouting and downpipes to manufacturer's specifications and/or in compliance with regulations set down by the local specifying authority. All spouting shall be fixed straight and even. Downpipes positioned where marked on plan and as required by manufacturer's instructions *and NZBC.*

VENTS AND SOIL STACK

Vent pipes shall be 80mm diameter PVC pipe in one length. Suitable fixing and flashings will be the responsibility of the plumber. Fix cage at top.

WASTES

Join WC pans to drains above the level of the floor with a rubber ring sealed with mastic or other approved material which will provide a non-rigid gas tight joint. Fix basin with 30mm PVC traps and waste pipes to floor level with an approved floor flange. Bath, shower and wash tubs shall be 40mm diameter. Sink wastes shall not be less than 40mm diameter. All waste pipes throughout the job shall be ^{or}PVC piping or as approved by local authority.

HOSE TAP

Supply and fit two brass cocks where owner requires.

COLD WATER SUPPLY

Lay cold water supply from toby in 15mm diameter alkathene pipe buried not less than 600mm. Install gate valve at house and take copper pipe branches to bath, basin, sink, vanity, each compartment of wash tubs, WC flushing cistern and to exterior hose taps.

Connect to storage tank and to hot water cylinder with 12mm polybutylene or copper pipe.

Install pressure limiting valve at first point of entry to house.

HOT WATER SUPPLY

Supply and install above floor level a general purpose hot water cylinder. Run a 20mm over-flow from cylinder to outside. Supply and fit maximum allowance element and thermostat to cylinder. From cylinder, connect in copper pipe to laundry tub, shower, bath and sink bench. Run pipes as scheduled for hot water and wrap in *approved insulation.*

A low pressure system open vented, complying with local council requirements, unless otherwise noted on drawings. Ensure that both hot water cylinder and supply tank are secured with 25 x 1 mm metal strapping and turnbuckle to timber framing or roof framing against seismic resistance, complying with NZS 3604 (1990) and 4102.

Mains pressure system to have discharge pipe from T&PR valve/CWE valve to a gully trap.
Also install tempering valve to HWC set at 55 degrees.
Install HWC system to comply with manufacturers requirements & NZBC.

SANITARY FITTINGS

As shown on floor plan and schedule. Fix PVC white cistern. WC pan shall be white glazed earthenware with white PVC seat.

FIXING

The sink top, tub and all vanity units shall be supplied by the Joiner and the Plumber is responsible for connecting only.

TESTING

Before any pipework is enclosed, test to full working pressure for not less than twelve hours duration. Any defects shall be remedied and the pipework retested as above.

Water supply pipes exposed to exterior, to be protected against freezing.

Work on buildings in inland areas known to have snow or extreme cold conditions are to have all pipes in exterior walls (and when required interior walls) ceilings, open or vented foundations, and otherwise exposed situations, insulated to prevent freezing.

Plumber to check plans before construction begins for positions of all services under concrete floors, and in enclosed spaces, also for connections of all stormwater drains and down pipes, and soil pipes are shown correct on plans. Plumber is to advise main contractor, builder and drainlayer of any corrections or changes before construction commences.

DRAINLAYER

EXTENT OF WORK

Work in this section of the contract comprises all surface and foul water drainage up to and above ground level to connect to plumber's work. Include all

pipes and special fittings, construction of manholes, all gully traps and connections for terminal vents, soil and waste pipes.

Drainlayer to coordinate all connections with plumber and Builder.

STANDARD OF WORK

The whole of this work shall be carried out by experienced tradesman to the satisfaction of the local drainage inspector. It shall conform to requirements of the drainage and plumbing regulations and the local council specification.

TRENCHES AND DRAINS

Excavate for and allow all necessary drains from gully traps and WC to septic tank for sewer connections. All pipes and fittings shall be 110mm PVC with socket joints and shall be laid to a true and even fall at minimum of 1 in 100. Seal all joints.

Trenches shall be carefully filled after drains have been inspected and the whole shall be left in perfect working order. All sanitary arrangements shall comply with the local by-laws and shall be completed to the satisfaction of the sanitary inspector.

STORM WATER

From PVC-bend, carry 110mm PVC pipes to soakholes as required by the local authority.

Soakholes to be 600mm diameter machine drilled to a minimum depth of 3000mm or to satisfy soakage. Cap soakhole 300mm below finished ground level with 1070mm diameter, precast concrete lid complete with handles. *to comply with NZBC and Local Territorial Authority.*

SOIL DRAINS

Fix 110mm PVC gully traps to take wastes and 110mm bends to rake soil pipe, TV etc. Each gully trap to be set on a concrete bed and shall have concrete kerbs and PVC grating.

Take 100mm PVC drains from gully traps and bends and connect with all necessary inspection fittings to local body sewer.

SEPTIC TANK

Where sewerage is not available, allow five metres of 100mm PVC pipe drainage connection to one 600 gallon septic tank, in compliance with health regulations, and local authority requirements.

TESTING

On completion have the whole drainage system tested and passed and leave the ground in a tidy condition.

Drains to be a min of 500 mm deep or 150 mm if covered by 75 mm concrete. Support drains in uncompacted filled soil. Drainlayer to site check all levels and confirm finished floor level of building will comply with requirements before building work starts.

ELECTRICAL

GENERAL :

The electrical work shall be carried out strictly in accordance with the NZ Electrical Wiring regulations. The Electrician shall obtain the necessary permits and pay all dues required by the Supply Authority, and provide owner with a '**Certificate of Compliance**'.

SCOPE:

The extent of the work includes the supply and installation of all necessary cables, flexibles, earthing, fittings, lamps, switches and switch sockets, service mains, submains, main switch board and sub switchboards, for the light and power services.

Allow for excavation for underground cables, backfilling of trenches with properly consolidated material and carting away surplus material from the site.

HOLES:

The Concretor and other trades people will leave holes for wiring and the like, and make good after installation, but it shall be the Electrician's responsibility to advise such tradesmen of the exact location of such holes etc before concrete is poured or before any linings are fixed.

The Electrician shall co-operate with other trades so that the work is carried out efficiently.

Holes in the face and notches in the edge of a plate shall not be more in diameter than : (i) 75 mm wide plates - 16 mm (ii) 100 mm wide plates - 25 mm

CABLES:

All cables from the main switchboard shall be TPS and of sufficient size to take required loads and to comply with Electrical Wiring Regulations and Local Supply Authority requirements.

All wiring shall be concealed behind linings or with approved conduit fixed in an approved manner to surfaces with no lining,

Lighting cables shall be TPS 1.00 mm twin and earth and power outlet cables shall be TPS 2.5 mm twin and earth.

Switchboards Provide and install a standard pattern Gael or equivalent meterboard cabinet with hinged door, to position shown on drawings.

Size to comply with Local Supply Authority requirements.

Provide and install a switchboard/circuit breaker panel where shown on plan complete with circuit breakers to all circuits.

Switchboard shall be suitably labelled to facilitate identification of switchgear and circuits connected thereto.

Lighting Install all lighting fittings and switches as shown on the drawings or as decided upon after consultation with the owners, the extra costs incurred to be charges as an extra.

Lighting switches shall be PDL Series 500 type switches flush mounted and fixed at a height of 1.000 to centre above floor level. Switches shall be single, two way, or three way as indicated in Drawings.

Incandescent lighting to sloping ceilings shall be pendant type with PDL clipsal type switches flush mounted and at a height of 1.000 to centre above floor level. Switches shall be single, two way, or three way as indicated in Drawings.

Fluorescent lighting shall be Thorn popular pack 1200 twin tube or 1500twin tube, or single tube as required, with diffusers fitted.

Socket Outlets All wall switch socket outlets shall be single or double PDL 500 series or to owner's selection, 10 amp flush mounted.

Switch sockets shall be mounted at a height of 300 mm above floor level, or 225 mm above bench. Dryer and refrigerator sockets shall be 1200 from floor level. The exact position of all power points shall be determined on site by the owner.

Hot Water Cylinder Plumber will install water heaters with elements and thermostats fitted. Install wired-in outlet with switching adjacent to outlet box on water cylinder.

Telephone Ensure that owner arranges for telephone wiring to be installed before any wall linings etc are fixed.

Television Aerial Provide and install concealed TV coaxial aerial wire from TV aerial plug, where shown to roof space allowing sufficient wire to run to suitable location for future aerial.

Where TV aerial wire runs parallel to 230 V cables, install them no less than 450 mm apart.

Heaters etc Install heaters as shown on drawings - includes bathroom heaters, extractor fans and heated towel rails as required.

Allow to pre wire house for security systems.

Install interconnected smoke detectors to passages and bedrooms, use 'Smoke & Safety NZ Ltd' BRK model 83RIAUS or equivalent.

PAINTER

WORKMANSHIP

All painting shall be in accordance with good trade practice, applied during suitable weather and using only good quality ready mixed paints, applied according to manufacturer's instructions.

STOPPING

After priming, all nail holes or joints are to be stopped and cleaned off before undercoating for painted work. For varnished work holes etc are to be stopped with matching putty after first coat of sealer.

PAINTING OF EXTERNAL WOODWORK

After priming, all external woodwork and adjacent metalwork such as flashings, spouting and downpipes are to be given one good coat of undercoat, followed by finishing coat of high gloss paint.

Cedar weatherboard to be given one coat of Gold-X oil stain and two finishing coats of clear UV resistant oil.

PAINTING OF INTERIOR SURFACES

All nails or screw holes should be stopped and joints between sheets stopped, taped and finished flush in accordance with gib joining and finishing instructions. After the surface area has dried all work should be lightly sanded down to a smooth finish. Remove all dust etc with a clean damp cloth in order to provide a clean dust free surface prior to the application of gib sealer. Apply two coats of gib sealer using a brush or a roller. Allow two hours drying time between coats. Paint as required with two coats of approved paint finishing flat or semi-gloss as required. Where full gloss is required such as kitchens and bathrooms, finishing coat shall be full gloss enamel.

VARNISHING

Where varnishing is required such as doors, sarking, architraves, skirtings, etc, give one coat of approved sealer followed by two coats of clear varnish. Polyurethane floor.

HARDIFLEX

Apply two coats of an approved PVA or Acrylic Paint to 4.5 Hardiflex.

HARDIPLANK

Apply one coat of HardiPrime and two finishing coats of Hardstain.

HARDITEX

All joins to be filled and taped and surface prepared before Revertex rough cast finish is applied. To be done by an approved Revertex applicator in accordance with manufacturer's specification.

STYRO/CRETE

Fix reinforced woven mesh over the styrofoam making certain mesh joints overlap. Mesh is to be secured to framing by mechanical fasteners with washer spacings at 600 crs horizontally and 300 crs vertically. Fix U channels, reinforcing mesh and corner reinforcements before applying styro/crete base coat modifier and styro/crete texture coat in accordance with manufacturer's specifications to the best trade practice. Paint finish to be of high quality eg Revertex.

SOLID PLASTER

Paint on solid plaster to be of a high quality eg Dulux Luxaclad. Prime first with Dulux Primercryl then apply Luxaclad and a third coat of Dulux Spruce. Apply with an airless spray or roller

PAPER HANGING

Walls shall be properly prepared by sizing. Hang paper straight and true with butt joints. Pastes shall have a fungicide incorporated. Clean paste off woodwork as work proceeds.

NOTE: All service rooms to have vinyl wall paper.

Please Photocopy

Gib Board® Wall Bracing Systems Construction Guide

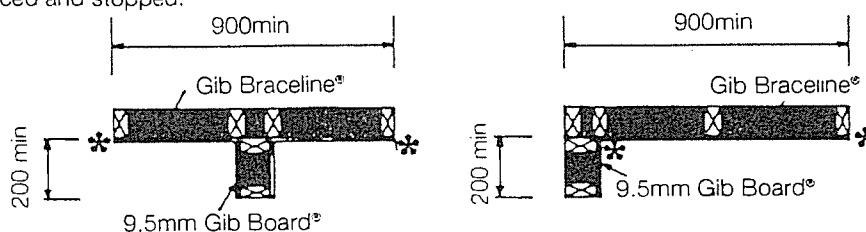
(complies with NZS 3604 : 1990)

Specifications			
Type	Description	Additional Requirements	Nailing & Stopping
Gib 1	9.5mm Gib Board® on one face. Min. length 1800mm	Diagonal brace	Gib 1, 2 and 3 30 x 2.5 Gib Clouts® at 150mm cos. around the perimeter of the bracing element and at 300mm ccs. to intermediate framing. Tape and stop all joints within the bracing element.
Gib 2	9.5mm Gib Boards® on both sides. Min. length 1800mm	Diagonal brace	
Gib 3	9.5mm Gib Boards® on both sides. Min. length 1200mm	No additional requirement	
BR 1	Gib Braceline® on one face. Min. length 1800mm	Diagonal brace	BR 1, 2, 3, 4, 5, 6, 7 and 8 30 x 2.5 Gib Clouts® fitted with Gib Braceline® washers at 150mm ccs. around the perimeter of the bracing element. Standard nailing to intermediate framing. Tape and stop all joints within the bracing element.
BR 2	Gib Braceline® vertical on one face. Min. length 1800mm	No additional requirement	
BR 3	Gib Braceline® horizontal on one face. Min. length 1800mm	No additional requirement.	
BR 4	Gib Braceline® on one face. Length 900 to 1200mm	6 kN end-stud fixings	
BR 5	Gib Braceline® on one face. Length 1200 to 2400mm	6 kN end-stud fixings	
BR 6	Gib Braceline® and Gib Board® on opp. sides. Length 1200 to 2400mm	12 kN end-stud fixings	
BR 7	Gib Braceline® on one face 7.5mm ply on other. Length 900 to 2400mm	6 kN end-stud fixings	
BR 8	Gib Braceline® on one face 4.75mm hardboard on other. Length 900 to 2400mm	6 kN end-stud fixings	

BR9 see sheets B6 & B7

Guidelines for Intersecting Walls

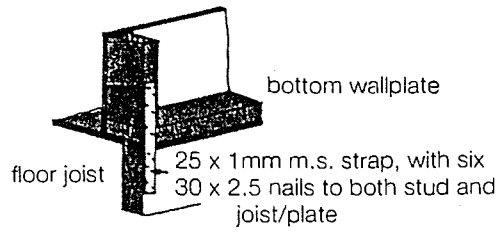
Types BR1 to BR8 may have standard 9.5mm Gib Board® intersecting walls with a min. length of 200mm. Gib Braceline® nails and washers are required around the perimeter of the bracing element (*). Intermediate vertical joints may be nailed with standard Gib Clouts® at 300mm ccs. and should be tape reinforced and stopped.



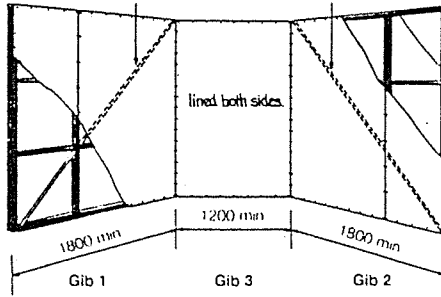
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Detail 1

6kN connection to timber sub-floor
(both sides of stud strapped for 12kN)

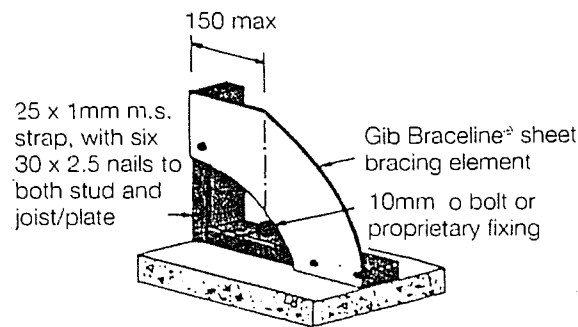


galv. steel angle brace, fixed with three 60 x 3.15 nails to top and bottom plates and with two 60 x 3.15 nails to wall studs

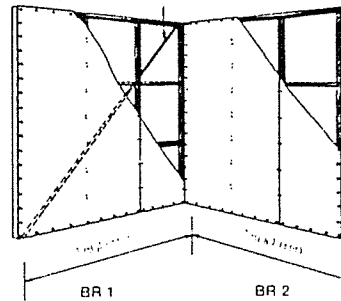


Detail 2

6kN connection to concrete (both sides of stud strapped for 12kN connection)



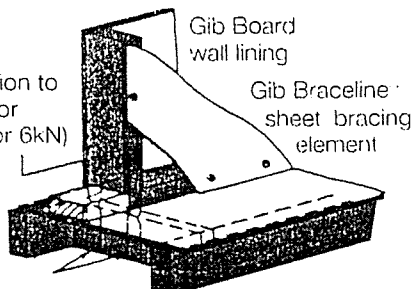
galv. steel angle brace, fixed with three 60 x 3.15 nails to top and bottom plates and with two 60 x 3.15 nails to wall studs



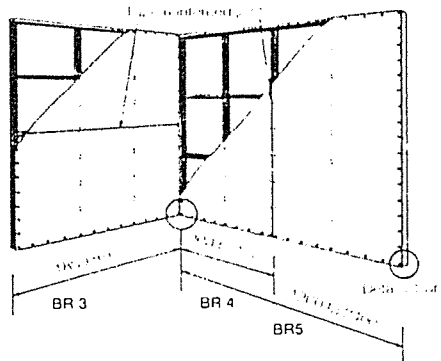
see specifications for nailing requirements

Detail 3

12kN connection to timber sub-floor
(single strap for 6kN)

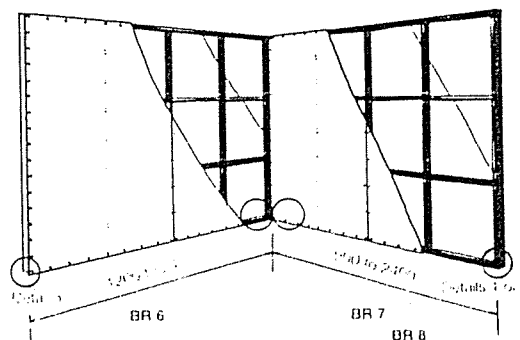
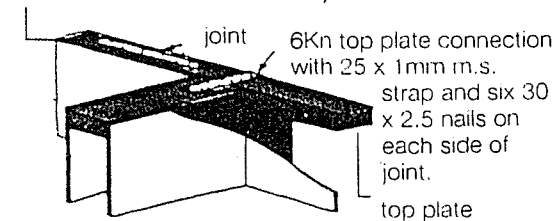


two 25 x 1mm m.s. straps, with six 30 x 2.5 nails to both stud and blocking piece between floor joists



Top Plate Connections

3kN top plate connection, with 25 x 1mm m.s. strap and three 30 x 2.5 nails on each side of joint.



PLAN NAME: **BRIGHTEN II 20-694****SUMMARY OF ROOF BRACING SYSTEMS:****B3**

Roof Type	Roof plane diagonal braces unless sarked	And/or	Roof space diagonal braces or ridge/gable braces	Hip or valley rafters	Hip end top plate
Light Hip	–	–	–	Min 3 per ridge	–
Heavy Hip	One in each side plane of roof for each 35m sq of plan area, part of	Plus	–	Min 3 per ridge	Top plate at hips connected at 2.5m max crs to wall bracing elements parallel to ridge
Light Gable	One per 50m sq in each roof plane plan area, part of	Or	At each end of ridge and max 7.5m crs between	–	–
Heavy Gable	One per 25m sq in each roof plane plan area, part of	Plus	One per 12m sq roof plane plan area, part of, not less than 2m from a parallel external wall, min ½ within 2m of ridge line, evenly distributed along length of roof	–	–

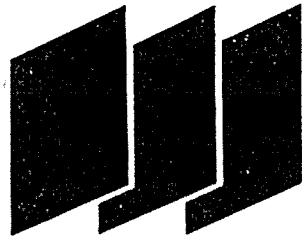
CHECK
BOX
BELOW

NOTE: For L – shaped roofs with ridge lines at right angles to each other, the valley or hip formed between 2 roof planes may be counted as forming a roof plane diagonal brace for each roof plane.
Roof braces to be constructed in accordance NZS 3604

DIAPHRAGMS:12mm MD Particle board CEILING DIAPHRAGM over rafters –9.5 or 12.5mm Winstone Gib plaster board CEILING DIAPHRAGM –9.5mm Winstone UltraLine Gib plaster board CEILING DIAPHRAGM –9.5mm Winstone BraceLine Gib plaster board CEILING DIAPHRAGM –20mm HD Particle board FLOOR DIAPHRAGM –

NOTE: Fix diaphragm in brick pattern with screws at 150mm crs around sheet edges at 300mm crs over intermediate supports and min 10mm from edges, or as required by Manufacturers Specifications. Diaphragms to comply with NZS 3604 and Manufacturers specifications.

B6.



INFORMATION BULLETIN No. 10

September 1993

GIB BOARD®

ADDITION TO: 'GIB BOARD® WALL BRACING SYSTEMS, 1992'

600 – 1200 mm WALL BRACING PANEL				
Type	Primary Bracing Requirements	Secondary Bracing Requirements	Bracing Unit rating per metre	
			Wind	Earthquake
BR9	Gib® Braceline on one face, min length 0.6m max length 1.2m	Metal strap of 6 kN capacity fixed to both wall end-studs	110	95
For wall heights other than 2.4 metres multiply the ratings by '2.4 / wall height', except that this factor shall not be greater than 1.33.				

Scope of Use

This bracing panel is an addition to Winstone Wallboards publication 'Gib® Board Wall Bracing Systems, 1992', and intended for use in buildings designed and constructed in accordance with NZS 3604:1990, 'Code of practice for Light Timber Frame Buildings not requiring specific design'.

Compliance with the NZBC

NZS 3604:1990 satisfies the requirements of the NZBC-B1 'Structure' and is listed in BS/AS1 section 4.0 Timber.

Under normal conditions of dry internal use Gib® Board Bracing Systems have a service life in excess of 50 years and satisfy the requirements of NZBC-B2 'Durability'.

Framing

100 x 50 mm No.1 framing constructed in accordance with the requirements of NZS 3604:1990.

Specific requirements include a double bottom plate, a single dwang at 800 mm above floor level, and dummy studs beside both end-studs below the level of the dwang.

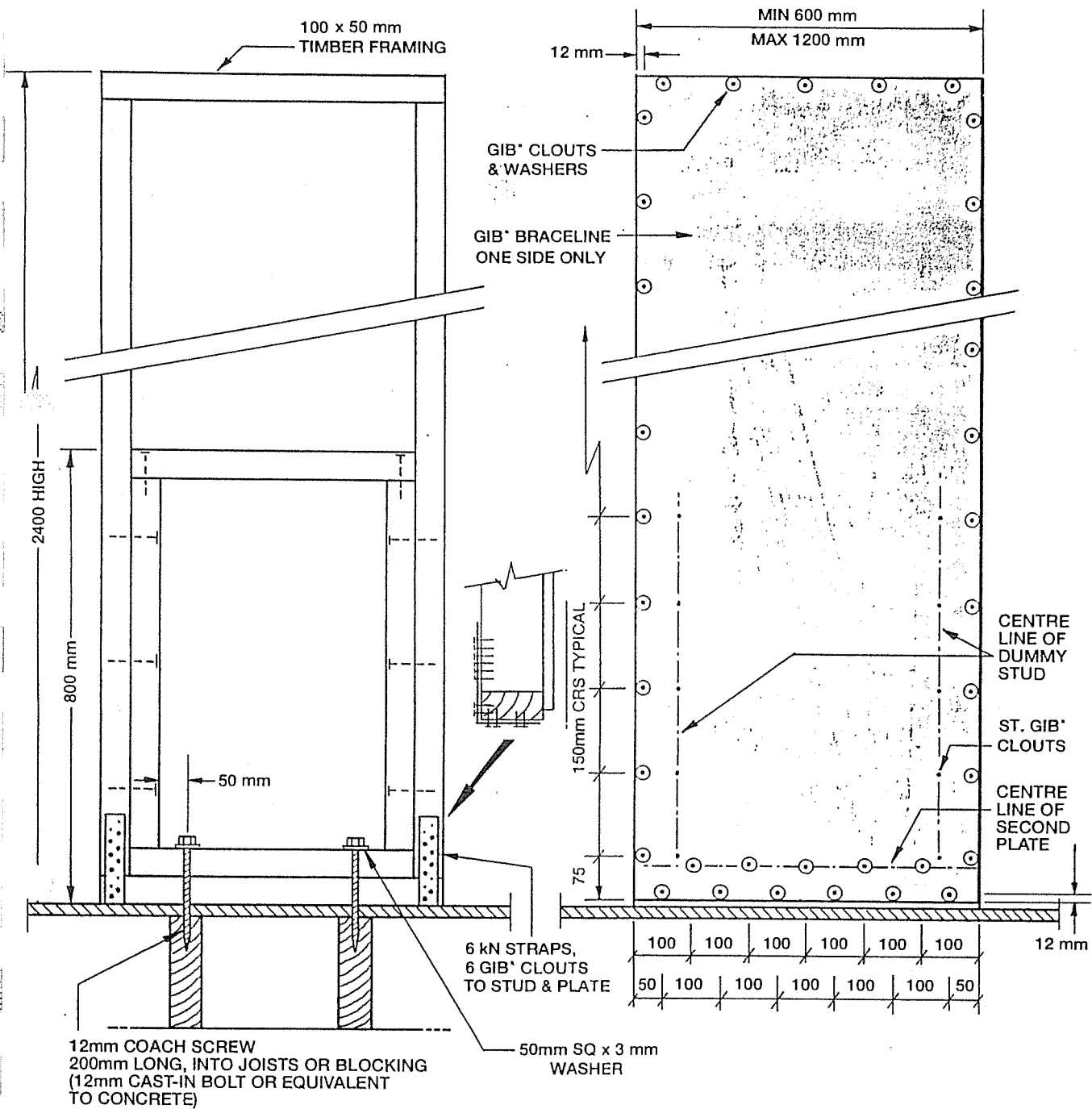
The end-studs must be fixed to the bottom plate by means of a strap with a minimum capacity of 6 kN (e.g., ex 25 x 1 mm galvanised steel strap). The bottom plate must be connected to the floor framing by means of a 12 mm coach screw with a 50 x 50 mm washer, or a fixing of equivalent strength.

Lining

Gib® Braceline on one face nailed typically at 150 mm around the perimeter of the bracing panel, and at 100 mm centres to both bottom plates with Gib® Clouts fitted with Braceline washers. Additional standard Gib® Clouts are used for fixing to the dummy studs.

Test Reference

BTL Test Report 230/1, 'Report on Bracing Rating of 0.6 m Long Braceline Wall with Special Base Fixings' June, 1993.



WINSTONE WALLBOARDS LTD

Auckland

P.O. Box 12 256 Penrose. Facsimile 0-9-634 3972.
Telephone 0-9-634 2184.

Lower Hutt

P.O. Box 36 024 Moera. Facsimile 0-4-568 7844.
Telephone 0-4-568 4293.

Christchurch

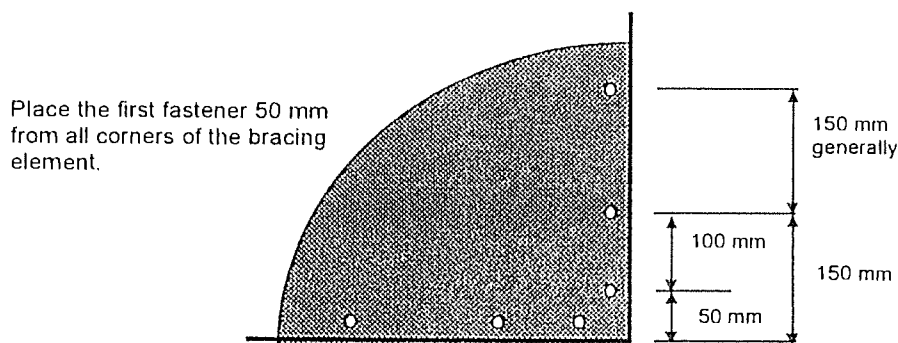
P.O. Box 1983 Christchurch. Facsimile 0-3-337 1014.
Telephone 0-3-332 3159.

(including standard Gib® plasterboard, Gib® Braceline, and Gib® Ultraline systems), fastener patterns should be as per the diagram over the page.

We are currently re-writing and updating the Gib® Bracing Systems (1994) book. This is due for release in January 1999. In the mean time we request that this fastener pattern be adopted for all Gib® bracing systems.

The following diagram shows the new fastener pattern for all Gib® Bracing Systems other than BR 9, which remains the same.

This is effective from November 1998 and replaces fastener spacings specified in "Gib® Bracing Systems, 1994".



The improvement to the face paper is a significant milestone in the evolution of Gib® plasterboard, one that will ensure that Gib® continues to meet the demands of not only today's, but also tomorrow's discerning customers.

We trust that you and your customers will appreciate the benefits that this improvement brings.

Yours Sincerely,

Chris Caiger
Marketing Director

Table K1
RATINGS OF 2.4 m HIGH WALL BRACING ELEMENTS

<i>Type</i>	<i>Principal bracing element</i>	<i>Secondary bracing element</i>	<i>Rating in bracing units per metre of element length</i>
1	Sheet material to clause K2.2 on one face not less than 1.8 m long	(a) Diagonal brace (to clause K2.3) entirely within the element consisting of: (i) Let in timber; or (ii) Let in metal angle; or (iii) Overlapping pair steel strips; or (iv) Overlapping pair of cut between timber (to clause K2.3)	42
		(b) Diagonal brace, (to clause K2.3) one of which is not entirely within the element consisting of: (i) Overlapping pair of steel strips; or (ii) Overlapping cut between timber pairs of braces	30
2	Sheet material to clause K2.2 on two faces not less than 1.8 m long	(a) Diagonal brace (to clause K2.3) entirely within the element consisting of: (i) Let in timber; or (ii) Let in metal angle; or (iii) Overlapping pair steel strips; or (iv) Overlapping pair of cut between timber (to clause K2.3)	62
		(b) Diagonal brace, (to clause K2.3) one of which is not entirely within the element consisting of: (i) Overlapping pair of steel strips; or (ii) Overlapping cut between timber pairs of braces	47
3	Sheet material to clause K6 on both faces not less than 1.2 m long	None	35
4	Sheet brace to clause K4 0.9 m up to 1.8 m long over 1.8 m long	None	67 83
5	Sheet brace to clause K4.4 not less than 1.8 m long	Sheet material to clause K2.2 on other face	83
6	Diagonal boarding to clause K3 not less than 1.8 m long	None	42
7	Reinforced concrete or reinforced masonry 1.5 m to 3 m 3 m to 6 m 6 m and longer	None	42
			100
			200

Limitations

All statements in this manual shall be read subject to the plywood being properly installed, used and maintained in accordance with specifications and instructions provided in this brochure.

Product Description

Structural plywood is manufactured from Pinus radiata veneers bonded with phenol formaldehyde resin adhesive. All Carter Holt Harvey structural plywood can be used for bracing; either untreated for dry, interior exposure or H3 treated for exterior use or internal environments exposed to high humidity or condensation. "Plybrace" is the basic structural plywood bracing sheet and is 7mm thick 3 ply, DD grade in 2440mm and 2745mm long sheets. Decorative plywood claddings can also be used as bracing.

Appraisal and Testing

Construction (structural) plywood wall bracing systems are suitable for use as designated bracing elements in buildings designed and constructed in accordance with NZS 3604: 1990 (BRANZ Appraisal certificate no. 224). Additional tests to BRANZ P21, "A wall bracing test and evaluation procedure" and the 1991 Supplement have been carried out by the New Zealand Forest Research Institute Limited on over 50 walls to provide a full range of design options for the inclusion in Table 1.

Product Range

Product	Thickness (mm)	Sheet Length (mm)	
		900mm cover	1200mm cover
Plybrace	7	2440, 2745	2440, 2745
Ecoply DD (or better)	7,9,12,15,17		2400, 2700
Shadowclad Texture 2000 AG Sheathing	12		2440, 2745

See the Carter Holt Harvey Plywood "Structural Plywood" brochure for the full product range.

Applications

Structural plywood bracing can be used in accordance with NZS 3604 as:

- Permanent sheet bracing under clause 6.9.3.
- Subfloor sheet bracing under clause 4.7.8.
- Construction bracing in clause 6.9.5.

Structural plywood can also be specifically designed as bracing to NZS 3603.

Aesthetics

Speciality plywood claddings such as Shadowclad and Texture 2000 have higher quality, textured face veneers designed and preservative treated to withstand exterior exposure. The bracing ratings given in this leaflet mean that wall cladding with decorative or weather protection functions can also act as bracing.

Performance to the New Zealand Building Code

Structure

Ratings for Carter Holt Harvey structural plywood bracing are in Table 1. The basic bracing panel has 100 bracing units per metre for both wind and earthquake loads. The values in Table 1 can be used with any design method, design manual or computer software that is in accordance with NZS 3604.

Durability

The durability of structural plywood bracing is in excess of 50 years.

Rain wetting and construction bracing: Some materials used in bracing elements will not withstand exposure to weather. Untreated plywood sheets will withstand some rain and exposure during construction.

Hence plywood bracing may be used as both construction and permanent bracing.

Humidity and condensation: In uses where the moisture content of wood may exceed 18% for prolonged periods, plywood must be H3 treated to resist decay or insect hazard.

Sub-floor sheet bracing: H3 treated plywood can be used unpainted in sub-floor sheet bracing where dampness does not allow the use of untreated plywood or other sheet materials (clause 4.7.8.1 of NZS 3604). Where plywood sub-floor sheet bracing is exposed to both rain and sun, it should be coated as for a cladding to achieve the 50 year durability.

Cladding as bracing: H3 treated plywood can be used as cladding, and bracing. To achieve 50 year structural durability, it should be at least five ply plywood and must be coated with a maintained three coat acrylic paint system, preferably in a light colour.

Soil: Plywood (untreated or H3 treated) must not be allowed to come in contact with soil.

For: Further information, refer to the Carter Holt Harvey Plywood "Durability Statement".

Table 1

Ratings for 2.4m high
Plybrace wall bracing
elements

These ratings apply to walls detailed in accordance with NZS 3604 and this leaflet. The hold-down value determines which details should be used. The 6kN hold-down is a dropped panel detail with no steel straps or a single strap at each end of the wall. The 12kN hold-down (Type D) is two straps at each end of the wall.

Wall Type	Minimum Wall Length (m)	Minimum Plywood Thickness (mm)	Nail* Spacing (mm)	Hold-down (kN)	Stud Spacing (mm)	Bracing Units/m (20 bracing units = 1kN) Wind Earthquake	
Ratings for plywood component only							
SP4	0.45	7	75	6	450	70	85
SP2	0.6	7	150	6	600	85	85
SP1	0.9	7	150	6	450 or 600	100	100
SPST1	1.2	7	150	-	600	90	80
SP6	0.9	12	150	6	450 or 600	115	110
SP8D	0.9	7	150	12	450	125	135
SP5D	1.2	7	75	12	600	130	135
SP10	1.8	7	75	6	450	135	135
Ratings for additional sheathing (Gib Board)							
SP2G	0.6	7	150	6	600	95	95
SP1G	0.9	7	150	6	450 or 600	100	100
SP11G	1.8	7	150	6	450 or 600	140	120
BR7**	0.9	7	150	6	450 or 600	145	145
SP6G	0.9	12	150	6	450 or 600	120	110
SP6GD	0.9	12	150	12	450 or 600	145	135

* Use these spacings at all sheet edges. Within the sheet, spacings may be double that specified.

** Braceline.

For 7mm plywood use 30mm x 2.5mm galvanised flathead nails.

For 12mm plywood use 50mm x 2.8mm or larger galvanised flathead nails.

For steel framing use SPST1 for plywood on light steel frames. Use button head self drilling, self tapping screws for Plybrace and standard plywood and counter sunk stainless steel self drilling, self tapping screws for cladding applications. Refer Carter Holt Harvey Plywood Technical Note "Plywood on steel frame" for more detail.

Figure 1

6kN strap fixings to each end of stud of plywood sheet braces for timber ground floor and upper storey

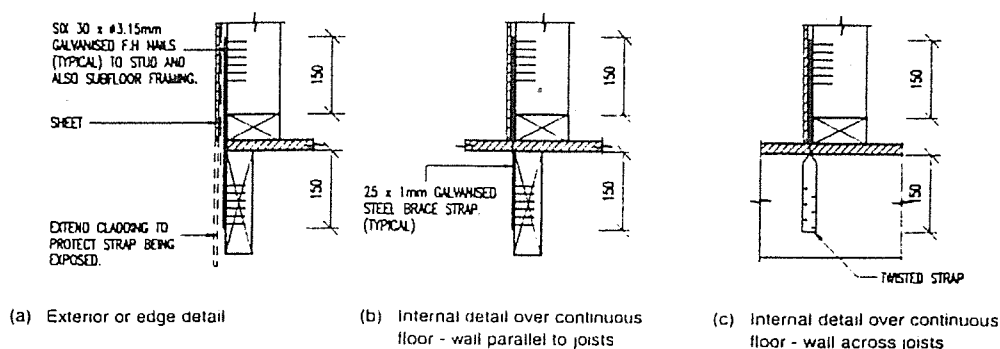
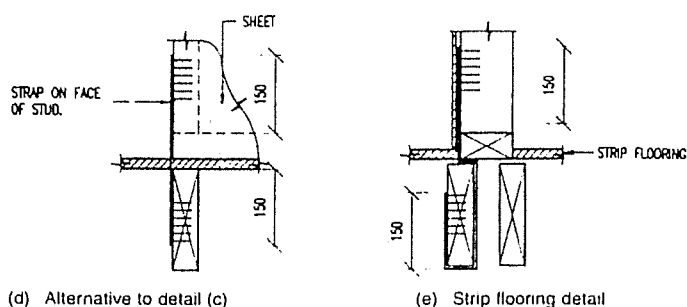


Figure 1

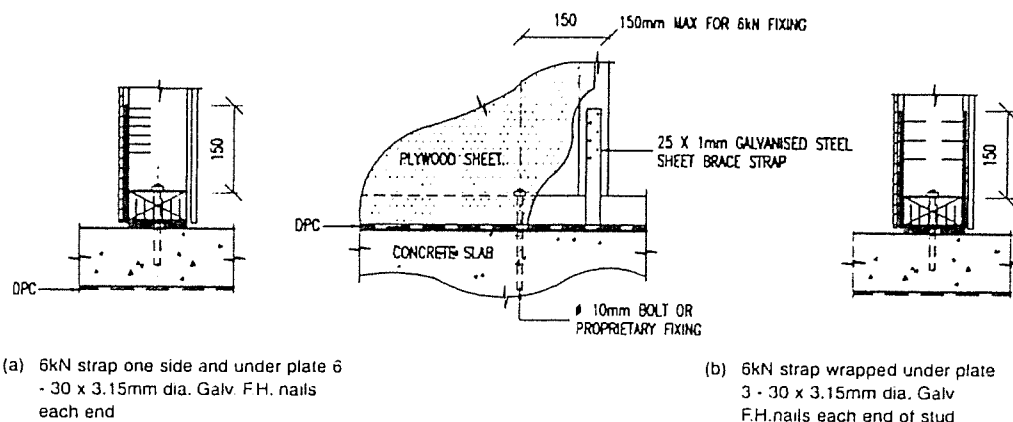
Continued

**Note**

1. Detail (a) can be replaced by a dropped panel fixing with no straps. See Figure 4.
2. Straps may be recessed into framing where a smooth finish is required in linings over straps.

Figure 2

6kN strap fixings and capacities to each end stud of braced panels on concrete

**Installation****Framing**

Framing shall be in accordance with NZS 3604: 1990 or similar standard. Before placing the frame in position, check the hold-down requirements to enable positioning of any straps required. Refer Figure 5 for detailing of expansion gaps and framing alignment.

Hold-down details**6kN hold-down:**

For 6kN hold-down; at each end of the wall, use either:

1. A single 25mm x 1.0mm galvanised steel sheet brace strap with 6kN capacity. See:
 - Figure 1(a) to (e) for timber floors.
 - Figure 2(a) or (b) for concrete floors.
2. Or the dropped panel detail, requiring no straps. See:
 - Figure 4(a) where the brace is in a veneer cavity or under cladding.
 - Figure 4(b) for cladding used as bracing.

12kN hold-down:

Higher wall ratings are possible with double hold-down and or double nailing. For 12kN hold-down use two 25 x 1.0mm, 6kN capacity straps. See:

1. Figure 6(a) to (d) for timber floors.
2. Figure 7 for concrete floors. Detailing in Figure 8 can be used with two straps.

Steel strap:

For details requiring steel straps according to NZS 3604, use only 25mm x 1.0mm galvanised steel sheet brace strap, with 3.15mm nails according to the strap manufacturer's instructions. Strap fixings must be protected from exposure to rain or excessive condensation. One way of doing this is by taking building paper under plywood or other claddings down over the straps. For concrete floors, details in Figure 8 can be modified to the requirements of Figures 2 and 7. All details are available as AUTOCAD files. See the reply coupon on back cover.

Nailing and fixing of sheets

Refer Figure 3. Nail according to the desired bracing rating in Table 1. Standard nailing at edges is 150mm centres and within the panel at no more than 300mm centres. Higher ratings can be obtained simply by double nailing, ie. all edges at 75mm centres and within the panel at 150mm centres.

- Allow a 2 to 3mm wide expansion gap between sheets (Figure 5).
- Use 30 x 2.5mm nails in 7mm plywood.
- Use 50mm x 2.8mm or larger nails for thicker plywood that functions both as cladding and as bracing.
- Use only galvanised flathead nails and drive flush to the surface. Nails must be at least 7mm from the edge of the sheet for square edge sheets and 7mm from the back edge for the shiplap claddings.
- Do not nail in the face and the overlap tongue (Figure 5).
- Nail edges and ends of the sheets used as bracing, including blue tongue or tongue and grooved sheets.
- Do not foul hold-down straps and nails used to fix the plywood. This weakens the strap below specification.
- Do not overdrive gun-nails.

Figure 3

Fixing of plywood bracing

315

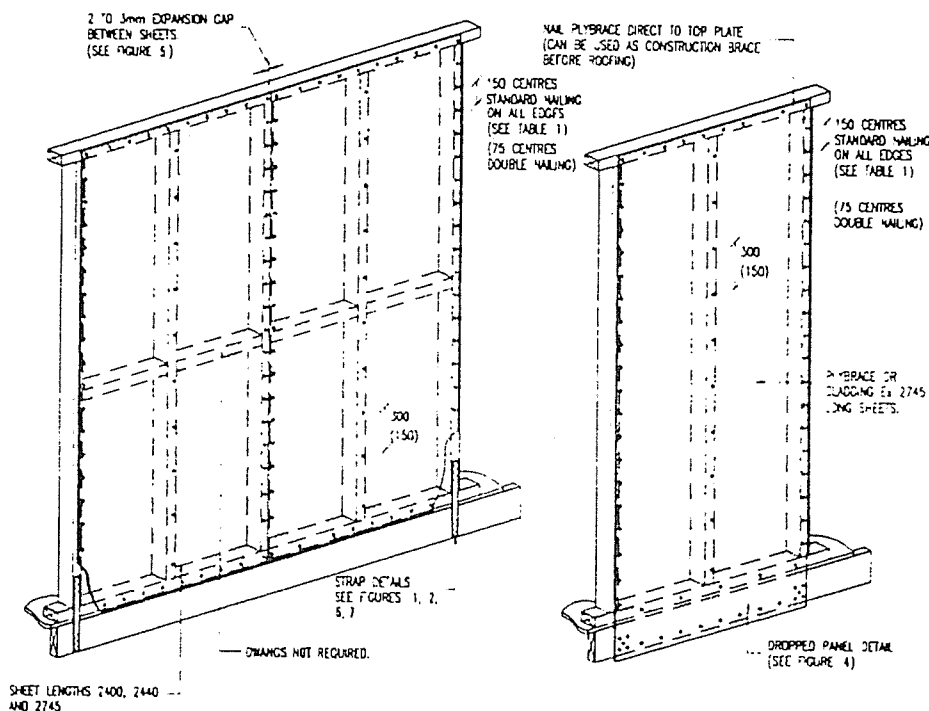
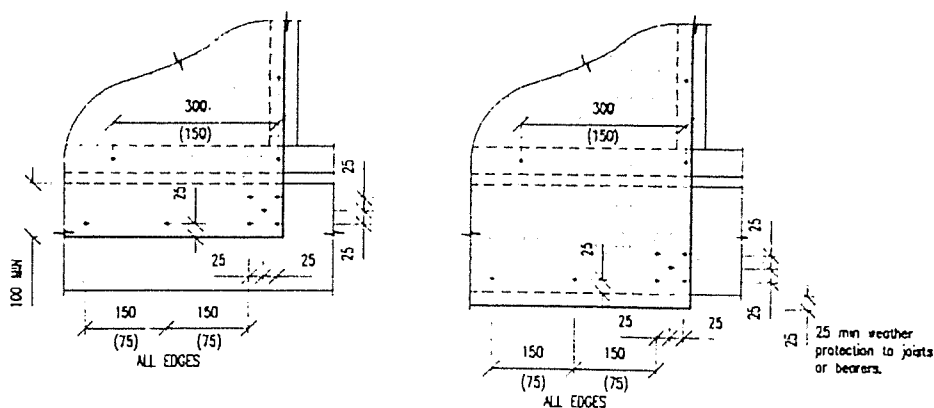


Figure 4

6kN dropped panel fixing
for timber frames



(a) Dropped panel for brace under other cladding

(b) Dropped panel for plywood cladding brace

Note

1. Nails as specified in Table 1.
2. Nail centres given for standard nailing, or in brackets for double nailings.
3. Extra hold-down nails are same size as for rest of sheet.

