

Napier City Council

231 Hastings Street, Napier
Private Bag 6010, Napier



CITY OF
NAPIER



APPLICATION FOR BUILDING CONSENT and/or Project Information Memorandum

Section 33 or section 45, Building Act 2004

THE BUILDING [Project Location]

Street address/rapid number of building: [for structures that do not have a street address, state the nearest street intersection and the distance and direction from that intersection]

236 KENNEDY RD
NAPIER 410

Legal description of land where building is located: [state legal description as at the date of application and, if subdivision is proposed include details of relevant lot numbers and subdivision consent]

Lot: 229 DP: 8434 Sec No: _____
Blk No: _____ Val No: 0997010100
ML No: _____ Blk name & No: _____

Building name: [if applicable]

RESIDENTIAL

Location of building within site: [include nearest street access]

Number of levels: [include ground level and any levels below ground]

1

Level/Unit number: [if applicable]

Area:

Existing floor area: _____

New floor area: _____

Total floor area: 80m²

Current, lawfully established, use: [include number of occupants per level and per use if more than one level]

RESIDENTIAL

Year first constructed: [approximate date is acceptable e.g.: c1920's or 1960-1970]

OWNER [must be completed for all applications and all details must be the owners]

Name of owner:

B & V HARRISON

[include preferred form of title, e.g. Mr, Miss, Dr if an individual and the contact persons name if a company, trust of similar]

Owner's mailing address:

236 Kennedy Road
NAPIER 410

Street address/Registered office:

Owner's contact details:

Landline: 8340905 Not In Service

Mobile: 027 747 1996

After hours: as above

Facsimile Number: _____

Email: vickisharty@slingshot.co.nz

Website: _____

Evidence of ownership: [please attach one of the following, as appropriate to the circumstances, showing full name of legal owner(s) of building/land]

- ☐ Copy of certificate of title, no more than one month old
☐ Agreement for sale and purchase
☐ Lease
☐ Other

OR

☒ Council to obtain certificate of title (cost as per Council fee schedule)

137/77

Council use only:

Building Consent Number: 081098

Property ID: 115676

The following Councils have developed and adopted this form in partnership



HASTINGS
DISTRICT
COUNCIL



AGENT [only required if application is being made on behalf of the owner]**Name of agent:** _____

[include the contact persons name if a company, trust or similar]

Agent's mailing address:**Street address/Registered office:****Agent's contact details:**

Landline: _____

Mobile: _____

After hours: _____

Facsimile Number: _____

Email: _____

Website: _____

Relationship to owner: _____

[state details and provide written authorisation from the owner to make the application on the owner's behalf]

THE PROJECT**Description of the building work:** [provide sufficient description of building work to enable scope of work to be fully understood]

NEW SUPPLEMENTARY UNIT
 RELOCATE GARAGE TO NEW
 POSITION ON SITE

List building consents previously issued for this project (if any): [list who issued the consent, the date of issue and the consent number]**Estimated value of the building work on which the levy will be calculated (including goods and services tax):** [state estimated value as defined in section 7 of the Building Act 2004]

\$100,000

Will the building work result in a change of use of the building?☐ Yes☒ No**If yes, provide details of the new use:****Intended life of the building if less than 50 years:****Type of application:** I request that you issue a:

- ☐ PIM (Project Information Memorandum) only
- ☒ Building Consent and PIM (Project Information Memorandum)
- ☐ Building Consent only in accordance with PIM (Project Information Memorandum) Number:

PROJECT INFORMATION MEMORANDUM DETAILS**NOTE:** Unless a Project Information Memorandum (PIM) has been sought or obtained separately, one will be issued as part of this application.

Please select:

- ☐ Project Information Memorandum was applied for on ____/____/____
- ☐ Project Information Memorandum Number: _____ was issued on ____/____/____
- ☒ Project Information Memorandum is required (please complete details below :)

The following matters are involved in the project:

- | | |
|---|---|
| <input type="checkbox"/> Subdivision | <input type="checkbox"/> Alterations to land contours |
| <input type="checkbox"/> New or altered connections to public utilities | <input checked="" type="checkbox"/> Disposal of storm water and wastewater |
| <input checked="" type="checkbox"/> New or altered locations and/or external dimensions of buildings | <input type="checkbox"/> Building work over any existing drains or sewers or in close proximity to wells or water mains |
| <input type="checkbox"/> New or altered access for vehicles | <input type="checkbox"/> Building work over or adjacent to any road or public place |
| <input type="checkbox"/> Other matters known to the applicant that may require authorisations from the territorial authority [specify]: | |

BUILDING CODE COMPLIANCE

(Not required for PIM only applications)

The building work will comply with the building code as follows: (to be completed by the designer)

Clause

Identify which clauses will be involved in the building work

Means of compliance

Refer to relevant compliance document(s) or detail of alternative solution in the plans and specifications. Tick N/A if not applicable. If "Other" please specify.

| | | | | | | | |
|-------------|-------------------------------------|---|--|--|--|----------------------------------|---------------------------------|
| B1 | Structure | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> B1/AS2/AS1 | <input checked="" type="checkbox"/> NZS3604 <input type="checkbox"/> AS/NZS1170 | <input type="checkbox"/> NZS4229 | <input type="checkbox"/> NZS4203 | <input type="checkbox"/> Other: |
| B2 | Durability | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> B2/AS1 | <input type="checkbox"/> NZS3101 | <input type="checkbox"/> NZS3602 | <input type="checkbox"/> NZS3604 | <input type="checkbox"/> Other: |
| C1-4 | Fire | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> C1/AS1 | | | | <input type="checkbox"/> Other: |
| D1 | Access routes | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> D1/AS1 | <input type="checkbox"/> NZS4121 | | | <input type="checkbox"/> Other: |
| D2 | Mechanical installations for access | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> D2/AS1 | <input type="checkbox"/> NZS4332 | <input type="checkbox"/> EN81 | <input type="checkbox"/> EN115 | <input type="checkbox"/> Other: |
| E1 | Surface water | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> E1/AS1 | <input type="checkbox"/> AS/NZS3500.3 | | | <input type="checkbox"/> Other: |
| E2 | External moisture | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> E2/AS1 | <input type="checkbox"/> Specific design and testing | | | <input type="checkbox"/> Other: |
| E3 | Internal moisture | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> E3/AS1 | | | | <input type="checkbox"/> Other: |
| F1 | Hazardous agents on site | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> F1/AS1 | | | | <