Figure 5

Typical detailing for
expansion gaps

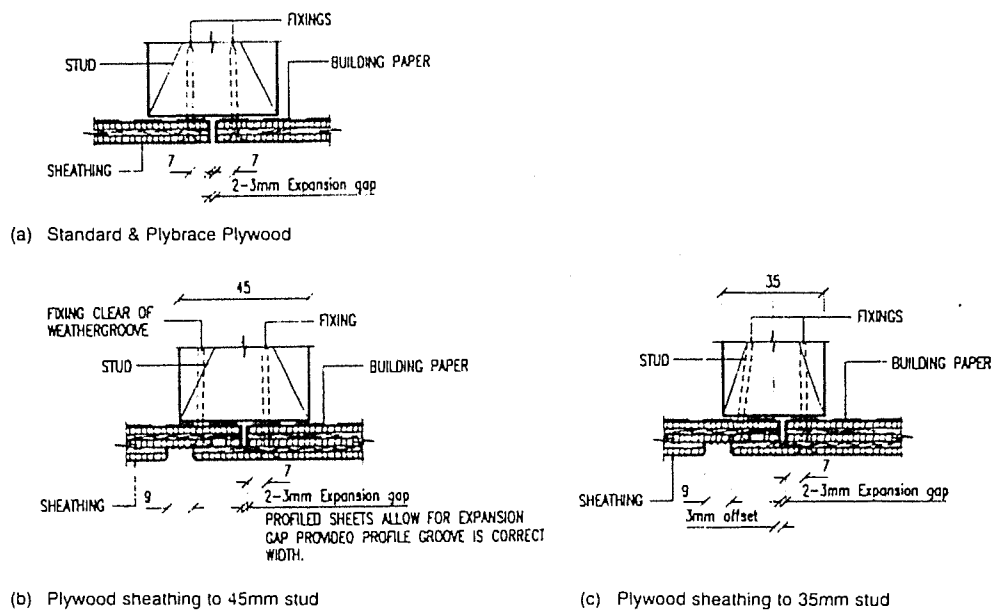


Figure 6

12kN strap fixings to each
stud of plywood sheet
braces for timber

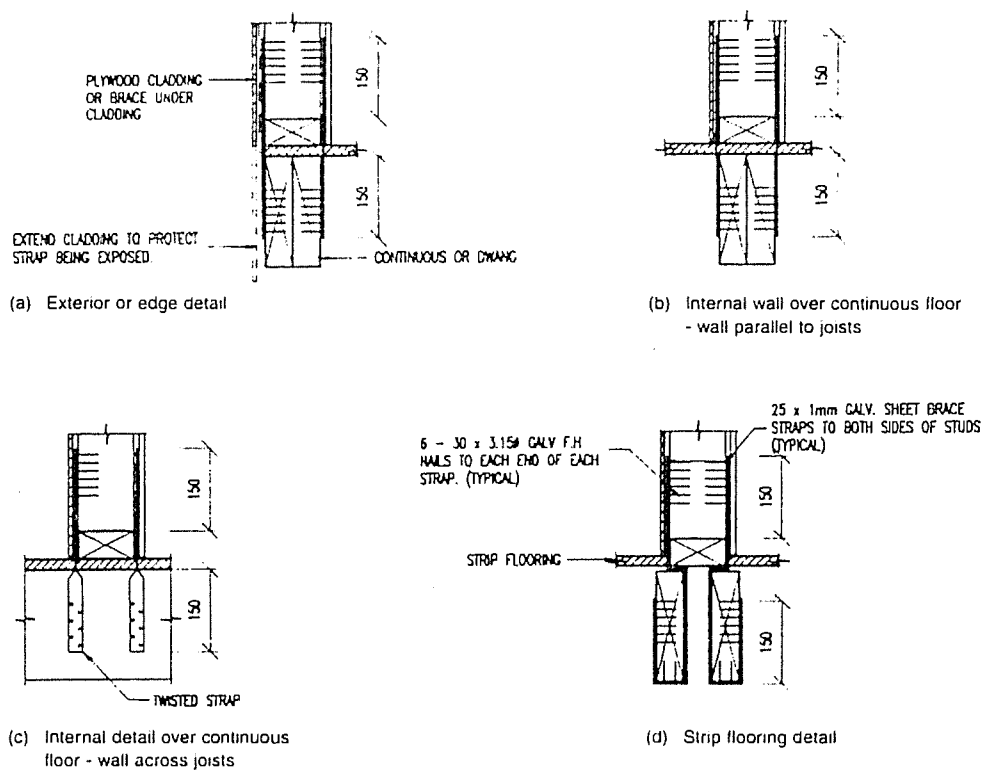


Figure 7

12kN strap fixings to end
studs of plywood sheet braces
for concrete floors

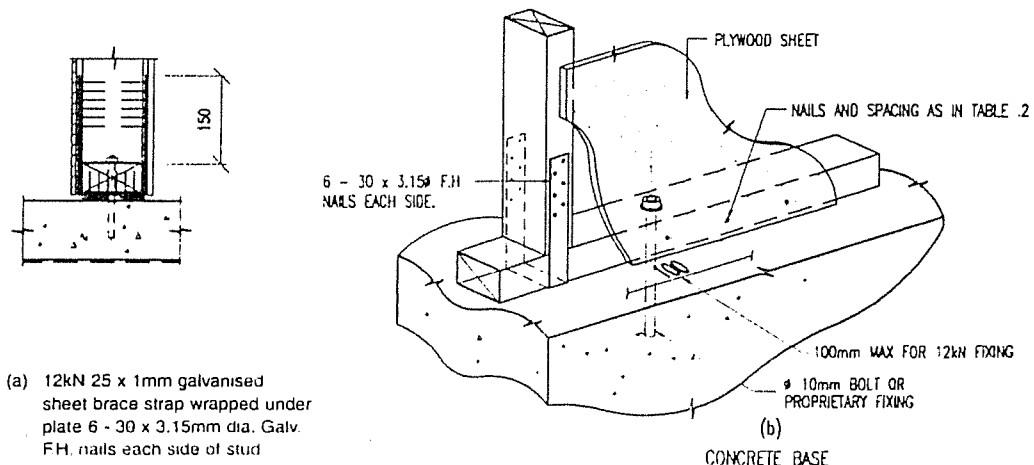
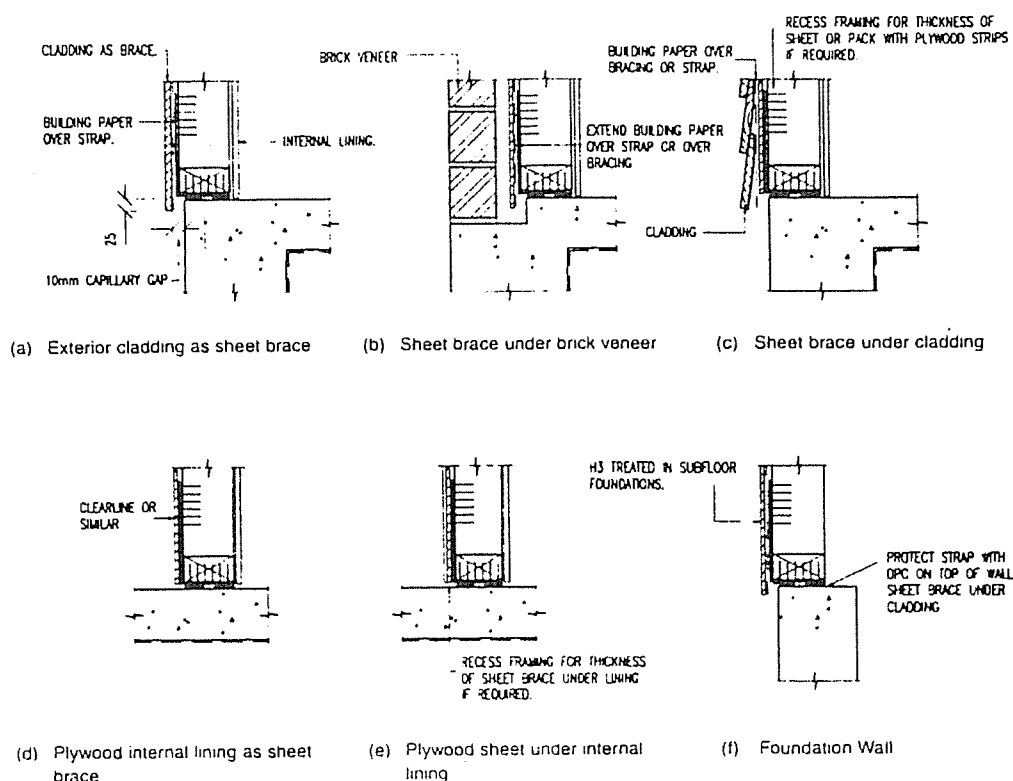


Figure 8

Typical detailing for wall and sub-floor framing on concrete floor and foundations



Note

Modify these details for either 6kN or 12kN fixings according to Figure 2 or Figure 7.

References

- BRANZ Appraisal No. 224 (1992). Construction plywood wall bracing systems.
- BRANZ TR 10, Supplement to P21. An evaluation method of P21 test results for use with NZS 3604: 1990.
- BRANZ P21, A wall bracing test and evaluation procedure. R C Cooney and M J Collins, 1979; Revised 1988.
- Carter Holt Harvey Plywood "Durability Statement".
- Forest Research Institute (Ltd), Wood Products Division Reports: P21 wall brace tests with Shadowclad plywood. HB94/2/1, FRI 1994. Performance of standard plywood clad wall panels in racking to P21 test WTC 1786/1, WTC 1786/2, WTC 1786/3, FRI 1991.

Carter Holt Harvey Plywood
 Private Bag, Tokoroa, New Zealand
 Tel: 64-7-886 2100 Fax: 64-7-886 0068
 (A division of Carter Holt Harvey Limited)

SECTION 2: NZ BUILDING CODE COMPLIANCE

New Zealand Building Code (NZBC)

Hardibacker® must be used in accordance with this specification. It will then meet the relevant provisions of the following NZBC Clauses:

- B1 Structure
 - B2 Durability
 - E2 External Moisture
 - F2 Hazardous Building Materials
- Hardibacker® is not hazardous in terms of clause F2).

It will also contribute towards the provisions of H1 Energy Efficiency when insulation is placed in the stud cavity (refer Fig. 10).

Hardibacker® is often used on both faces of barriers to decks as a substrate to meet NZBC F4 safety needs (and allow finishes to blend with the building).

Durability

The Hardibacker® cladding and bracing system meets the performance requirements of NZBC Clause B2.3.(a) of 50 years as long as the integrity of the coating system is maintained. This is particularly relevant to the performance of the fixing and jointing systems.

Serviceable life

Hardibacker® is not susceptible to long-term moisture damage and when the jointing, sealing, flashing and coating details are maintained the Hardibacker® is expected to have a serviceable life of at least 50 years.

BTL (BRANZ) appraisal

Hardibacker® has gained the following BTL Appraisal Certificates: No. 229 (1995) James Hardie Wall Bracing Systems No. 240 (1995) Hardibacker® - Substrate for Solid Plaster Walls.

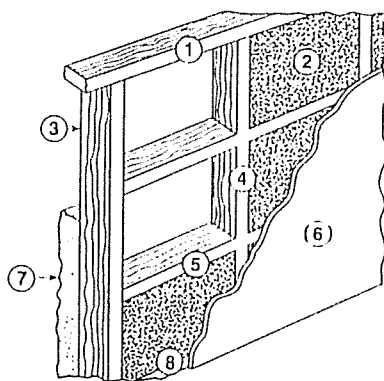
Maintenance

Routine maintenance of the solid plaster, jointing and coating systems is essential to ensure water ingress is prevented over the life of the building. In particular the following will need careful attention and maintenance – sealants, coatings and any cracks in the solid plaster.

Energy efficiency

An insulated timber-framed wall clad with 4.5mm Hardibacker® and 21mm of solid plaster (refer Fig. 10) will exceed the 1.5°Cm²/W requirement of clause H1 Energy Efficiency as cited by Acceptable Solution E3/AS1.

Fig. 10 TIMBER-FRAMED WALL WITH FIBREGLASS BATTS



CONSTRUCTION

1. Top plate
2. Fibreglass Wall Pink Batts R1.8
3. Hardibacker® sheet 4.5mm thickness
4. Studs ex (100 x 50) at 600mm centres
5. 2 rows nogs (800mm centres)
6. Internal lining (9.5mm Gib board)
7. Building paper, reinforcing mesh and solid plaster over 4.5mm Hardibacker® sheet
8. Bottom plate

Note:

The construction shown above will give an R value of 1.77°Cm²/W.

Bracing systems

Framing and fixing requirements

This specification is used to install and determine the bracing ratings of Hardibacker® as a backing sheet for plaster to timber-framed walls.

Bracing ratings have all been determined by BTL (BRANZ) tests and are suitable for use in conjunction with NZS 3604:1990.

Hardibacker® meets the wall-bracing element requirements of NZS 3604. (NZS 3604 is cited in Approved Document B1/AS1 Clause 4.0).

Hardibacker® when used as the required bracing must also be used with the appropriate fixings as set out in Table 2. Refer also to Figs 11 to 15 for Hardibacker® sheet-bracing details.

Hardibacker® sheets for bracing applications must be fixed vertically with all sheet edges on framing.

To achieve the bracing ratings shown in Table 2, full-height sheets without joints must be used. Jointing sheets in the horizontal direction is permissible to make up the element length. Jointing must be kept to the minimum, for example an 1800mm element length must be a 1200mm and 600mm-wide sheet or two 900mm-wide sheets.

Always ensure the sheet joint is on the centre line of the stud to achieve the fixing as detailed.

There is no limit to the length of bracing elements.

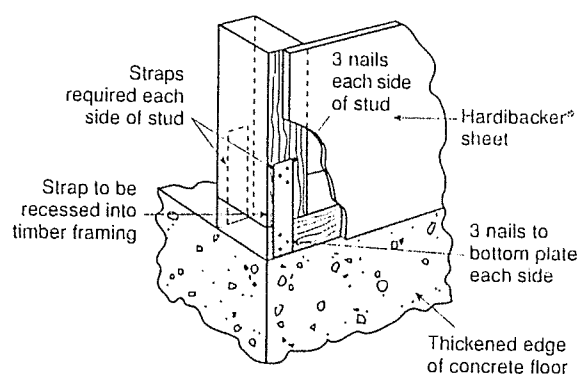
Certain bracing applications require the use of end strap fixing. The end straps must be rebated into the framing behind the sheets. (Refer Table 2 and Figs 11 and 12.)

When end fixing straps are used, the strap and the holding-down bolt must be used at the end of each element length as required by NZS 3604.

Table 2: Bracing ratings for Hardibacker® 4.5mm thick

System number	Bracing element length (mm)	End straps	Bracing details	NZS 3604:1990 rating in bracing units per metre of element length	
				Wind	Earthquake
HBK1	1200 or more	Not required	Refer Figs 13 and 14	85	70
HBK2	1800 or more	Not required	Refer Figs 13 and 14	90	75
HBK3	2400 or more	Not required	Refer Figs 13 and 14	105	80
HBK4	900 or more	Required (refer Figs 11 and 12)	Refer Figs 13 and 14	110	85

Fig. 11 END FIXING STRAP TO BOTTOM PLATE ON CONCRETE FLOOR



Notes:

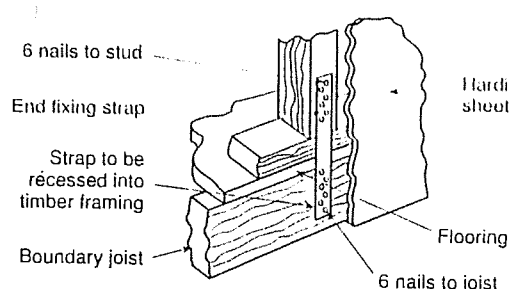
1. The 2 straps combined must be capable of carrying a tension force of 6kN (capacity load as defined in NZS 3604:1). This is achieved by a 25mm x 1mm strap each side, each of 3kN capacity (3 nails each end of a 25mm x 1mm strap give 3kN capacity and 6 nails each end of strap give 6kN capacity.)
2. Strap nails must be 40 x 2.5mm diameter galvanised flat-heads.

The bracing values given in Table 2 are derived from the Hardibacker® sheet only and do not utilise any bracing contribution from the solid plaster or from the internal linings.

When increased bracing ratings are required, 6mm Hardiflex® can be used in conjunction with the Hardibacker®.

The Hardiflex® can be substituted for the Hardibacker® sheet and the increase in thickness can be taken up in the mesh placement and the plaster.

Fig. 12 END FIXING STRAP TO TIMBER FLOOR



Notes:

1. The strap must be 25mm x 1mm galvanised steel capable of carrying a tension force of 6kN (capacity load as defined in NZS 3604:1990)
2. Strap nails must be 40 x 2.5mm diameter galvanised flat-heads.

Sheets stopped below top plate

Where bracing sheets are stopped below the level of the top plate refer to Fig. 15 for details.

Bracing panel height

Bracing panel height is normally 2400mm and all bracing ratings given in Table 2 are for this panel height. When other heights are required refer to Clause K.7 NZS 3604:1990.

The maximum height for these bracing panels is 4800mm.

Diagram illustrating the dimensions and components of a bracing element:

- 50mm from corners
- Fixings at 200mm centres
- 50mm from corners
- Bracing sheet height
- Fixings at 200mm centres to all studs
- Hardibacker[®] sheet
- Timber studs
- M10 galvanised HD bolts required for all systems (refer Note 2)
- 200mm
- 150mm
- Refer Fig. 11
- 150mm
- Bottom plate
- Concrete floor
- 50mm sheet overhang
- 50mm
- Fixings at 200mm centres
- 50mm
- Bracing element length

- (Systems HBK1, HBK2, HBK3, HBK4)
-
- Diagram illustrating the HBK systems (HBK1, HBK2, HBK3, HBK4) showing a cross-section of a floor assembly. The assembly includes a concrete slab (labeled "Refer Fig. 12") supported by a timber floor joist or boundary joist. The slab has a 50mm overhang. The assembly is supported by a bottom plate and flooring.

Diagram illustrating the connection between the top plate and studs, showing the required nailing and bracing details:

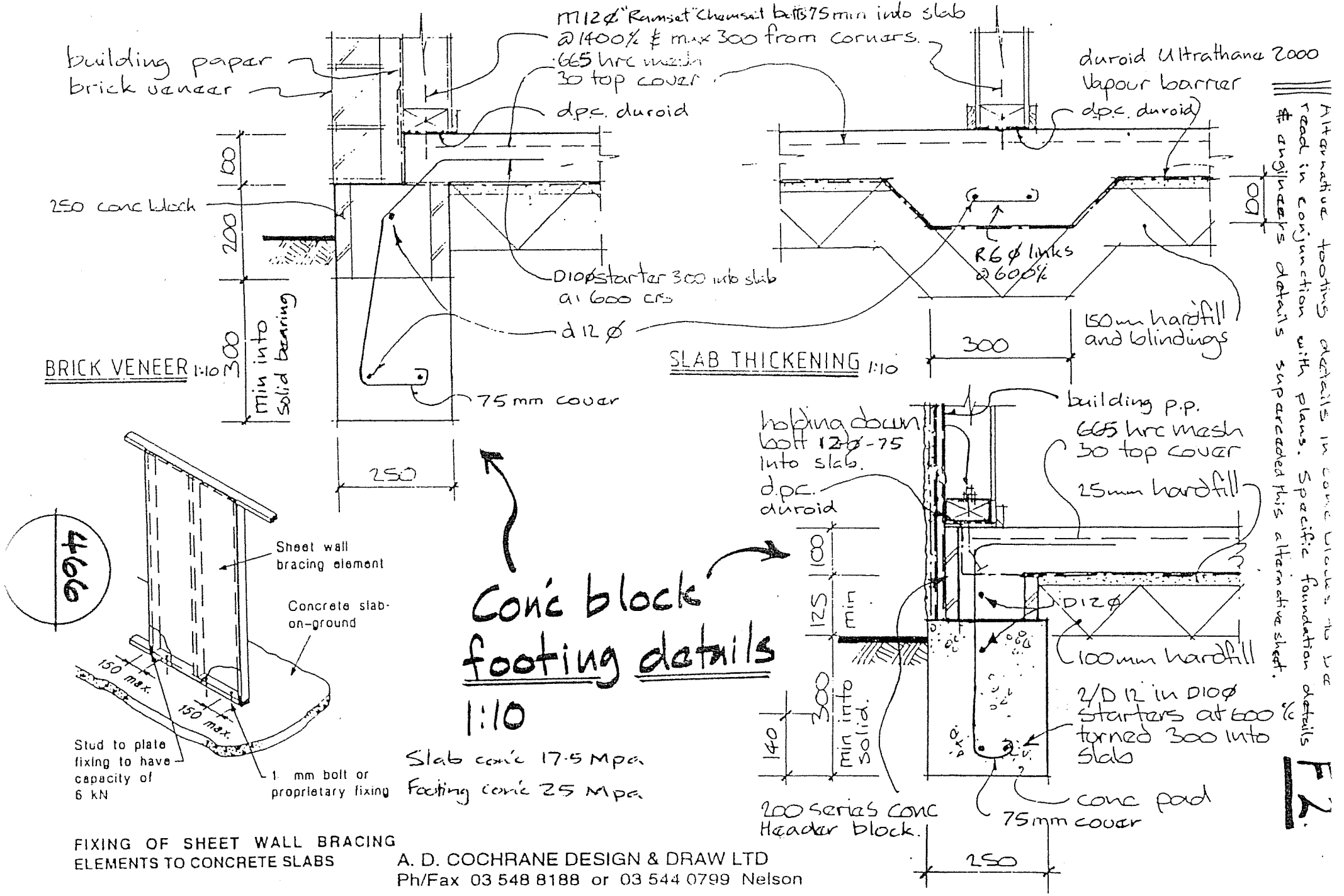
- Extra nog under top plate
- 3/100 x 4mm nails to each nog
- 2/100 x 4mm end nails to each nog
- 300mm max.
- Sheet nailing as for top plate
- Studs
- Bracing sheet
- Extra nogs to be same size as studs and plates
- Overall bracing height can vary (refer to information on p.11)

- © James Hardie Building Products

BRANZ Explanation of Table 4.1

Steel items such as bolts, brackets and plates used to connect timber members and requiring a 50-year durability, excluding nails and screws

ZONES OR ENVIRONMENT	MATERIAL / PROTECTION
Closed (dry, internal location, not subject to airborne salts or rain wetting)	
1) Anywhere in New Zealand (all zones)	Mild steel
Treated Timber Piles	
2) Connections to timber piles within 600 mm of the ground (Sheltered and exposed)	Treat as exposed in all zones (refer to appropriate protection 8, 9 or 10)
3) Connections to timber piles more than 600 mm from the ground	Use appropriate category below 4 to 10.
Sheltered (open to airborne salts, not rain wetting)	
4) Sheltered, Sea spray zone	Stainless steel 304 or 316 ^(v)
5) Sheltered, Zone 1 (a) Vented more than 7000 mm ² /m ² (b) Vented less than 7000 mm ² /m ²	Treat as exposed (see 8, 9 or 10) Hot dipped galvanised steel ^(v)
6) Sheltered Zones 2, and 3	Hot dipped Galvanised steel ^(v)
7) Sheltered, within 50 m of geothermal hot spot (zone 4) ⁽ⁱ⁾	Stainless steel 316 or hot dipped galv. steel ^(v) plus epoxy powder coating
Exposed (open to airborne salts and rain wetting)	
8) Exposed, Sea spray zone	Stainless steel 304 or 316
9) Exposed Zones 1, 2, and 3	Galvanised steel plus protection or Stainless Steel 304 ⁽ⁱⁱⁱ⁾ and ^(v)
10) Exposed within 50m of geothermal hot spot (Zone 4) ⁽ⁱⁱ⁾	Stainless steel 316 or hot dipped galvanised steel plus epoxy powder coating. ⁽ⁱⁱⁱ⁾ or ^(v)
<p>i) "Geothermal hot spot" is a location that exhibits any geothermal activity such as steam, water or fumes emitting from the ground, hot water or mud pool.</p> <p>ii) Use of further protection such as grease on stainless steel fasteners is advisable but not mandatory.</p> <p>iii) See 4.4.4 and 4.4.5 for additional protection required.</p> <p>iv) Dowels and bolts to secure bearers to concrete ordinary piles can be mild steel in all closed and sheltered environments in all zones.</p> <p>v) See Table 4.2 for type and weight of galvanizing.</p>	



FIXING OF SHEET WALL BRACING ELEMENTS TO CONCRETE SLABS

A. D. COCHRANE DESIGN & DRAW LTD
Ph/Fax 03 548 8188 or 03 544 0799 Nelson

Timber Frame

(30)/30/30

NLB/LB

Fire Rated Wall Systems Two Way FRR — Timber Frame

Specification Number	Loadbearing Capability	Fire Resistance Rating	Lining Requirements	Sound Transmission Class	System Weight Approx
GBT 30a	NLB	-/30/30	1x9.5mm Gib® Fyreline each side	STC 36	22kg/m ²
GBTL 30	LB	30/30/30			

Framing

No.1 framing grade H1-treated radiata pine nominal dimensions 75x50mm minimum or, F5 stress grade H1-treated radiata pine nominal dimensions 75x40mm minimum.
Studs at 600mm centres maximum.
Nogs at 800mm centres maximum (vertical fixing).
Nogs at 1200mm centres maximum (horizontal fixing).

Wall Height

GBT30a non-loadbearing

Framing dimensions and height as determined by NZS3604:1990 stud tables for non-loadbearing partitions.

GBTL30 loadbearing

Framing dimensions and height as determined by NZS3604:1990 stud and top plate tables for loadbearing walls.

For loads and/or wall heights outside the design scope of NZS3604:1990, use Winstone Wallboards Ltd's 'Design of Loadbearing Timber Framed Walls with Gib Board® Linings for Fire Resistance', or contact Winstone Wallboards technical staff.

Lining

1 layer of 9.5mm Gib® Fyreline each side of the frame.

Vertical or horizontal fixing permitted.

When fixing vertically use full height sheets where possible.

All sheet joints must be formed over solid timber framing.

Fixing

Fixing type

40x2.5mm galvanised Gib® Clouts or 40x6g bugle head gypsum drywall screws

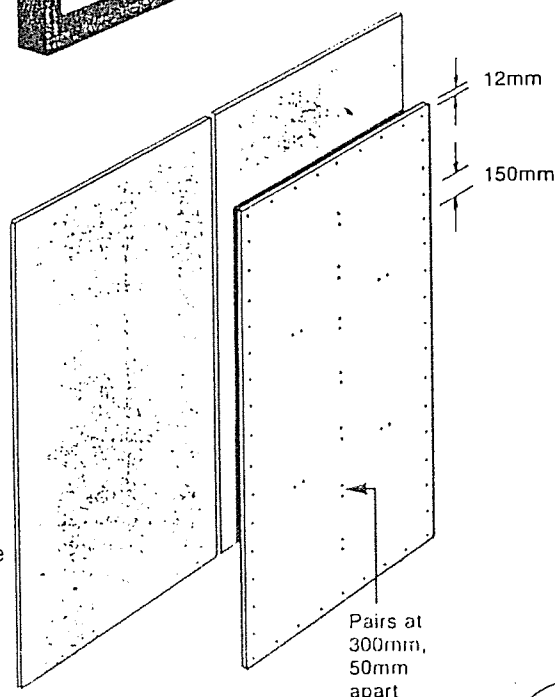
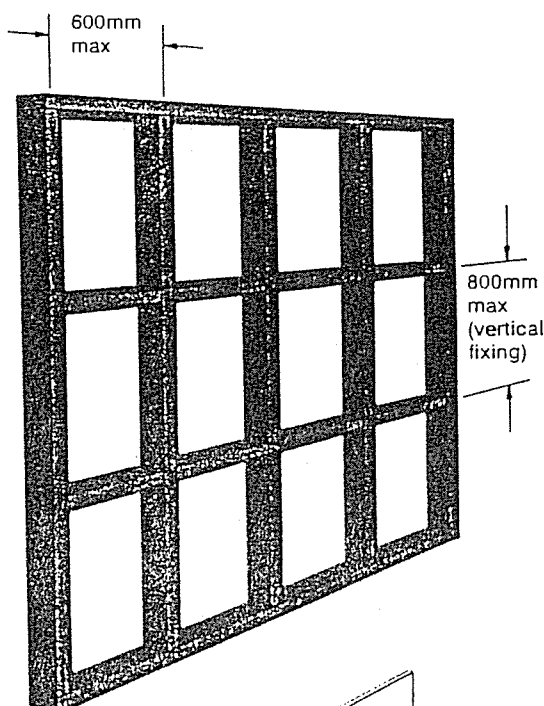
Fixing centres

150mm centres around the sheet perimeter, 12mm from the sheet edge.

Pairs of fasteners, 50mm apart, at 300mm centres to intermediate studs and nogs.

Jointing

All fastener heads stopped and all sheet joints tape reinforced and stopped in accordance with Winstone Wallboards Ltd's 'Gib Board® Stopping and Finishing Systems — 1992'.



1167



Gib® Residential Garage Boundary Walls

ADDITION TO: 'GIB BOARD® FIRE RATED SYSTEMS, 1992'

Scope of Use

The solution offered in this bulletin is intended for use when a 30/30/30 or 60/60/60 Fire Resistance Rating (FRR) is required by the NZBC Acceptable Solution C3/AS1 for single storey residential garage boundary walls.

Compliance with the NZBC

Under normal conditions of dry internal use Gib Board® Fire Rated Systems have a serviceable life in excess of 50 years and satisfy the requirements of NZBC Clause B2 – Durability.

Gib Board® Fire Rated Systems provide passive fire protection in accordance with the requirements of NZBC Clause C3 – Spread of Fire.

Gib® Residential Garage Boundary Walls have been specifically designed to fall inwards, away from the adjacent property boundary, when collapse conditions are reached during a fire and therefore satisfy the requirements of NZBC Clause C4 – Structural Stability during Fire.

NOTES:

- i) Wall construction in accordance with 'Gib Board® Fire Rated Systems, 1992' GBTL 30 or GBTL 60 depending on the required Fire Resistance Rating (FRR).
- ii) Sheets joints in the external Gib Fyrelite® linings on the outside of the frame, i.e., under the cladding system, do not require taping and stopping.
- iii) Impervious cladding materials with a ventilating air-space, such as steel or aluminium weatherboards, may be installed over building paper directly over the external Gib Fyrelite® lining.
- iv) Absorbent cladding materials such as plywood or fibre cement must be separated from the external Gib Fyrelite® lining by means of vertical battens, with a nominal depth of 50mm, and building paper behind the cladding material.

Reference

Macdonald Barnett Partners, Consulting Civil and Structural Engineers, Report No 5109 CRB, dated 13 October 1993, and Producer Statement dated 1 March 1994.



Auckland Tel 0-9-634 2184 Fax 0-9-634 3972
Wellington Tel 0-4-568 4293 Fax 0-4-568 7844
Christchurch Tel 0-3-332 3159 Fax 0-3-337 1014

Fire Rated Wall Systems Two Way FRR - Double Timber Frame

Specification Number	Loadbearing Capability	Fire Resistance Rating	Lining Requirements	Sound Transmission Class	System Weight Approx
GBTLA 60	LB	60/60/60	2 x 9.5mm Gib® Fyreline each side	STC 59	50kg/m ²

Framing

No. 1 framing grade H1 treated Radiata Pine nominal dimensions 100mm x 50mm minimum.
Alternatively, F5 stress grade or No. 1 visually graded kiln dried Radiata Pine, actual dimensions 90mm x 35mm minimum.

Double Frame (25mm space between frames)

Studs at 600mm centres maximum.

Nogs at 800mm centres maximum.

Nogs may be 75mm x 40mm minimum.

Wall Height

Framing dimensions and height as determined by NZS3604 stud and top plate tables for loadbearing walls.

Sound Absorption Material

Sound control infill R1.8 (75mm) pink fibreglass batts shall be installed between the studs and nogs on one side of the double frame.

Lining

2 layers of 9.5mm Gib® Fyreline each side of the frame.
Vertical fixing only permitted. Full height sheets shall be used where possible.

Sheets shall be touch fitted.

Vertical joints of the second layer are staggered from joints in the first layer on the same side of the frame.

All sheet joints must be formed over solid timber framing.

Fastening the Lining

Fasteners

First layer - 40mm x 2.5mm galvanised Gib® Clouts or 40mm x 6g bugie head gypsum drywall screws.
Outer layer - 50mm x 2.5mm galvanised Gib® Clouts or 50mm x 7g bugie head gypsum drywall screws.

Fastener Centres

First layer - 300mm centres up each stud.

Outer layer - 300mm centres around the sheet perimeter, 12mm from the sheet edge.

Pairs of nails, (50mm apart), or single screws at 300mm centres to intermediate studs.

Acoustic Sealant

To achieve the stated sound transmission class (STC), a bead of acoustic sealant must be placed around the perimeter of the inner layer, the outer layer is then bedded on to the bead.

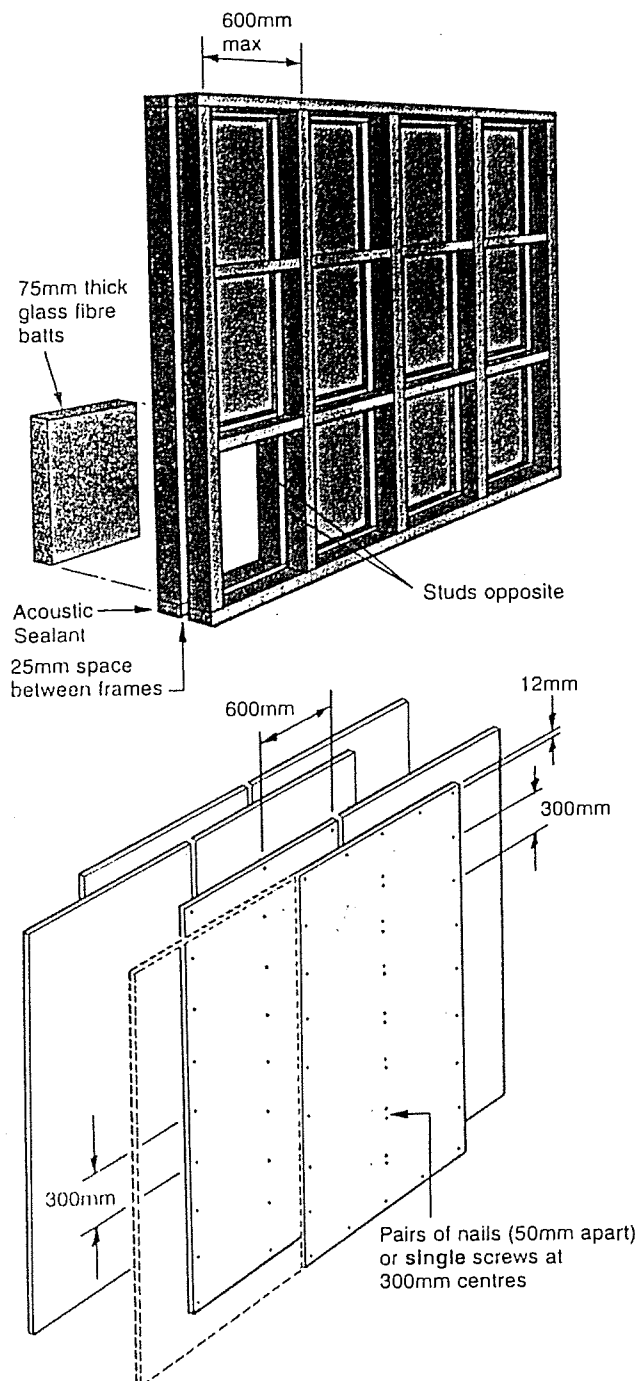
Jointing

First layer unstopped.

Outer layer - All fastener heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled "Gib® Stopping and Finishing Systems" or a later approved revision.

Bracing

If GBTLA60 is used as a bracing element in accordance with specification GIB® A1, the outer lining must be fastened at 150mm centres around the perimeter of each sheet.



Fire Rated Wall Systems Two Way FRR – Timber Frame

Specification Number	Loadbearing Capability	Fire Resistance Rating	Lining Requirements	Sound Transmission Class	System Weight Approx
GBT 60a	NLB	-/60/60	1 x 12.5mm Gib® Fyreline each side	STC 36	26kg/m ²
GBTL 60	LB	60/60/60			

Framing

GBT60a Non Loadbearing - No. 1 framing grade H1 treated Radiata Pine nominal dimensions 75mm x 50mm minimum.

Alternatively, F5 stress grade or No. 1 visually graded kiln dried Radiata Pine, actual dimensions 70mm x 35mm minimum.

GBTL60 Loadbearing - No. 1 framing grade H1 treated Radiata Pine nominal dimensions 100mm x 50mm minimum.

Studs at 600mm centres maximum.

Nogs at 800mm centres maximum for Vertical fixing.

Nogs at 1200mm centres maximum for Horizontal fixing.

Wall Heights

GBT60a Non Loadbearing - Framing dimensions and height as determined by NZS3604 stud tables for non loadbearing partitions.

GBTL60 Loadbearing - Framing dimensions and height as determined by NZS3604 stud and top plate tables for loadbearing walls.

Lining

1 layer of 12.5mm Gib® Fyreline each side of the frame.

Vertical or Horizontal fixing permitted.

Sheets shall be touch fitted.

When fixing vertically, full height sheets shall be used where possible.

All sheet joints must be formed over solid timber framing.

Fastening the Lining

Fasteners

40mm x 2.5mm galvanised Gib® Clouts or 40mm x 6g bugle head gypsum drywall screws.

Fastener Centres

300mm centres around the sheet perimeter, 12mm from the sheet edge.

Pairs of nails, (50mm apart), or single screws at 300mm centres to intermediate studs.

Jointing

All fastener heads stopped and all sheet joints tape reinforced and stopped in accordance with the publication entitled "Gib® Stopping and Finishing Systems 1992" or a later approved revision.

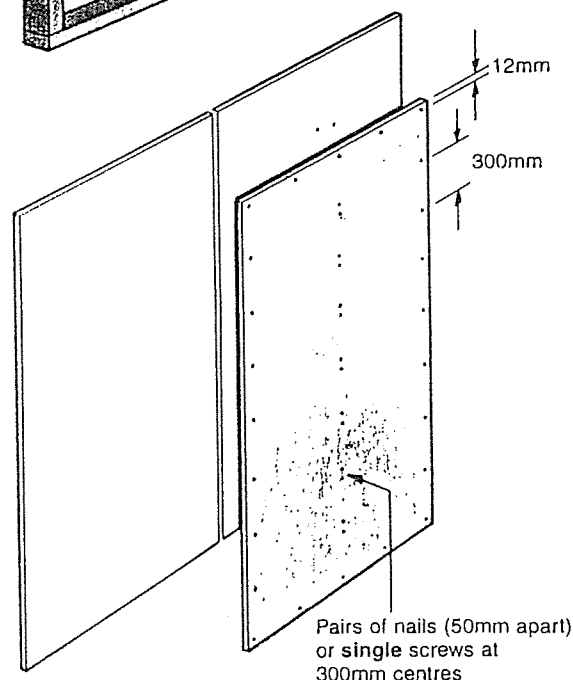
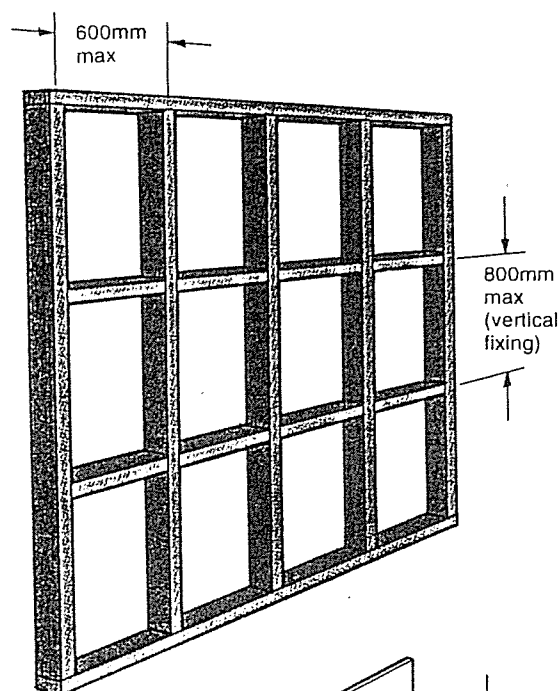


Table 1. Specification for finishing plasterboard lining

Level	Type of finish	Application
0	No stopping, taping, finishing or accessories.	Used for temporary construction or when final finish not decided.
1	All joints and interior angles to have tape embedded in joint compound. Surface free of excess joint compound. Tool marks and ridges acceptable.	Ceiling plenums, attics, non-public areas.
2	All joints and interior angles to have tape embedded in joint compound, and one separate coat of compound applied over all joints, angles, fastener heads and accessories. No excess compound on surfaces. Minimal tool marks and ridges acceptable.	Warehouses, garages and other areas where appearance is not a major concern.
3	All joints and interior angles to have tape embedded in joint compound, and one separate coat of compound applied over all joints, angles, fastener heads and accessories. All joint compound surfaces finished smooth. Seal before final finish applied.	Textured finishes (heavy or medium grade), heavily textured wallpapers.
4	All joints and interior angles to have tape embedded in joint compound, and a minimum of two coats of joint compound applied over all joints, angles, fastener heads and accessories. All joint compound shall be smooth and free of tool marks and ridges. Seal before final finish applied.	Lightly textured finishes, lightly textured wallpapers. Flat or low-gloss paints in non-critical lighting areas.
5	All joints and interior angles to have tape embedded in joint compound, and one coat of compound applied over all joints, angles, fastener heads and accessories. A thin skim coat of air-drying compound or similar specially produced product shall be applied to the whole surface. The whole surface shall be free of ridges and tool marks. Seal surface prior to painting or finishing.	Gloss paints or smooth finishes. Critical lighting conditions.

STANDARDS

Standards Association of New Zealand.
NZS 3602 (1990). Code of practice for specifying timber and wood-based products for use in building.

Standards Association of New Zealand.
NZS 3631 (1988). New Zealand national timber grading rules.

FURTHER READING

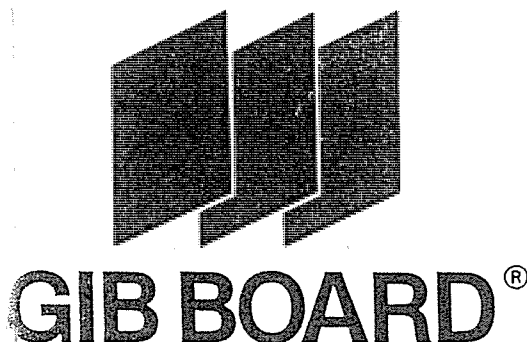
Winstone Wallboards. 1992. Recommended specification: Levels of Gib Board finish. Auckland.

Gypsum Association. 1990. Using gypsum board for walls and ceilings. Washington.

Ridge, M J. 1990. Illumination and decoration of flat surfaces. CSIRO Division of Building, Construction and Engineering. TR 90/1. Highett.

Note:

Main Contractor is responsible to confirm required standard of interior lining finishes to all surfaces before commencing contract, with owner. finishes to comply with manufacturers specifications.



Nail Pops and Peaking

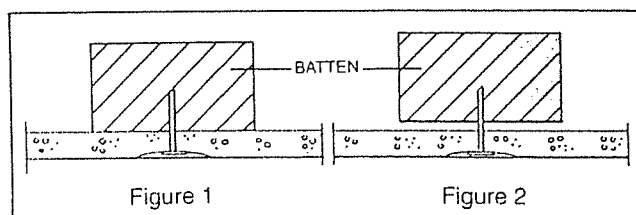
A SUMMARY OF WHY NAIL POP AND PEAKING OCCURS, PRACTICES TO AVOID THE PROBLEM AND RECTIFICATION PROCEDURES.

Nail Pops: Cause and Cure

One of the most costly problems in wood-frame construction is nail pops. Unsightly protrusions of drywall nailheads can mar attractive wall and ceiling surfaces and result in customer dissatisfaction and expensive callbacks.

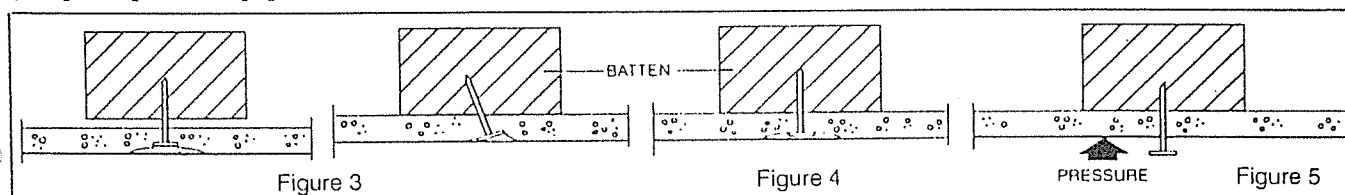
Nails are less likely to pop when gypsum panels are nailed tight against framing members (fig. 1). If nailed loosely (fig. 2), any inward pressure on the panel will push the nailhead through the thin covering of joint compound.

Nails loosen primarily because of improper panel application, timber shrinkage or a combination of both factors. This



brochure specifically describes these causes of nail pops and, more important, how to control them.

Improper Application Procedures



Nailheads Puncturing Face Paper

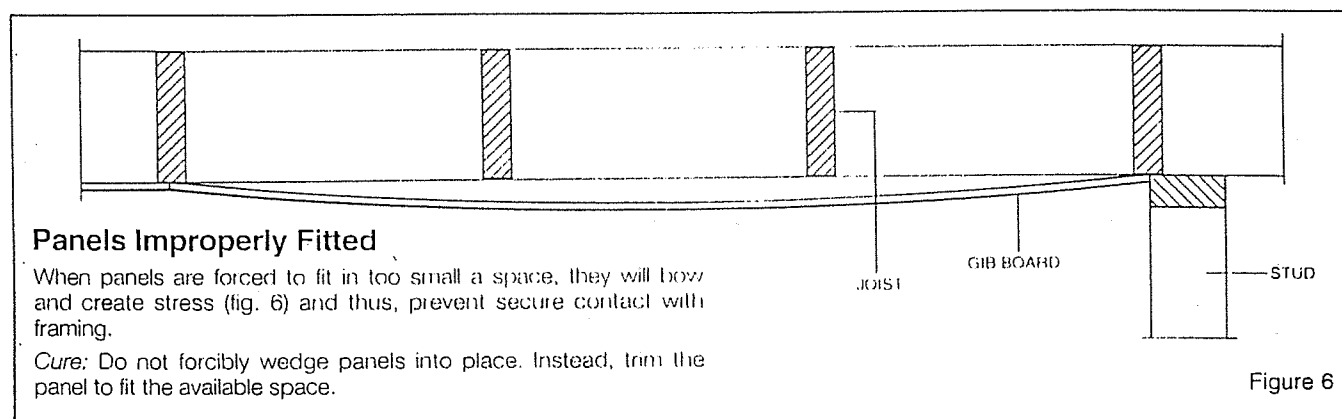
Overdriven or skewed nails can puncture face paper, damage the panel core and weaken its grip on studs or battens (fig. 3). Wet compound on cut paper can also cause bulging.

Cure: Drive nails in *straight* (fig. 4), so a slight uniform dimple forms and the panel holds tight.

Lack of Pressure on Panels While Nailing

Studs, joists or ceiling battens may bow or warp prior to erection, making it difficult for a 7mm nailhead to pull panels into firm contact with framing.

Cure: During the last blows of the hammer, apply ample pressure with the free hand to force the panel into firm contact with the framing member. (fig. 5).

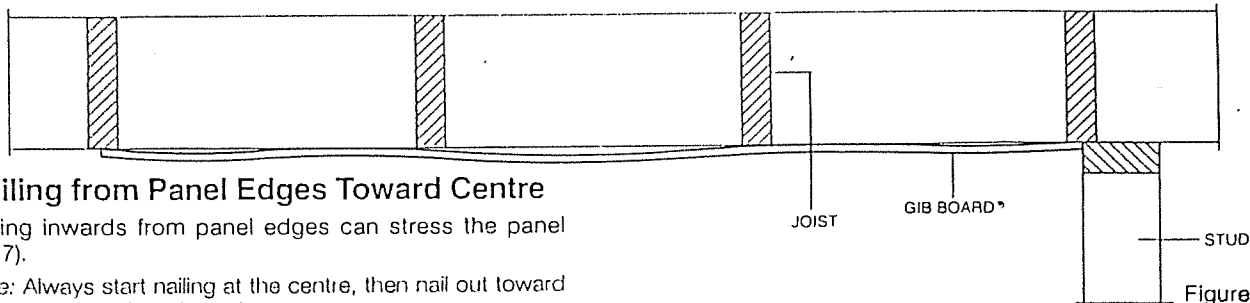


Panels Improperly Fitted

When panels are forced to fit in too small a space, they will bow and create stress (fig. 6) and thus, prevent secure contact with framing.

Cure: Do not forcibly wedge panels into place. Instead, trim the panel to fit the available space.

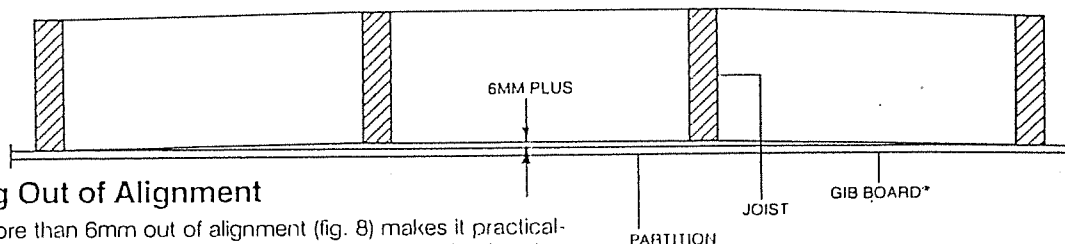
Figure 6



Nailing from Panel Edges Toward Centre

Nailing inwards from panel edges can stress the panel (fig. 7).

Cure: Always start nailing at the centre, then nail out toward each end and edge of panel.



Framing Out of Alignment

Framing more than 6mm out of alignment (fig. 8) makes it practically impossible to bring the panel into firm contact with framing members.

Cure: Before applying panels, check stud, batten and joist alignment, correcting wherever necessary. This reduces nail pops, plus promotes straighter walls and ceilings.

Figure 8

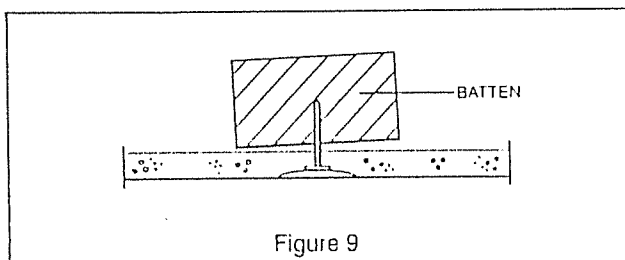


Figure 9

Twisted Framing

When framing is not properly squared with plates nailhead may puncture face paper (fig. 9). Also, timber is subject to twisting as it dries, resulting in loosely nailed panels.

Cure: Adjust or replace twisted framing members if possible. Otherwise, shim surfaces to assure secure contact.

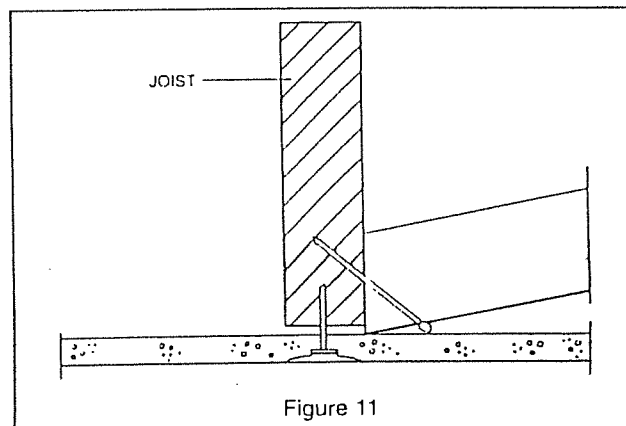


Figure 11

Panels Applied Over Protrusions

Bridging that projects downward beyond the joist face may prevent the panel from contacting the nailing surface (fig. 11).

As a result, nails driven in area of protrusion can pop.

Cure: Before applying panel, make sure no materials project beyond the plane of the nailing surface.

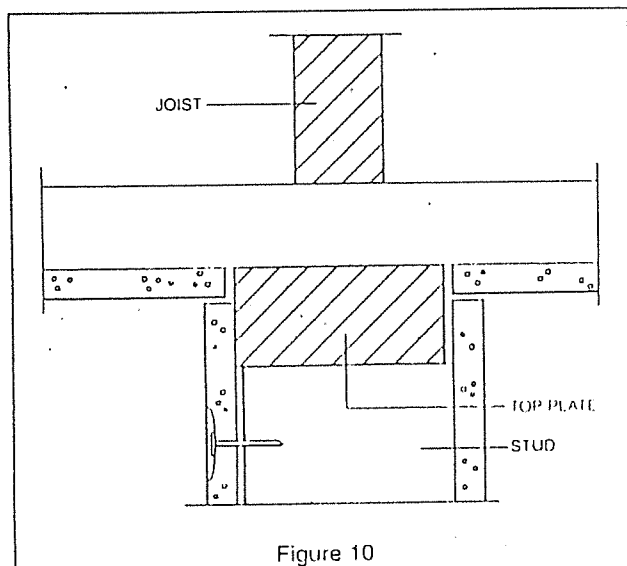


Figure 10

Improperly Aligned Studs, Joists or Headers

Hammering along misaligned stud and top plate (fig. 10) results in nails puncturing paper or cracking the panel.

Cure: Correct studs, plates and headers that are not aligned. If necessary, shim the faces of studs and plates flush with adjoining surfaces.

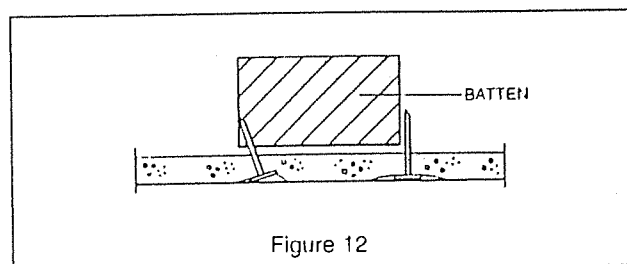


Figure 12

Nails Insecurely Driven

Nails that are not securely anchored within a wood framing member (fig. 12) may work loose with vibrations from closing doors, bumps against walls, truck and rail traffic, and even loud stereos.

Cure: Remove nails that are not securely driven into framing and drive in new ones.

Bowed Studs, Improperly Placed Joists

A badly bowed stud, highly crowned joist or a joist placed with the crown down can create weakness similar to a misaligned framing member.

Cure: Check for alignment and proper crowning of joists. Straighten or replace badly bowed studs.

Nails Loosened by Pounding

Applying panels to the second side of a partition tends to loosen nails on opposite side, especially when lightweight, soft or undersized studs are used.

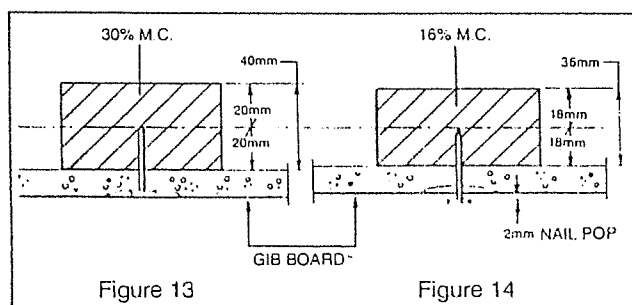
Cure: After second side is applied, check tightness of panels on side where first applied. If loose, strike each nailhead an additional blow while holding panel firmly against frame. Do not over-drive the nail.

Timber Shrinkage

A 75mm x 40mm ceiling batten with a moisture content of say 30% is common even in summer. When lined with Gib Board® the 30mm Gib Clouts penetrate into the timber about 20mm (see fig. 13). The ceiling is stopped and painted and the owner moves in.

About 3 months later the moisture content of the battens has dropped to around 18% and nail pops have appeared on the ceiling. So what has happened?

The timber shrinks as it dries but because the point of the Clout cannot be forced further into the batten, the timber shrinks along the shank of the nail and the head "pops" (see fig. 14). If the board is glued as well as nailed the pops occur as the board moves back with the timber. If it isn't glued, a gap appears behind the board and pops will occur as wind gusts or slamming doors create differences in air pressure between the room below and roof cavity.



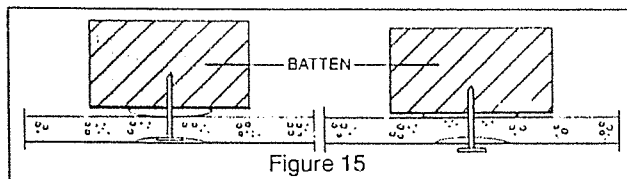
Formation of Nail Pops Due to 5% Shrinkage

Often nail pops are not the only signs of timber shrinkage. It can show up as cracks, particularly at corners or as jamming doors and windows.

In order to reduce the incidence of such problems it is important to ensure the framing timber and battens are relatively dry prior to lining. It may not be possible to check the actual moisture content, but using timber that has been stored under cover or using kiln dried timber is best. Winstone Wallboards recommend a timber moisture content of 16% prior to lining. Using number one grade timber rather than poorer grades which are more susceptible to movement is also good practice.

When it comes to lining it is a good idea to use the Winstone Wallboards screw and adhesive system. Glue reduces the possibility of pops occurring because the number of mechanical fixings is less and the thread of the screws helps resist shrinkage down the shank.

Fixing Through Glue



If screws or nails are applied through adhesive a pop can occur as the glue dries and pulls the board closer to the framing member. (fig. 15)

Cure: Use systems as laid down in Winstone Wallboards "Fixing and Jointing Instructions" Booklet.

Checklist of Good Practices

The following steps summarise how to reduce nail pops.

1. As a minimum use framing timber meeting the requirements of the building codes.
2. Make sure framing members are straight, true, of uniform dimension and properly aligned.
3. Use framing timber of low moisture content or kiln dried timber to reduce the likelihood of timber movement as it dries.
4. Help framing timber dry further by allowing the building, after being closed in, to stand as long as possible prior to fixing the Gibraltar Board.
5. Before fixing Gibraltar Board, check the studs, plates, joists, headers, electrical attachments and plumbing so there is no interference between sheets and the fastening surfaces of framing. Straighten any bowed or twisted studs or joists. Shim or replace as required.
6. Observe these precautions when fixing Gibraltar Board.
 - a) Cut to fit loosely, do not force into place.
 - b) Always start fixing from the centre of the sheet and move toward the edges.
 - c) As most preferred fixing methods use the Screw and Adhesive System as specified in Winstone Wallboards "Fixing and Jointing" Booklet.
 - d) Never nail or screw directly through glue.
 - e) Be sure to apply pressure on the sheet adjacent to the nail while driving.
 - f) Use a suitable tool with a slightly crowned driving surface such as the Gib hammer. This will give a slight uniform dimple with the last blow without breaking the face paper around the nail or the dimple, but seat the nail just below the surface of the paper.
7. After applying the sheets, inspect the walls
 - a) Pound walls to detect loose fasteners, if detected drive nails or screws tight.
 - b) If screw or nail heads have punctured the paper, hold the panel tight and refasten properly using a second fastener.
8. Remember that when decorating even the smallest pop will be objectionable when the surface is painted to a smooth uniform film, especially with gloss or semi gloss paint. Strong sidelighting also accentuates irregularities.

Repairing Nail Pops

When to Repair

Nail pops that occur before or during decoration can be repaired immediately. They are probably caused by improper application methods.

Nail pops that occur after at least one months heating cycle are probably caused by timber shrinkage and/or warping. Because further shrinkage is likely to occur and pops reappear, do not repair until the end of a heating season.

How to Repair

An appropriate nail or screw should be reapplied about 50mm from the popped nail. Drive it in while applying sufficient pressure against the adjacent panel to assure firm contact with framing. Strike the popped nail with light blows to seat it below the surface of the board. Remove loose compound. Apply finishing coats of joint compound and redecorate.

Screw fixing methods are preferred. Bugle head screws depress the face paper without tearing, threads cut into and deform the wood to hold tightly.

Will Pops Reoccur

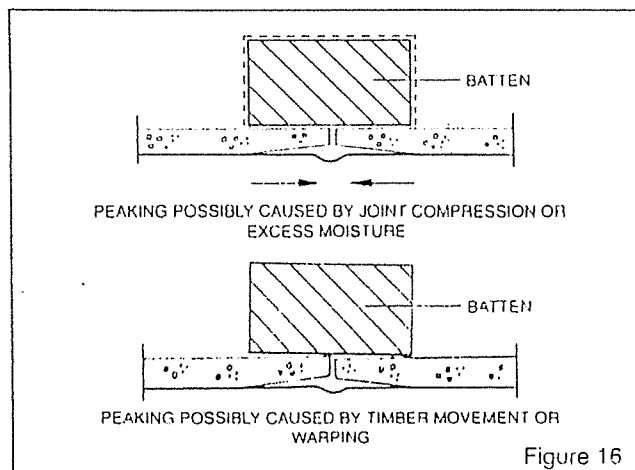
If timber has endured a full heating season chances are that the timber has reached its equilibrium moisture content. Seasonal fluctuations in moisture content are unlikely to cause future nail pops.

Peaking: Cause and Cure

Peaking occurs basically for five different reasons which in some instances are beyond the control of the builder and are generally manifest when there are increases in temperature and changes in relative humidity.

Building materials grow or shrink due to the changes in thermal expansion and hygroscopic expansion. Where timber frame construction is involved shrinkage occurs as the timber dries, even "kiln dried" timber can shrink, warp, bow, and twist causing the gypsum panels in a partition or ceiling to be put under stress, either by compression or tension, depending on the temperature or humidity conditions. These stresses are relieved when the panels bend outwards in the region of the joint. Once this bending takes place, the system takes a set and very rarely returns to normal. It can progressively become worse with each change of temperature or humidity. This deformation appears as a continuous ridge along the length of the joint, with a uniform fine, peak like pattern at the centre. (see fig. 16)

Due to the timber shrinking most in the direction of the growth rings and less across the growth rings, very little along the grain longitudinally, it can show irregular peaking in ceilings and walls and at the same time show up as nail pops.



Potential Causes of Peaking

The worst time for peaking is during the spring months and especially at this time when there has been an extremely wet period and then there is a sudden rise in temperature.

Peaking is an international problem, and we as a company endeavour to limit the occurrence of peaking and nail pops by advising on correct moisture content and fixings as detailed in our literature.

Peaks can also show up once the house has been painted, particularly with gloss or semi-gloss paint. Often these are not actually peaks at all but rather are the slight humps over joints which are a product of the joint stopping. It is the illusionary effects of light and shadow that cause the hump to look like a fine peak over the joint. Strong sidelight in particular tends to highlight this phenomenon.

Other main causes are:

1. Water trapped in the Bedding Compound behind the tape. Bedding Compound is plaster and sets while still being wet, in the same way as concrete, and the water endeavours to escape by diffusing through to the atmosphere. When a second coat of Bedding Compound is applied too early it prevents this happening causing extensive drying time which can in turn cause peaking.
2. A similar situation arises if excessive gaps (ie: over 3mm) are left between the sheets. Gaps between sheets should be filled first with Gib Bedding Compound and allowed to completely dry before application of tape and subsequent coats of Bedding Compound.
3. Creep on timber due to the timber being wet and then subjected to excessive temperatures in low plenum and roof spaces.

4. No gaps being left at the base of the wall sheets. A 10mm gap is essential to allow for shrinkage of the wall plates and studs. This prevents pressure being put on the base of the sheets thus transferring tension to the joints.
5. With concrete floor slabs it is essential to have good ventilation to prevent release water vapour from diffusing to roof structures and causing timber movement.

In all cases of peaking it is essential that the house be left as long as possible (ie; reach its ambient condition) before undertaking remedial work, usually six to nine months, or through the cycle of the four seasons. February is generally the best month for rectifications.

Repairing Peaks

1. Unless the peak is actually a hump incurred during the stopping, let the peak develop fully before undertaking repairs - usually six months is sufficient. Make repairs under hot and dry conditions;
2. Smooth peak down to reinforcing tape without cutting through tape. Fill concave areas on either side of peak with light fill of compound. After this is dry, float another very thin film of compound over the entire area;
3. Examine the area with strong sidelighting to make certain that peak has been concealed. If not, use additional feathering coats of compound. Redecorate. Peaking can recur, but is usually less severe. Continuous wetting will aggravate the condition.
4. Remember that gloss or semi-gloss paint will highlight surface irregularities, particularly under the influence of glancing light.

Checklist of Good Practices

The following steps summarise how to reduce the incidence of peaking.

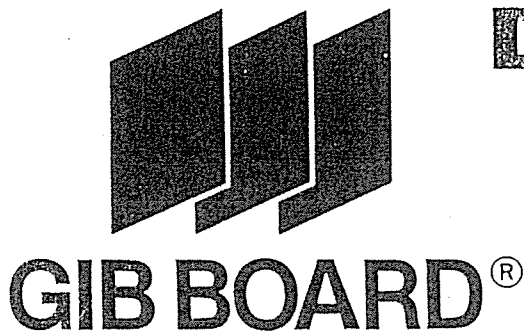
1. Follow steps 1-4 as set out in Good Practices for reducing Nail Pops.
2. Straighten any bowed or twisted framing timber. Shim or replace as required.
3. Allow adequate time between layers of Jointing Compound. These can be either an air drying or setting type material specifically formulated for use on Gibraltar Board. Each coat of air drying joint compound must be completely dry prior to the application of any following coats (approx. 24 hours). Allow "setting" type compounds to fully harden prior to the application of following coats.
4. If there are gaps of 3mm or more between sheets, stop these gaps and allow to dry before applying the normal layers of jointing compound.
5. Provide adequate ventilation within the house as the compounds dry, particularly if a concrete floor slab is used.
6. Provide a 10mm gap at the base of walls to allow for any shrinkage of framing members.
7. If fixing board horizontally in walls, fix the top sheet first then the bottom one. This eliminates the temptation of resting the top sheet on the bottom one while fixing, which places excessive stress on the joint.
8. Avoid butt joints wherever possible to reduce the incidence of built up joints that can look like peaks in glancing light.
9. Remember that painted surfaces, especially using gloss or semi gloss paint can accentuate uneven surfaces in the board. This becomes worse in conditions of strong sidelighting.



For further information contact:

WINSTONE WALLBOARDS LTD

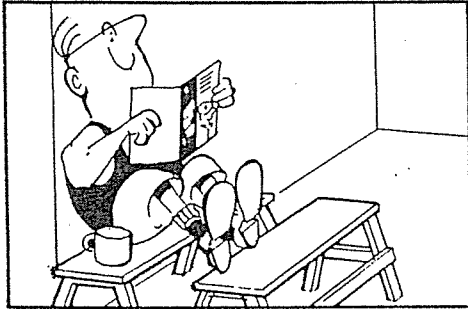
Auckland Tel 0-9-634 2184 Fax 0-9-634 3972
Wellington Tel 0-4-588 4293 Fax 0-4-588 7844
Christchurch Tel 0-3-332 3159 Fax 0-3-337 1014



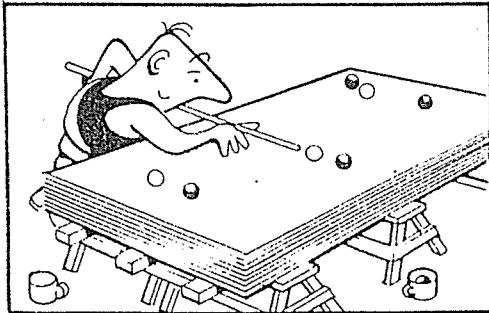
Do's & Don'ts For Builders

For technical information contact Winstone Wallboards Ltd.
 Auckland Tel (09) 634-2184 Fax (09) 634-3972
 Wellington Tel (04) 568-4293 Fax (04) 568-7844
 Christchurch Tel (03) 332-3159 Fax (03) 337-1014

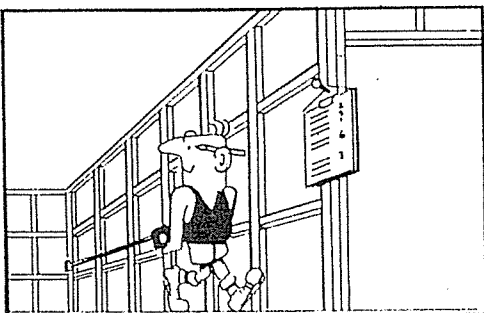
This document has been prepared in consultation with the New Zealand Master Builders Federation.



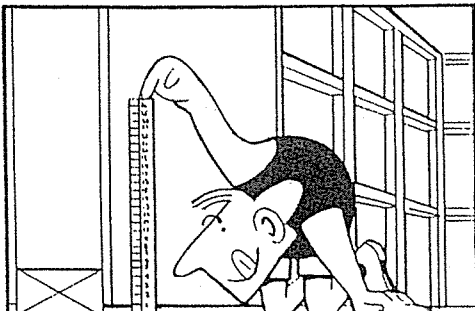
Do ensure fixing is in accordance with Winstone Wallboard "Fixing and Jointing Instructions Booklet" and call us if in doubt.



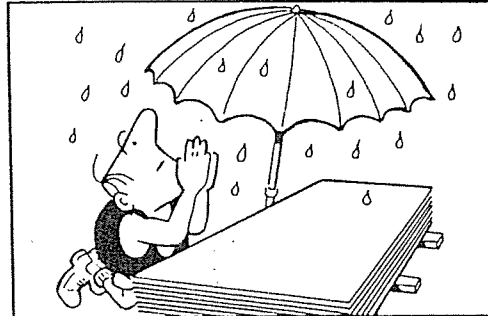
Do store board flat and clear of the ground.



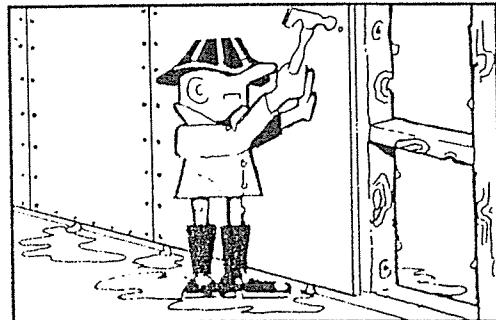
Do measure rooms, plan the fixing and utilise different length sheets to minimise joints. Fix with a drywall hammer.



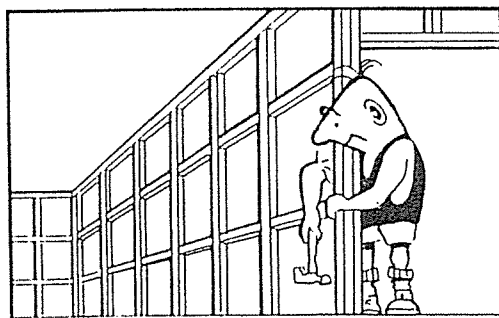
Do allow a 10mm gap at the floor line to allow for movement of the frame.



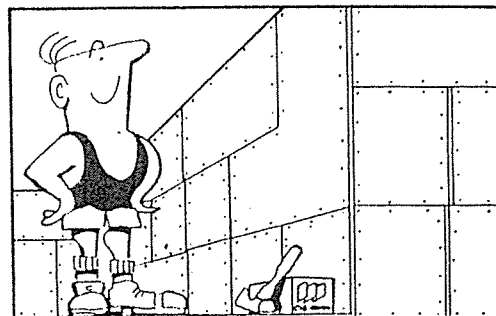
Don't store boards in areas exposed to moisture or transport in uncovered trucks.



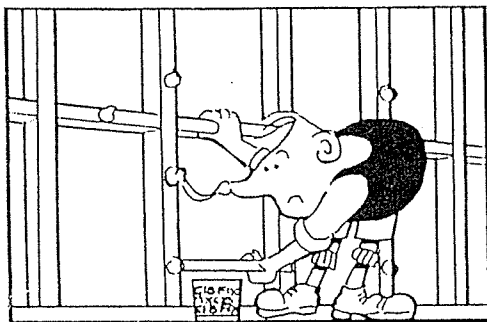
Don't fix Gib board over wet or poor quality timber. Shrinkage and movement can lead to finishing problems.



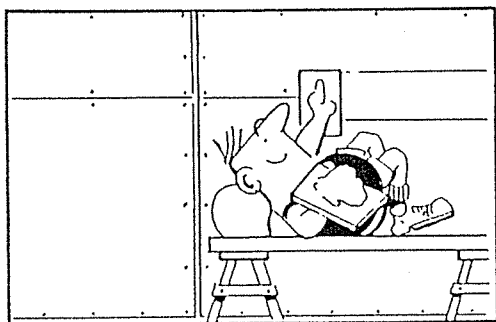
Don't over drive clouts thereby breaking the face paper or rupturing the core.



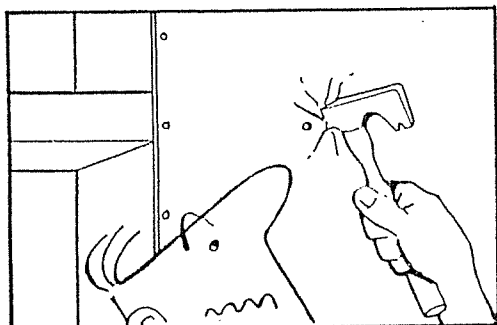
Don't create extra joints by using offcuts; this can increase stopping costs and affect the finish.



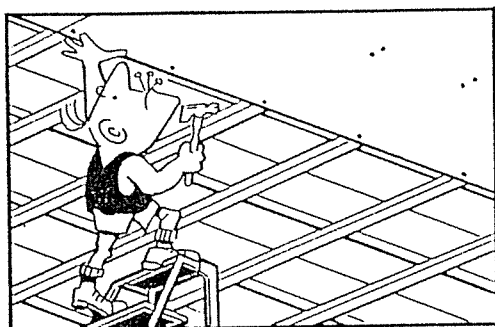
Do use adhesive and mechanical fixing combinations where appropriate. For the best finish use glue and screw method.



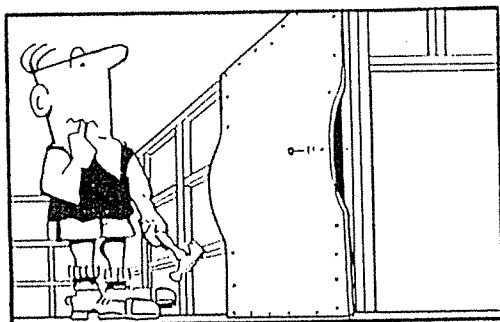
Do consider horizontal fixing as a means to minimise joints and for ease of finishing.



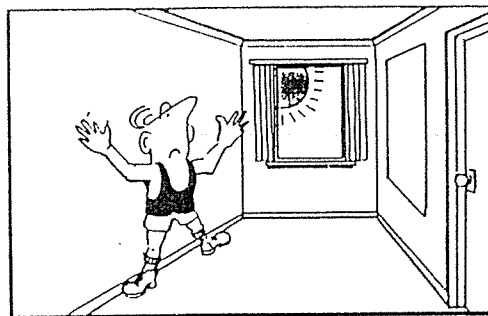
Do leave 50mm between clouts when double nailing or screwing.



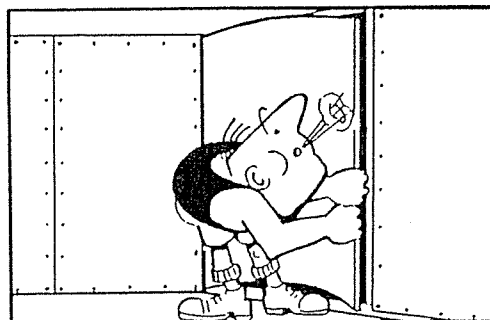
Do fix ceiling sheets at right angles to the battens.



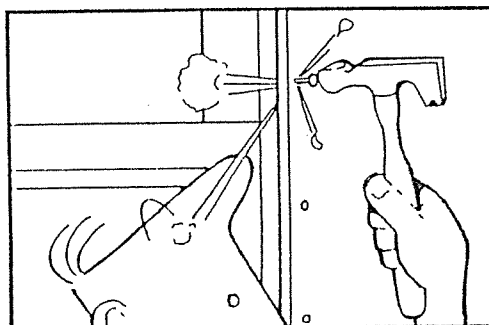
Do fix sheets from the centre to prevent bellying.



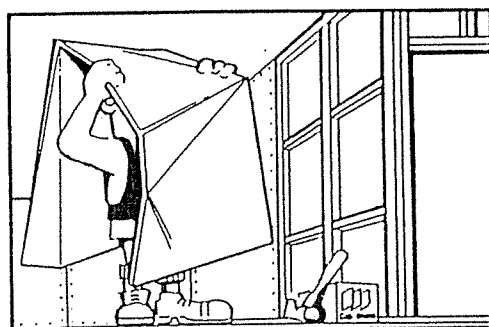
Do understand that paint finishes and glancing light can highlight imperfections.



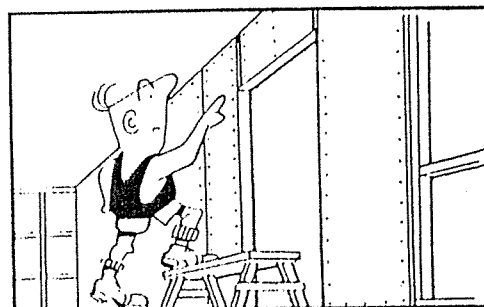
Don't force board into position; this stresses the sheets and can cause finishing problems.



Don't nail through glue, because glue shrinkage can lead to nail pops.



Don't use cracked or broken sheets.



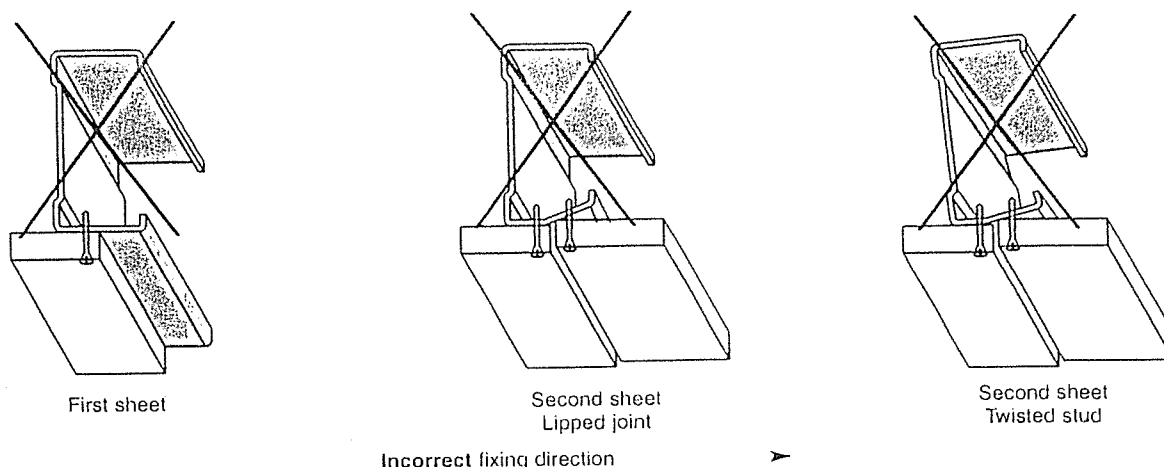
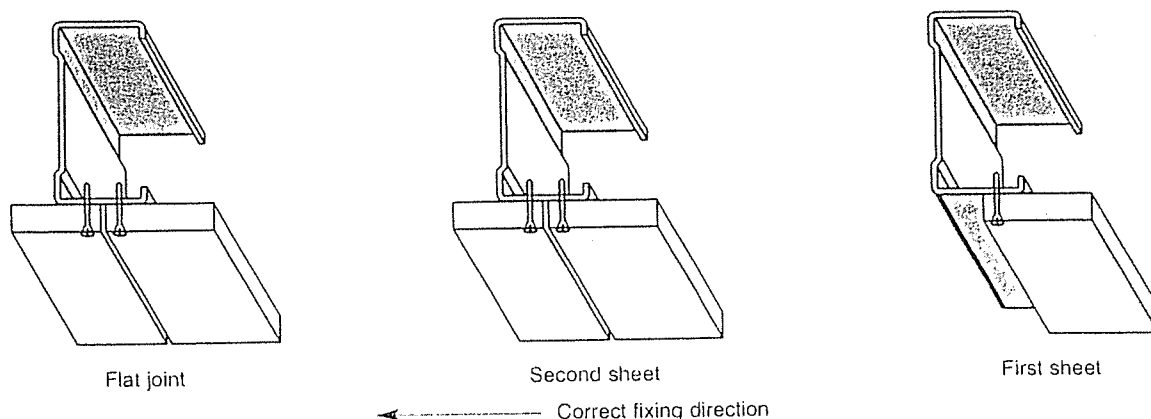
Don't have joints at the corners of windows or doors, as these are areas prone to movement and consequently cracked joints.

Fastening the Gib® Plasterboard to Metal Studs

Correct method

As the face of a steel stud can deflect initially, the correct sequence of attaching the board is important. The first board is attached to the open side of the stud which will cause minor deflection but will pull back tight against the board when the screw is fully tightened.

When the second sheet is fixed there will be minimal deflection as the open flange is now supported by the previous sheet. Support the stud to avoid twisting.

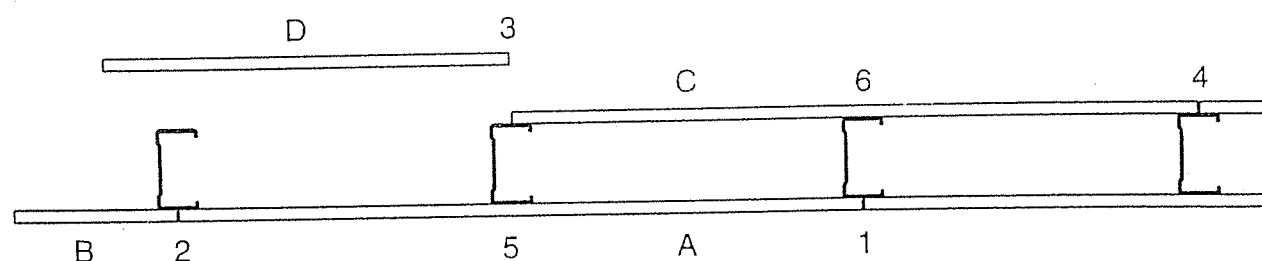


Incorrect fixing method results in lipped joints or twisted studs misalignment of the wall.

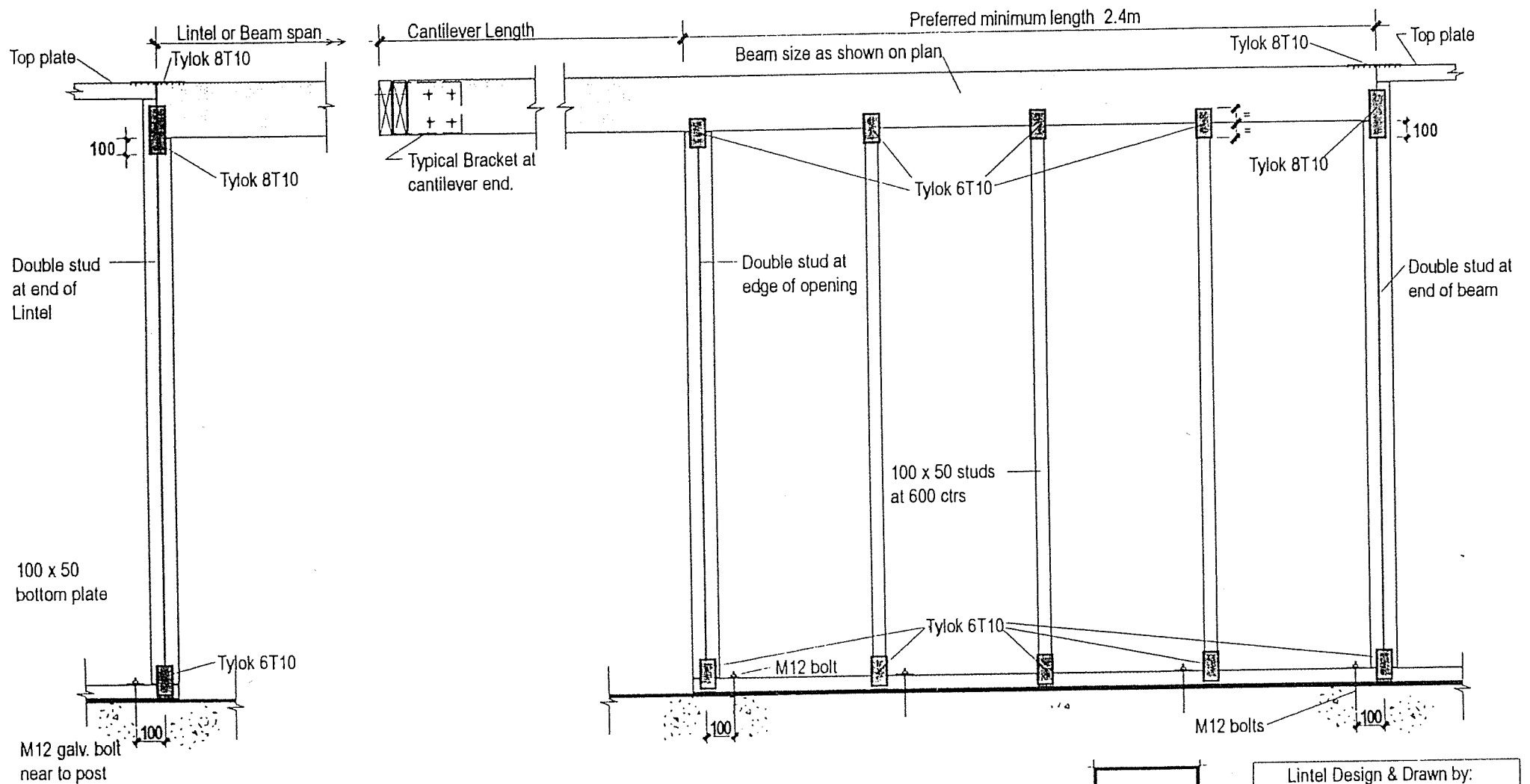
Plasterboard Fixing Sequence

Fix the boards in the sequence as shown below A,B,C,D.

Install A and B first at the edges only THE CENTRE MUST NOT BE FIXED until the C and D boards have been installed. Locate board joints on alternate studs on each side of the frame. Tighten fasteners in the numbered sequence as below 1 - 6. Correct fixing sequence will minimise misalignment and result in a higher quality finish.



CANTILEVER LINTEL DETAILS

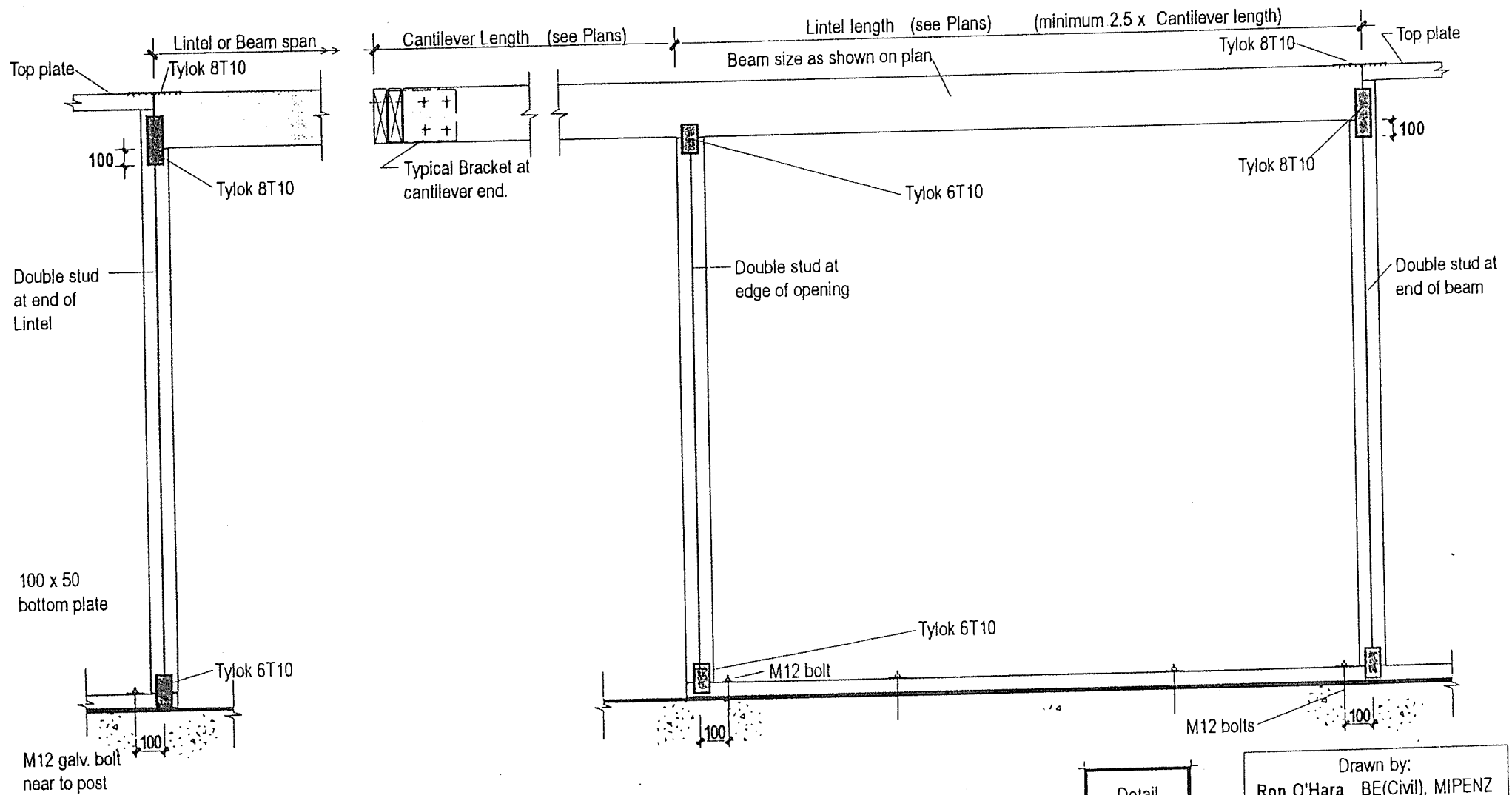


GENERAL ELEVATION - CONNECTION TO CONCRETE FLOOR SLAB

Detail
860

Lintel Design & Drawn by:
Ron O'Hara BE(Civil), MIPENZ
Registered Engineer
04-10-94
File: CANTLINT.PM5 - p1

CANTILEVER LINTEL DETAILS

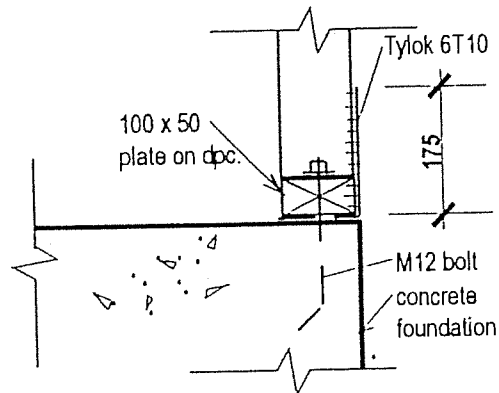


GENERAL ELEVATION - CONNECTION TO CONCRETE FLOOR SLAB

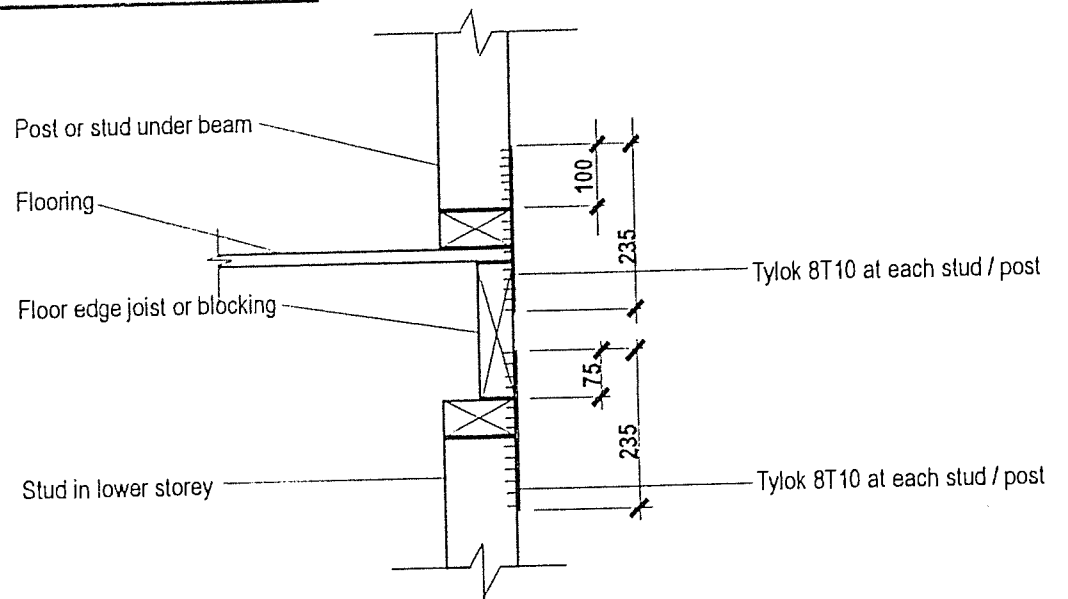
Detail
861

Drawn by:
Ron O'Hara BE(Civil), MIPENZ
 Registered Engineer
 23-10-96
 File: CANTLINT.PM5 - p6

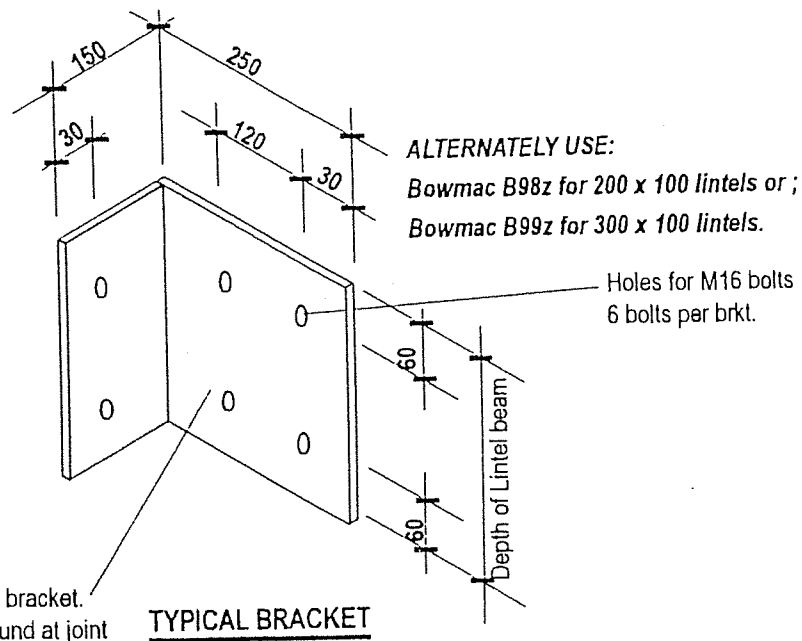
CANTILEVER LINTEL - CONNECTION DETAILS



SECTION AT CONCRETE FLOOR SLAB FOUNDATION



SECTION AT FIRST FLOOR (if required)



Detail

862

Lintel Design & Drawn by:
Ron O'Hara BE(Civil), MIPENZ
Registered Engineer
04-10-94
File: CANTLINT.PM5 : p2

CANTILEVER LINTEL BEAM - FOUNDATION DETAILS

100x100 (or 2 - 100x50)
Timber Post.

100x50 bottom plate
fixed to floor slab
with M12 bolts at
1.2m ctrs or less.

Perimeter foundation outline
dashed & reinforcing not shown
for clarity.

Post connection to base either
of details A or B below.

HRC reinforcing mesh
in floor slab.

min
300

Footing concrete to be minimum of
20 MPa strength at 28 days

D12 bars at max 150mm ctrs
both ways in base of footing.
Cover to be 75mm.

Centre-line of
post and UB

450 x 450

FOOTING AT PERIMETER WALL

use when supporting
lintels 250mm deep
or larger.

100x100 (or 2 - 100x50)
Timber Post.

Approx 120x120 galv nail
plate (Pryda 4N15 or Tylok
4T15) to each side of joint.

150x50 bottom plate
fixed to floor slab
with M12 bolts at
1.2m ctrs or less.
Concrete floor slab.

BASE HOLD DOWN DETAIL - B

100x100 (or 2 - 100x50)
Timber Post.

Bowmac B51 steel angle
bracket to each side of joint.

150x50 bottom plate

2 - M12 galv hold
down bolts set min of
200mm into footing.

BASE HOLD DOWN DETAIL - A

863

**PRODUCER STATEMENT - DESIGN
GANG-NAIL GROUP LIMITED**

**GANG-NAIL FLITCH BEAM
DESIGN**

The GANG-NAIL FLITCH BEAM designs have been compiled using sound and widely accepted engineering principles and in accordance with NZS4203:1992 and NZS3603:1993 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.

As independent design professionals covered by a current policy of Professional Indemnity Insurance to a minimum value of \$200,000
I BELIEVE ON REASONABLE GROUNDS that subject to:

1. The verification of all design assumptions detailed in the drawings and
2. All proprietary products meeting the performance specification requirements,

the drawings, specifications and other documents according to which the building is proposed to be constructed, comply with the relevant provisions of the Building Code.

Stephen Anthony COLL

T.M. IPENZ, MNZIOB

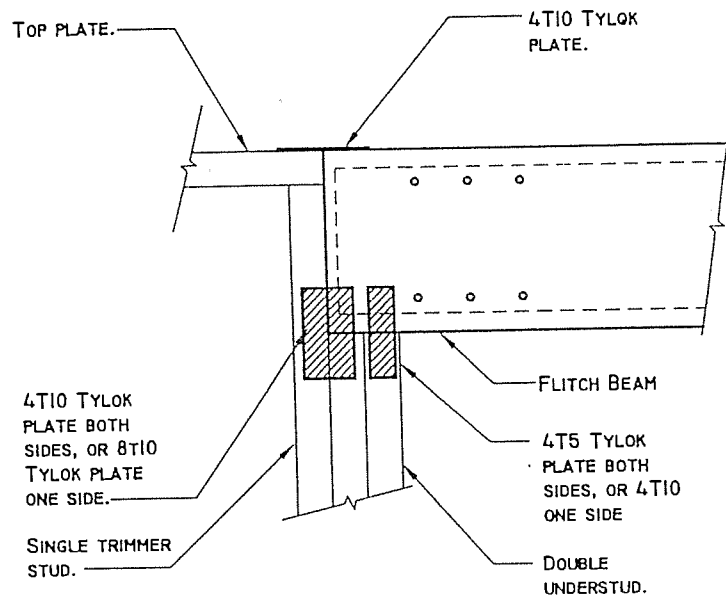
for GANG-NAIL GROUP LIMITED
20 KOTZIKAS PLACE
CHRISTCHURCH
NEW ZEALAND

Date: November, 1998

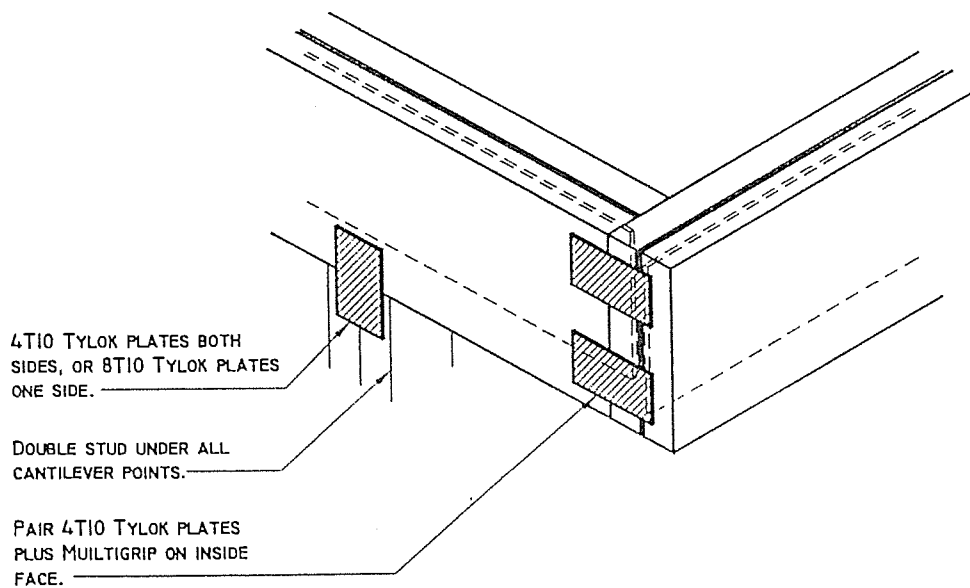


GANG-NAIL FLITCH BEAM

L15



SIMPLY SUPPORTED BEAM



CANTILEVER BEAM

FIXING AND SUPPORT DETAILS

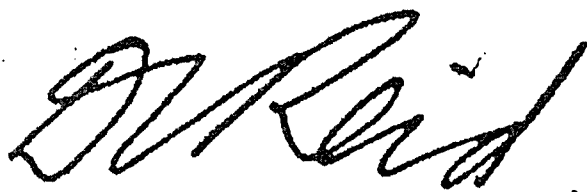
1383

DESIGN CERTIFICATE

GANGLAM Selection Manual

The selection charts and manufacturing details contained in this Manual have been designed to comply with the relevant requirements of NZS4203 and NZS3603 of the approved documents issued by the Building Industry Authority and in accordance with sound and widely accepted engineering principles.

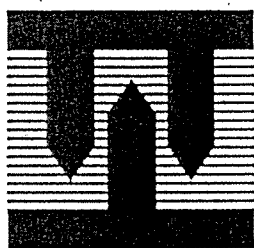
For and on behalf of Gang-Nail Group Ltd,



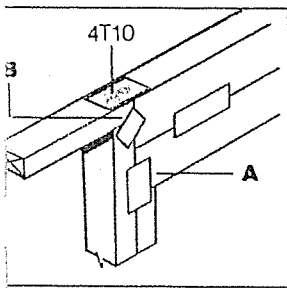
David Reid

BE(Civil), M.IPENZ, Registered Engineer

01/11/97

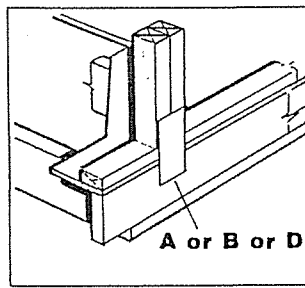


GANG-NAIL®



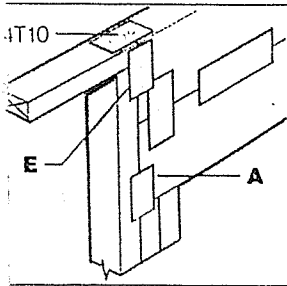
BEAM END — TYLOK

- A** 4T10 both sides
- B** As **A** plus Strap Nail both sides



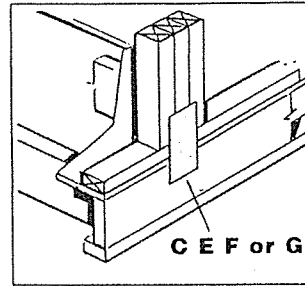
SUPPORT BASE — TWO STUDS ONTO TIMBER

- A** 8T10 one side only
- B** 10T15 one side only
- D** 200 x 110 x 1mm Nailon one side only



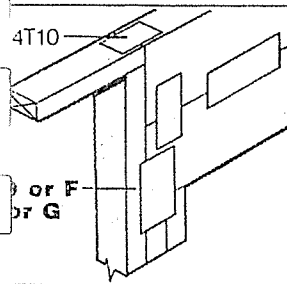
BEAM END — DOUBLE TYLOK

- E** As **A** plus 4T10 both sides



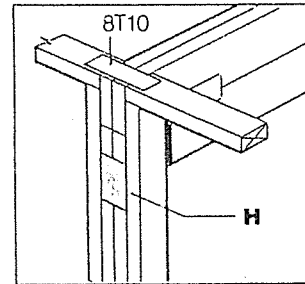
SUPPORT BASE — 3 STUDS ONTO TIMBER

- C** 10T15 one side only
- E** 200 x 110 x 1mm Nailon one side only
- F** 280 x 110 x 1mm Nailon one side only
- G** 360 x 110 x 1mm Nailon one side only



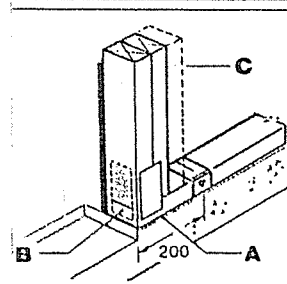
BEAM END — NAILON

- D** or **C** 200 x 110 x 1mm Nailon outside plus 4T10 inside
- F** 200 x 110 x 1mm Nailon both sides
- G** 280 x 110 x 1mm Nailon both sides



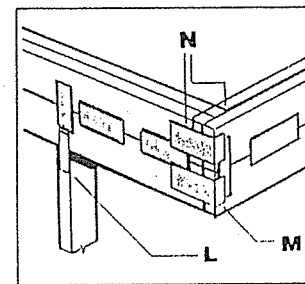
BEAM POCKET

- H** 6T15 TYLOK plate (Typical)



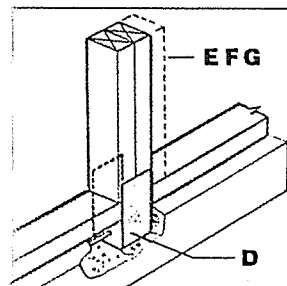
SUPPORT BASE — TYLOK ONTO CONCRETE

- A** 4T10 both sides 1 BOTTOM PLATE FIXING ANCHOR
- B** as **A** plus 4T10 to end stud plus BOTTOM PLATE ANCHOR
- C** as **B** but with double understud to beam



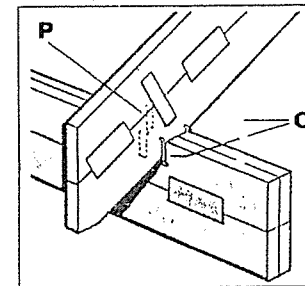
CANTILEVERED BEAM & SUSPENDED LINTEL

- L** 200mm Strapfixing both sides at each support (All cases)
- M** 1/200 x 50 x 110 x 1mm Nailon cleat & Multi-grip inside (Typical)
- N** 2 x **M** on Heavy roof over 200 x 100 suspended Lintel size (Typical)



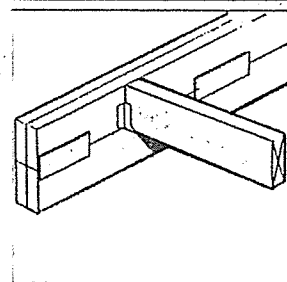
SUPPORT BASE — NAILON U BRACKET ONTO CONCRETE

- D** 210 x 100 x 210 x 1mm Nailon U Bracket under reinforcing steel in concrete
- E** **F** **G** as **D** but with double understud to beam



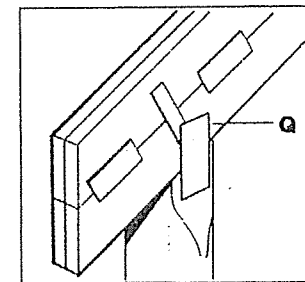
RAFTER TO BEAM

- O** 2 wire dogs with blocking for **A** to **D** index
- P** CT200 with 4 nails each end both sides for **E** to **G** (birdsmouth rafter only)



JOIST OR PURLIN TO GANGLAM

Joist or Purlin fixings may be selected by referring to the Maxspan brochure



POLE TO GANGLAM

- Q** 200 x 110 x 1mm Nailon both sides onto pole cut for bearing and face cut for Nailon

GANGLAM

CONSTRUCTION DETAILS

INTRODUCTION

By comparing the shaded colour in the selection charts with the Fixing Index Table No.12 below, you are able to select the duty of the beam (Refer GANGLAM Plate Maximum Spacing) e.g. 350 x 100 Regular Duty. Within that duty select the correct wind area as per NZS 3604 or NZS 4203 e.g. High Wind. Go to the GANGLAM depth selected e.g. 350 and find out your fixing index, e.g. 'B'.

You then look to the GANGLAM Fixings Page for the fixing required for both the beam end and its support base e.g. beam end 4T10 on top, 4T10 and Strap Nail both sides - support base, 3/4T10's & 2 Bottom Plate Anchor Fixings.

Please read the following notes carefully before selecting fixings.

TABLE 12:

GANGLAM FIXING INDEX								
GANGLAM DUTY	WIND	GANGLAM DEPTH (mm)						
		300	350	400	450	500	550	600
REGULAR	L	A	A	A	A	A	A	A
	M	A	A	A	A	A	A	A
	H	B	B	E	E	E	E	E
HEAVY	VH	B	B	F	F	F	F	F
	L	A	A	A	A	A	A	A
	M	B	B	E	E	E	E	E
SUPER	H	D	D	G	G	G	G	G
	VH	D	D	G	G	G	G	G
	L	A	A	A	A	A	A	A
	M	B	B	E	E	E	E	E
	H	D	D	G	G	G	G	G
	VH	D	D	G	G	G	G	G
UNDERSTUDS		SINGLE	SINGLE*	DOUBLE	DOUBLE	DOUBLE	DOUBLE	DOUBLE

* Note: All 'G' fixings require double understuds.

STABILITY

Top Edge Restraint

All GANGLAM Lintels and rafters are to be restrained along their top edge at 900mm centres maximum for heavy roof and 1200mm centres maximum for light roof. Floor beams or joists are restrained along their top edge at 600mm centres maximum for beams up to 400mm deep and 450mm centres maximum for beams up to 600mm deep.

Bottom Edge Restraint

GANGLAM rafters are to be restrained along their bottom edge every third purlin. Bottom edge restraints are not required where purlins half the depth or more are fixed onto the side of the rafter.

Joists

GANGLAM joists - to use solid blocking or herringbone strutting as per NZS 3604.

SPECIFICATIONS

Timber Specification

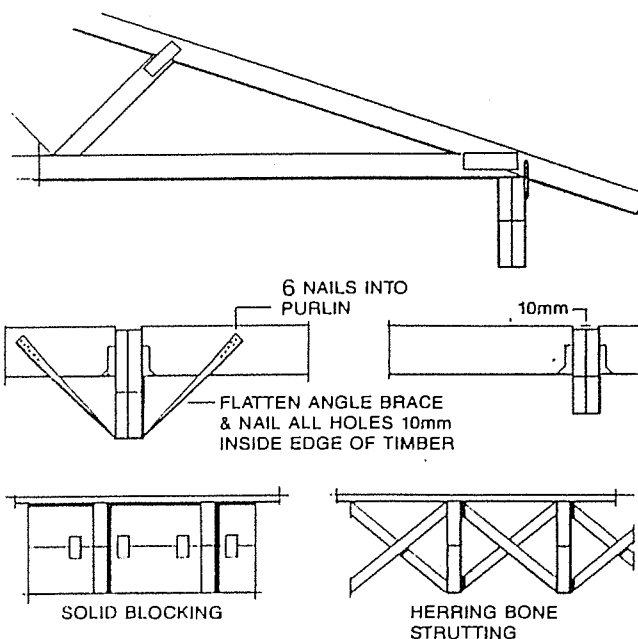
Normal — F5 machine stress graded Radiata Pine or No.1 framing Radiata Pine or No.1 framing Douglas Fir or equivalent grade of other species (refer Gang-Nail Group)

Architectural — Select visually acceptable Grade as above.

Treatment — Refer to NZS 3602.

Fixing Specifications

1. These fixings have been capacity designed. Other fixings may be designed for use in lieu of these details.
2. All fixings should be LUMBERLOK unless otherwise specified.
3. All Nailon, Multigrip, Strapfixing, Joist Hangers, etc to be fully nailed using 30 x 3.15 dia. LUMBERLOK Product Nails.
4. All splices in beams are factory made.
5. Site penetrations of 50mm dia. maximum may be made along the beam centreline only. Holes must be clear of all connectors and be at least 1200mm apart.
6. Site fixings are to be placed with equal area on beam and support or support and base.



Moisture Content — All GANGLAM beams are made dry, 18% or less at time of fabrication.

Size — Components are nominally 50mm thick gauged timber.

GANGLAM

SPECIFICATIONS Cont.

ANGLAM Plate

The GN10-9x22 plate is pressed on only one side of each 50mm layer for regular and heavy duty GANGLAM, and both sides for super duty GANGLAM. The plate spacing is not to exceed the maximum for that grade.

Support Plate

These are pressed on both sides of each 50mm layer directly above every support location.

See Table for Maximum GANGLAM Plate Spacing

ANGLAM Plate Maximum Spacing

Regular Duty GANGLAM Plate Spacing : 600mm one side only
Super Duty GANGLAM Plate Spacing : 600mm both sides only

Architectural GANGLAMS are only regular or heavy duty.

Stitch Plate

These are pressed on the opposite side of the GANGLAM plates, spaced at not more than 2.0m apart. They are not required for super duty GANGLAM or architectural GANGLAM.

Splice Plate

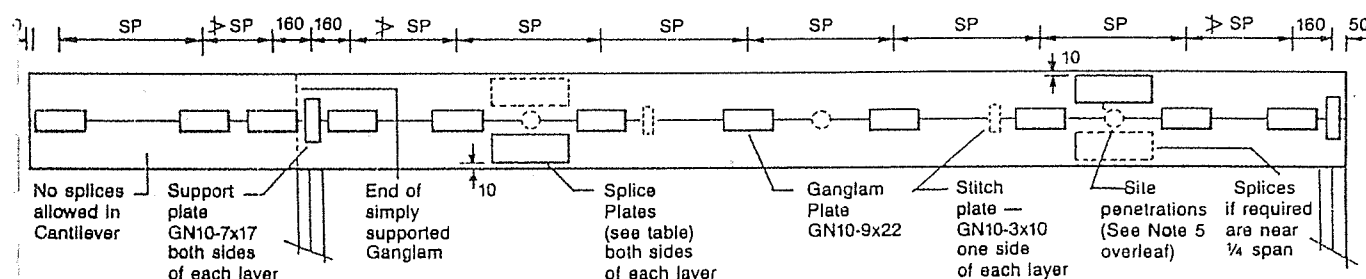
Timber components may be butt-jointed to required length with splice plates on both sides of each 50mm layer. Splice plates should be located around quarter spans.

Splice Plate Size

GANGLAM Depth	300/350	400/450	500/550/600
Splice Plate	GN16-9x43	GN16-14x33	GN16-14x43

Cantilever GANGLAM

See table for maximum GANGLAM plate spacing



Multilayered Beams

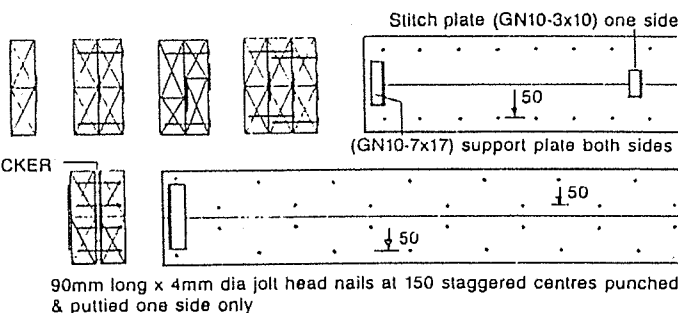
Multilayered beams should be nailed together with 90 x 4mm dia. nails at 150mm centres along the top and bottom edges. Bolting together may be required if four or more layers are used.

Architectural GANGLAM

Architectural GANGLAM Beams have no splices and all shear plates are in between layers with no stitch plates on the outside.

Camber

GANGLAM beams should be cambered $SPAN/300$ but not exceeding 24mm at midspan between supports. Jig with additional camber to achieve specified camber when



90mm long x 4mm dia jolt head nails at 150 staggered centres punched & puttied one side only

released. Beams should be marked to indicate the right way up. No camber is required for cantilever beams.

FOR YOUR NEAREST GANGLAM SUPPLIER CONTACT:

YOUR GANG-NAIL OR LUMBERLOK FABRICATOR

GANG-NAIL

GROUP LTD

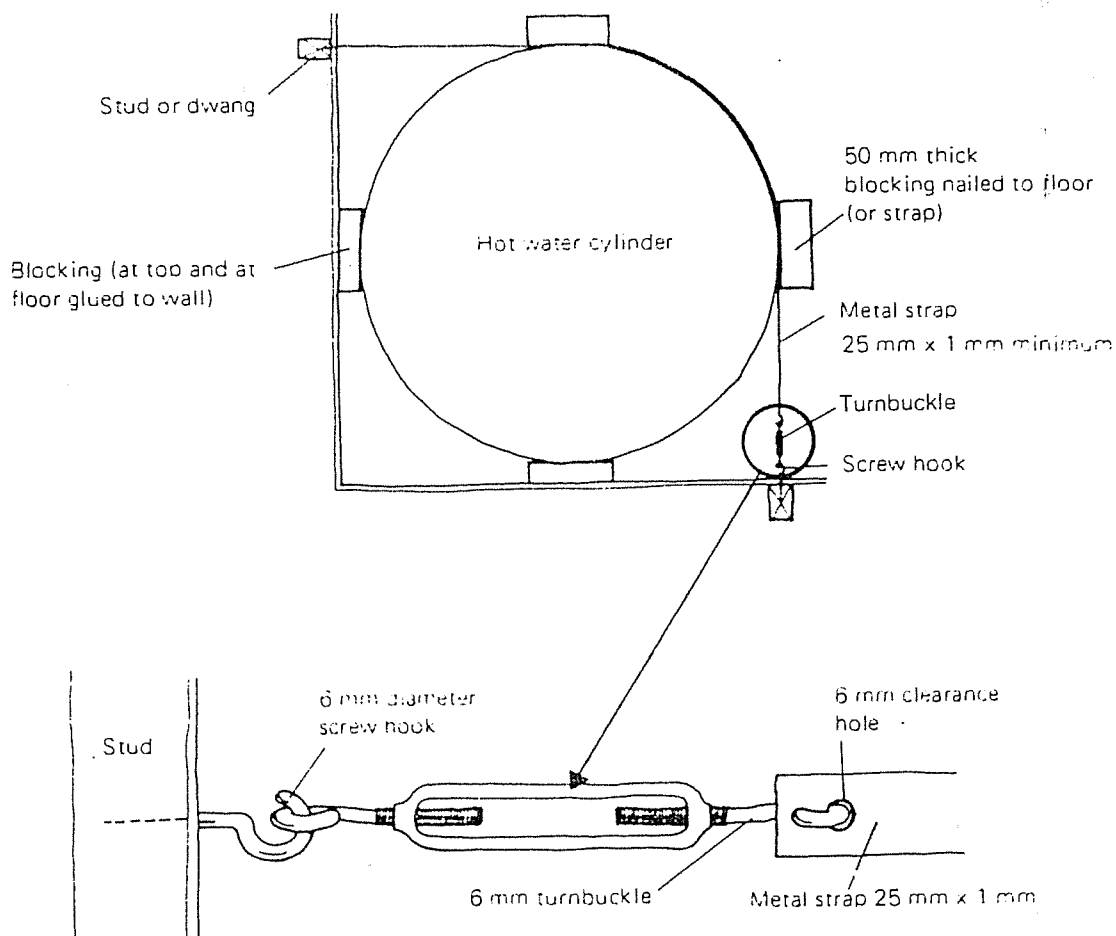
AUCKLAND

5 Zealandian Drive, Greenmount
P.O. Box 58-014, Greenmount
Ph. 0-9-274-7109
Fax. 0-9-274-7100

CHRISTCHURCH

20 Kotzikas Place
P.O. Box 8387, Riccarton
Ph. 0-3-348-8691
Fax. 0-3-348-0314

Also - secure supply tank against trusses or roof framing with a 25x1mm metal strap & turn buckle, similar to hotwater cylinder detail below.





INSURANCE

For all building work it is recommended that insurance cover is taken out to indemnify the builder and/or building owner against loss resulting from:

- accidental damage to the building (builders all risks policy can be taken out by either builder or owner). For alteration work to existing buildings cover should allow for possible loss (and reinstatement) of the existing building as well as the new work.
- damage to adjacent properties resulting from carrying out building works (public liability insurance).
- theft of materials, tools, fittings and appliances.



QUALITY CONTROL

To ensure a quality job continual checks must be made throughout the building programme to ensure quality is being maintained.

Good quality control involves:

- checking as materials are delivered to site that they are:
 - the correct quality, grade, shape, length, size.
 - undamaged.
 - the correct finish.
 - the correct colour.
 - stored correctly.
- regular checks during building progress to ensure:
 - dimensions, set out, tolerances and alignment are within the limits defined later in this section.
 - the plans and specifications are being followed.
 - materials are correctly installed.
 - items already installed such as stairs and windows are protected from damage.
- regular checks on code compliance are carried out by the Territorial Authority or Approved Certifier.
- regular checks on the quality of work carried out by:
 - the owner (or his agent) on the builder and sub-trades.
 - the builder on his employees and sub-trades.

It is important that tools used on any building job are of good quality. Cheaper tools, while they decrease the initial cost outlay have often been found to be:

- inaccurate (measuring tapes which are inaccurately set out and which stretch with use or spirit levels which do not record a true level).
- not as robust as the top-line tools - therefore can be more easily damaged and are unlikely to last as long.

Tools should also be used properly because poor use of tools will shorten their life.

CABLE-END CONSTRUCTION

DETAILS:

Max Verge overhang 600mm
Min actual depth of Verge
rafter 69mm.

Blocking between
verge rafters.

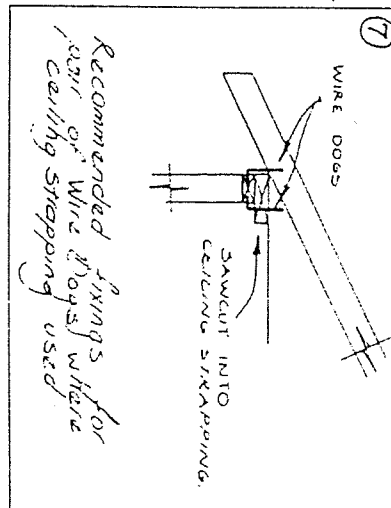
verge rafters
@ 900 CRS.

10mm Skt.

CE2

Standard Top Drop - lines up with
soffit drop at end of overhang

Standard soffit Drop - 10mm
below Rafter truss toe cut



REVA: MINOR REVISIONS		DATE MAR '82	BY <i>PD</i>
GABLE END FLUSH END WALL.			
Client	Dwg No	Date	No of Sheets
Scale	A128/4A	12-10-75	
Drawn by	B.W.K.		



GANG-NAIL COMPONENT

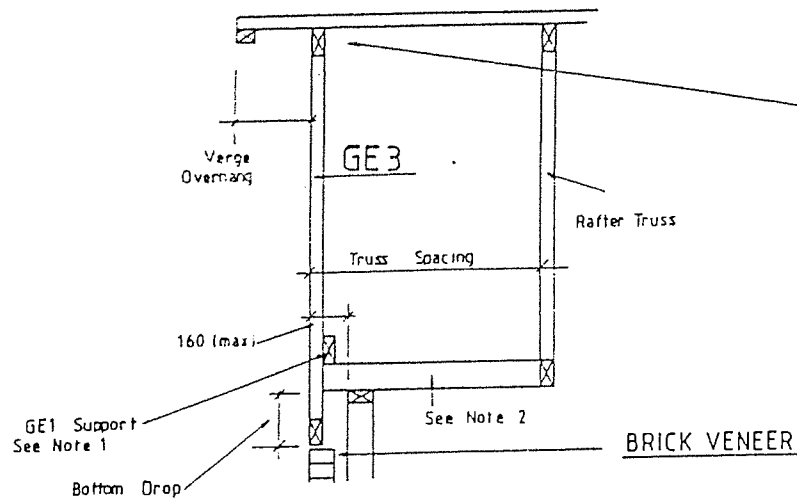
Designed by
AUTOMATED BUILDING COMPONENTS
(N.Z.) LTD.

3 - 5 ZELANIAN DRIVE, EAST TAMAKI
P.O. BOX 58-014 AUCKLAND, PHONE POP. 47-106

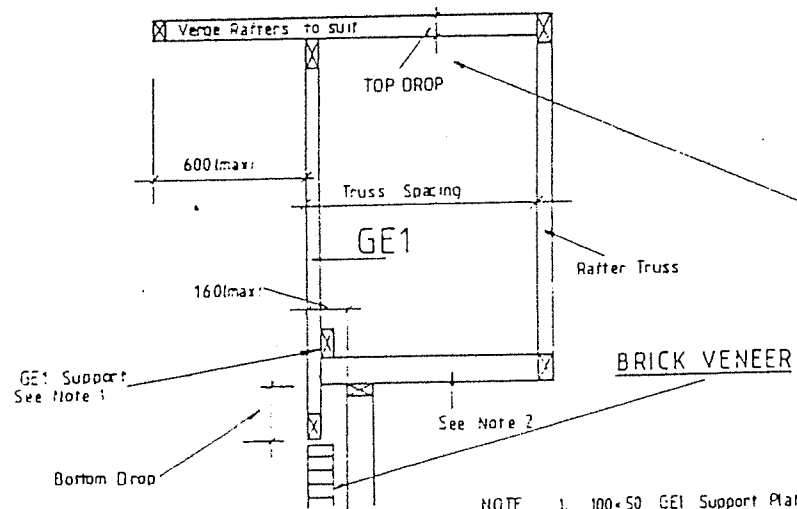
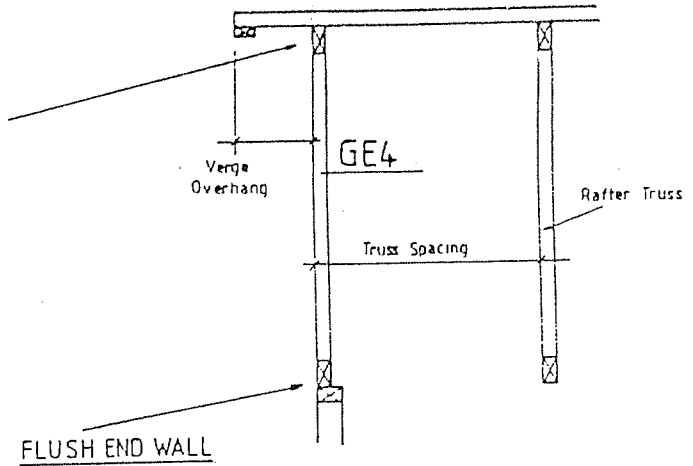
CONSTRUCTION DETAILS

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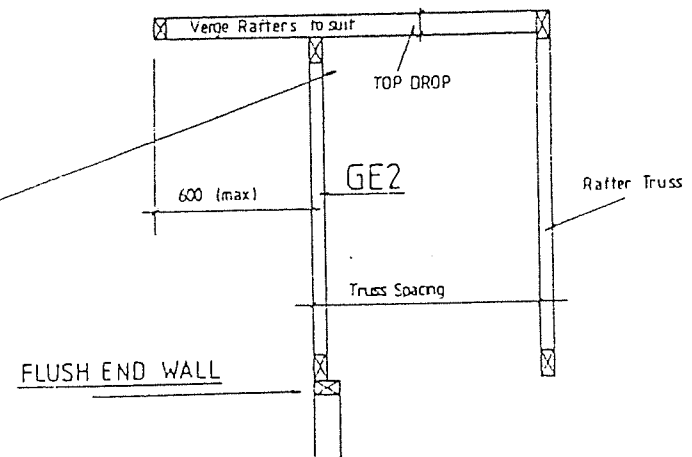
6.7



NO TOP DROP
 VERGE OVERHANG
 as NZS 3604
 10.3.12



WITH TOP DROP
 Verge Rafters as
 NZS 3604
 10.3.12



- NOTE**
1. 100x50 GE1 Support Plate fixed to each web with 3-90mm nails at each crossing.
 2. 100x50 Cantilever Dwggs at the Rafter Truss Spacing fixed to the rafter truss lower chord with 2/90mm nails and fixed to the top plate and GE1 Support Plate with one wire dog at each crossing.



LIGHT & HEAVY ROOF
 NO SNOW & SNOW LOAD
 GABLE END TRUSSES

NZ 500
 541



VELUX Roof Windows and Skylights

1. GENERAL

This section relates to the specification and installation of VELUX Roof Windows, skylights and accessories.

These specifications do not substitute VELUX installation instructions, and should be read in conjunction with them.

2. ROOF WINDOW AND/OR SKYLIGHT SPECIFICATION

Unit No 1 Model: (GGL, VS, FS, FCM) Size:

Unit No 2 Model: (GGL, VS, FS, FCM) Size:

Unit No 3 Model: (GGL, VS, FS, FCM) Size:

Unit No 4 Model: (GGL, VS, FS, FCM) Size:

All glass shall be VELUX ComfortTM, LowE², Argon filled, Toughened Double glazing type 75, unless stated otherwise. (Discuss any specific glazing requirements with VELUX New Zealand Limited)

The following Blinds shall be fitted on:

Unit No 1:

Unit No 2:

Unit No 3:

Unit No 4:

3. OPERATION OF OPENING ROOF WINDOWS AND SKYLIGHTS

Electrical or manual control options for roof windows, skylights and blinds are indicated in manufacturers printed material.

All GGL Roof windows positioned within hand reach from floor level shall be opened manually unless otherwise stated.

All GGL Roof windows positioned up to 3.0 metres in height above floor level shall be opened using ZCT200 rod unless otherwise stated.

All GGL Roof windows positioned up to 4.2 metres in height above floor level shall be opened using ZCT200 rod with ZCT100 extension unless otherwise stated.

All GGL Roof windows positioned above 4.2 metres in height relative to floor level shall be opened electrically using VELUX electrical operation system unless otherwise stated.

All VS ventilating skylights positioned within hand reach from floor level shall be opened using CHL handle unless otherwise stated.

All VS ventilating skylights positioned up to 4.2 metres in height above floor level shall be opened using ZCT300 rod unless otherwise stated.

All VS ventilating skylights positioned above 4.2 metres in height relative to floor level shall be opened electrically using VELUX electrical operation system unless otherwise stated.

Blinds shall be operated by equivalent means to the roof window or skylight in which they are fitted.

4. FLASHING SPECIFICATION

Install manufacturer's engineered perimeter flashing in accordance with manufacturer's installation instructions to achieve weatheright installation

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Unit No 3 Model: (GGL, VS, FS, FCM) Size:

Unit No 4 Model: (GGL, VS, FS, FCM) Size:

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The following Blinds shall be fitted on:

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Unit No 3:

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All VS ventilating skylights positioned above 4.2 metres in height relative to floor level shall be opened electrically using VELUX electrical operation system unless otherwise stated.

Blinds shall be operated by equivalent means to the roof window or skylight in which they are fitted.

4. FLASHING SPECIFICATION

Install manufacturer's engineered perimeter flashing in accordance with manufacturer's installation instructions to achieve weathertight installation.

Use VELUX EDH flashing for roofing material greater than 8mm thick or high profile material up to 90mm, and for roof slopes of 15 degrees to 85 degrees. Use VELUX EK combination flashing for side by side roof window or skylight installation. Allow 100mm gap between skylights.

Use VELUX EDL soaker flashing system for flat surfaced roofing materials less than 8mm thick and for slopes of 15 degrees to 85 degrees.

For roof pitches less than 15 degrees, pitch up skylight to 15 degree min (if using GGL, VS or FS) and purpose flash accordingly. If using FCM curb mounted unit the curb should be purpose flashed prior to installation of the skylight. In all cases ensure that the flashing is watertight.

For trough roofing materials make purpose made flashing. Ensure Skylight is installed 15mm above conventional installation to clear skylight capping above roofing material. Ensure flashing is watertight.

For membrane roofs remove skylight capping and run membrane material up sides of skylight. All fillets and laps are to be in accordance with membrane manufacturers' specification. Replace capping upon completion.
Form purpose made galvanized steel capping to ensure adequate waterproofing of top edge of skylight.

5. DELIVERY, HANDLING, STORAGE

Deliver products in manufacturer's original containers, dry, undamaged, seals and labels intact.

Store and protect products in accordance with manufacturer's recommendations

6. PRELIMINARY WORK

Unit dimensions quoted by VELUX are overall finished frame dimensions.

For framing purposes allow 30mm extra over unit dimensions for rough opening. Verify rough opening dimensions and proper orientation of skylight.

7. INSTALLATION

Install skylight in accordance with manufacturer's installation instructions.

Align skylight level and free of warp or twist, maintain dimensional tolerances.

Do not leave exposed to adverse weather conditions without adequate protection

Attach skylight to roof structure with manufacturer's brackets and screws to accommodate construction tolerances and other irregularities.

Coordinate attachment and seal of perimeter air and vapor barrier material.

Finish roofing material around skylight in accordance with VELUX installation requirements.

Provide thermal insulation when components penetrate or disrupt building insulation. Pack fibrous insulation in rough opening to maintain continuity of thermal barriers.

8. FINISHES

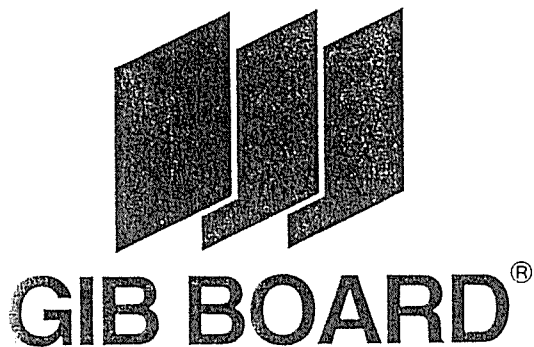
All exposed exterior wood surfaces are covered with roll formed maintenance free aluminium. Finishing coat on the aluminium is umber grey, Kynar 500 polyvinylidene fluoride resin finish.

Interior surfaces: For VS and FS skylights apply paint system to all exposed interior wood surfaces. Verify with Architect prior to application.

GGL Roof windows have a VELUX clear TopFinish, and do not require additional finish.

Remove VELUX sticker from inside glass surface and clean glass.

Ensure all installed VELUX products are adequately protected from damage and adverse weather during construction.



Moisture Content of Timber Framing Prior to Lining

There has been some confusion recently in regard to the timber framing moisture limits stipulated by the New Zealand Building Code (NZBC) which differ from the recommendations of Winstone Wallboards Ltd.

The NZBC acceptable solution E2/AS1 clause 6.0.2.(a) states that the maximum moisture content for timber framing at the time of installing interior linings shall be 24% for insulated buildings or 30% for uninsulated buildings, with a comment that 'some lining manufacturers recommend lower moisture content where their products are being used'.

Winstone Wallboards Ltd literature recommends that for levels of Gib Board[®] Finish 3, 4 or 5 (ref 1 below) that the moisture content should not be greater than 16% at the time of lining (equivalent to a reading of 20% on the Douglas Fir scale of resistance type moisture meters (ref 2 below). The basis of this recommendation is to minimise instances of joint or surface defects developing as the building is subsequently occupied and its components reach a state of equilibrium. Thus this recommendation is towards enhancing the appearance of the finished decorated wall or ceiling. The decision to comply with this recommendation thus becomes the responsibility of the customer (eg, home owner), the specifier, the builder or the fixer and should be specified accordingly prior to work commencing.

Gib Board[®] systems will however comply with the relevant requirements of the NZBC, in the event that the Gib Board[®] linings are installed on timber framing with a moisture content up to a maximum of 24% (equivalent to a reading of 27% on the Douglas Fir scale of resistance type moisture meters – ref 2 below). This applies to compliance with:

- NZBC – B1 Structure General
- NZBC – B2 Durability
- NZBC – C3 Spread of Fire
- NZBC – G6 Airborne and Impact Sound

Ref 1: Levels of Gib Board[®] Finish
Winstone Wallboards Ltd (November 1992)

Ref 2: Measurement of Moisture Content
of Assembled Timber Framing
*New Zealand Forest Research
Institute Ltd and Winstone Wallboards Ltd*



WINSTONE
WALLBOARDS LTD

Auckland Tel 0-9-634 2184 Fax 0-9-634 3972
Wellington Tel 0-4-568 4293 Fax 0-4-568 7844
Christchurch Tel 0-3-332 3159 Fax 0-3-337 1014

MOISTURE CONTENT OF TIMBER

Because timber is made up of a number of inter-linked cells shrinkage starts to occur only when the moisture content falls below the fibre saturation point (FSP) which is 29% for Radiata pine and within the 28 to 30% range for most other timbers. Above the FSP water is lost from (or gained by) the cell cavity which does not alter the size or shape of the timber. With time timber will dry to a level which is determined by the relative humidity of the air around it (equilibrium moisture content). Timber will then absorb or release moisture as the relative humidity of the air changes. Table 1.3 details recommended maximum installation moisture contents for particular timber uses to reduce:

- the amount of timber shrinkage and distortion that occurs.
- the risk of problems, such as mould forming on internal linings and water condensing in the wall cavities.
- the amount of deflection that will occur (particularly if wet spanning timbers are loaded prematurely i.e. when wet).

Kiln-dried timber should be used where:

- the construction programme requires rapid progress and early fixing of linings.
- the moisture content of timber is critical. The use of kiln-dried timbers means there is minimal timber shrinkage.
- the greater strength of dry timber is required so that the risk of bowing and sagging of loaded members is minimised.

Protection should be provided to the timber to prevent the dry materials taking up water during storage and construction.

The best test for the amount of moisture in timber framing is to use a moisture meter. The following simple two step method can be used if a meter is not readily available. *Step 1.* Drive a nail into part of the timber framing. If water appears around the nail the timber is too wet. Repeat the test weekly. When no water appears, carry on with *Step 2.* *Step 2.* Take out a dwang nearest to the bottom of any wall, and cut it in half. Place one half back in the wall. Weigh the other half, then place it in the oven sitting it on the oven tray at 120°C (250°F) overnight. Weigh the piece again in the morning. If the wood has lost less than one fifth of its weight, the framing is dry enough to start lining. If not repeat the test using the other half of the dwang in seven days time.

TABLE 1.3 MAXIMUM RECOMMENDED TIMBER MOISTURE CONTENTS

Use	Moisture content measured	Maximum recommended % moisture content for buildings which are:		
		Centrally heated	Irregularly heated (1)	Not heated
weatherboards, exterior joinery and exterior finishing timber	when fixed in place	18	18	18
ground level suspended floor framing	when flooring laid	18	20	20
interior joinery, trims, furniture, flooring	when fixed in place	12	14	14
all framing above ground floor level	before fixing linings	18 (2,3)	24 (3)	24 (3)
roof trusses, lintels, beams and upper floor joists deeper than 200 mm (4)	when erected	14 (2)	16 (2)	16 (2)
NOTES:				
(1) Buildings heated by open fires, electric heaters.				
(2) In-situ drying to this figure may be difficult to achieve due to the season or region.				
(3) Refer also to lining manufacturers' installation instructions. -- Note see page T1.				
(4) To reduce sagging when wet timber has loads applied lintels, beams and upper floor joists may require propping until the recommended moisture level is reached.				



TIMBER SHRINKAGE

Timber as it dries shrinks and may warp, twist and bow as the cells lose water. Poor storage and drying can make timber deformation worse.

The effects of timber shrinkage in a completed building are:

- joints in timber finishes opening up.
- cracking of flush stopped linings fixed over wet timber which has subsequently dried and distorted.
- distorted and poorly fitting or aligned timber.
- splitting of wide boards.

Care must be exercised when using some imported timbers (particularly finishing timbers) because the timber is imported shrink-wrapped and dried to a moisture content of around 8%. Before using this timber it must be conditioned (allowed to absorb moisture) to bring it in line with higher local in-service moisture levels (usually around 15% - 18%). If not conditioned the timber will swell rapidly when installed.

Defects resulting from timber shrinkage can be minimised by:

- correctly storing timber.
- using dry timber where possible (particularly with finishing timbers).
- fixing timber securely in place.
- providing (particularly where building may take place over an extended period and timber is exposed to the weather) lateral support to framing by installing temporary walings (horizontal members fixed to the side of the framing at mid-span) to hold the framing in line while drying.
- selecting timber by using:
 - flat sawn boards where shrinkage across the width of the board is not desirable. (Flat sawn timber has the grain at right angles to the width of the board.)
 - quarter sawn timber where shrinkage across the thickness of the board is not desirable. (Quarter sawn timber has the grain at right angles to the width of the board.)
- using boards which are as narrow as possible.
- minimising the use of dark colours, particularly dark coloured stains on timber used externally.
- using timbers with lower shrinkage rates.

BRANZ Bulletins 271 and 295 outline the shrinkage and stability characteristics for a number of timbers commonly used in New Zealand.

TIMBER TREATMENT

Timber used in framed construction should either be naturally durable or treated in accordance with Table 1.1. Treatment is often necessary to protect against wood boring insects and in damp or wet situations to improve the durability of the timber.

Naturally durable timbers which can have untreated heartwood used externally (except in ground contact) are: totara, iroko, vitex, western red cedar, jarrah, kwila, meranti, macrocarpa, redwood, eucalypts and yellow balau.

When using CCA-treated timber embedded in the ground or near the ground ensure that cut ends of the timber are:

- not placed in the ground.
- liberally treated with a light spirit-based site-applied preservative or sealing agent such as bituminous paint. (This is particularly important for poles and bearers which have been cut, notched or scarfed and are exposed to the weather.)

Treated timber should be stamped or marked with the woodmark symbol, the treatment plant number and the level of treatment (Figure 1.1). Offcuts of CCA-treated timber, because of the chemicals used in the treatment, must NOT be used for firewood or barbecues.

TABLE 1.1 REQUIRED TREATMENT LEVELS FOR DIFFERENT END USES OF NON-DURABLE TIMBERS

Timber used for	Required treatment	Timber used for	Required treatment
piles	H5	poles	H5
sub-floor framing (1)	H1	flooring	H1
internal framing	H1	roof framing	H1
sarking	H1	shingles	H3
unfinished cladding	H3	painted cladding	H1
exterior finishing timber and joinery	H3	exterior plywood	H3
exterior joinery, painted	H3	interior finishing timber	H1
exposed exterior framing (2)	H3	interior plywood	H1
interior joinery	H1	decking	H3
fence posts	H4	fence rails and palings	H3
spa pools	H4	verandah posts in ground	H5
NOTES:			
(1) H3 treatment is recommended if there is any possibility of the sub-floor area being damp.			
(2) H4 treated timber should be used in situations where water may be trapped between the timbers.			

TIMBER GRADES

Timber used in building work must be the correct grade (strength and/or appearance) for its end use. It is recommended that No. 1 framing be used in loadbearing walls.

No. 2 framing can be prone to bowing after linings are fixed because of the size and number of knots permitted in each piece of timber. No. 2 framing can be used in loadbearing walls when:

- the building is not in a high or very high wind zone.
- stud heights do not exceed 3.0 m.
- walls support roof load only.
- walls are dwanged within 160 mm of mid height.
- studs are not trimming studs.

Studs in non-loadbearing external walls in high and very high wind areas should be increased in size or installed at closer centres to minimise the amount of deflection that will occur in windy conditions. This is particularly important with gable end walls of skillion roofed buildings.

Radiata pine, Douglas fir and Macrocarpa timber grades are identified by the following colours:

- | | |
|-----------------|-----------------|
| • Engineering | silver |
| • No. 1 framing | black |
| • No. 2 framing | yellow |
| • Dressing | green |
| • Select A | chocolate brown |
| • Box | red |
| • Cutting | orange |

ISOLATING TIMBER FROM CONCRETE

Timber directly fixed to concrete must have a bituminous strip or similar damp-proof course (DPC) sandwiched between the timber and the concrete (Figure 1.2) to prevent moisture from the concrete being absorbed by the timber.

ALLOWABLE BUILDING TOLERANCES

A building which is incorrectly sited, is out of plumb, has uneven floor levels or is not square is usually not acceptable to owners/occupiers. Table 1.4 based on NZS 3604, sets the limits within which an acceptable timber frame building should be constructed.

TABLE 1.4 ALLOWABLE BUILDING TOLERANCES

Description	Acceptable limit
deviation from vertical	20 mm maximum over building height 8 mm maximum in any 2.4 m of building height
deviation from level	10 mm maximum on any one level 5 mm in any 10 m length
misalignment of vertical load bearing walls between floors	5 mm maximum
deviation from plan length	10 mm maximum 5 mm in any 10 m length
siting of finished building from position shown on site plan	25 mm maximum

PREVENTING CORROSION OF METALS

The presence of moisture substantially increases the risk of corrosion of metals occurring. In a timber framed building the use of particular materials can increase the risk of corrosion.

Potential problems and their solutions are outlined in Table 1.5. (See also Table 7.1.)

Materials which are stated to be protected against corrosion should have the level of protection provided stated clearly on the packaging.

TABLE 1.5 PREVENTING CORROSION

Cause	Cure
CCA treatment of timber corroding steel fixings	<ul style="list-style-type: none"> - use hot-dip galvanised, powder coated or stainless steel fixings. - coat bolts in grease or bituminous paint prior to installation. - plastic shrink wrap bolts. - allow treatment salts to fix in the timber (a moisture content less than 20%) before using the timber.
acidic nature of the timber (cedar, redwood) attacking galvanised steel fixings and flashings	<ul style="list-style-type: none"> - use aluminium, silicon bronze or stainless steel fixings. - use powder coated or butyl rubber flashings.
corrosion between incompatible metals (for additional information see Table 7.1)	<ul style="list-style-type: none"> - do not use the materials in positions where they are in contact and can interact. - provide protective coatings to prevent contact, or runoff from one material flowing over the other.
unprotected metal exposed to the weather (e.g. mild steel)	<ul style="list-style-type: none"> - use hot-dip galvanised, or other corrosion resistant fixings. - provide protection from the weather (i.e. stop fixing holes).

Gib® Wall Bracing Calculation Sheet A**single storey****Job Details**

Name	BARRY AND PENNY HOSKING
Street and Number	LYNWOOD TCE.
Lot and DP Number	LOT 5/ DP 13982
City/Town/District	BISHOPDALE, NELSON CITY COUNCIL
Designer and date	James Petersen

Building Specification

Location of Storey	single	▼	<i>not applicable (single storey building)</i> <i>not applicable (slab)</i>
Floor Loading	2 kPa	▼	
Foundation Type	slab	▼	
Building Height to Apex (m)	6	▼	
Roof Height above Eaves (m)	3	▼	
Stud Height (m)	2.4	▼	
Cladding Weight (top or single)	light	▼	
Cladding Weight (lower)	medium	▼	
Cladding Weight (subfloor)	medium	▼	
Roof Weight	light	▼	
Roof Pitch (degrees)	0-25	▼	
Room in Roof Space	no	▼	
Building Length (m)	17.8		
Building Width (m)	12.9		
Gross Building Plan Area (m2)	180.5		

Building Location

Wind Zone	Medium		Earthquake Zone	
Region	R1	▼	A	▼
Terrain	Inland	▼		
Exposure	Sheltered	▼		
Topography	Moderate	▼		

Bracing Units required for Wind

per m	subfloor	walls
W along	n/a	54 BUs/m
W across	n/a	54 BUs/m
Totals	subfloor	walls
W along	n/a	697 BUs
W across	n/a	961 BUs

Bracing Units required for Earthquake

per m2	subfloor	walls
E	n/a	3.6 BUs/m2
Totals	subfloor	walls
E along	n/a	650 BUs
E across	n/a	650 BUs

single storey

						Wind	Earthq.
Totals Achieved						798	698
						OK	OK
Totals Required (from Sheet A)						697	650

single storey

Wind	Earthq.
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
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97	97
98	98
99	99
100	100

OK OK

Totals Required (from Sheet A)					961	650
--------------------------------	--	--	--	--	-----	-----

1. DRAINLAYER TO CHECK ALL LEVELS ON SITE PRIOR TO HOUSE FLOOR LEVEL BEING ESTABLISHED
2. 100 DIA S.W. AND S.S TO FALL AT MIN. 1 TO 100
3. ANY DRAIN LESS THAN 500 DEEP TO BE COVERED IN 75MM CONCRETE TO LOCAL TERRITORIAL AUTHORITY REQUIREMENTS
4. ALL VENT PIPES TO RUN WITHIN WALL CAVITY WHERE POSSIBLE
5. F.S.L. TO BE 150MM ABOVE FINISHED PROTECTED GROUND

PLUMBING INSPECTIONS: One working Day's Notice Required Before **COVERING UP** or **CLOSING IN**:-

SLAB — Waste Pipes installed under a Concrete Floor, PRIOR to Pouring Concrete.

PRELINE — Pipe Installation Fitted. Water Pipes Installed and Tested for 30 Minutes at 1500 KPA Pressure PRIOR to Inspection.

FINAL — At **COMPLETION** of the Works.

EXISTING 100 DIA. S.S. CONNECTION

BUILDING CONSENT HOLDERS ARE RESPONSIBLE FOR ALL DAMAGE TO THE STREET FRONTAGE. IF THERE IS DAMAGE TO THE FRONTAGE, IT MUST BE BROUGHT TO THE COUNCIL'S ATTENTION PRIOR TO WORK COMMENCING.

LOT 5
DP- 13982
AREA- 594 sqM

HOUSE COVERAGE- 180.4 sqM, (30.4 %)

site plan 1:100

G.J. Gardner.
HOMES

CLIENT
B.+ P. HOSKING, 140039

PROJECT
LOT 5, LYNWOOD ESTATE

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DATE
1/11/01

SCALE
1:100

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SHEET
1
OF 8

R.O.W.

19.50 M

3.165

3.090

11.55 M 65° 04'

LYNWOOD TCE.

T INDICATES OUTSIDE TAP

Prime Building Compliance Limited
These plans and specifications must be read with the conditions attached to the Building Consent.

NELSON CITY COUNCIL

20021763

Prime Building Compliance Limited
Plans and Specifications APPROVED in accordance with the Building Act 1991, clause 56(2) and the Building Regulations 1992, clause 3.

Signed: *[Signature]* 17/11/02

200MM WIDE MOWING STRIP TO BE INCORPORATED INTO PATIOS

BUILDING CONSENT
020391
NCC

1 MAY 2002

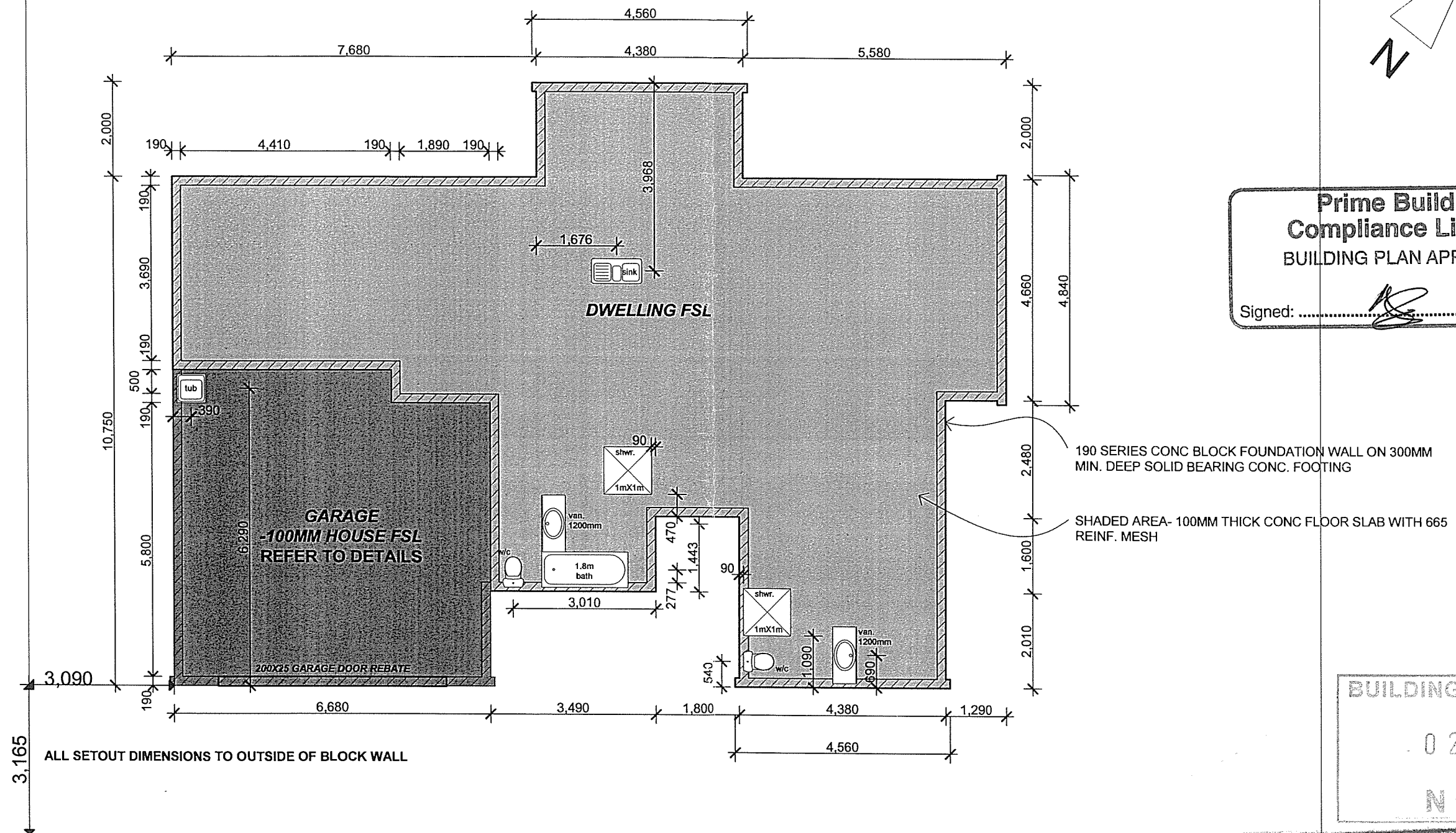
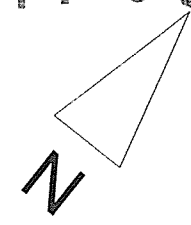
N

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All construction work and materials used shall comply with the New Zealand Building Code, notwithstanding any inconsistencies which may occur in the drawings and specifications.

CONSENT COPY

16.36 M 70° 10'

20021763



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Signed: 17/4/02

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foundation plan 1:100

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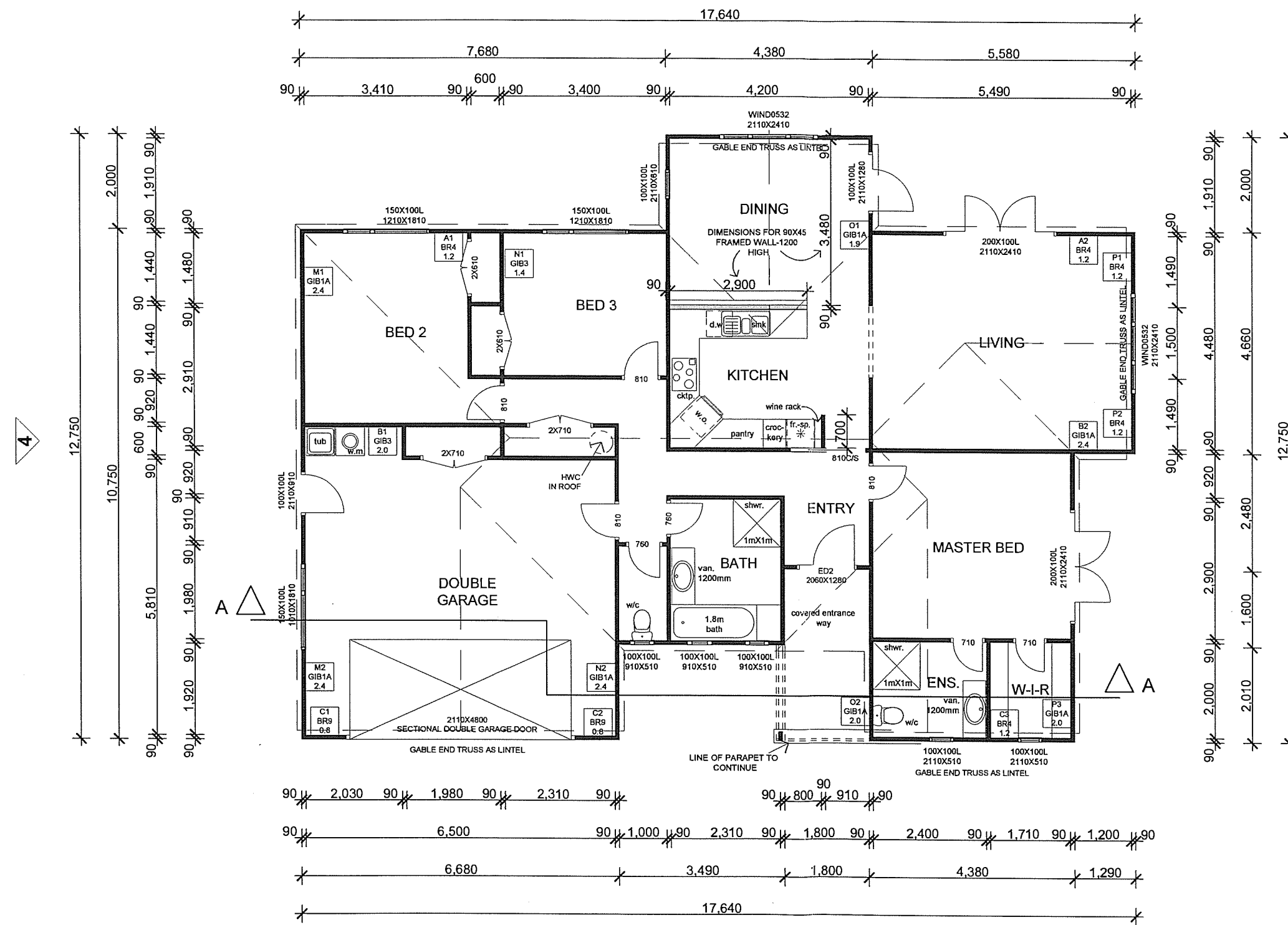
SHEET
2
OF 8

7 MAY 2002

note: BATHROOM+WC+ENSUITE+W-I-R TO HAVE FROSTED FILM TO WINDOWS- NOT OBSCURE

note: DOUBLE CATCHES TO ALL WINDOWS

note: 'EYES' TO ALL EXTERNAL ALUMINIUM DOORS/ 'HOOKS' TO BE PLASTERED INTO WALL



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FLOOR PLAN 1:100

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ELEVATIONS 1:100

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The 'Rockcote' system must be undertaken by a licensed applicator.
Produce Statement/Contr. repd upon completion

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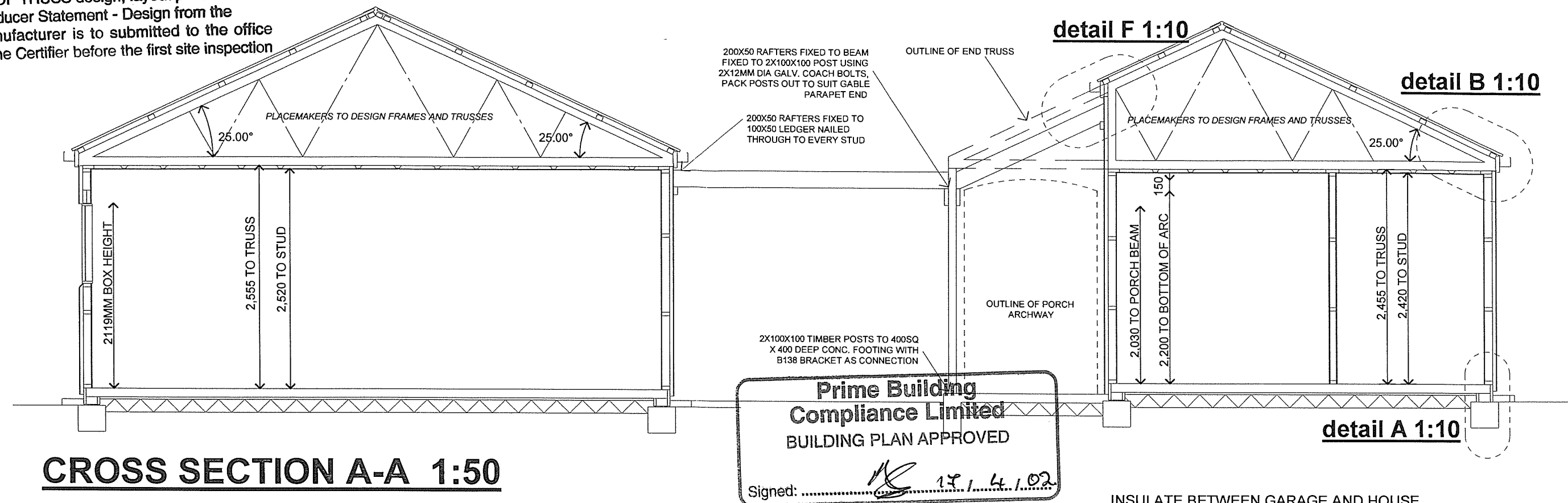
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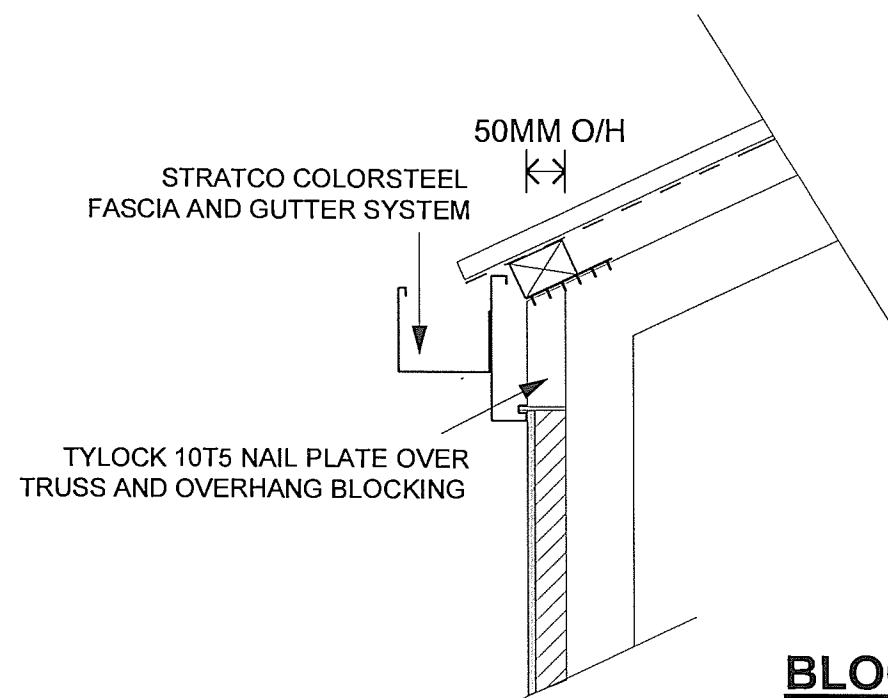
SHEET
4
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ROOF TRUSS design, layout plan and
Producer Statement - Design from the
manufacturer is to be submitted to the office
of the Certifier before the first site inspection



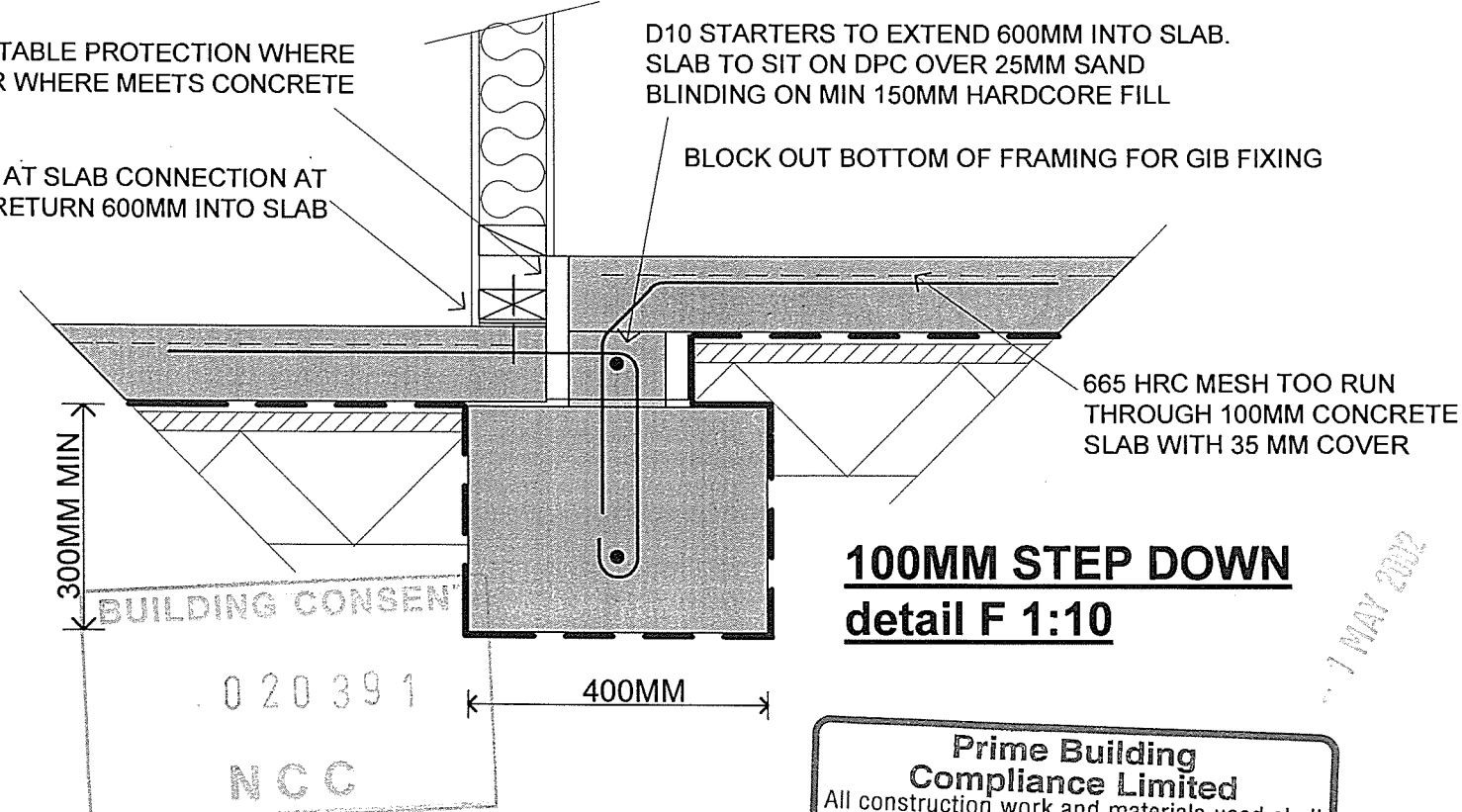
CROSS SECTION A-A 1:50



**BLOCKING TO TRUSS END
detail E 1:10**

PROVIDE SUITABLE PROTECTION WHERE
TIMBER WHERE MEETS CONCRETE

D10 STARTERS AT SLAB CONNECTION AT
600MM MAX CRS TO RETURN 600MM INTO SLAB



**100MM STEP DOWN
detail F 1:10**

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BUILDING CODE APPROVED DOCUMENTS AND
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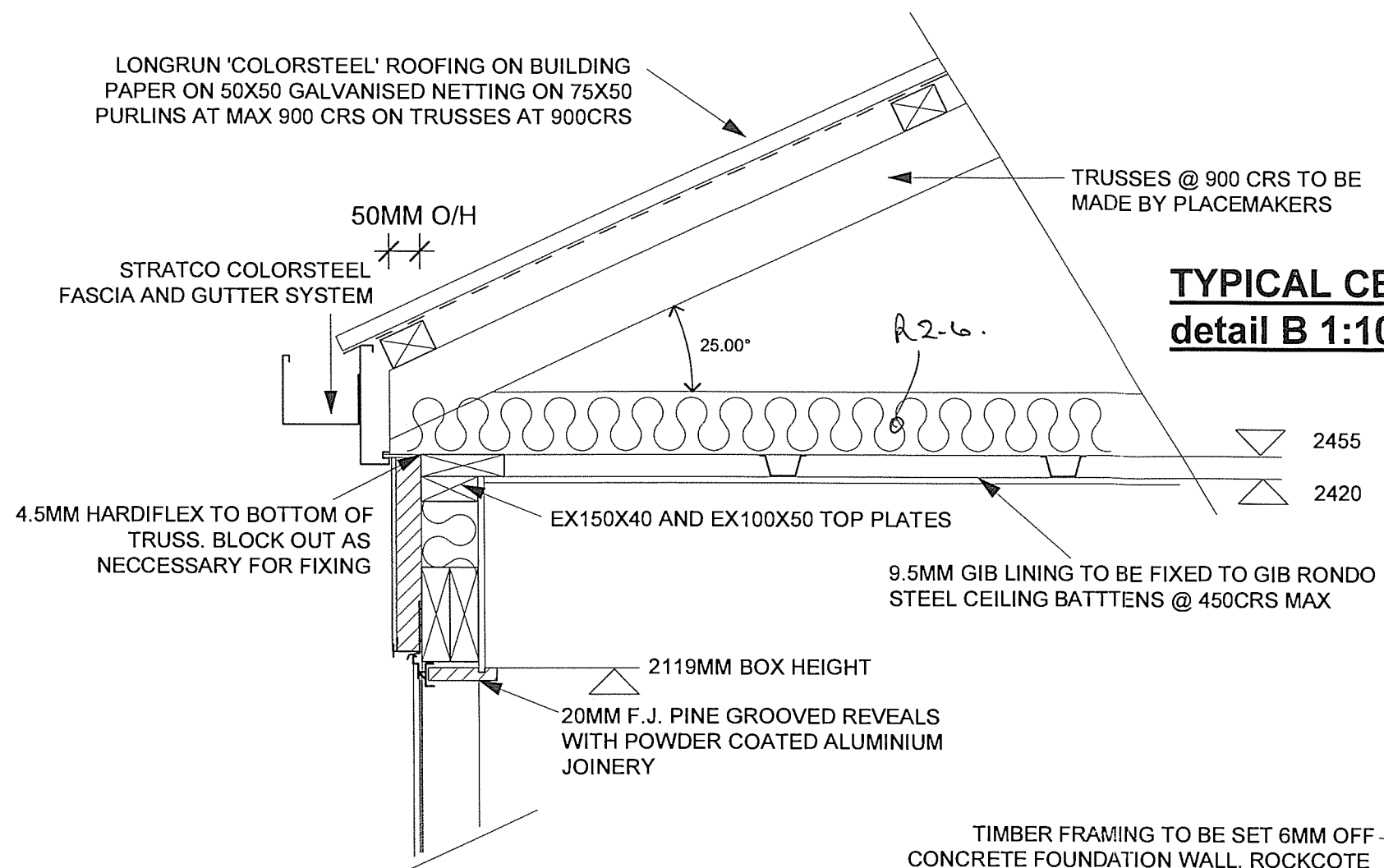
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5
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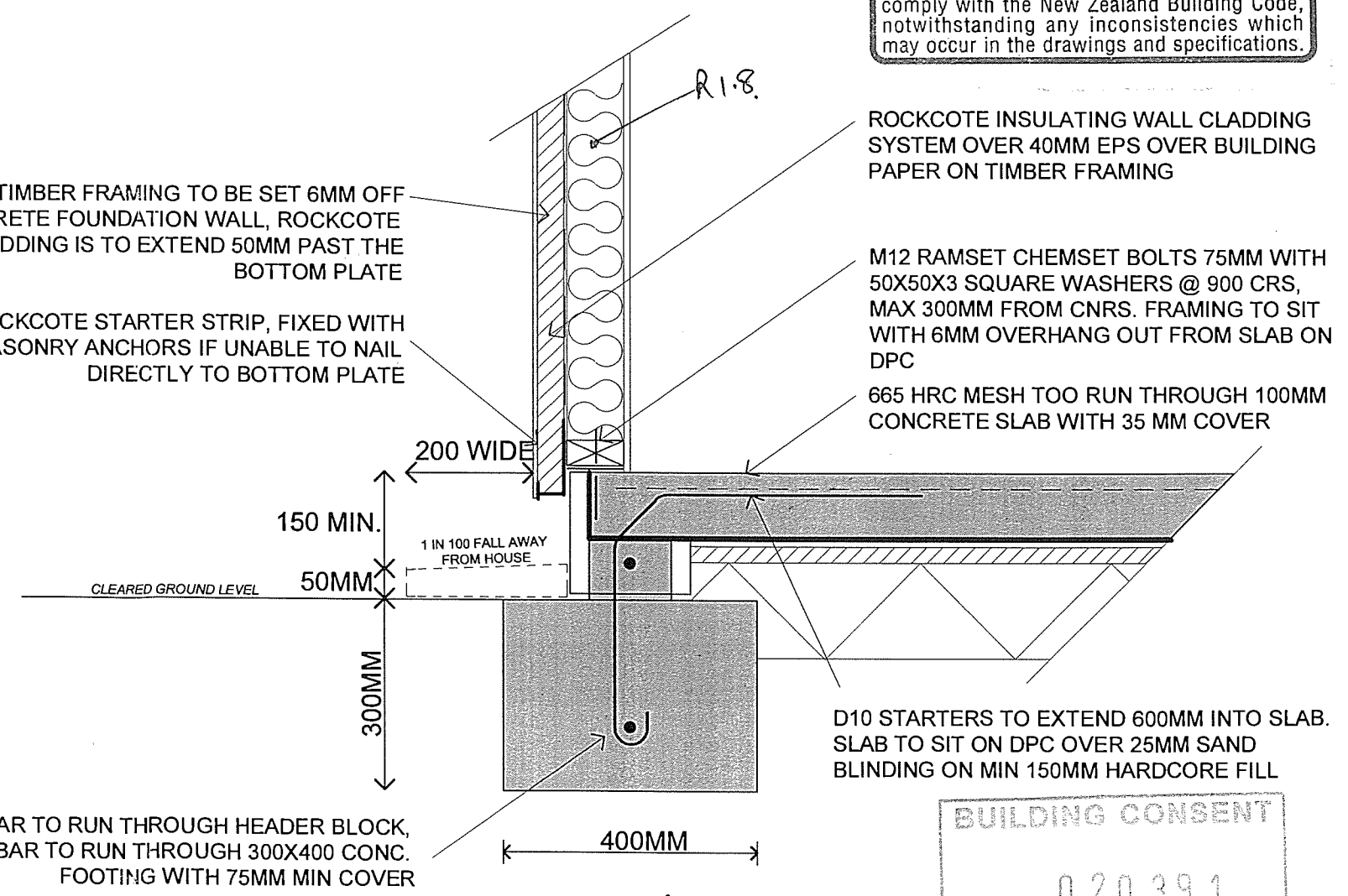
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TYPICAL CEILING
detail B 1:10

TIMBER FRAMING TO BE SET 6MM OFF CONCRETE FOUNDATION WALL, ROCKCOTE CLADDING IS TO EXTEND 50MM PAST THE BOTTOM PLATE

ROCKCOTE STARTER STRIP, FIXED WITH MASONRY ANCHORS IF UNABLE TO NAIL DIRECTLY TO BOTTOM PLATE



TYPICAL FOUNDATION
detail A 1:10

NOTE: PVC MOISTURE BREAK FLASHING TO BE USED IF ROCKCOTE TO CONTINUE TO GROUND

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**PARAPET END
detail C 1:10**

PURLINS WITH BLOCKING REFER TO
DETAIL D

2 X EX100X50 TO BE BLOCKED OUT
FROM FRAMING AT 800MM CRS IN
SIMILAIR MANNER TO PURLINS

EX 100X50 PACKERS TO BE CUT AND FIXED
ACROSS PURLINS, EX 100X50 TO RUN
PERPINDICULAR TO PURLINS AND TO BE
BLOCKED OUT TO FORM PARAPET ENDS

DPC WHEREVER TIMBER MEETS
UNPROTECTED CONCRETE

CONCRETE MOWING STRIP TO
EXTEND 200MM FROM BUILDING,
REPEAT STRIP AROUND FENCE

CLEARED GROUND LEVEL 75MM

1 IN 100 FALL AWAY
FROM HOUSE

300MM DEEP

90

25°

*full flashing
under parapet.*

ROCKCOTE TO HAVE 15° DEGREE FALL TOWARDS
ROOF

PLASTER TO END 50MM OFF TOP OF FLASHING.
GALVANISED METAL FLASHING TO EXTEND
OVER AT LEAST 2 RIDGES, REFER TO
ROCKCOTE STANDARD DETAILS IN ROCKCOTE
TECHNICAL AND INSTALATION MANUAL

190 O/A

*8mm edge
protected in
all locations.*

**TYPICAL GABLE END
detail D 1:10**

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DATE
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1:10

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WORK. CONTRACTOR TO REPORT ANY
DISCREPANCY.

SHEET
7
OF 8

NOTES:

Longrun colorsteel roofing (G27) on Gib antiblaze greencap self supporting roof underlay on danband strapping on 75x40 purlins @ 900 crs on trusses to manufacturers specifications @ 900mm crs. Install roof plane bracing as per NZS3604 (1999).

Line ceilings with 9.5mm Gib on ex75X40 ceiling battens @ 450mm crs and 150X40, 200X40 top plate packers. (or Rondo steel ceiling battens @ 400mm crs with 150 & 200X40 timber top plate packers, allow 10mm gap between battens at joiners. Where a ceiling diaphragm is required use 35mm steel battens with perimeter channel attached to side of top plate packers, battens to be directly fixed to roof framing through both flanges with 35mmX8g Wafer head screws 'for diaphragms only'- See Gib bracing systems requirements). Use 75X50 dwangs between bottom chords to coves and any low ceilings where shown in plans. Insulate ceiling with R2.5 Fibreglass Batts.

90X35 Kiln dried Laser Frame or equiv. with studs @ 600mm crs. Install dwangs @ 800mm crs. Insulate exterior walls with R1.8 Fibreglass Batts.

4.5mm Hardiflex soffit lining on ex 100X50 bearers and ribbon plates. Install Stratco colorsteel fascias & 'D' gutters or equiv. with Marley uPVC 65 dia. downpipes.

Aluminium windows and doors, powder coated. Glazing to doors, sidelights and bathrooms greater than 0.5m sq to be Grade A safety glass. All glazing to comply with NZS 4223.

Line interior with 9.5mm Gib. Use Hardies villaboard or Aqualine Gib in bathrooms and service areas where recommended by manufacturer, installed to manufacturers instructions.

The Rockcote Insulating Wall Cladding System consists of expanded polystyrene (EPS) or extruded polystyrene insulation boards fixed to the building construction, which are then coated with a polymer-modified cement-based plaster rendering system. All details and techniques can be found in the Rockcote installation manual.

100mm concrete slab reinforced with 655 mesh, on Gib Dampguard vapour barrier on 25mm sand blinding on 150mm min basecourse hardfill. Footings to be min. 300mm deep into solid bearing. Install DPC between all concrete and timber.

All topsoil to be removed under concrete slabs and replaced with hardfill compacted at 150mm layers.

See specification for bracing schedule.

Manufacturers to provide a design certificate for trusses to local territorial authority prior to installation.

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1 MAY 2002

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HOMES

CLIENT
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PROJECT
LOT 5, LYNWOOD ESTATE

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DATE
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SCALE
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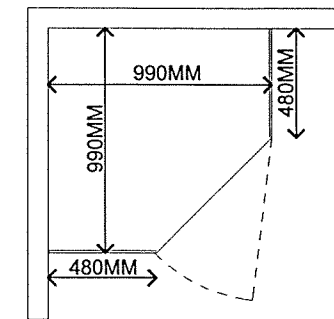
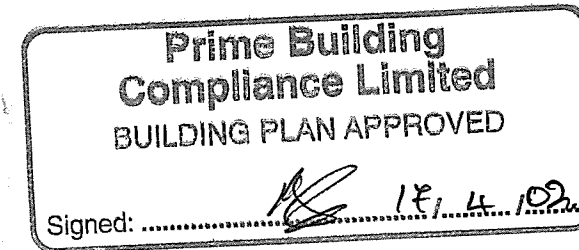
WHERE RAFTERS MEET HOUSE FIX TO 100X50
LEDGER NAILED THROUGH TO EVERY STUD

ALL PERGOLA TIMBER H3, ALL POSTS H3, ALL
TIMBER TO BE STAINED

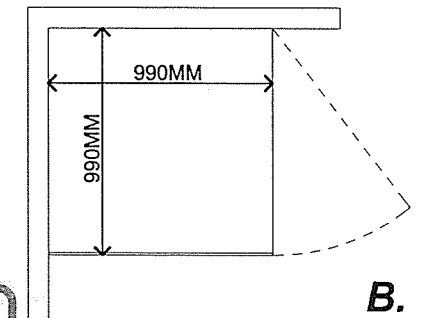
SET UP POST HEIGHT FOR PATIO

150X50 RAFTERS FIXED TO 200X50 BEAM
FIXED TO 2X100X100 POST USING 2X12MM
DIA GALV. COACH BOLTS

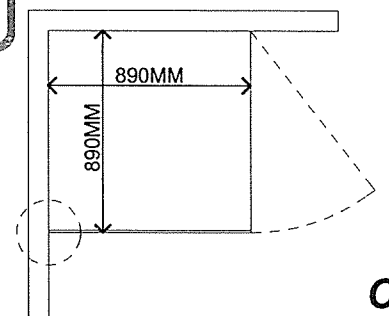
BEAM TO 300SQ. X 300 DEEP FOOTING
USING B134 BOWMAC BRACKET. SETUP
HEIGHT TO CONCRETE PATIO



A.



B.

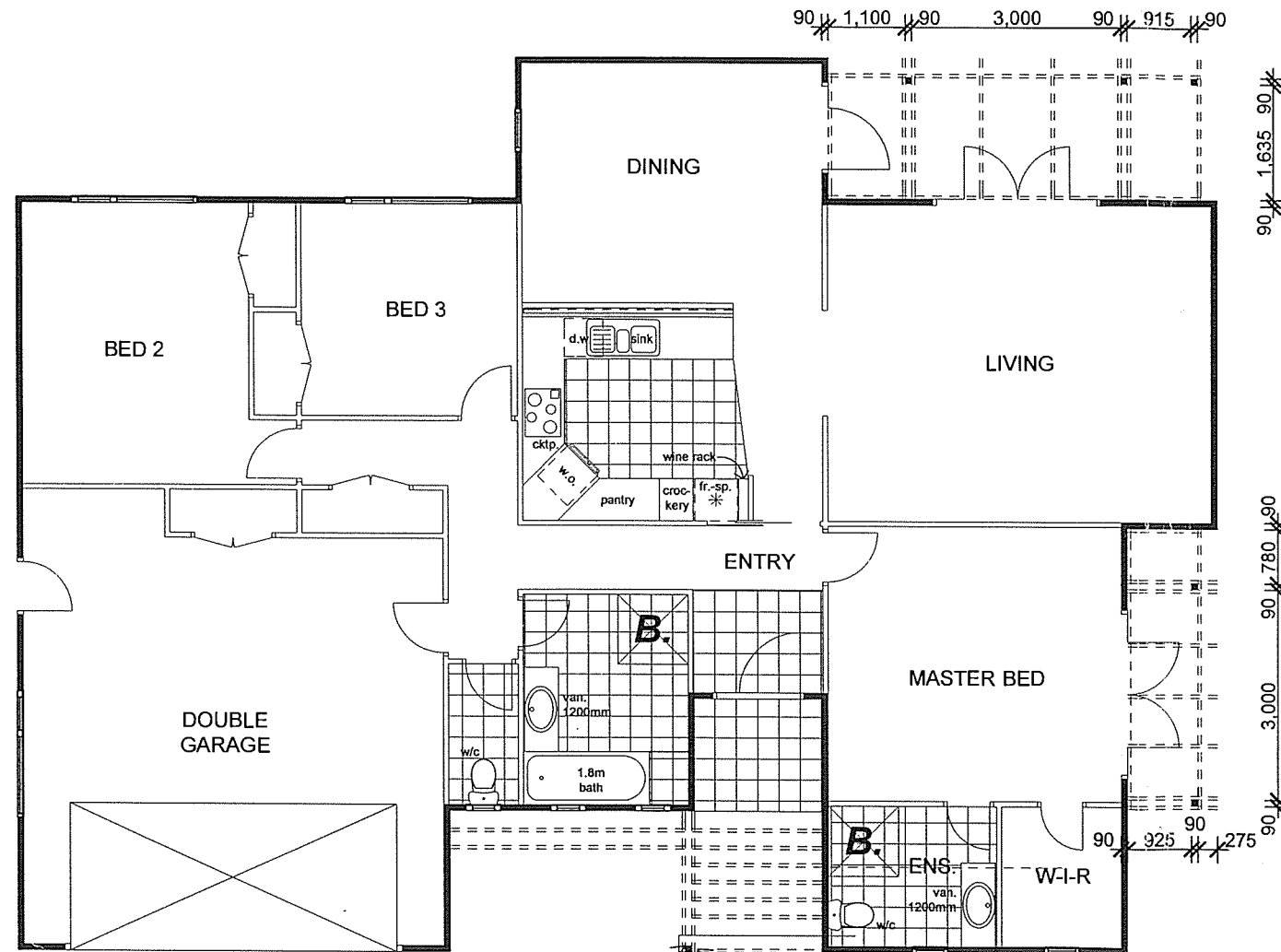


C.

Prime Building
Compliance Limited
All construction work and materials used shall
comply with the New Zealand Building Code,
notwithstanding any inconsistencies which
may occur in the drawings and specifications.

150X50 RAFTERS FIXED TO 200X50 BEAM
FIXED TO 2X100X100 POST USING 2X12MM
DIA GALV. COACH BOLTS

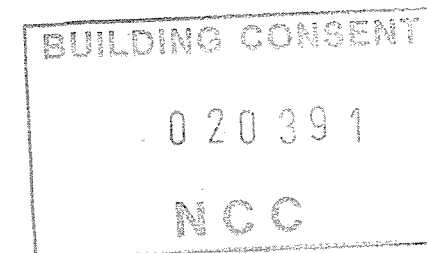
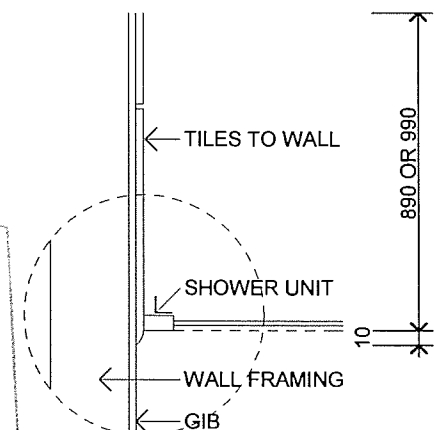
BEAM TO 300SQ. X 300 DEEP FOOTING
USING B134 BOWMAC BRACKET. SETUP
HEIGHT TO CONCRETE PATIO



200X50 RAFTERS FIXED TO BEAM FIXED
TO 100X100 POST USING 2X12MM DIA
GALV. COACH BOLTS, PACK POSTS OUT
TO SUIT GABLE PARAPET END

100X100 TIMBER POST TO BE
EMBEDDED INTO 400SQ X 400 DEEP
CONC. FOOTING

PLAN/WALL DETAIL



TILE AND PERGOLA LAYOUT 1:100

G.J. Gardner.
HOMES

CLIENT
B.+ P. HOSKING, 140039

PROJECT
LOT 5, LYNWOOD ESTATE

COPYRIGHT- THIS DRAWING REMAINS
THE PROPERTY OF G.J. GARDNER HOMES
AND IS PROVIDED FOR THE USE
DESCRIBED ABOVE AND MAY NOT BE
USED OR REPRODUCED IN WHOLE OR IN
PART WITHOUT WRITTEN PERMISSION

DATE
1/11/01
SCALE
1:100

ALL CONSTRUCTION TO COMPLY WITH LOCAL
AUTHORITY REQUIREMENTS, NZBIA NZ
BUILDING CODE/ APPROVED DOCUMENTS AND
MEANS OF COMPLIANCE, INC NZS 3604
ALL DIMENSIONS & LEVELS TO BE CHECKED BY
CONTRACTOR BEFORE COMMENCEMENT OF
WORK. CONTRACTOR TO REPORT ANY
DISCREPANCY.

C

130291

File Ref:

051

SITE FILE

When calling
please ask for:
Direct Dial Phone:
Email:

Bob Neiman
03 546 0270
bob.neiman@ncc.govt.nz

18 October 2002

AUTHORIZED	D	F	INITIALS	DATE
	1	1	CH	21/10/02
FILE:				

APPLICATION NO: 051

Independent Kerb & Concrete
P O Box 3073
Nelson 7031

APPROVAL TO INSTALL OR ALTER VEHICLE CROSSING

Address of Property: 11 Lynwood Tce.

Proposed work: Install new vehicle crossing to property

CONDITIONS:

- (a) Kerb cut down must not exceed 6 metres in length.
- (b) Concrete footpath behind cut down shall be removed and strengthened.
- (c) Concrete crossover shall be taken back to the property boundary.
- (d) Only an approved vehicle crossing installer selected for the accompanying list dated 28 August 2002 shall be engaged to carry out the above work.
- (e) A copy of this approval shall be given to the approved contractor of your choice for pricing and for his information of requirements.
- (f) Applicant to pay the approved installer all costs associated with the work and any special conditions as above.



R A Neiman
Investigator/Contract Supervisor

Enc: ~~List of Approved Installers dated 28 Oct 2002~~

File Ref:

When calling
please ask for:
Direct Dial Phone:
Email:

130251
043
SITE FILE

Bob Neiman
03 546 0270

bob.neiman@ncc.govt.nz

20 September 2002

AUTHORIZED	D	F	INITIALS	DATE
		1		
FILE:				

APPLICATION NO: 043

Market Developments / G J Gardner Homes
199 Queen St
Richmond 7002

APPROVAL TO INSTALL VEHICLE CROSSING

Address of Property: 11 Lynwood Tce.

Proposed work: Install new vehicle crossing to property

CONDITIONS:

- (a) Kerb cut down must not exceed 6 metres in length.
- (b) Concrete footpath behind cut down shall be removed and strengthened.
- (c) Concrete crossover shall be taken back to the property boundary.
- (d) Only an approved vehicle crossing installer selected for the accompanying list dated 28 August 2002 shall be engaged to carry out the above work.
- (e) A copy of this approval shall be given to the approved contractor of your choice for pricing and for his information of requirements.
- (f) Applicant to pay the approved installer all costs associated with the work and any special conditions as above.



R A Neiman
Investigator/Contract Supervisor

Enc: List of Approved Installers dated 28 August 2002.

File:

130291

SITE FILE

When calling
please ask for:
Direct Dial Phone:
Email:

Bob Neiman
546 0270
bob.neiman@ncc.govt.nz

12 September 2002

AUTHORIZED	D	F	INITIALS	DATE
	/	/	ct	12/9/02
FILE:				

Mr B.E. & Mrs P.K. Hosking
11 Lynwood Tce.
Nelson 7001

Dear Mr & Mrs Hosking:

VEHICLE ENTRANCE - 11 LYNWOOD TCE.

It has been bought to our notice that there is to be a new vehicle crossing installed to the property you own at 11 Lynwood Tce.

To date we have not received an application for this crossing, if one has been submitted and crossed in the mail would you please disregard this letter, if not would you please complete the enclosed form and return it together with the \$22.50 application fee.

Only approved contractors are permitted to carry out work on the Council's streets, this includes altering or installing new vehicle crossings. On receipt of an application and fee we will advise what is required together with a list of approved vehicle crossing installers that you can use to carry out this work.

Should you wish to discuss this further please phone Bob Neiman on 546 0270.

Yours faithfully



Bob Neiman
Investigator/Contracts Supervisor

DATE: -----

CONDITION No: 2

STREET ADDRESS:

LEGAL DESCRIPTION:

PROPERTY OWNER
or SUBDIVIDER:

SCHEME PLAN No:

NCC PLAN No:

AUTHORITY:

REASON FOR CONDITION:
(Abbreviated)

CONDITION:

This site has had uncertified filling placed on it. The plans accompanying all applications for Building Consents shall be signed by a Chartered Professional Engineer, stating that the proposed excavations, foundations and drainage measures are satisfactory.

Amended 14.07.05 (Building Permits to Building Consents & Registered Engineer to Chartered Professional Engineer).

DATE: 26-Nov-01 CONDITION No: 1010

STREET ADDRESS: 177 Waimea Road, 5,7,9,11,13 Market Rd

DIAGRAM: No

LEGAL DESCRIPTION All Lots LT 303220

PROPERTY OWNER
or SUBDIVIDER: Market Developments Ltd

SCHEME PLAN No: RC 005179

NCC PLAN No: 36/1154

AUTHORITY: James Hopkins Infrastructural Assets

REASON FOR CONDITION:
(Abbreviated) Vehicle crossings not formed at the time of subdivision.

CONDITION:

Building consent can only be issued once a vehicle crossing has been approved in accordance with Nelson City Council Engineering standards 1993 and Nelson Resource Management Plan.

Date Entered: 27-Nov-01

DATE: 10-Apr-02 CONDITION No: 1029

STREET ADDRESS: Market Road/Lynwood Avenue

DIAGRAM: Yes

LEGAL DESCRIPTION Lots 1, 2, 38 - 40 DP 303220; 3-6, 27, 29 – 37 & 44 DP303491; 14 – 18 LT 319965

PROPERTY OWNER
or SUBDIVIDER: Market Developments Ltd (Stages 1, 2 & 4)

SCHEME PLAN No: RM 005179

NCC PLAN No:

AUTHORITY:

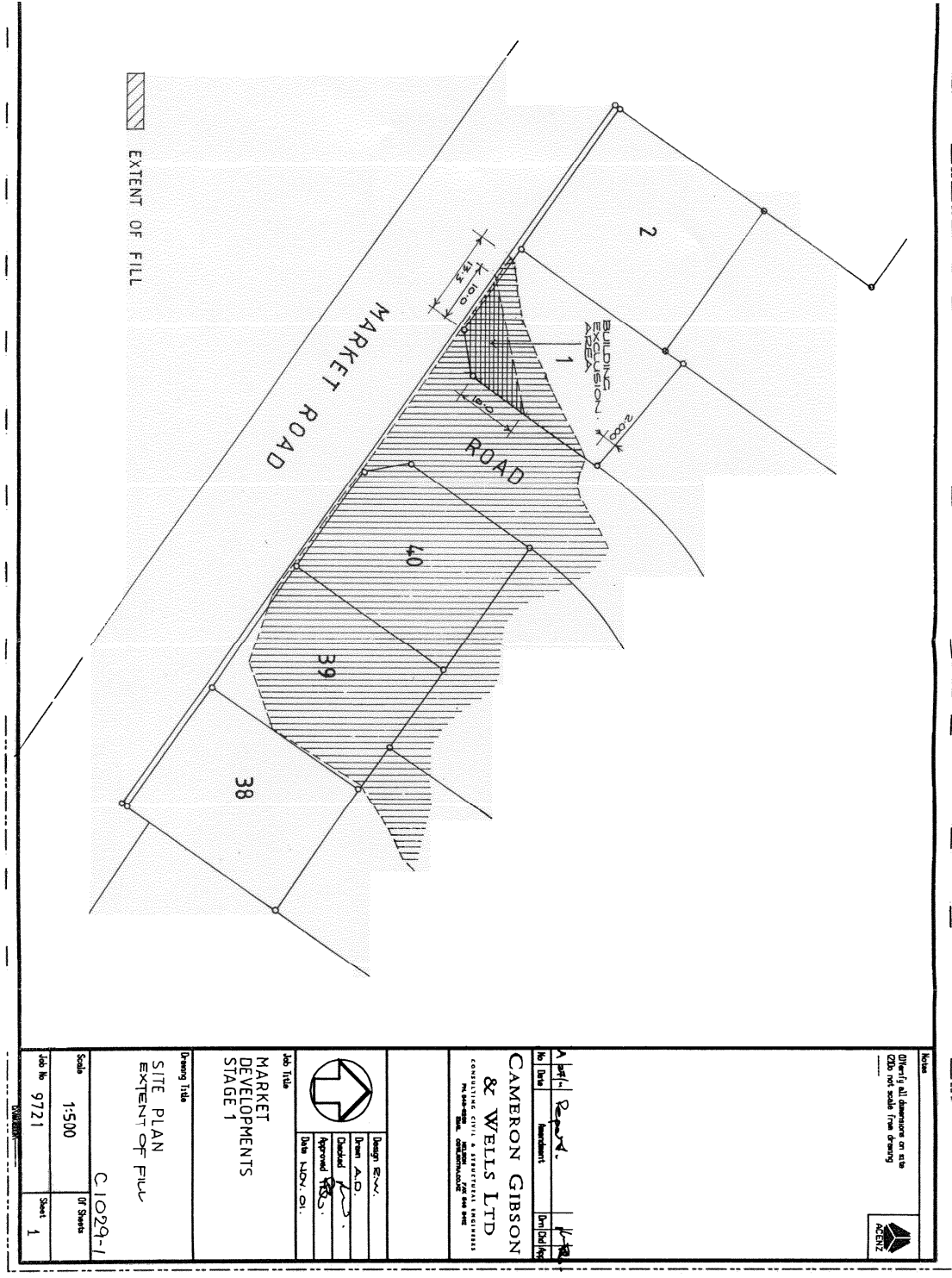
REASON FOR CONDITION:
(Abbreviated) Subdivision - Amended 23rd May 2003 & 28th January 2004

CONDITION:

- (i) With the exception of Lots 1 and 2 DP 303220 and Lots 4 and 44 DP 303491, which contain building exclusion areas, all of the lots have been certified by Golder Associates (NZ) Ltd as suitable for residential buildings. The building exclusion area, involving uncertified filling, on Lot 1 is shown on Cameron Gibson & Wells drawing 9721 – Sheet 1 dated November 2001 and for Lots 2, 4, and 44 the building exclusion areas, involving an excavated face, are shown on Golder Associates plan 01645640/3210 - Fig 1 dated February 2002 and as amended on 16 April 2002.
- (ii) Foundations shall penetrate topsoil, subsoil and loose fill to bear in competent natural ground or fill certified by Cameron Gibson & Wells as meeting the requirements of NZS 4431:1989 - *Code of practice for Earth Fill for Residential Development*. As the subdivision involves substantial cuts and fills areas of loose fill may be present on any lot.
- (iii) Foundation excavations for buildings meeting NZS 3604:1999 – *Timber framed buildings* shall penetrate into ground of good bearing capacity by a minimum of 200 mm. The excavations shall be inspected and approved by a chartered professional engineer experienced in foundations who shall also confirm in writing to the Inspections Supervisor, Planning & Consents, Nelson City Council the suitability of the ground conditions for the building. Foundations

for buildings not meeting NZS 3604 shall be specifically designed and constructed under the supervision of a chartered professional engineer experienced in foundations.

- (iv) No cuts and fills in excess of 1.2 m in height or depth shall be undertaken without the prior approval of an experienced engineering geologist or a chartered professional engineer practising in geotechnical engineering. The latter shall also design and supervise the construction of any retaining walls that may be necessary.
- (v) All structural fills shall be placed in accordance with NZS 4431:1989 – *Code of Practice for Earth Fill for Residential Development*. Non-structural fills shall be placed in a competent manner with track rolling in thin incremental layers and shall include adequate stripping, benching and underdrainage of the underlying materials.
- (vi) All structures not founded in competent ground may be subject to differential settlement and allowance shall be made for potential settlement of all structures, including across cut/fill interfaces present on Lots 14, 27, 29, 30, 31 33, 34, 35, 37 and 39. The approximate positions of the interfaces are shown on Cameron Gibson & Wells drawings 9721 – Sheet 1 dated November 2001, Sheet 2 dated February 2002, Sheet 3 dated December 2002 and Sheet 4 dated January 2003.
- (vii) Subsurface drains exist, as shown on Nelson City Council Plans 36/1154, 36/1187, and 36/1239 on Lots 1, 14, 15, 21, 24, 26, 30, 33, 36 and 40. Foundations and lot development generally shall not affect the integrity of the drains.
- (viii) Certified fill exists on all or part of Lots 1, 9 – 11, 13 – 18, 20 – 26, 30, 34 – 37, 39 – 40 and all excavations, including for foundations and drainage, shall be undertaken in a manner that minimises water infiltration into the fill.
- (ix) Stormwater from roofs and paved areas, discharges from drainage and retaining walls and overflows from standing water such as swimming pools and ponds shall be conveyed in a controlled manner to the Nelson City Council Stormwater System.
- (x) Each lot, and in particular the steep slopes within Lots 2, 4, 13 and 44, shall be maintained in a vegetation cover that inhibits erosion and enhances slope stability.



12

13

44

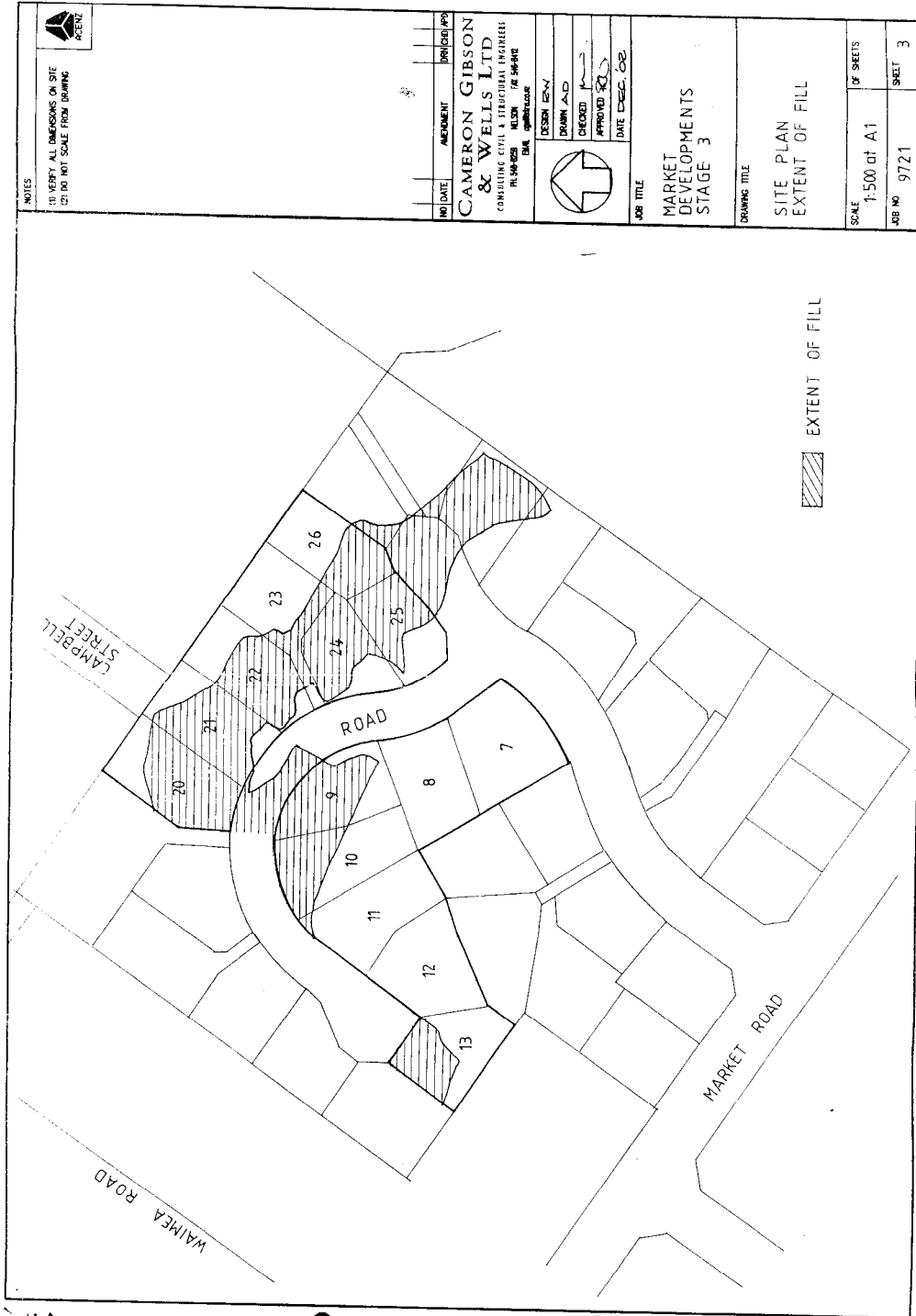
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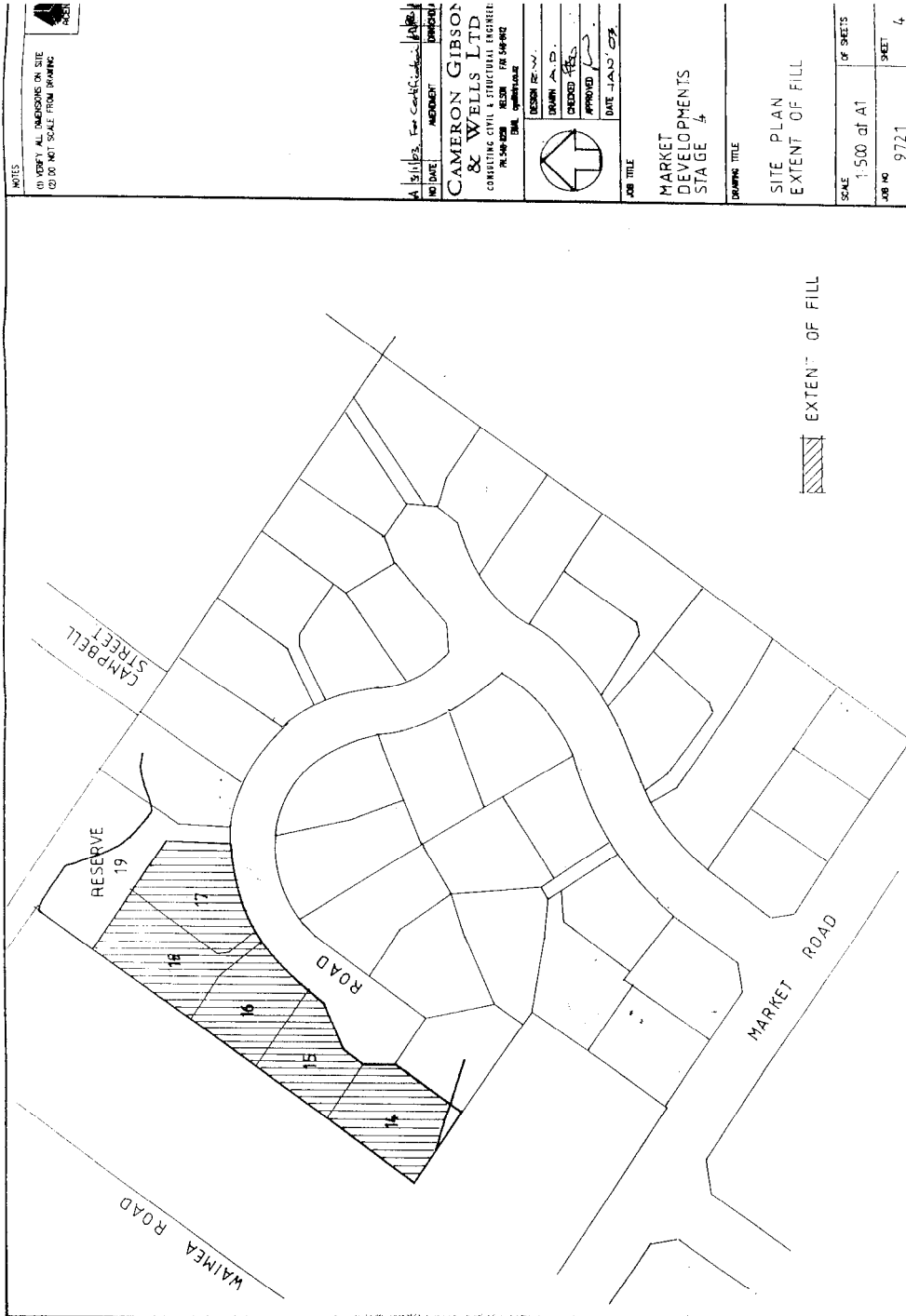
2

1:250 *efy* 16/4/02.

١١٢٢







Date Entered: 10-Apr-02

Date	12 January 2006	Condition No.	C1401
Street address	All properties contained in the Nelson Urban Area within Airshed A or B1 (consult Fig A2.1, A2.2A and A2.2B in Air Plan)		
Diagram	No		
Legal Description	Various		
Property Owner or Subdivider	Various		
Scheme Plan No.	N/A		
NCC Plan	Air Quality Plan		
Authority	Principal Adviser - City Development (see David Jackson)		
Reason for condition	(Abbreviated) This property may contain a domestic spaceheater or open fire that falls under the rules set out in the Council's Air Quality Plan. Under rule AQr.24.1, within the Urban Area the use of open fires was allowed to continue up until 1 January 2008 (except that any 'Jetmaster' type open fire (including Warmington brands) may continue until 1 January 2013). Discharge to air from open fires is prohibited after that date. In addition, within Airsheds A and B1 (as defined in the Air Plan) the use of existing enclosed burners has been phased out. The use of all enclosed burners that do not comply with the emissions standards set out by the Air Quality Plan has been progressively banned between 2010 and 2012, starting with the oldest burners. This was necessary to meet the targets imposed by the National Environmental Standards for air quality. Updated 7 th June 2012.		

Condition

The Air Quality Plan states that in the Nelson Urban Area within these airsheds (Airshed A and B1 – consult Fig A2.1, A2.2A and A2.2B in Air Plan) no discharge from domestic-type fires may occur after the cessation date below.

Type of Heating Appliance	Disused By
Open fires (Jetmaster type open fires)	1/01/2008 (1/01/2013)
Burners installed before 1996	1/01/2010
Burners installed between 1996 and 1999	1/01/2012

Date entered: 12th January 2006

Golder Associates (NZ) Ltd

Level 1, 79 Cambridge Terrace
PO Box 2281, Christchurch
New Zealand
Telephone: +64 3 377 5696
Fax: +64 3 377 9944
Email: christchurch@golder.co.nz
www.golder.com



Rm 005179

19 February 2002

01645640/3210

Chief Executive Officer
Nelson City Council
PO Box 645
Nelson

Stage 2 Lynwood Tce
companion lots 3-6
27, 29-37, 44
(28 is walkway)

Dear Sir

GEOTECHNICAL ASSESSMENT COMPLETION REPORT:

MARKET PROPERTIES LTD.

SUBDIVISION OF LOTS 1 – 27 AND 29 – 40, 177 WAIMEA ROAD, NELSON

This geotechnical completion report summarises “as built” conditions encountered during subdivision construction, defines the area suitable for the erection of a dwelling and the geotechnical conditions which should be applied to any development on the site as required by Section 106 of the Resource Management Act 1991. Reference should be made to Figure 1 attached which illustrates the “as built” subdivision layout. Reference should also be made to Golder report 00645640/269¹ which summarises geotechnical investigations prior to commencement of construction.

1. Non Engineered Fill:

Non engineered fill occurs locally on several lots of the subdivision. This aspect is addressed by Cameron Gibson Wells Ltd. in its certification of earthfill, and is outside of the scope of this geotechnical construction report.

2. Stability of cuts:

In the vicinity of Lots 31, 32 and 33, development has involved excavation of an existing ridge line to a depth of approximately 4 m. At design stage, the stability of the proposed cut slope was investigated by means of test pitting and numerical analyses using assumed strength parameters based on a cut slope design profile given in Figure 2 (attached). The “as built” differs from the design cut slope profile in that there has been additional excavation (approaching 1.2 m depth) carried out in the upper part of the cut slope (Figures 2 and 3). We confirm that this additional excavation does not alter our original conclusions in connection with the overall stability of this slope¹.

3. Cuts and fills:

Cuts and fills in excess of 1.2 m height carried out by lot owners as part of the development of individual allotments should be the subject of specific investigation and design by a Registered Engineer.



4. Stormwater:

All stormwater from earthfill subsoil drains, roofs, paved areas and retaining wall drains should be piped into Nelson City Council's reticulation system. Under no circumstances should discharge to ground be carried out.

5. Foundations:

No restrictions on the types of foundation systems are considered necessary. However, this does not remove the need for site specific foundation investigation, design and inspection at the Building Consent stage as specified in the New Zealand Building Code (1991) (with amendments) and or in New Zealand Standard NZS 3604: "Code of Practice for Light Timber Frame Building Not Requiring Specific Design", which ever is appropriate.

6. Building Exclusion Areas:

Lots 2, 4, 13 and 44 are sited adjacent to an excavated slope which rises from the existing bowling club to the subdivision level. The height of cut varies depending on proximity to the subdivision boundary, up to a maximum of approximately 7.5 m. Adjoining Lots 2 and 4, the lower (2 m) of the excavated slope is retained by means of a timber pole wall, above which the excavation is in unsupported cut. Adjoining Lots 13 and 44, the excavated slope is entirely in unsupported cut. Other than minor ravelling of surficial material at the top of the cut slope on Lot 4, the unsupported cut generally exhibits adequate stability characteristics. The establishment of a vegetative cover would be an appropriate method of minimising ongoing ravelling of exposed surfaces at this location.

Due to the height of the excavated slope described above, all structures should be set back an appropriate distance from the top edge of the excavated slope. As the top edge of the excavated slope does not necessarily coincide with the common boundary separating Lots 2, 4, 12, 13 and 44 with the bowling club, the set back has been established by means of a projected angle of repose from the toe of the unsupported cut slope. Figure 1 attached illustrates the building exclusion area that has been established.

Other than Lots 2, 4, 13 and 44, no restrictions on the siting of building envelopes are considered necessary, save considerations of boundary setbacks to conform to local authority planning requirements and proximity to cut slopes on Lots 31, 32, and 33.

Yours sincerely,
GOLDER ASSOCIATES (NZ) LTD



Guy Grocott
Regional Manager

References:

1. Golder Associates (New Zealand) Ltd., 2001: Geotechnical assessment of Market Road Developments subdivision, Stages I-III, Nelson. Unpublished consultants report No. 269 prepared for Cameron Gibson Wells Ltd., dated 23 April 2001.

Attachments :

Figure 1: Subdivision plan

Figure 2: Section A-A' Comparison between original, design and "as built"

Figure 3: View of Cut Slope; Lots 31, 32, 33

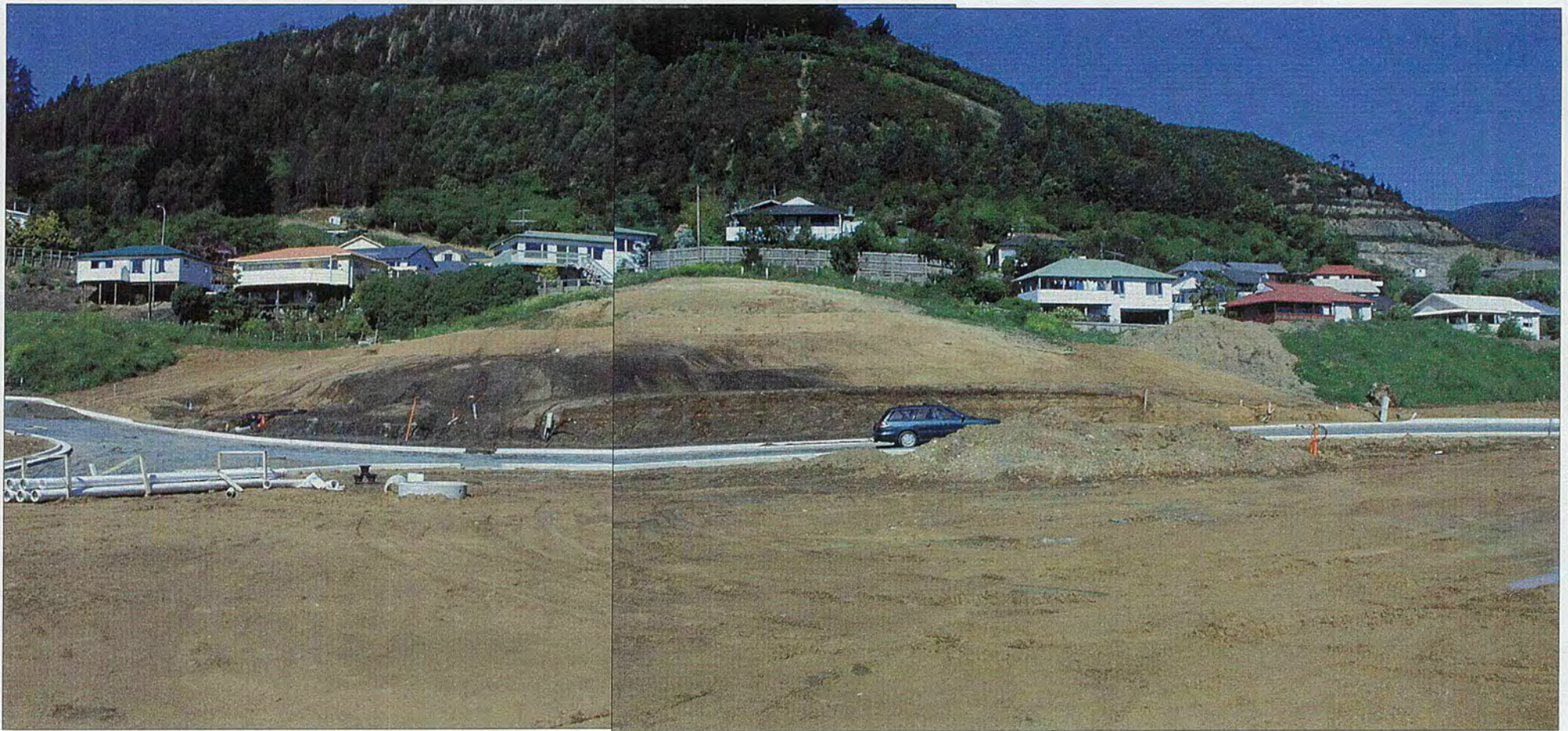
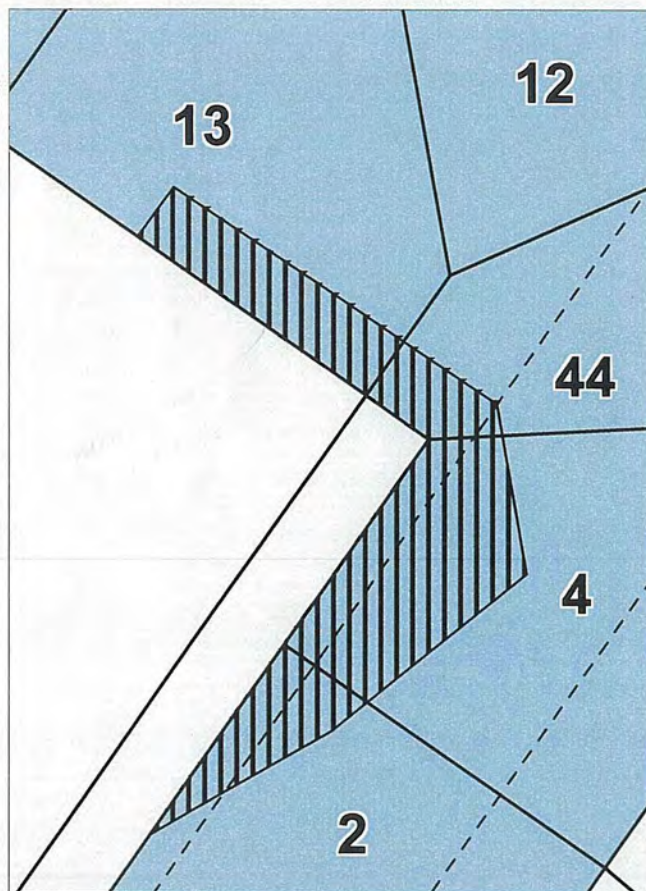


Figure 3 View of Cut Slope; Lots 31, 32, 33



Enlargement of Building Exclusion Zone
Scale 1:500



A A'

Cross Section (refer Fig 2)



Lots referred to in Golder letter

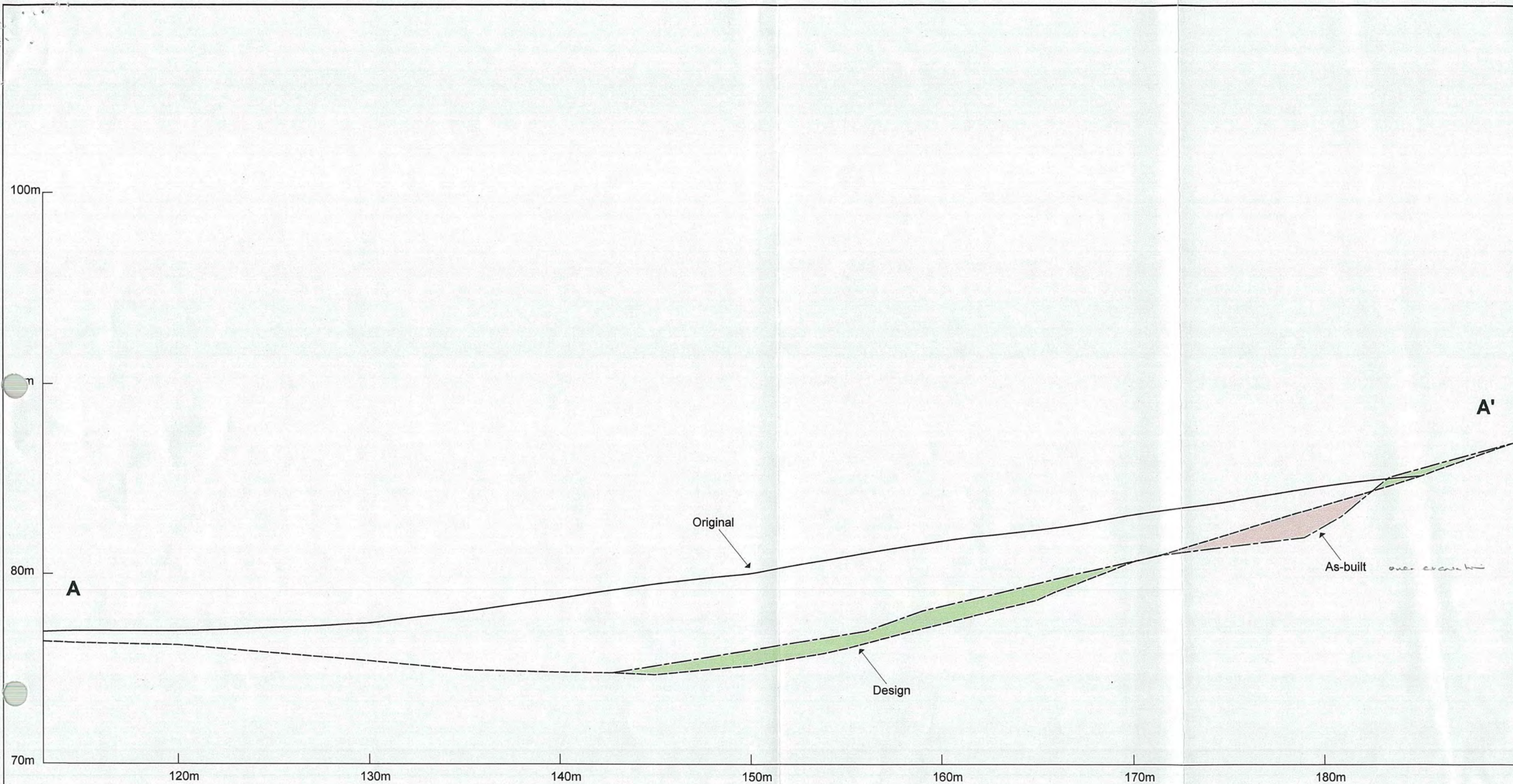




Building Exclusion Zone

15 0 15 30
metres



CLIENT Cameron Gibson Wells Ltd		PROJECT MARKET DEVELOPMENTS	
DRAWN MCD	DATE February 2002	TITLE SUBDIVISION PLAN	
CHECKED	DATE		
SCALE 1:1250	FILE Plan.wor	A3	PROJECT No 01645640
			REPORT No 01645640/3210
			FIGURE No 1



 Under Excavation
 Over Excavation

2 0 2 4
 metres



CLIENT Cameron Gibson Wells Ltd		PROJECT MARKET DEVELOPMENTS		
DRAWN MCD	DATE December 2001	TITLE SECTION A - A'		
CHECKED	DATE	COMPARISON BETWEEN ORIGINAL, DESIGN AND AS-BUILT		
SCALE 1:200	FILE SectionAA.wor	A3	PROJECT No 01645640	REPORT No FIGURE No 2

RM005179

From Rod Gibson
Cameron Gibson & Wells Ltd.

RECEIVED

Cameron Gibson & Wells Ltd

26 Nile Street
Nelson

- 8 AUG 2006

NCC

Site:
Location:
Ground Surface RL:
Depth from Ground RL to Excavated Surface:

Date:
Job No:
Operated By:
Logged By:
Checked By:

Test No.
Sheet of 3

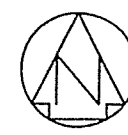
mm DRIVEN	25	26	27	28	29	No. of Blows	32	33	34	35	36	cont.
	1	2	3	4	5	6	7	8	9	10	11	12
50												2402
100	8	1	2	9	10	1	21	4	3			6
150												
200	4		1	7	4	3	2	2	2			7
250												
300	4		1	4	3	1	2	2	1			
350												
400	4			2	2	2	2	3	1			
450												
500	3			4	1	2	3	3	2			
550		1										
600	3	2		1	2	3	4	3	2			
650												
700	3	1	1	2	2	2	2	2	1			
750												
800	4	1	2	2	2	2	2	4	5			
850												
900	4	1	3	5	6	5	4	8	5			
950												
1000	5	2	3	4	5	5	5	7	4			
1050												
1100	7	1	2	5	5	7	7	6	8			
1150												
1200	6	2	3	5	4	8	9	7	6			
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1300	6	4	3	6	4	10	8		7			
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1500		5	4	5	5							
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1600		6	5	4	5							
1650												
1700		3	6	8	9							
1750												
1800		3	5	17	13							
1850				12	8							
1900		4	6									
1950												
2000		3	6									

Test Method Used: NZS 4402:1988 Test 6.5.2 Dynamic Cone Penetrometer

to soft clay.
3
6
6

soft black
6
8


to clay



Cameron Gibson & Wells Ltd.

RECEIVED
- 8 AUG 2006
NCC

(1) Verify all dimensions on site.
(2) Do not scale from drawing.

No	Amendment	Date
Designed by: NELSON OFFICE Nelson Office 16 Para Para Road PO Box 417 Nelson Ph 03 548 4422 Fax 03 548 4427 e-mail: info@nelsonoffice.co.nz		
 STRICK & SMITH LIMITED		RESOURCE MANAGEMENT
SURVEYING PLANNING ENGINEERING		
Manager Infrastructure Assets (NCO)		
Date:		
Design: Drawn: D. Canton Checked: Approved: Date: 23/01/02		
Job Title: Market Developments Stages I - III		
Drawing Title: Isocontour Plan (Revised Boundaries)		
Scale:	1:500 at A1	DWG6693T
Job No:	6693	Sheet 1 of 1

CAMERON GIBSON & WELLS LTD

CONSULTING CIVIL & STRUCTURAL ENGINEERS

9721-7

13 November 2001

Rm 005179

Stage 1

DP 303220

Market Developments Ltd
C/- Staig & Smith Ltd
P O Box 913
NELSON

Attention: Alex Grigg

Report on Subdivision Earthworks
Market Developments Ltd RM005179
Lots 1, 2, 38, 39 & 40
Ref: Staig & Smith Ltd Plan No. 303220

1.0 Introduction

This report details the scope of work undertaken by Cameron Gibson & Wells Ltd for certification of earthworks on the above subdivision. Subdivision works are being completed in stages and this report therefore relates to the first five Lots only namely Lots 1, 2, 38, 39 and 40 which have frontage to Market Road. Our work has been undertaken at the request of Staig & Smith Ltd on behalf of Market Developments Ltd. Cameron Gibson & Wells Ltd was engaged to supervise earth fill operations on the subdivision and carry out all necessary site testing so as to be able to provide fill certification and site suitability reports for this residential development as per NZS4431:1999. Subdivision design was carried out by Staig & Smith Ltd as shown on their plans numbered 6693 and specification for the bulk earthworks contract were prepared by Cameron Gibson & Wells Ltd titled "Market Developments Subdivision – Market Road Nelson, Bulk Earthworks". As-built plans of earthworks operations have been provided by Staig & Smith Ltd.

2.0 Site Description

The subdivision is situated on land formerly known as the Cattle Market Reserve. This land has access from Waimea Road and frontage also from Market Road. Resource consent has been obtained for development for some 40 sections but these works will be completed in stages.

CAMERON GIBSON & WELLS LTD

Development works include bulk earthworks affecting a number of sites, excavation and reworking of an area of old fill at the bottom of the site, provision of main stormwater drains connected to the Council mains in Waimea Road and all other associated roading and services works.

3.0 Earthworks

Following completion of initial works to clear the site and prepare for earthworks bulk earthworking operations were commenced on site in February 2001. Earthworks operations were carried out by Graham Marshall – Contractor using a 20 tonne excavator, trucks, a heavy grid roller towed by bulldozer and a ride-on wedge foot vibrating roller. A water cart was used on site to increase soil moisture content as required. Fill was placed by truck, spread in thin layers by excavator, watered as necessary, benched into firm natural ground and progressively compacted. Earthworks operations were supervised under the direction of Mr RWL Wells of Cameron Gibson & Wells Ltd. Control testing on site was carried out by the use of a Humbolt Nuclear Densometer supplemented by Scala Penetrometer tests. During site stripping operations some areas of seepage were encountered and these have been intercepted by means of subsoil drains connected to the piped stormwater system. The location of subsoil drains has been recorded and will be shown on Staig & Smith Ltd as-built drawings of the works.

Subsequent to completion of earthworks testing, a small amount of untested, therefore uncertified fill was placed on a portion of Lot 1, to harmonise levels between the kerb line and natural ground contours. The extent of this area is shown on the attached plan of earthworks. No building should be permitted on this area without specific foundation investigation and design by a Registered Engineer.

4.0 Control Testing

Prior to commencement of earthworks, representative samples of fill material were tested to obtain acceptance criteria in the form of maximum dry density and optimum moisture content parameters. Laboratory control testing was undertaken by Opus Laboratories and these results are attached as appendix i. During construction, regular fill testing by Nuclear Densometer was carried out by Cameron Gibson & Wells Ltd and the summary of corrected test results is given in section five. On completion of the works, Penetrometer testing of each Lot was carried out, and these test results are attached as appendix ii.

5.0 Acceptance Criteria

Fill material used in this section of the work is described as highly weathered grading to slightly weathered siltstone of the Braemar formation. Material was predominantly light brown in colour

CAMERON GIBSON & WELLS LTD

although a small area of dark grey material was also encountered. Proctor testing of fill samples gave the following results.

	Test 1	Test 2
Maximum dry density	1.32t/m ³	1.34t/m ³
Optimum moisture content	33%	33%

Based on these results the following acceptance criteria for compacted fill were established.

Density	All results > 1.25 t/m ³
Moisture	All results > 29% < 35%
Air voids	All results < 10%

6.0 Test Results

Date	Test No.	Density	% MDD	MC%	Air Voids %	Result
26/03/01	8	1410	112%	28.4	7.7	Pass
	9	1391	111%	31.7	4.3	Pass
04/04/01	10	1240	99%	35.0	10.7	Fail
	11	1177	94%	39.3	11.7	Fail
	12	1282	103%	35.9	6.3	Reworked Pass
06/04/01	13	1352	108%	31.7	7.0	Pass
09/04/01	14	1349	108%	30.3	9.1	Pass
	15	1310	105%	31.4	10.2	Pass
11/04/01	16	1339	107%	31.7	7.9	Pass
	17	1390	111%	30.7	5.7	Pass
19/04/01	20	1366	109%	31.5	6.3	Pass
	21	1391	111%	29.9	6.8	Pass
30/04/01	22	1347	108%	33.6	4.8	Pass
	23	1432	114%	26.2	9.4	Pass

7.0 Penetrometer Testing

On completion of earthworks and other site preparation work, four Penetrometer tests were carried out per Lot in accordance with the provisions of NZS3604, 1999, - 'Timber Framed Buildings'

NZS3604:1999 is being called upon as an acceptable solution for meeting the requirements of the New Zealand Building Code as outlined in the BIA approved documents, Section B1 – Structure.

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A summary of test results is attached to this report.

NZS3604:1999 requires that foundations are supported on good ground with ultimate soil bearing capacity of greater than 300kPa. Three Penetrometer blows per 75mm depth of penetration is required to a depth equal to the width of the widest footing below the underside of the proposed footings. This generally corresponds to a depth of 600mm to 800mm below the ground surface. Verification of ground conditions beyond this level is required for a further 1.2 metres.

Results of Penetrometer testing were variable around the five Lots tested. Good ground as defined in NZS3604 may not be found in some cases until approximately one metre depth. In this event, the excavation between good ground and the underside of the foundation may need to be filled with low strength concrete (10MPa) or the foundations may be piled to derive support from the good ground.

8.0 Conclusions and recommendations

Our attached plan no. 9721 sheet 1 shows the extent of filled ground affecting sections in this stage of the subdivision and covered by testing detailed in this report. This plan shows Lots 1, 39 and 40 to contain filled ground and the extent of the fill. As a result of our site observations and control test results recorded above we are satisfied that this fill has been placed in compliance with the requirements of NZS4431:1999. We would recommend the following special limitations to be observed and we draw this to the attention of builders or designers contemplating the erection of a dwelling.

- (i) Foundation excavations for buildings to be sited on these Lots shall be extended to penetrate into ground of good bearing capacity by a minimum 200mm. Such excavations shall be inspected and approved by a Registered Engineer.
- (ii) No building should be permitted on the area of uncertified filling shown on Lot 1, without specific foundation investigation and design by a Registered Engineer.

9.0 Applicability

This report has been prepared solely for the benefit of your as our client with respect to the particular brief given to us and data or opinions contained in it may not be used in other contexts or for any other purpose without our prior review and agreement.

Test results included in this report indicate conditions on the date of testing and may not represent conditions at other locations or at other dates.

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During excavation and construction, the site should be examined by an engineer competent to judge whether the exposed subsoils are compatible with the inferred conditions on which the report has been based. We would be pleased to provide this service to you and believe your project would benefit from the continuity. However, it is important that we be contacted if there is any variation in subsoil conditions from those described in the report.



RWL Wells

CAMERON GIBSON & WELLS LTD

Reviewed by



R B Gibson

CAMERON GIBSON & WELLS LTD

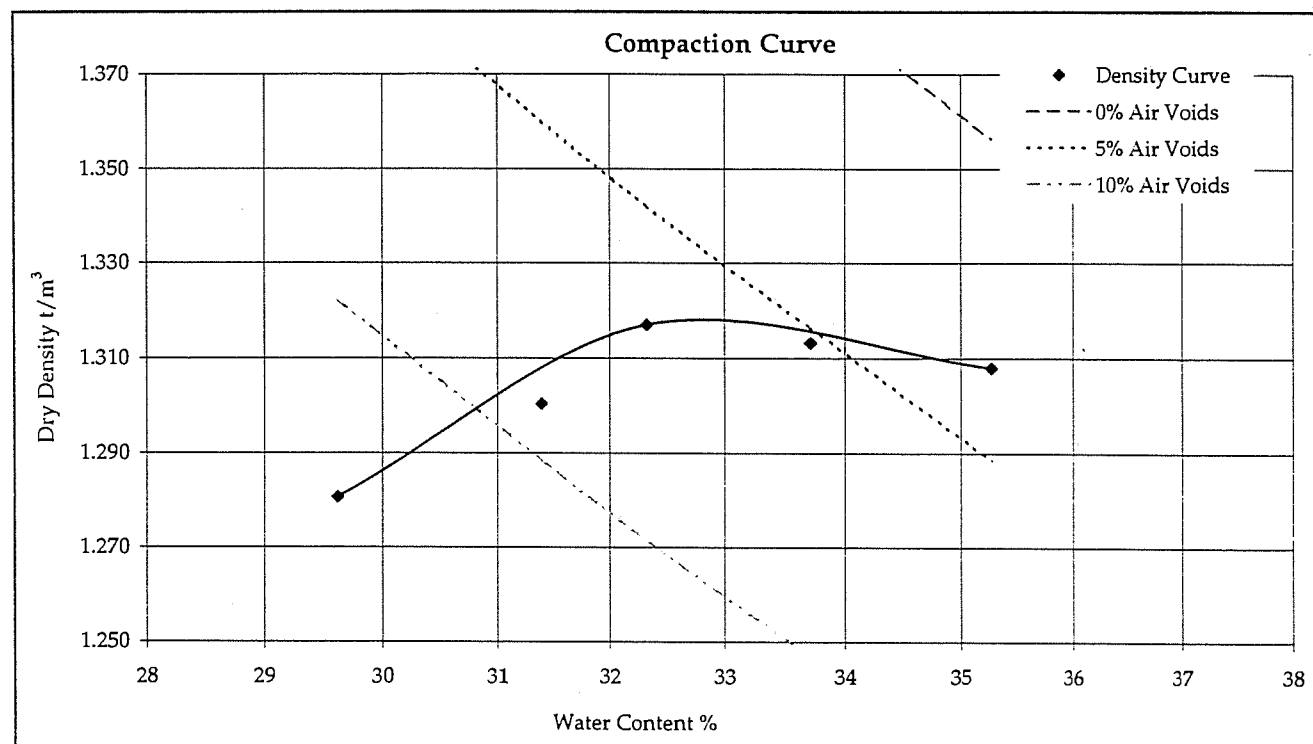
DRY DENSITY/WATER CONTENT RELATIONSHIP DYNAMIC COMPACTION

Project : Market Road Subdivision
Location : TP1
Client : R Wells
Contractor : Cameron Gibson & Wells
Sampled by : R Wells
Date sampled : 20-Feb-01
Sampling method : Unknown
Sample description: Light brown CLAYEY SILT
Sample condition : Natural
Date received : 20-Feb-01



Project No: CS081-98
Lab Ref No: 0106
Client Ref: NA

Sample ID	1	2	3	4	5		
Bulk density t/m ³							
Water content %	29.6	31.4	32.3	33.7	35.3		
Dry density t/m ³	1.28	1.30	1.32	1.31	1.31		
Sample condition	Damp	Damp	Damp	Damp	Damp		



Test Methods & Notes		Test Results	
Compaction	NZS 4402 : 1986, Test 4.1.1 (Standard)	Maximum dry density	1.32 t/m ³
Sampling method	Unknown	Solid density(assumed)*	2.60 t/m ³
Fraction tested	-19mm	Optimum water content	33 %
Sample history	Dried/Natural/Wet-up	Natural water content	26.1 %

Date tested : 28-Feb-01

Date reported : 1-Mar-01

IANZ Approved Signatory: *[Signature]*
M Hollows
Designation : Engineering Officer
Date : 1-Mar-01

* Not IANZ Endorsed
Sampling is not covered by IANZ Accreditation

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Tests indicated as not accredited are outside the scope of the laboratory's accreditation.

CSF 2026 (8/98)

Page 1 of 1

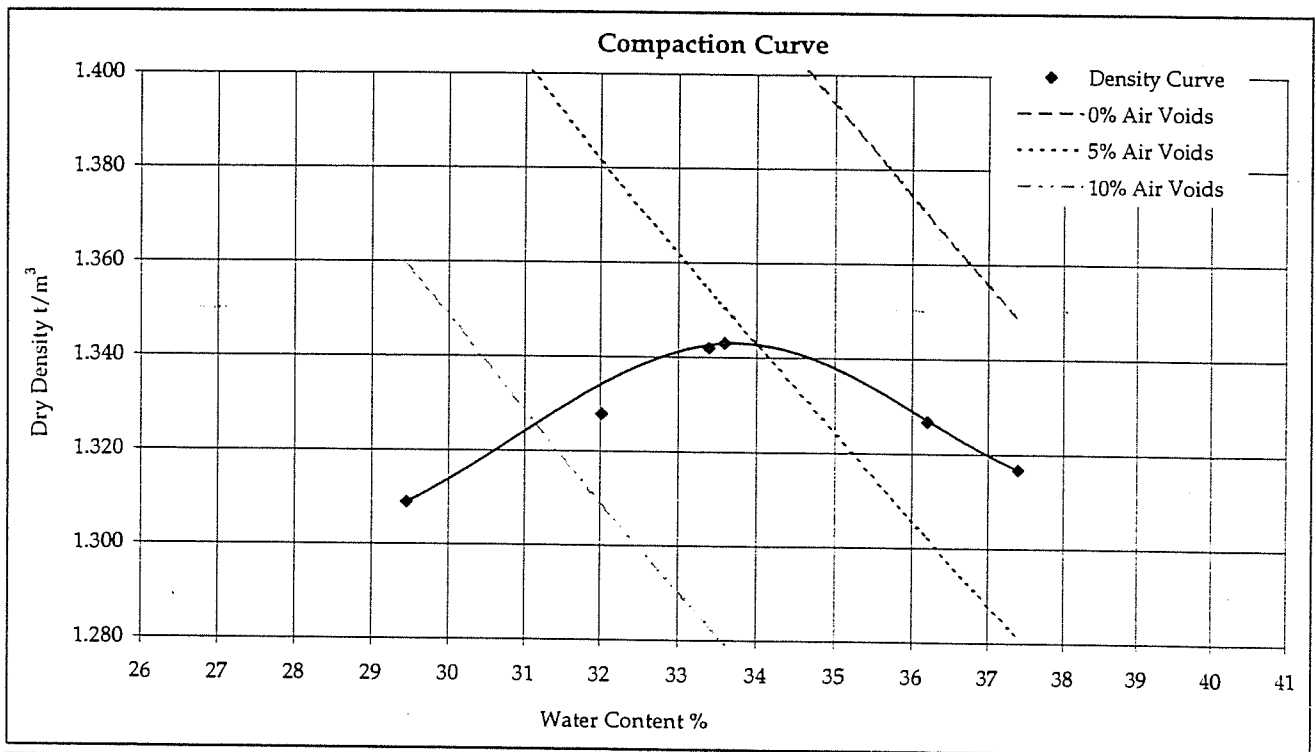
DRY DENSITY/WATER CONTENT RELATIONSHIP DYNAMIC COMPACTION

Project : Market Rd Subdivision
 Location : TP 2
 Client : R Wells
 Contractor : Cameron Gibson & Wells
 Sampled by : R Wells
 Date sampled : 27-Feb-01
 Sampling method : Unknown
 Sample description: Light brown CLAYEY SILT
 Sample condition : Natural
 Date received : 27-Feb-01



Project No: C9081-95
 Lab Ref No: 01037
 Client Ref: N/A

Sample ID	1	2	3	4	5	6	
Bulk density t/m ³							
Water content %	29.5	32.0	33.4	33.6	36.2	37.4	
Dry density t/m ³	1.31	1.33	1.34	1.34	1.33	1.32	
Sample condition	Damp	Damp	Damp	Damp	Damp	Damp	



Test Methods & Notes		Test Results	
Compaction	NZS 4402 : 1986, Test 4.1.1 (Standard)	Maximum dry density	1.34 t/m ³
Sampling method	Unknown	Solid density (measured)	2.72 t/m ³
Fraction tested	-19mm	Optimum water content	34 %
Sample history	Dried/Natural/Wet up	Natural water content	27.3 %

Date tested : 15-Mar-01
 Date reported : 17-Mar-01
 Signatory : *[Signature]*
 Designation : M Hollows
 Date : Engineering Officer
 17-Mar-01

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PENETROMETER TEST RESULTS

Subdivision: MARKET ROADDate: 9-11-01

Location: _____

Consultant: Cameron Gibson & Wells LtdLOT NUMBER: 1

BLOWS PER 100MM PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1m	4	5	5	3	<p>200mm TOPSOIL</p>
0.1 - 0.2m	3	3	3	3	
0.2 - 0.3m	3	4	2	4	
0.3 - 0.4m	3	4	3	7	
0.4 - 0.5m	4	2	3	5	
0.5 - 0.6m	3	3	3	7	
0.6 - 0.7m	3	3	4	5	
0.7 - 0.8m	4	3	3	5	
0.8 - 0.9m	3	5	6	7	
0.9 - 1.0m	5	5	7	7	
1.0 - 1.1m	5	6	6	6	
1.1 - 1.2m	6	5	7	6	
1.2 - 1.3m	7	9	10	6	
1.3 - 1.4m	7	8	9	5	
1.4 - 1.5m	6	8	9	8	
1.5 - 1.6m					
1.6 - 1.7m					
1.7 - 1.8m					
1.8 - 1.9m					
1.9 - 2.0m					
2.0 - 2.1m					
2.1 - 2.2m					
2.2 - 2.3m					
2.3 - 2.4m					
2.4 - 2.5m					

PENETROMETER TEST RESULTS

Subdivision: MARKET ROADDate: 9-11-01

Location: _____

Consultant: Cameron Gibson & Wells LtdLOT NUMBER: 2

BLOWS PER 100MM PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1m	3	3	4	4	<p>200mm TOPSOIL</p>
0.1 - 0.2m	0.5	3	5	3	
0.2 - 0.3m	0.5	0.5	3	3	
0.3 - 0.4m	1	0.5	3	3	
0.4 - 0.5m	3	1	2	3	
0.5 - 0.6m	3	1	3	3	
0.6 - 0.7m	4	2	3	2	
0.7 - 0.8m	6	3	3	2	
0.8 - 0.9m	3	3	4	3	
0.9 - 1.0m	3	4	4	4	
1.0 - 1.1m	4	4	3	4	
1.1 - 1.2m	4	4	4	4	
1.2 - 1.3m	5	4	5	7	
1.3 - 1.4m	5	7	7	7	
1.4 - 1.5m	4	12	6	8	
1.5 - 1.6m	5	10	6	7	
1.6 - 1.7m	5	9	6	9	
1.7 - 1.8m	7	10	6	9	
1.8 - 1.9m	9		6	7	
1.9 - 2.0m	9		6	8	
2.0 - 2.1m			8	9	
2.1 - 2.2m					
2.2 - 2.3m					
2.3 - 2.4m					
2.4 - 2.5m					

PENETROMETER TEST RESULTS

Subdivision: MARKET ROADDate: 9.11.01

Location: _____

Consultant: Cameron Gibson & Wells LtLOT NUMBER: 38

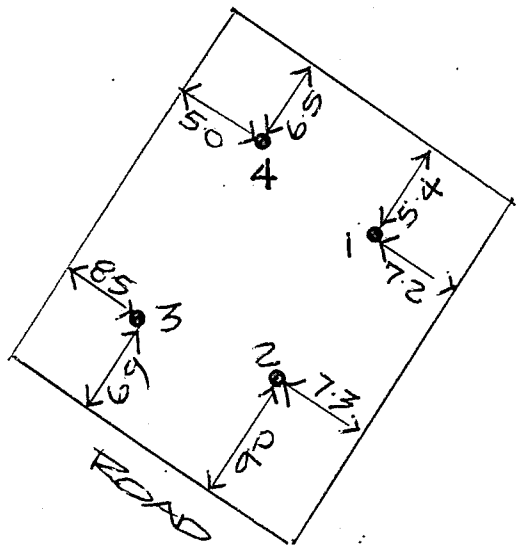
BLOWS PER 100MM PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1m	2	1	1	1	<p>200mm TOPSOIL</p>
0.1 - 0.2m	3	2	2	2	
0.2 - 0.3m	2	1	4	2	
0.3 - 0.4m	4	1	3	3	
0.4 - 0.5m	4	1	2	2	
0.5 - 0.6m	5	1	4	2	
0.6 - 0.7m	10	3	3	3	
0.7 - 0.8m	9	3	4	3	
0.8 - 0.9m	10	5	4	3	
0.9 - 1.0m	9	8	10	3	
1.0 - 1.1m	14	5	13	3	
1.1 - 1.2m	8	4	11	3	
1.2 - 1.3m	6	4	11	4	
1.3 - 1.4m	8	7	10	6	
1.4 - 1.5m	12	7	11	6	
1.5 - 1.6m			9	6	
1.6 - 1.7m			5	8	
1.7 - 1.8m			5	14	
1.8 - 1.9m			9	12	
1.9 - 2.0m			7	11	
2.0 - 2.1m			8	9	
2.1 - 2.2m				8	
2.2 - 2.3m				9	
2.3 - 2.4m					
2.4 - 2.5m					

PENETROMETER TEST RESULTS

Subdivision: MARKET ROAD.Date: 9-11-01

Location: _____

Consultant: Cameron Gibson & Wells LtdLOT NUMBER: 39

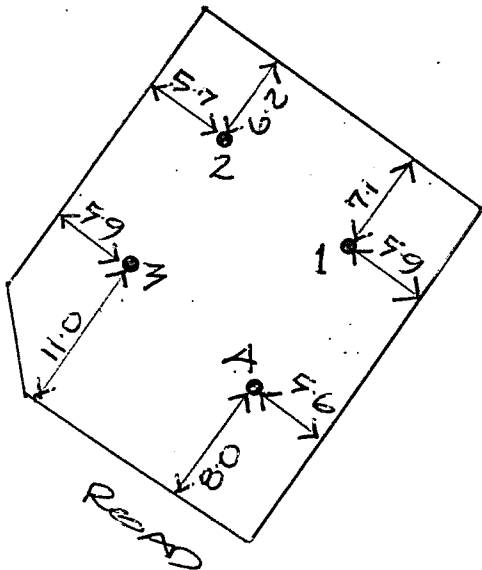
BLOWS PER 100MM PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1m	5	2	1	3	NO TOPSOIL 
0.1 - 0.2m	2	2	2	2	
0.2 - 0.3m	2	3	2	3	
0.3 - 0.4m	2	6	4	3	
0.4 - 0.5m	3	4	4	4	
0.5 - 0.6m	5	4	4	3	
0.6 - 0.7m	4	3	4	3	
0.7 - 0.8m	3	3	5	3	
0.8 - 0.9m	6	4	6	5	
0.9 - 1.0m	6	3	9	5	
1.0 - 1.1m	6	6	9	7	
1.1 - 1.2m	6	6	10	7	
1.2 - 1.3m	7	6	10	9	
1.3 - 1.4m	7	5	7	8	
1.4 - 1.5m	7	5		8	
1.5 - 1.6m		5			
1.6 - 1.7m		6			
1.7 - 1.8m		11			
1.8 - 1.9m		12			
1.9 - 2.0m					
2.0 - 2.1m					
2.1 - 2.2m					
2.2 - 2.3m					
2.3 - 2.4m					
2.4 - 2.5m					

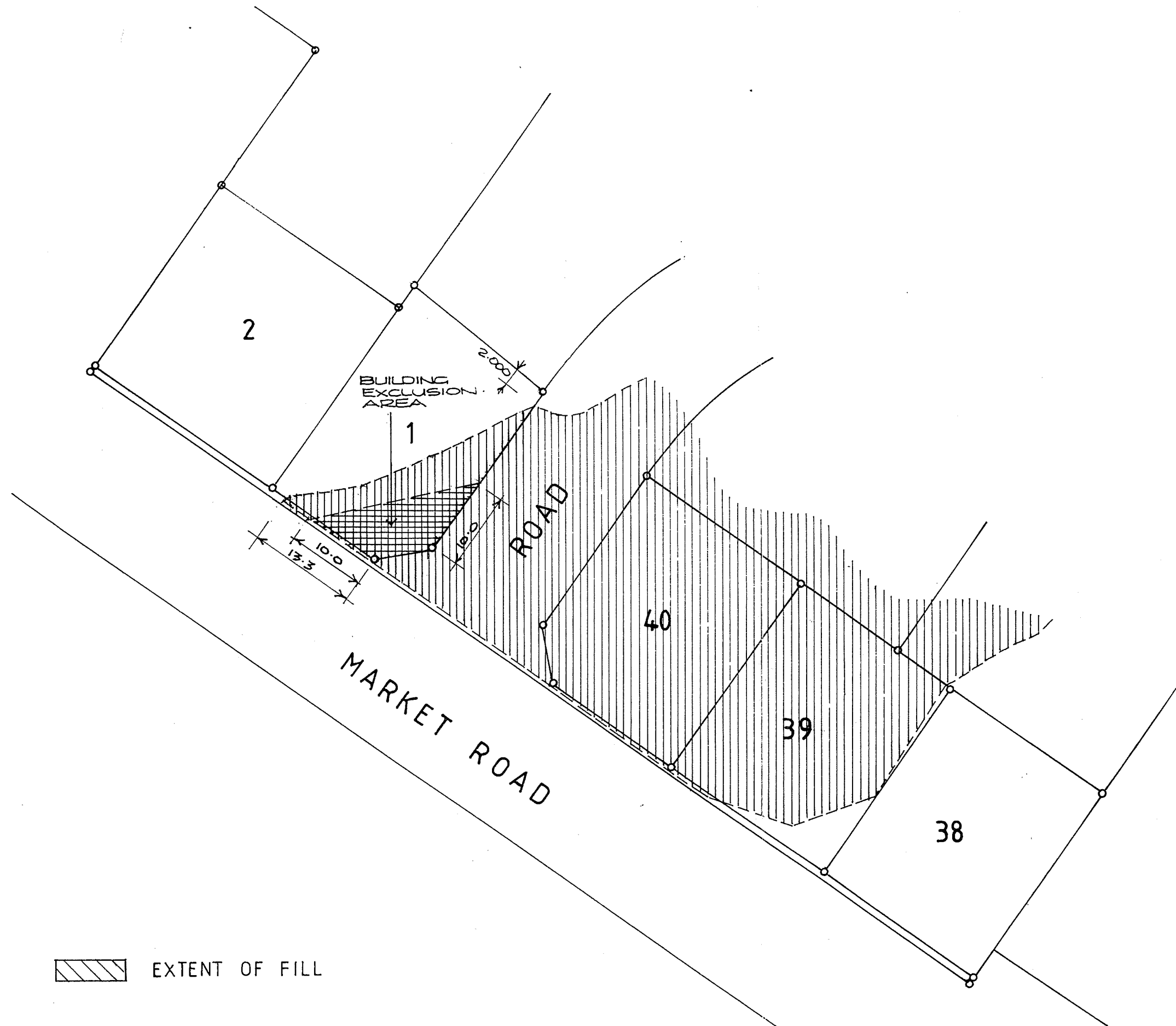
PENETROMETER TEST RESULTS

Subdivision: MARKET ROADDate: 9-11-01

Location: _____

Consultant: Cameron Gibson & Wells LtdLOT NUMBER: 40

BLOWS PER 100MM PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1m	3	1	2	2	<p>NO TOPSOIL.</p> 
0.1 - 0.2m	3	1	2	2	
0.2 - 0.3m	4	2	1	7	
0.3 - 0.4m	3	3	4	4	
0.4 - 0.5m	4	4	3	2	
0.5 - 0.6m	4	6	7	6	
0.6 - 0.7m	7	6	6	8	
0.7 - 0.8m	7	8	7	8	
0.8 - 0.9m	10	8	8	10	
0.9 - 1.0m	9	12	9	10	
1.0 - 1.1m	8	10	10	10	
1.1 - 1.2m	10	12	11	10	
1.2 - 1.3m	13	12	13	12	
1.3 - 1.4m	12				
1.4 - 1.5m					
1.5 - 1.6m					
1.6 - 1.7m					
1.7 - 1.8m					
1.8 - 1.9m					
1.9 - 2.0m					
2.0 - 2.1m					
2.1 - 2.2m					
2.2 - 2.3m					
2.3 - 2.4m					
2.4 - 2.5m					



Notes

(1) Verify all dimensions on site
(2) Do not scale from drawing



A 27/11/01 Report		H. K.	
No	Date	Amendment	Drn Chd App

CAMERON GIBSON & WELLS LTD
CONSULTING CIVIL & STRUCTURAL ENGINEERS
PH 048-8288 NELSON FAX 048 8412
EMAIL CGW@XTRA.CO.NZ



Design R.W.
Drawn A.D.
Checked [Signature]
Approved [Signature]
Date NOV. 01.

Job Title

MARKET DEVELOPMENTS
STAGE 1

Drawing Title

SITE PLAN
EXTENT OF FILL

Scale	1:500	Of Sheets
Job No	9721	Sheet 1



(1) Verify all dimensions on site.
(2) Do not scale from drawing.

No	Amendment	Date
----	-----------	------

Designed by:
NELSON OFFICE
Herald House
16 Para Para Road
PO Box 913 Nelson

Ph: 03 548 1422
Fax: 03 548 1427
e-mail: enquiries@nelsonoffice.co.nz

**STAIG & SMITH
LIMITED**
SURVEYING PLANNING ENGINEERING
RESOURCE MANAGEMENT

Manager: Infrastructural Assets (NCC)	Date:
---------------------------------------	-------

Design:
Drawn: D. Canton
Checked:
Approved:
Date: 11/10/01

Job Title:
**Market Developments
Stages I - III**

Drawing Title:
Isocontour Plan

Scale: 1:500 at A1	DWG6693S
Job No: 6693	Sheet 1 of 1

Key

—1.0—

Depth of Fill

—0.0—

Cut / Fill Boundary

—1.0—

Depth of Cut

Approx 1:1000

CAMERON GIBSON & WELLS LTD

CONSULTING CIVIL & STRUCTURAL ENGINEERS

9721-13

18 February 2002

Rm 005179

Stage 2

DP 303491

Market Developments Ltd

C/- Staig & Smith Ltd

P O Box 913

NELSON

Attention: Alex Grigg

Report on Subdivision Earthworks

Market Developments Ltd RM005179

Lots 3 – 6, 27, 29 – 37 and 44

Ref: Staig & Smith Ltd Plan No. 6693

1.0 Introduction

This report details the scope of work undertaken by Cameron Gibson & Wells Ltd for certification of earthworks on the above subdivision. Subdivision works have been completed in stages. We have previously reported on the first stage of earthworks, affecting Lots 1, 2 and 38 – 40, refer to Cameron Gibson & Wells Ltd report ref: 9721-7, dated 13 November 2001. This report relates to earthworks affecting Stage II of the subdivision, being Lots 3 – 6, 27, 29 – 37 and 44. Our work has been undertaken at the request of Staig & Smith Ltd on behalf of Market Developments Ltd. Cameron Gibson & Wells Ltd was engaged to supervise earth fill operations on the subdivision and carry out all necessary site testing so as to be able to provide fill certification for this residential development as per NZS4431:1999. Golder Associates have reported separately on site stability and site suitability for building in their report ref: 01645640/3210 dated 19 February 2002. Subdivision design was carried out by Staig & Smith Ltd as shown on their plans numbered 6693 and specification for the bulk earthworks contract were prepared by Cameron Gibson & Wells Ltd titled "Market Developments Subdivision – Market Road Nelson, Bulk Earthworks". As-built plans of earthworks operations have been provided by Staig & Smith Ltd.

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2.0 Site Description

The subdivision is situated on land formerly known as the Cattle Market Reserve. This land has access from Waimea Road and frontage also from Market Road. Resource consent has been obtained for development for some 40 sections but these works will be completed in stages.

Development works include bulk earthworks affecting a number of sites, excavation and reworking of an area of old fill at the bottom of the site, provision of main stormwater drains connected to the Council mains in Waimea Road and all other associated roading and services works.

3.0 Earthworks

Following completion of initial works to clear the site and prepare for earthworks bulk earthworking operations were commenced on site in February 2001. Earthworks operations were carried out by Graham Marshall – Contractor using a 20 tonne excavator, trucks, a heavy grid roller towed by bulldozer and a ride-on wedge foot vibrating roller. A water cart was used on site to increase soil moisture content as required. Fill was placed by truck, spread in thin layers by excavator, watered as necessary, benched into firm natural ground and progressively compacted. Earthworks operations were supervised under the direction of Mr RWL Wells of Cameron Gibson & Wells Ltd. Control testing on site was carried out by the use of a Humbolt Nuclear Densometer supplemented by Scala Penetrometer tests. During site stripping operations some areas of seepage were encountered and these have been intercepted by means of subsoil drains connected to the piped stormwater system. The location of subsoil drains has been recorded and will be shown on Staig & Smith Ltd as-built drawings of the works.

Bulk earthworks operations on site were completed in July/August 2001..

4.0 Control Testing

Prior to commencement of earthworks, representative samples of fill material were tested to obtain acceptance criteria in the form of maximum dry density and optimum moisture content parameters. Laboratory control testing was undertaken by Opus Laboratories and these results are attached as appendix i. During construction, regular fill testing by Nuclear Densometer was carried out by Cameron Gibson & Wells Ltd and the summary of corrected test results is given in

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section six. On completion of the works, Penetrometer testing of each Lot was carried out, and these test results are attached as appendix ii.

5.0 Acceptance Criteria

Two types of fill ~~for use~~ material for use in earthworks operations were identified on the site, as described below.

Type 1 fill material around most of the site is described as highly weathered grading to slightly weathered siltstone of the Braemar formation. Material was predominantly light brown in colour although a small area of dark grey material was also encountered.

Type 2 material which was identified as an areas old filling to be reworked as part of this development comprises a dark brown silty clay.

Proctor testing of fill samples gave the following results.

	Type 1	Type 2
Maximum dry density	1.32t/m ³	1.52t/m ³
Optimum moisture content	33%	24%

Based on these results the following acceptance criteria for compacted fill were established.

Density	All results > 1.25 t/m ³	All tests > 1.44
Moisture	All results > 29% < 35%	All results > 23 < 28
Air voids	All results < 10%	All results < 10%

6.0 Test Results

Date	Test No.	Fill Type	Density	% MDD	MC%	Air Voids %	Result
21/03/01	1	2	1488		26.6	5.2	Pass
	2	2	1470		25.4	8.1	Pass
22/03/01	3	1	1342		30.5	9.3	Pass
	4	1	1280		33.8	9.2	Pass
	5	1	1310		31.2	10.5	Fail
	Re-test of 5	1	1396		29.3	7.3	Rework of 5 Pass
23/03/01	6	1	1351		30.4	8.8	Pass

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	7	1	1421		29.7	5.0	Pass
03/05/01	24	1	1377		32.9	3.6	Pass
	25	1	1401		31.0	4.5	Pass
15/05/01	26	2	1450		19.0	18.7	Fail
16/05/01	27	2	1644		20.2	5.7	Rework of 16
							Pass
	28	2	1512		24.1	7.4	Pass
21/05/01	29	2	1559		24.3	4.2	Pass
	30	2	1580		23.3	4.5	Pass
	31	2	1657		20.4	4.8	Pass
31/05/01	32	2	1560		22.9	6.4	Pass
	33	2	1616		20.4	7.2	Pass
	34	1	1329		32.1	8.1	Pass
	35	1	1338		33.0	6.2	Pass
	36	1	1250		34.6	11.0	Pass
08/06/01	37	1	1435		29.8	3.9	Pass
	38	1	1390		31.7	4.4	Pass
12/06/01	39	1	1235		35.3	10.4	Pass
	40	1	1290		30.9	10.3	Pass
13/06/01	41	2	1510		23.2	8	Pass
11/07/01	42	1	1352		33.7	6.2	Pass
	43	1	1250		37.9	7.4	Accept
	44	1	1443		29.4	29.4	Pass
	45	1	1474		28.4	7.7	Pass
	46	1	1508		30.5	3.1	Pass
	47	1	1455		34.3	2.6	Pass
	48	1	1429		30.7	7.4	Pass
	49	1	1387		33.2	8.1	Pass
	50	1	1437		33.2	6.6	Pass

7.0 Penetrometer Testing

On completion of earthworks and other site preparation work, Penetrometer tests were carried out on each Lot in accordance with the provisions of NZS3604, 1999, - 'Light Timber Framed Buildings not requiring specific design'.

CAMERON GIBSON & WELLS LTD

NZS3604:1999 is being called upon as an acceptable solution for meeting the requirements of the New Zealand Building Code as outlined in the BIA approved documents, Section B1 – Structure.

NZS3604:1999 requires that foundations are supported on good ground with ultimate soil bearing capacity of greater than 300kPa. Three Penetrometer blows per 75mm depth of penetration is required to a depth equal to the width of the widest footing below the underside of the proposed footings. This generally corresponds to a depth of 600mm to 800mm below the ground surface. Verification of ground conditions beyond this level is required for a further 1.2 metres.

Results of Penetrometer testing were variable around the Lots tested. In particular areas of soft ground were located in natural ground on Lots 27, 29, 34 and 37 and good ground as defined in NZS3604 may not be found in some cases until approximately one metre depth. In this event, the excavation between good ground and the underside of the foundation may need to be filled with low strength concrete (10MPa) or the foundations may be piled to derive support from the good ground.

8.0 Conclusions and recommendations

Our attached plan no. 9721 sheet 2 shows the extent of filled ground affecting sections in this stage of the subdivision and covered by testing detailed in this report. This plan shows Lots 30 and 34 – 37 to contain filled ground affecting building areas and the extent of the fill. As a result of our site observations and control test results recorded above we are satisfied that this fill has been placed in compliance with the requirements of NZS4431:1999. We would recommend the following special limitations to be observed and we draw this to the attention of builders or designers contemplating the erection of a dwelling.

- (i) Foundation excavations for buildings to be sited on these Lots shall be extended to penetrate into ground of good bearing capacity by a minimum 200mm. Such excavations shall be inspected and approved by a Registered Engineer.
- (ii) Cuts and fills in excess of 1.2m proposed by individual property owners as part of site development should be the subject of specific investigation and design by an experienced geotechnical practitioner.
- (iii) All stormwater from drains, roofs and paved areas to be discharged to Council's reticulation system.

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9.0 Applicability

This report has been prepared solely for the benefit of your as our client with respect to the particular brief given to us and data or opinions contained in it may not be used in othe contexts of for any other purpose without our prior review and agreement.

Test results included in this report indicate conditions on the date of testing and may not represent conditions at other locations or at other dates.

During excavation and construction, the site should be examined by an engineer competent to judge whether the exposed subsoils are compatible with the inferred conditions on which the report has been based. We would be pleased to provide this service to you and believe your project would benefit from the continuity. However, it is important that we be contacted if there is any variation in subsoil conditions from hose described in the report.



RWL Wells

CAMERON GIBSON & WELLS LTD

Reviewed by

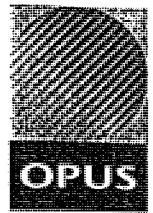


R B Gibson

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DRY DENSITY/WATER CONTENT RELATIONSHIP DYNAMIC COMPACTION

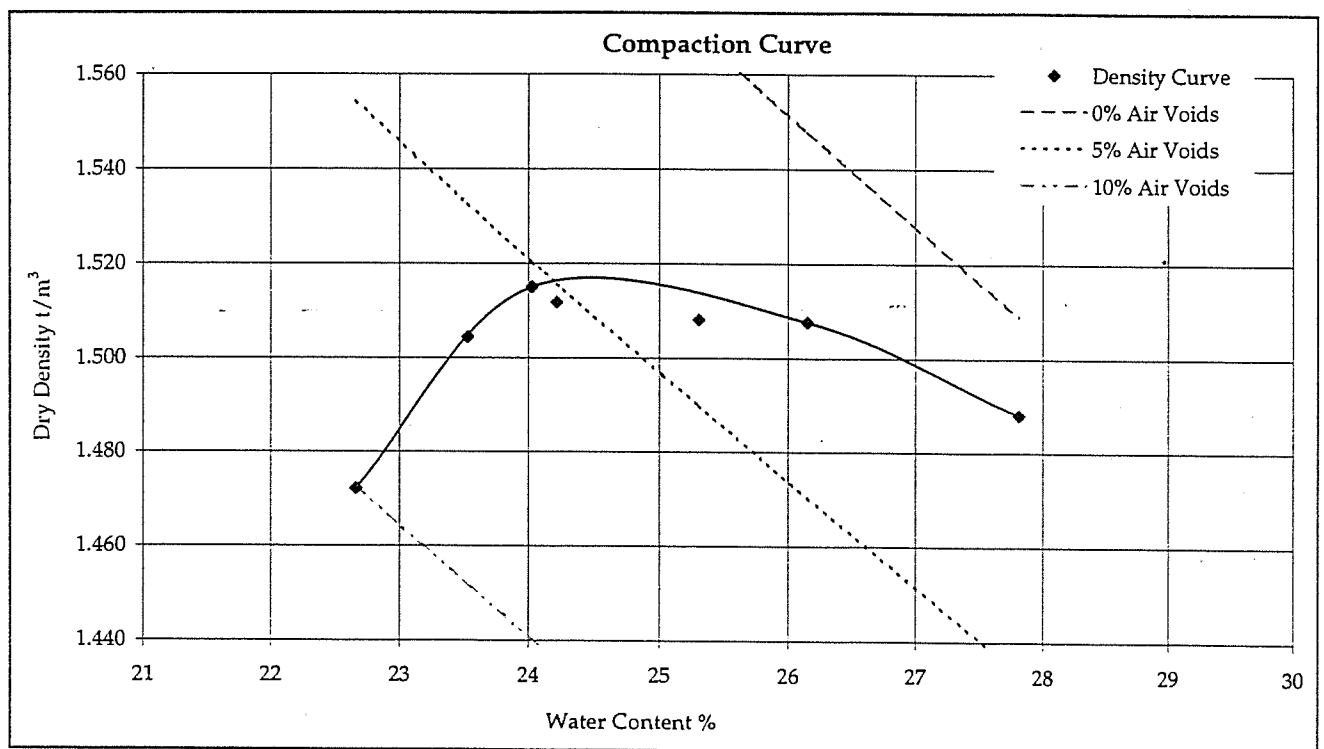
Project : Market Road Subdivision
Location : TP 3
Client : R Wells
Contractor : Cameron Gibson & Wells
Sampled by : R Wells
Date sampled : 21-Feb-01
Sampling method : Unknown
Sample description: Dark brown SILT
Sample condition : Natural
Date received : 21-Feb-01



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Project No: C018498
Lab Ref No: 01001
Client Ref: N/A

Sample ID	1	2	3	4	5	6	7
Bulk density t/m ³							
Water content %	22.7	23.5	24.0	24.2	25.3	26.1	27.8
Dry density t/m ³	1.47	1.50	1.52	1.51	1.51	1.51	1.49
Sample condition	Damp	Damp	Damp	Damp	Damp	Damp	Damp



Test Methods & Notes		Test Results	
Compaction	NZS 4402 : 1986, Test 4.1.1 (Standard)	Maximum dry density	1.52 t/m ³
Sampling method	Unknown	Solid density (assumed)*	2.60 t/m ³
Fraction tested	-19mm	Optimum water content	24 %
Sample history	Dried/Natural/Wet up	Natural water content	22.8 %

Date tested : 8-Mar-01

Date reported : 12-Mar-01

IANZ Approved Signatory

M Hollows

Designation :

Engineering Officer

Date :

21-Mar-01

* Not IANZ Endorsed

Sampling is not covered by IANZ Accreditation

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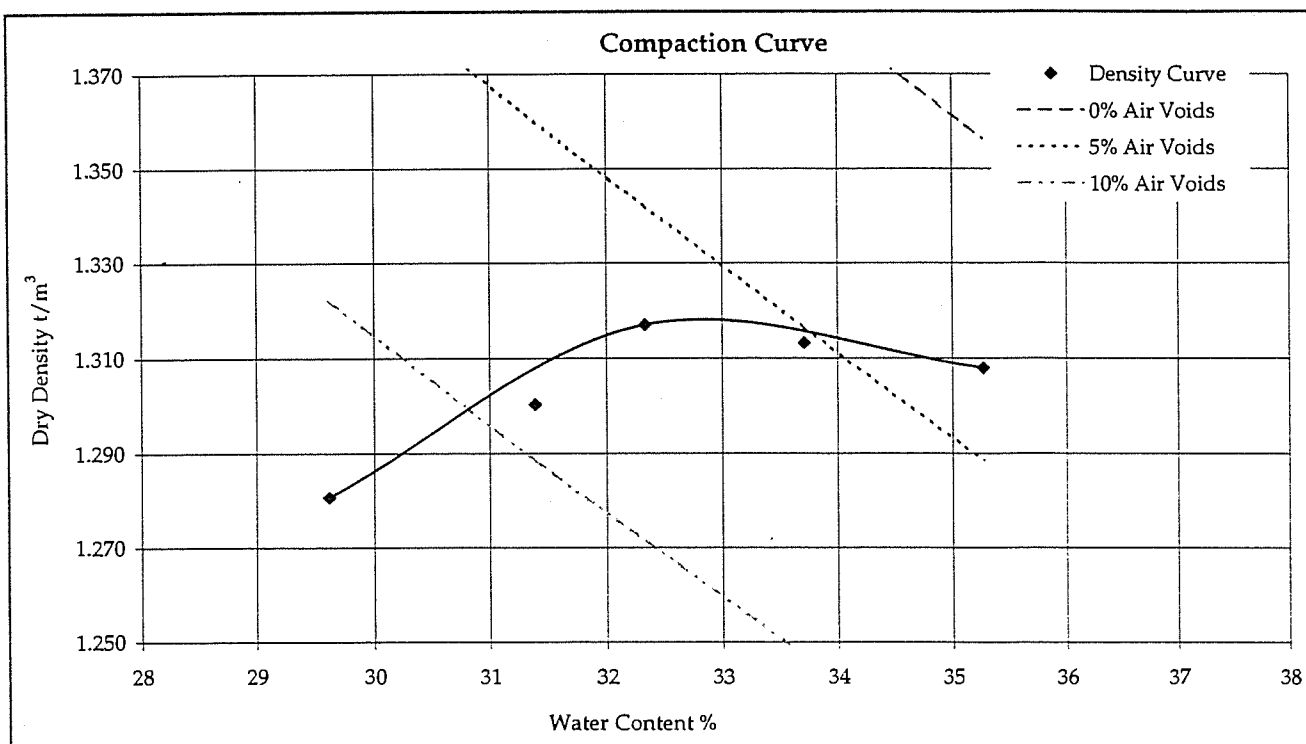
DRY DENSITY/WATER CONTENT RELATIONSHIP DYNAMIC COMPACTION

Project : Market Road Subdivision
Location : TP1
Client : R Wells
Contractor : Cameron Gibson & Wells
Sampled by : R Wells
Date sampled : 20-Feb-01
Sampling method : Unknown
Sample description: Light brown CLAYEY SILT
Sample condition : Natural
Date received : 20-Feb-01



Project No: G908L93
Lab Ref No: 01036
Client Ref: NA

Sample ID	1	2	3	4	5		
Bulk density t/m ³							
Water content %	29.6	31.4	32.3	33.7	35.3		
Dry density t/m ³	1.28	1.30	1.32	1.31	1.31		
Sample condition	Damp	Damp	Damp	Damp	Damp		



Test Methods & Notes		Test Results	
Compaction	NZS 4402 : 1986, Test 4.1.1 (Standard)	Maximum dry density	1.32 t/m ³
Sampling method	Unknown	Solid density(assumed)*	2.60 t/m ³
Fraction tested	-19mm	Optimum water content	33 %
Sample history	Dried/Natural/Wet up	Natural water content	26.1 %

Date tested : 28-Feb-01

Date reported : 1-Mar-01

IANZ Approved Signatory
M Hollows
Designation : Engineering Officer
Date : 1-Mar-01

* Not IANZ Endorsed

Sampling is not covered by IANZ Accreditation

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NOTES

(1) VERIFY ALL DIMENSIONS ON SITE
(2) DO NOT SCALE FROM DRAWING



NO	DATE	AMENDMENT	DRN	CHD	APD

**CAMERON GIBSON
& WELLS LTD**
CONSULTING CIVIL & STRUCTURAL ENGINEERS
PH. 548-8258 NELSON FAX 546-8412
EMAIL cgm@extra.co.nz

	DESIGN R.W.
	DRAWN A.D.
	CHECKED
	APPROVED
DATE FEB. 02.	

JOB TITLE
**MARKET
DEVELOPMENTS
STAGE 2**

DRAWING TITLE
**SITE PLAN
EXTENT OF FILL**

SCALE 1:500 at A1	OF SHEETS
JOB NO 9721	SHEET 2

CAMERON GIBSON & WELLS LTD

CONSULTING CIVIL & STRUCTURAL ENGINEERS

9721-15

5 December 2002

Rm 005179

Stage 3

DP 315710

Market Developments Ltd
C/- Staig & Smith Ltd
P O Box 913
NELSON

Attention: Alex Grigg

Report on Subdivision Earthworks
Market Developments Ltd RM005179
Lots 7 – 13 and 20 - 26
Ref: Staig & Smith Ltd Plan No. 6693

1.0 Introduction

This report details the scope of work undertaken by Cameron Gibson & Wells Ltd for certification of earthworks on the above subdivision. Subdivision works have been completed in stages. We have previously reported on the first two stages of earthworks, affecting Lots 1 to 6 and 38 – 40, refer to Cameron Gibson & Wells Ltd reports ref: 9721-7, dated 13 November 2001 and 9721-13 dated 18 February 2002.

This report relates to earthworks affecting Stage III of the subdivision, being Lots 7 to 13, and 20 to 26. Our work has been undertaken at the request of Staig & Smith Ltd on behalf of Market Developments Ltd. Cameron Gibson & Wells Ltd was engaged to supervise earth fill operations on the subdivision and carry out all necessary site testing so as to be able to provide fill certification for this residential development as per NZS4431:1999. Golder Associates have reported separately on site stability and site suitability for building in their report ref: 01645640/3210 dated 19 February 2002. Subdivision design was carried out by Staig & Smith Ltd as shown on their plans numbered 6693 and specification for the bulk earthworks contract were prepared by Cameron Gibson & Wells Ltd titled "Market Developments Subdivision – Market Road Nelson, Bulk Earthworks ". As-built plans of earthworks operations have been provided by Staig & Smith Ltd.



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2.0 Site Description

The subdivision is situated on land formerly known as the Cattle Market Reserve. This land has access from Waimea Road and frontage also from Market Road. Resource consent has been obtained for development for some 40 sections to be completed in stages.

Development works include bulk earthworks affecting a number of sites, excavation and reworking of an area of old fill at the bottom of the site, provision of main stormwater drains connected to the Council mains in Waimea Road and all other associated roading and services works.

3.0 Earthworks

Following completion of initial works to clear the site and prepare for earthworks bulk earthworking operations were commenced on site in February 2001. Earthworks operations were carried out by Graham Marshall – Contractor using a 20 tonne excavator, trucks, a heavy grid roller towed by bulldozer and a ride-on wedge foot vibrating roller. A water cart was used on site to increase soil moisture content as required. Fill was placed by truck, spread in thin layers by excavator, watered as necessary, benched into firm natural ground and progressively compacted. Earthworks operations were supervised under the direction of Mr RWL Wells of Cameron Gibson & Wells Ltd. Control testing on site was carried out by the use of a Humbolt Nuclear Densometer supplemented by Scala Penetrometer tests. During site stripping operations some areas of seepage were encountered and these have been intercepted by means of subsoil drains connected to the piped stormwater system. The location of subsoil drains has been recorded and will be shown on Staig & Smith Ltd as-built drawings of the works.

Bulk earthworks operations on site were completed in July/August 2001.

Since that time, completion of roading and other services has progressed in stages, and earthworks areas completed for this stage have been left while sections in stages I and II have been developed.

4.0 Control Testing

Prior to commencement of earthworks, representative samples of fill material were tested to obtain acceptance criteria in the form of maximum dry density and optimum moisture content parameters. Laboratory control testing was undertaken by Opus Laboratories and these results are attached as appendix i. During construction, regular fill testing by Nuclear Densometer was carried out by Cameron Gibson & Wells Ltd and the summary of corrected test results is given in section six. On completion of the works, Penetrometer testing of each Lot was carried out, and these test results are attached as appendix ii.

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5.0 Acceptance Criteria

Two types of fill material for use in earthworks operations were identified on the site, as described below.

Type 1 fill material around most of the site is described as highly weathered grading to slightly weathered siltstone of the Braemar formation. Material was predominantly light brown in colour although a small area of dark grey material was also encountered.

Type 2 material which was identified in an area of old filling to be reworked as part of this development comprises a dark brown silty clay.

Proctor testing of fill samples gave the following results.

	Type 1	Type 2
Maximum dry density	1.32t/m ³	1.52t/m ³
Optimum moisture content	33%	24%

Based on these results the following acceptance criteria for compacted fill were established.

Density	All results > 1.25 t/m ³	All tests > 1.44
Moisture	All results > 29% < 35%	All results > 23 < 28
Air voids	All results < 10%	All results < 10%

6.0 Test Results

Date	Test No.	Fill Type	Density	% MDD	MC%	Air Voids %	Result
21/03/01	1	2	1488	98	26.6	5.2	Pass
	2	2	1470	97	25.4	8.1	Pass
22/03/01	3	1	1342	101	30.5	9.3	Pass
	4	1	1280	97	33.8	9.2	Pass
	5	1	1310	99	31.2	10.5	Fail
	Re-test of 5	1	1396	106	29.3	7.3	Rework of 5 Pass
23/03/01	6	1	1351	102	30.4	8.8	Pass
	7	1	1421	108	29.7	5.0	Pass
26/03/01	8	1	1410	107	28.4	7.7	Pass
	9	1	1391	105	31.7	4.3	Pass

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11/07/01	42	1	1352	102	33.7	6.2	Pass
	43	1	1250	95	37.9	7.4	Accept
	44	1	1443	109	29.4	29.4	Pass
	45	1	1474	112	28.4	7.7	Pass
	46	1	1508	114	30.5	3.1	Pass
	47	1	1455	110	34.3	2.6	Pass
	48	1	1429	108	30.7	7.4	Pass
	49	1	1387	105	33.2	8.1	Pass
	50	1	1437	109	33.2	6.6	Pass

7.0 Penetrometer Testing

On completion of all construction work in this stage, Penetrometer tests were carried out on each Lot in accordance with the provisions of NZS3604, 1999, - 'Light Timber Framed Buildings not requiring specific design'.

NZS3604:1999 is being called upon as an acceptable solution for meeting the requirements of the New Zealand Building Code as outlined in the BIA approved documents, Section B1 – Structure.

NZS3604:1999 requires that foundations are supported on good ground with ultimate soil bearing capacity of greater than 300kPa. Three Penetrometer blows per 75mm depth of penetration is required to a depth equal to the width of the widest footing below the underside of the proposed footings. This generally corresponds to a depth of 600mm to 800mm below the ground surface. Verification of ground conditions beyond this level is required for a further 1.2 metres.

Results of Penetrometer testing were variable around the Lots tested. Some softening of the surface of filled ground since its placement was detected, due to ingress of surface water, and in particular areas of soft ground were located in natural ground on Lots 11, 12, and 26. Good ground as defined in NZS3604 may not be found in some cases until approximately one metre depth. In this event, the excavation between good ground and the underside of the foundation may need to be filled with low strength concrete (10MPa) or the foundations may be piled to derive support from the good ground. For this reason we recommend that specific design of foundations for buildings to be erected on these Lots should be required.

8.0 Conclusions and recommendations

Our attached plan no. 9721 sheet 3 shows the extent of filled ground affecting sections in this stage of the subdivision and covered by testing detailed in this report. This plan shows Lots 3, 10, 13 and 20 to 26, to contain filled ground affecting building areas and the extent of the fill. As a result of our site observations and control test results recorded above we are satisfied that this fill has been placed in

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compliance with the requirements of NZS4431:1999. We would recommend the following special limitations to be observed and we draw this to the attention of builders or designers contemplating the erection of a dwelling.

- (i) Foundations for buildings to be sited on these Lots shall be extended to penetrate into ground of good bearing capacity by a minimum 200mm, and shall be subject to specific design or approved by a Registered Engineer.
- (ii) Cuts and fills in excess of 0.9m proposed by individual property owners as part of site development should be the subject of specific investigation and design by an experienced geotechnical practitioner.
- (iii) All stormwater from drains, roofs and paved areas to be discharged to Council's reticulation system.

9.0 Applicability

This report has been prepared solely for the benefit of your as our client with respect to the particular brief given to us and data or opinions contained in it may not be used in othe contexts of for any other purpose without our prior review and agreement.

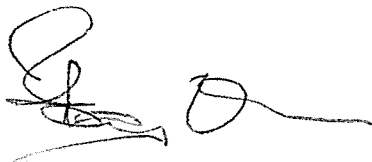
Test results included in this report indicate conditions on the date of testing and may not represent conditions at other locations or at other dates.

During excavation and construction, the site should be examined by an engineer competent to judge whether the exposed subsoils are compatible with the inferred conditions on which the report has been based. We would be pleased to provide this service to you and believe your project would benefit from the continuity. However, it is important that we be contacted if there is any variation in subsoil conditions from those described in the report.

Reviewed by



RWL Wells
CAMERON GIBSON & WELLS LTD



R B Gibson
CAMERON GIBSON & WELLS LTD

DRY DENSITY/WATER CONTENT RELATIONSHIP DYNAMIC COMPACTION

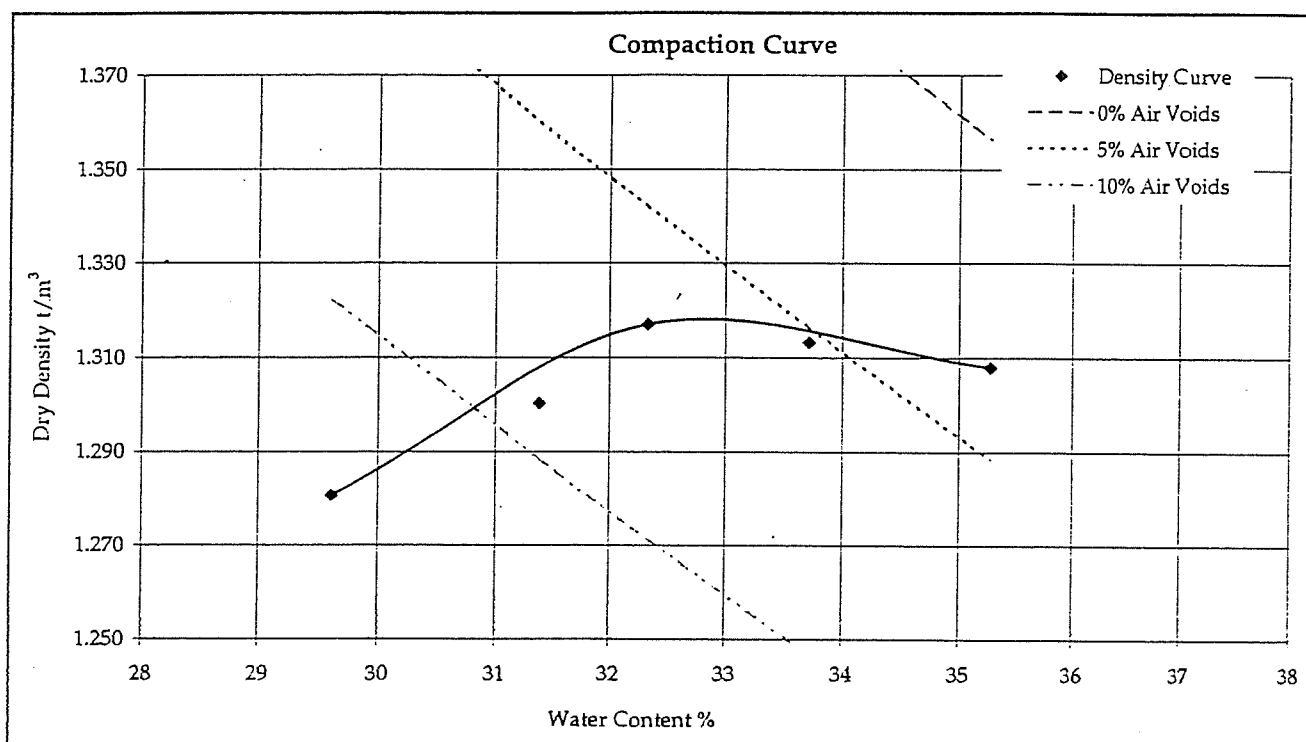
Project : Market Road Subdivision
Location : TP1
Client : R Wells
Contractor : Cameron Gibson & Wells
Sampled by : R Wells
Date sampled : 20-Feb-01
Sampling method : Unknown
Sample description: Light brown CLAYEY SILT
Sample condition : Natural
Date received : 20-Feb-01



INTERNATIONAL
CONSULTANTS

Project No: C018193
Lab Ref No: 01086
Client Ref: NA

Sample ID	1	2	3	4	5		
Bulk density t/m ³							
Water content %	29.6	31.4	32.3	33.7	35.3		
Dry density t/m ³	1.28	1.30	1.32	1.31	1.31		
Sample condition	Damp	Damp	Damp	Damp	Damp		



Test Methods & Notes	Test Results
Compaction NZS 4402 : 1986, Test 4.1.1 (Standard)	Maximum dry density 1.32 t/m ³
Sampling method Unknown	Solid density(assumed)* 2.60 t/m ³
Fraction tested -19mm	Optimum water content 33 %
Sample history Dried/Natural/Wet up	Natural water content 26.1 %

* Not IANZ Endorsed

Date tested : 28-Feb-01

Sampling is not covered by IANZ Accreditation

Date reported : 1-Mar-01

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IANZ Approved Signatory

M Hollows

Designation : Engineering Officer

Date : 1-Mar-01



Tests indicated as
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outside the scope
of the laboratory's
accreditation.

CSF 2026 (8/98)

Page 1 of 1

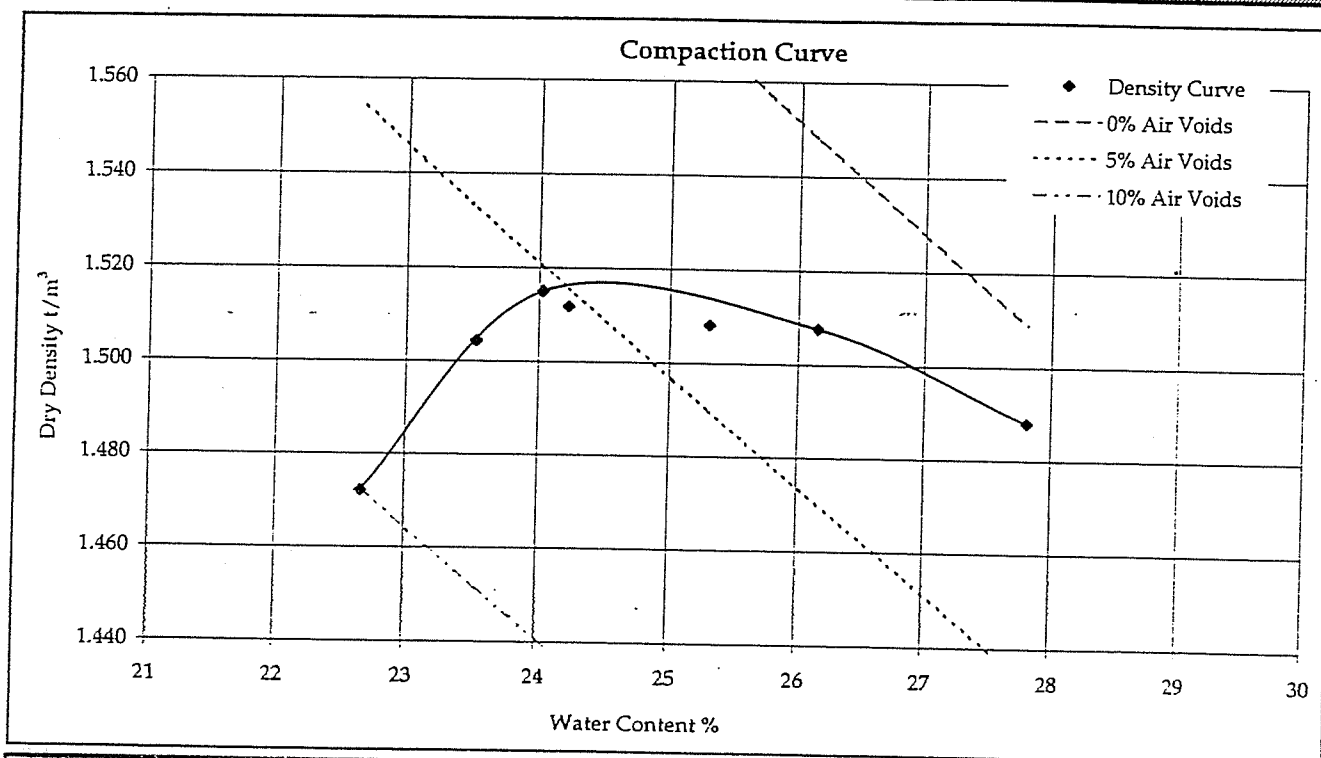
DRY DENSITY/WATER CONTENT RELATIONSHIP DYNAMIC COMPACTION

Project : Market Road Subdivision
 Location : TP 3
 Client : R Wells
 Contractor : Cameron Gibson & Wells
 Sampled by : R Wells
 Date sampled : 21-Feb-01
 Sampling method : Unknown
 Sample description: Dark brown SILT
 Sample condition : Natural
 Date received : 21-Feb-01



Project No: C004023
 Lab Ref No: 01001
 Client Ref: N/A

Sample ID	1	2	3	4	5	6	7
Bulk density t/m ³							
Water content %	22.7	23.5	24.0	24.2	25.3	26.1	27.8
Dry density t/m ³	1.47	1.50	1.52	1.51	1.51	1.51	1.49
Sample condition	Damp	Damp	Damp	Damp	Damp	Damp	Damp



Test Methods & Notes		Test Results	
Compaction	NZS 4402 : 1986, Test 4.1.1 (Standard)	Maximum dry density	1.52 t/m ³
Sampling method	Unknown	Solid density(assumed)*	2.60 t/m ³
Fraction tested	-19mm	Optimum water content	24 %
Sample history	Dried/Natural/Wet up	Natural water content	22.8 %

Date tested : 8-Mar-01

Date reported : 12-Mar-01

IANZ Approved Signatory, *M Hollows*

Designation : Engineering Officer

Date : 21-Mar-01

* Not IANZ Endorsed

Sampling is not covered by IANZ Accreditation

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File: 9721

PENETROMETER TEST RESULTS

Subdivision: Lynwood TceDate: 20/11/02Location: BishopdaleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 7

BLOWS PER 100 mm PENETRATION (DEPTH)						
Depth	Test Location Number				Site Location	
	1	2	3	4	Lot/Locations	
0 - 0.1 m	2	4	3	2	25 Road	
0.1 - 0.2 m	3	3	5	2		
0.2 - 0.3 m	3	3	2	6		
0.3 - 0.4 m	5	4	3	7		
0.4 - 0.5 m	5	7	3	8		
0.5 - 0.6 m	5	5	5	7		
0.6 - 0.7 m	6	5	4	8		
0.7 - 0.8 m	6	7	5	7		
0.8 - 0.9 m	6	7	4	7		
0.9 - 1.0 m	7	7	5	8		
1.0 - 1.1 m	7	6	5	8		
1.1 - 1.2 m	8	8	5	7		
1.2 - 1.3 m	8	8	6	6		
1.3 - 1.4 m	9	7	6	7		
1.4 - 1.5 m						
1.5 - 1.6 m						
1.6 - 1.7 m						
1.7 - 1.8 m						
1.8 - 1.9 m						
1.9 - 2.0 m						
2.0 - 2.1 m						
2.1 - 2.2 m						
2.2 - 2.3 m						
2.3 - 2.4 m						
2.4 - 2.5 m						

File: 9720

PENETROMETER TEST RESULTS

Subdivision: Lynwood TceDate: 20/11/02Location: BishopdoleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 8

BLOWS PER 100 mm PENETRATION (DEPTH)					Site Location	
Depth	Test Location Number				Lot/Locations	
	1	2	3	4		
0 - 0.1 m	2	1	1	1		Road
0.1 - 0.2 m	3	0	2	2		
0.2 - 0.3 m	3	1	2	3		
0.3 - 0.4 m	4	0	2	3		
0.4 - 0.5 m	5	1	2	4		
0.5 - 0.6 m	4	3	3	5		
0.6 - 0.7 m	7	4	3	5		
0.7 - 0.8 m	7	3	2	6		
0.8 - 0.9 m	7	4	3	5		
0.9 - 1.0 m	8	3	4	4		
1.0 - 1.1 m	6	4	2	4		
1.1 - 1.2 m	6	4	3	6		
1.2 - 1.3 m	7	5	3	5		Road
1.3 - 1.4 m	6	4		6		
1.4 - 1.5 m						
1.5 - 1.6 m						
1.6 - 1.7 m						
1.7 - 1.8 m						
1.8 - 1.9 m						
1.9 - 2.0 m						
2.0 - 2.1 m						
2.1 - 2.2 m						
2.2 - 2.3 m						
2.3 - 2.4 m						
2.4 - 2.5 m						

File: 9721.

PENETROMETER TEST RESULTS

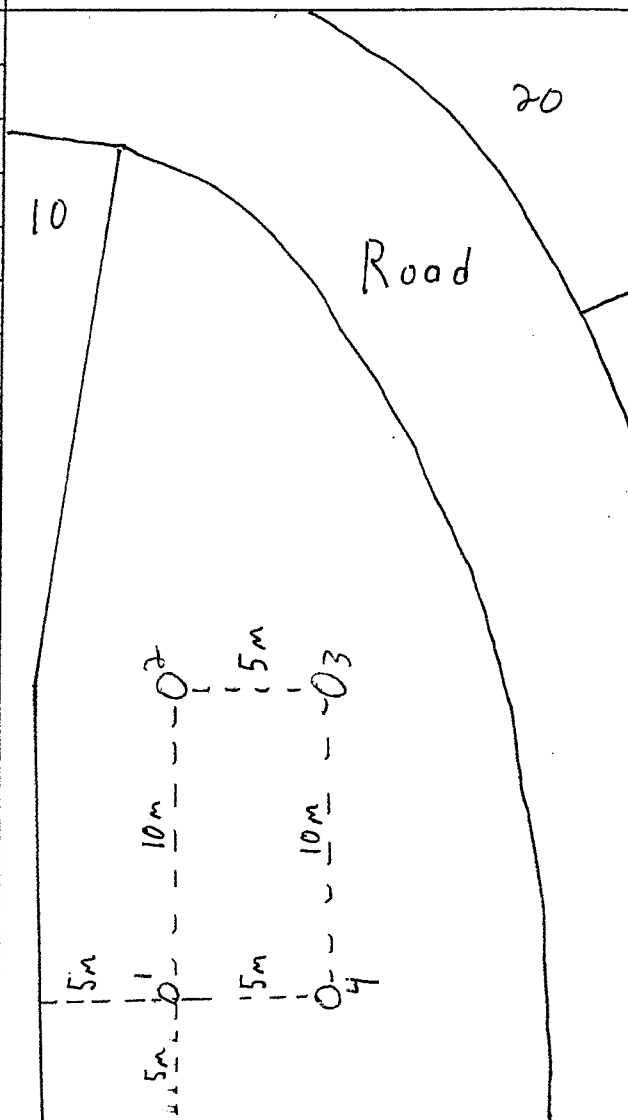
Subdivision: Lynwood Tce

Date: 20/11/02

Location: Bishopdale

Consultant: Cameron Gibson & Wells Ltd

LOT NUMBER: 9

BLOWS PER 100 mm PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1 m	1	4	4	1	
0.1 - 0.2 m	3	1	2	2	
0.2 - 0.3 m	4	1	2	3	
0.3 - 0.4 m	2	1	3	3	
0.4 - 0.5 m	5	2	3	3	
0.5 - 0.6 m	7	2	4	5	
0.6 - 0.7 m	6	4	5	2	
0.7 - 0.8 m	7	5	5	4	
0.8 - 0.9 m	6	6	4	4	
0.9 - 1.0 m	2	6	5	5	
1.0 - 1.1 m	8	5	5	6	
1.1 - 1.2 m	7	4	4	7	
1.2 - 1.3 m	8	4	4	8	
1.3 - 1.4 m	9				
1.4 - 1.5 m					
1.5 - 1.6 m					
1.6 - 1.7 m					
1.7 - 1.8 m					
1.8 - 1.9 m					
1.9 - 2.0 m					
2.0 - 2.1 m					
2.1 - 2.2 m					
2.2 - 2.3 m					
2.3 - 2.4 m					
2.4 - 2.5 m					

File: 9721

PENETROMETER TEST RESULTS

Subdivision: Lynwood TceDate: 20/11/02Location: BishopdoleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 10

BLOWS PER 100 mm PENETRATION (DEPTH)					Site Location	
Depth	Test Location Number				Lot/Locations	
	1	2	3	4		
0 - 0.1 m	1	2	2	1		
0.1 - 0.2 m	2	3	3	4		
0.2 - 0.3 m	2	4	2	2		
0.3 - 0.4 m	3	8	12	20		
0.4 - 0.5 m	16	15	Refusal	Refusal		
0.5 - 0.6 m	23	Refusal				
0.6 - 0.7 m	11					
0.7 - 0.8 m						
0.8 - 0.9 m						
0.9 - 1.0 m						
1.0 - 1.1 m						
1.1 - 1.2 m						
1.2 - 1.3 m						
1.3 - 1.4 m						
1.4 - 1.5 m						
1.5 - 1.6 m						
1.6 - 1.7 m						
1.7 - 1.8 m						
1.8 - 1.9 m						
1.9 - 2.0 m					8	
2.0 - 2.1 m						
2.1 - 2.2 m						
2.2 - 2.3 m						
2.3 - 2.4 m						
2.4 - 2.5 m						

File: 9721.

PENETROMETER TEST RESULTS

Subdivision: Lynwood TceDate: 20/11/02Location: BishopdaleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 11

BLOWS PER 100 mm PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1 m	1	1	3	2	Road
0.1 - 0.2 m	7	2	2	3	
0.2 - 0.3 m	11	2	1	9	
0.3 - 0.4 m	21	3	1	8	
0.4 - 0.5 m	10	2	2	7	
0.5 - 0.6 m	13	2	3	13	
0.6 - 0.7 m	16	6	6	Refusal	
0.7 - 0.8 m		11	2		
0.8 - 0.9 m		12	5		
0.9 - 1.0 m		Refusal	5		
1.0 - 1.1 m			4		
1.1 - 1.2 m			8		
1.2 - 1.3 m			25		
1.3 - 1.4 m			Refusal		
1.4 - 1.5 m					
1.5 - 1.6 m					
1.6 - 1.7 m					
1.7 - 1.8 m					
1.8 - 1.9 m					
1.9 - 2.0 m					
2.0 - 2.1 m					
2.1 - 2.2 m					
2.2 - 2.3 m					
2.3 - 2.4 m					
2.4 - 2.5 m					

File: 9721

PENETROMETER TEST RESULTS

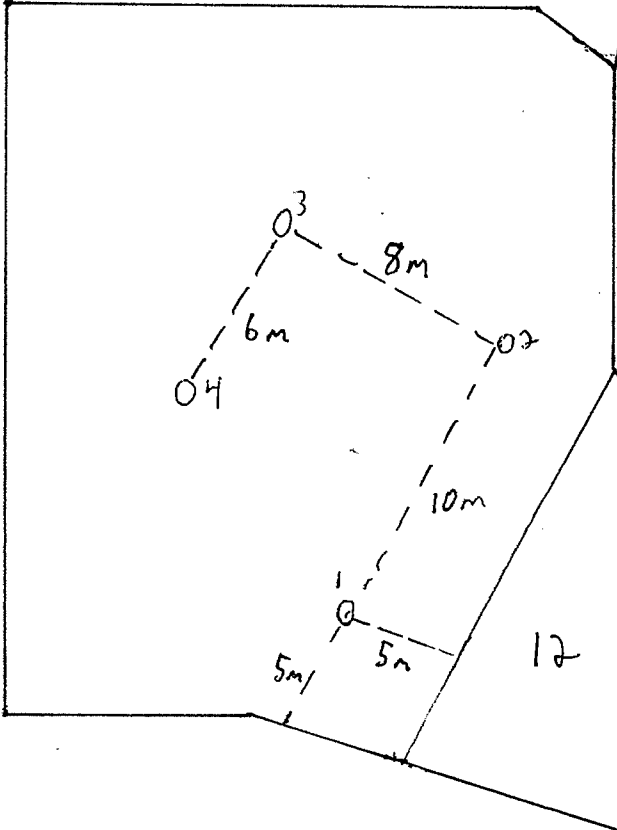
Subdivision: Lynwood TceDate: 20/11/02Location: BishopdaleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 12

BLOWS PER 100 mm PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1 m	1	2	1	1	<div><div>13</div><div>Road</div><div><div>11</div><div><div><div><div><div>2</div><div>0</div><div>7m</div><div>5m</div><div>10</div><div>5m</div><div>0</div><div>3</div><div>7m</div><div>0</div><div>4</div></div></div><div>10m</div></div></div></div></div>
0.1 - 0.2 m	2	4	3	2	
0.2 - 0.3 m	2	4	3	5	
0.3 - 0.4 m	2	4	2	5	
0.4 - 0.5 m	3	5	2	5	
0.5 - 0.6 m	7	4	2	6	
0.6 - 0.7 m	14	8	3	11	
0.7 - 0.8 m	14	7	3	13	
0.8 - 0.9 m	10	9	2	12	
0.9 - 1.0 m	10	10	2	13	
1.0 - 1.1 m		11	2		
1.1 - 1.2 m		17	2		
1.2 - 1.3 m			3		
1.3 - 1.4 m			4		
1.4 - 1.5 m			9		
1.5 - 1.6 m					
1.6 - 1.7 m					
1.7 - 1.8 m					
1.8 - 1.9 m					
1.9 - 2.0 m					
2.0 - 2.1 m					
2.1 - 2.2 m					
2.2 - 2.3 m					
2.3 - 2.4 m					
2.4 - 2.5 m					

File: 9721.

PENETROMETER TEST RESULTS

Subdivision: Lynwood TceDate: 20/11/02Location: BishopdaleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 13

BLOWS PER 100 mm PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1 m	1	1	1	1	
0.1 - 0.2 m	3	2	2	3	
0.2 - 0.3 m	4	2	2	4	
0.3 - 0.4 m	3	2	4	16	
0.4 - 0.5 m	3	8	4	14	
0.5 - 0.6 m	4	25	5	8	
0.6 - 0.7 m	3	15	4	4	
0.7 - 0.8 m	5	7	3	3	
0.8 - 0.9 m	6	8	3	2	
0.9 - 1.0 m	4	10	4	2	
1.0 - 1.1 m	6	10	5	13	
1.1 - 1.2 m	10	14	7	6	
1.2 - 1.3 m	13		11	6	
1.3 - 1.4 m	Refusal		10	7	
1.4 - 1.5 m					
1.5 - 1.6 m					
1.6 - 1.7 m					
1.7 - 1.8 m					
1.8 - 1.9 m					
1.9 - 2.0 m					
2.0 - 2.1 m					
2.1 - 2.2 m					
2.2 - 2.3 m					
2.3 - 2.4 m					
2.4 - 2.5 m					

File: 9721

PENETROMETER TEST RESULTS

Subdivision: Lynwood TceDate: 20/11/02Location: BishopdoleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 20

BLOWS PER 100 mm PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1 m	2	1	1	1	<p>19 (Reserve) Road</p>
0.1 - 0.2 m	8	1	1	2	
0.2 - 0.3 m	11	1	1	2	
0.3 - 0.4 m	10	2	2	1	
0.4 - 0.5 m	8	2	2	2	
0.5 - 0.6 m	6	2	3	1	
0.6 - 0.7 m	9	3	5	2	
0.7 - 0.8 m	8	5	6	3	
0.8 - 0.9 m	7	5	5	2	
0.9 - 1.0 m	7	7	6	3	
1.0 - 1.1 m	5	8	5	3	
1.1 - 1.2 m	7	10	8	7	
1.2 - 1.3 m	10	12	10	9	
1.3 - 1.4 m	7	13	8	8	
1.4 - 1.5 m					
1.5 - 1.6 m					
1.6 - 1.7 m					
1.7 - 1.8 m					
1.8 - 1.9 m					
1.9 - 2.0 m					
2.0 - 2.1 m					
2.1 - 2.2 m					
2.2 - 2.3 m					
2.3 - 2.4 m					
2.4 - 2.5 m					

File: 9721

PENETROMETER TEST RESULTS

Subdivision: Lynwood TceDate: 20/11/02Location: BishopdaleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 21

BLOWS PER 100 mm PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1 m	2	2	1	1	
0.1 - 0.2 m	1	1	1	1	
0.2 - 0.3 m	3	1	1	1	
0.3 - 0.4 m	4	2	1	1	
0.4 - 0.5 m	11	2	2	1	
0.5 - 0.6 m	10	3	2	3	
0.6 - 0.7 m	9	3	3	3	
0.7 - 0.8 m	10	4	4	4	
0.8 - 0.9 m		4	5	4	
0.9 - 1.0 m		5	3	4	
1.0 - 1.1 m		7	4	3	
1.1 - 1.2 m		8	5	4	
1.2 - 1.3 m		7	6	3	
1.3 - 1.4 m		7	6	4	
1.4 - 1.5 m					
1.5 - 1.6 m					
1.6 - 1.7 m					
1.7 - 1.8 m					
1.8 - 1.9 m					
1.9 - 2.0 m					
2.0 - 2.1 m					
2.1 - 2.2 m					
2.2 - 2.3 m					
2.3 - 2.4 m					
2.4 - 2.5 m					

File: 9721.

PENETROMETER TEST RESULTS

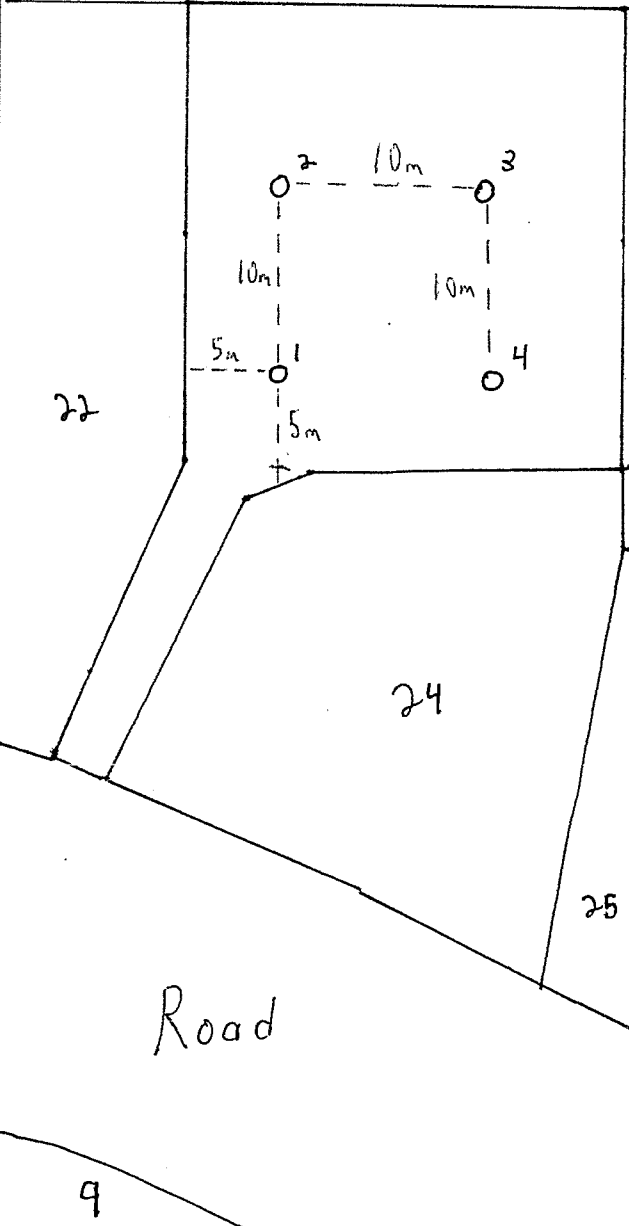
Subdivision: Lynwood TceDate: 20/11/02Location: BishopdoleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 22

BLOWS PER 100 mm PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1 m	2	2	3	3	
0.1 - 0.2 m	2	1	2	2	
0.2 - 0.3 m	1	2	1	1	
0.3 - 0.4 m	2	4	1	1	
0.4 - 0.5 m	3	4	2	1	
0.5 - 0.6 m	3	4	1	2	
0.6 - 0.7 m	4	4	5	4	
0.7 - 0.8 m	6	5	5	8	
0.8 - 0.9 m	12	7	8	8	
0.9 - 1.0 m	9	7	9	9	
1.0 - 1.1 m	9	9	12	4	
1.1 - 1.2 m		8	8	4	
1.2 - 1.3 m		9		4	
1.3 - 1.4 m				4	
1.4 - 1.5 m					
1.5 - 1.6 m					
1.6 - 1.7 m					
1.7 - 1.8 m					
1.8 - 1.9 m					
1.9 - 2.0 m					
2.0 - 2.1 m					
2.1 - 2.2 m					
2.2 - 2.3 m					
2.3 - 2.4 m					
2.4 - 2.5 m					

File: 9721

PENETROMETER TEST RESULTS

Subdivision: Lynwood TceDate: 20/11/02Location: BishopdaleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 23

BLOWS PER 100 mm PENETRATION (DEPTH)					Site Location	
Depth	Test Location Number				Lot/Locations	
	1	2	3	4		
0 - 0.1 m	1	2	2	3		
0.1 - 0.2 m	2	2	1	3		
0.2 - 0.3 m	1	2	2	2		
0.3 - 0.4 m	1	1	2	2		
0.4 - 0.5 m	3	1	2	2		
0.5 - 0.6 m	2	3	2	2		
0.6 - 0.7 m	2	2	3	2		
0.7 - 0.8 m	2	3	2	3		
0.8 - 0.9 m	4	2	4	2		
0.9 - 1.0 m	5	3	3	2		
1.0 - 1.1 m	6	2	4	2		
1.1 - 1.2 m	8	4	4	3		
1.2 - 1.3 m	9	5	4	3		
1.3 - 1.4 m	10	4	3	3		
1.4 - 1.5 m				3		
1.5 - 1.6 m				3		
1.6 - 1.7 m				4		
1.7 - 1.8 m				3		
1.8 - 1.9 m				4		
1.9 - 2.0 m				3		
2.0 - 2.1 m				5		
2.1 - 2.2 m				7		
2.2 - 2.3 m				10		
2.3 - 2.4 m						
2.4 - 2.5 m						

File: 9721

PENETROMETER TEST RESULTS

Subdivision: Lynwood TceDate: 20/11/02Location: BishopdoleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 24

BLOWS PER 100 mm PENETRATION (DEPTH)						
Depth	Test Location Number				Site Location	
	1	2	3	4	Lot/Locations	
0 - 0.1 m	3	3	3	3		
0.1 - 0.2 m	1	1	2	1		
0.2 - 0.3 m	2	1	1	5		
0.3 - 0.4 m	2	1	1	6		
0.4 - 0.5 m	1	1	1	6		
0.5 - 0.6 m	3	1	5	6		
0.6 - 0.7 m	4	1	7	11		
0.7 - 0.8 m	3	1	3	11		
0.8 - 0.9 m	4	1	5	16		
0.9 - 1.0 m	6	5	6	Refusal		
1.0 - 1.1 m	7	7	Refusal			
1.1 - 1.2 m	13	5				
1.2 - 1.3 m	10	5				
1.3 - 1.4 m	7	3				
1.4 - 1.5 m	5	10				
1.5 - 1.6 m	8	5				
1.6 - 1.7 m	9	9				
1.7 - 1.8 m	8	14				
1.8 - 1.9 m	5	11				
1.9 - 2.0 m	5	10				
2.0 - 2.1 m	5					
2.1 - 2.2 m	6					
2.2 - 2.3 m	6					
2.3 - 2.4 m						
2.4 - 2.5 m						

File: 9721

PENETROMETER TEST RESULTS

Subdivision: Lynwood TerraceDate: 20/11/02Location: BishopdaleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 25

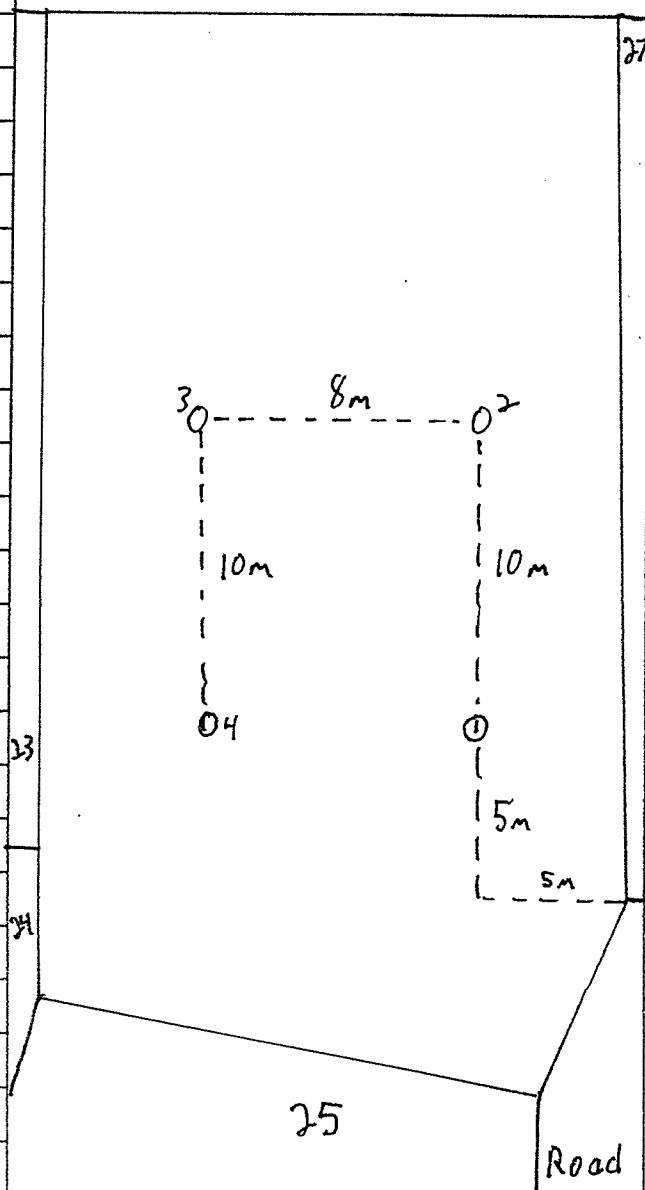
BLOWS PER 100 mm PENETRATION (DEPTH)					
Depth	Test Location Number				Site Location
	1	2	3	4	Lot/Locations
0 - 0.1 m	2	2	4	1	
0.1 - 0.2 m	2	2	3	1	
0.2 - 0.3 m	1	2	2	1	
0.3 - 0.4 m	2	3	3	3	
0.4 - 0.5 m	3	5	4	3	
0.5 - 0.6 m	2	5	6	5	
0.6 - 0.7 m	2	6	6	4	
0.7 - 0.8 m	3	5	4	5	
0.8 - 0.9 m	4	6	5	6	
0.9 - 1.0 m	6	7	5	7	
1.0 - 1.1 m	7	7	6	6	
1.1 - 1.2 m	6	9	5	8	
1.2 - 1.3 m	7	4	5	10	
1.3 - 1.4 m	7	9	7	10	
1.4 - 1.5 m	8	8	7	10	
1.5 - 1.6 m			17		
1.6 - 1.7 m			15		
1.7 - 1.8 m			12		
1.8 - 1.9 m					
1.9 - 2.0 m					
2.0 - 2.1 m					
2.1 - 2.2 m					
2.2 - 2.3 m					
2.3 - 2.4 m					
2.4 - 2.5 m					

File: 9721

PENETROMETER TEST RESULTS

Subdivision: Lynwood TceDate: 20/11/02Location: RishopdaleConsultant: Cameron Gibson & Wells LtdLOT NUMBER: 26

BLOWS PER 100 mm PENETRATION (DEPTH)					Site Location	
Depth	Test Location Number				Lot/Locations	
	1	2	3	4		
0 - 0.1 m	3	1	2	3		
0.1 - 0.2 m	2	1	1	2		
0.2 - 0.3 m	2	1	2	2		
0.3 - 0.4 m	2	1	2	2		
0.4 - 0.5 m	3	1	3	2		
0.5 - 0.6 m	3	3	3	3		
0.6 - 0.7 m	1	4	3	3		
0.7 - 0.8 m	2	3	3	4		
0.8 - 0.9 m	2	4	3	5		
0.9 - 1.0 m	3	3	3	5		
1.0 - 1.1 m	4	3	2	5		
1.1 - 1.2 m	4	2	4	4		
1.2 - 1.3 m	6	2	4	5		
1.3 - 1.4 m	4	3	4	5		
1.4 - 1.5 m	4	3	4	6		
1.5 - 1.6 m	4	Refusal	4	7		
1.6 - 1.7 m	4		6	7		
1.7 - 1.8 m	6		7	7		
1.8 - 1.9 m	6		6	8		
1.9 - 2.0 m	7		7	8		
2.0 - 2.1 m	8		8	8		
2.1 - 2.2 m	8		8	8		
2.2 - 2.3 m	7		7	8		
2.3 - 2.4 m						
2.4 - 2.5 m						





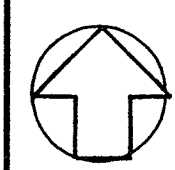
NOTES

- (1) VERIFY ALL DIMENSIONS ON SITE
- (2) DO NOT SCALE FROM DRAWING



NO	DATE	AMENDMENT	DRN	CHD	APD

CAMERON GIBSON & WELLS LTD
 CONSULTING CIVIL & STRUCTURAL ENGINEERS
 PH 548-8259 NELSON FAX 546-8412
 EMAIL cgm@extra.co.nz



DESIGN	RW
DRAWN	AD
CHECKED	<i>[Signature]</i>
APPROVED	<i>[Signature]</i>
DATE	DEC. '02

JOB TITLE
 MARKET DEVELOPMENTS
 STAGE 3

DRAWING TITLE
 SITE PLAN
 EXTENT OF FILL

SCALE 1:500 at A1	OF SHEETS
JOB NO 9721	SHEET 3

Golder Associates (NZ) Ltd

Level 1, 79 Cambridge Terrace
PO Box 2281, Christchurch
New Zealand
Telephone: +64 3 377 5696
Fax: +64 3 377 9944
Email: christchurch@golder.co.nz
www.golder.com



Rm 005179

19 February 2002

01645640/3212

Chief Executive Officer
Nelson City Council
PO Box 645
Nelson

Dear Sir

**STATEMENT OF PROFESSIONAL OPINION AS TO SUITABILITY OF LAND
FOR BUILDING DEVELOPMENT:**

SUBDIVISION: LOTS 1 – 27 AND 29 – 40, 177 WAIMEA ROAD, NELSON

OWNER: MARKET PROPERTIES LTD

I Guy Grocott of Golder Associates (New Zealand) Ltd. confirm that:

1. I am an engineering geologist experienced in the fields of slope and foundation stability and was retained by the subdividing owner as geotechnical consultant on the above subdivision.
- X 2. I have carried out a pre-construction site investigation in accordance with sound engineering geological principles and practice as described in reference 1.
- X 3. The extent of my inspections during construction and the geotechnical conditions which should be applied to any development on the site are described in reference 2.
4. It is my professional opinion not to be construed as a guarantee that:
 - that the completed works give due regard to land slope and foundation stability
 - cuts and fills in excess of 1.2 m proposed by individual property owners as part of site development should be the subject of specific investigation and design by an experienced geotechnical practitioner
 - all stormwater from drains, roofs and paved areas to be discharged to Council's reticulation system
 - building exclusion areas have been identified for Lots 2, 4 13 and 44 and are shown on Figure 1 included as part of Golder Associates (NZ) Ltd letter form report to Nelson City Council dated 19 February 2002 (reference 01645640/3210) attached
5. This statement of professional opinion applies only to the slope stability of each allotment. Certification of the compacted earthfill which has been placed on the site is outside of the scope of Golder Associates, and is the responsibility of Cameron Gibson Wells Ltd.

6. This professional opinion is furnished to Nelson City Council and the subdividing owner for their purposes alone on the express condition that it will not be relied upon by any other person and does not remove the necessity for the normal inspection of foundation conditions at the time of erection of any dwelling.

Yours sincerely,
GOLDER ASSOCIATES (NZ) LTD



Guy Grocott
Regional Manager

References:

1. Golder Associates (New Zealand) Ltd., 2001: Geotechnical assessment of Market Road Developments subdivision, Stages I-III, Nelson. Unpublished consultants report No. 269 prepared for Cameron Gibson Wells Ltd., dated 23 April 2001.
2. Golder Associates (New Zealand) Ltd., 2002: Unpublished consultants letter form report to Nelson City Council dated 19 February 2002 and referenced 01645640/3210.



Nelson City Council
te kaunihera o whakatū

APPLICATION FOR OUTLINE PLAN APPROVAL

Consent No: RM
Fee Paid:
Receipt Number:

Applicant & Contact Details

Full name of applicant(s) MINISTRY OF EDUCATION

Contact person or agent JAMES HARDY

Address for service * (see note below) PO BOX 282
NELSON Post Code 7040

Phone _____ Mobile _____

Fax _____ Email _____

Address for Invoicing – if different from above *(see note below) NAYLAND COLLEGE
166 NAYLAND ROAD, STOKES, NELSON 7011

Signed [Signature] Date 09/08/2018
(Signature of person authorised to sign on behalf of applicant)

* All correspondence including the Decision Letter and Invoice will be sent to the "Address for Service". If the invoice is to be sent to a separate address, please specify.

Designation Details

Requiring Authority: MINISTER OF EDUCATION

Name and Code of Designation: DEZ NAYLAND COLLEGE

Purpose of Designation: EDUCATION

Property Details

Address: Number 166 Street/Road NAYLAND ROAD

Legal Description PT SEC 78, DP1866 ON SO 9981 WAIMSEA SD

Owner's name MINISTRY OF EDUCATION

If the location has an amalgamated title, please indicate clearly on the Certificate of Title, the exact lot or parcel where the activity is to take place.

Activity Details

Provide a brief description of the activity to be undertaken; a full description of the activity must be provided as part of the application (see item 4 of the Checklist on next page)

PUBLIC EDUCATION

If there is an associated building consent, please quote Building Consent Number: BC _____

CHECKLIST: Have you included all of the following items?

The following items must be provided with the application form (see note (i) below)

		✓ x
1	An INITIAL PAYMENT in accordance with the Nelson City Council Schedule of Fees & Charges (see Note (v) below)	
2	Copy of CERTIFICATE OF TITLE (Search Copy must be less than 3 months old and must include a Title Plan)	✓
3	A FULL DESCRIPTION of the proposed activity – 1 copy	✓
4	An OUTLINE PLAN – 1 copy According to s176(A)(3) of the RMA an Outline Plan must show	✓
4(a)	The height, shape, and bulk of the public work, project, or work; and	✓
4(b)	The location of the site of the public work, project, or work; and	✓
4(c)	The likely finished contour of the site; and	N/A
4(d)	The vehicular access, circulation, and the provision for parking; and	✓
4(e)	The landscaping proposed; and	N/A
4(f)	Any other matters to avoid, remedy, or mitigate any adverse effects on the environment.	—

Important Notes

- (i) The application will not be lodged for processing by Nelson City Council unless all the above items are included with the application form.
- (ii) This application will be checked for completeness, under Section 176(A)(3) of the Resource Management Act 1991 (the Act).
- (iii) If the application is deemed to be **complete**, the application will be formally received as from the date of lodgement. The applicant will receive an acknowledgement letter within 10 working days advising that the application is formally received, and advising of the name of the Planner who will be processing the application.
- (iv) If the application is deemed to be **incomplete** (under Section 176(A)(3) of the Act) it will be **rejected** and returned to the applicant, within 10 working days, along with details of the missing information (or information that is needed in order for it to be deemed complete).

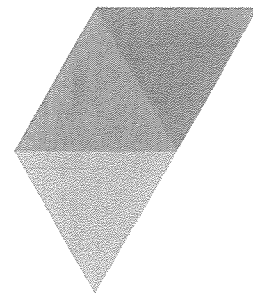
If the rejected application is re-lodged with the Council, it is treated as a new application, i.e. the processing clock starts from the date the application is re-lodged.

If the applicant does not re-submit the rejected application, the initial payment (deposit) will be returned to the applicant, minus the charges incurred to date (e.g. for the check by the Planner, and for administration time).

- (v) Further charges may be incurred for processing the application.
- (vi) Once this application has been formally received by the Council, it is available for public inspection.



MINISTRY OF EDUCATION
TE TĀHUHU O TE MĀTAURANGA



9 August 2018

The City Planner
Resource Planning
Nelson City Council
P.O. Box 645
Nelson

Dear Sir/Madame,

OUTLINE PLAN APPLICATION

The MOE formally wishes to apply for a waiver to Outline Plan approval from the Nelson City Council, as detailed in Section 176A of the Resource Management Act 1991, for the proposed work at Nayland College.

The extent of the work covered by the submitted plans comprising partial recladding and window/door replacement and extensive internal upgrading.

This work will increase the existing buildings footprint by a minimal amount (the size of a Personnel Lift, a first floor veranda and 2 external stairs)

The number of employees at the school will not increase.

I formally request a waiver of the Section 176A of the Resource Management Act 1991 requirement to provide an Outline plan application.

I have enclosed a site plan showing the extent of the proposed works.

Please send your Invoice direct to the school:

Attention: John Hall
The Principal and Board of Trustees
Nayland College
166 Nayland Road
Stoke
NELSON
7011

Please do not hesitate to contact me should you have any questions.

Yours sincerely

James Hardy | Regional Property Advisor
DDI +6435391548 Mobile +64 27 242 1234
19 Haven Road, Nelson

education.govt.nz | Follow us on Twitter: @EducationGovtNZ

We get the job done *Ka oti i a mātou ngā mahi*
We are respectful, we listen, we learn *He rōpū manaaki, he rōpū whakarongo, he rōpū ako mātou*
We back ourselves and others to win *Ka manawanui ki a mātou, me ētahi ake kia wikaoria*
We work together for maximum impact *Ka mahi ngātahi mō te tūkinga nui tonu*

Great results are our bottom line *Ko ngā huanga tino pai ā mātou whāinga mutunga*



COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952




R.W. Muir
Registrar-General
of Land

Search Copy

Identifier **689493**
Land Registration District **Nelson**
Date Issued 27 February 2015

Prior References

Proc 60237

Estate	Fee Simple
Area	8.4948 hectares more or less
Legal Description	Part Section 78 Suburban South District

Proprietors

Koata Limited

Interests

Subject to Part IV A Conservation Act 1987 (but Sections 24(2A), 24A and 24AA do not apply)

Subject to Section 11 Crown Minerals Act 1991

Subject to Section 170(6) and (7) Ngati Koata, Ngati Rarua, Ngati Tama ki Te Tau Ihu and Te Atiawa o Te Waka-a-Maui Claims Settlement Act 2014

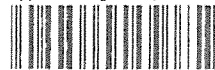
10023699.5 Lease Term 21 years commencing 1 August 2014 (Renewal Clause) CIR 716565 issued - 8.10.2015 at 11:33 am

Identifier

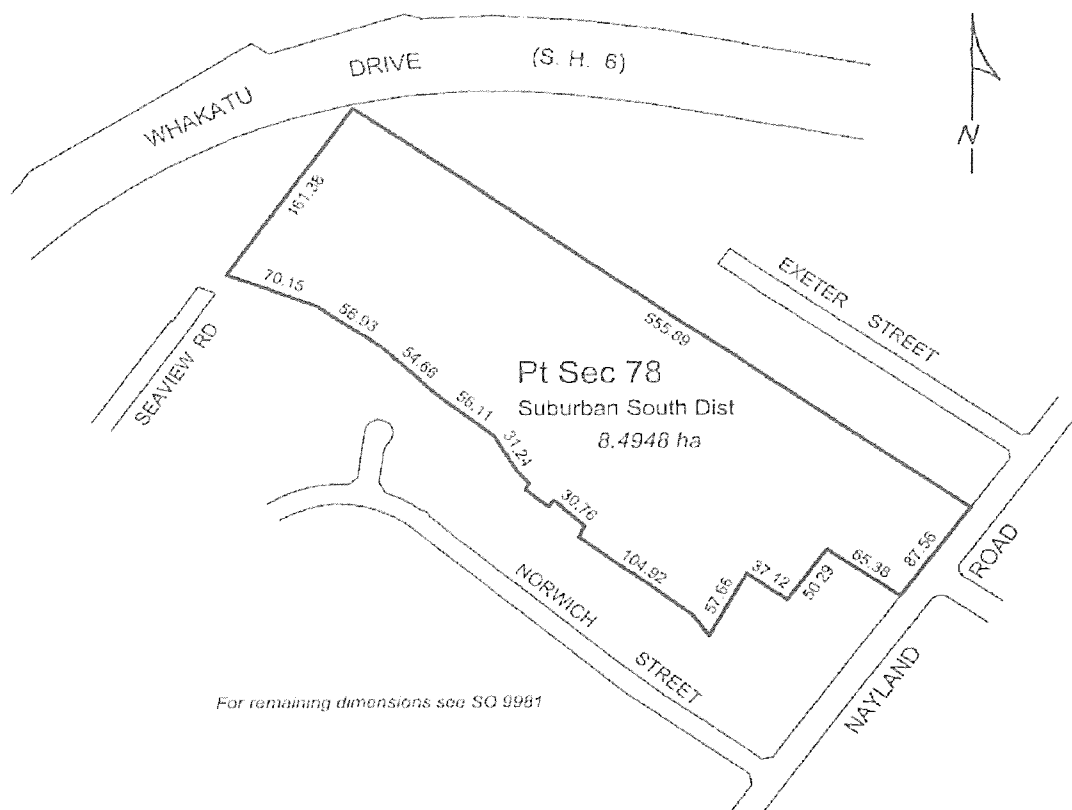
689493

Title Diagram 689493

Cpy - 01/01, Pgs - 001, 03/03/10, 06:56



DocID: 213990517





COMPUTER INTEREST REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy



R. W. Muir
Registrar-General
of Land

Identifier **716565**
Land Registration District **Nelson**
Date Registered 08 October 2015 11:33 am

Prior References

689493 NL134/2

Estate	Leasehold	Instrument	L 10023699.5
Area	8.8489 hectares more or less	Term	21 years commencing 1 August 2014 (Renewal Clause)

Legal Description Part Section 78 Suburban South District
and Part Section 78 District of Suburban
South

Purpose For Education Purposes

Proprietors

Her Majesty the Queen

Interests

10999960.1 Notification that a building consent issued pursuant to Section 72 Building Act 2004 identifies inundation as a natural hazard - 9.1.2018 at 7:00 am (Affects Part Section 78 Suburban South District)

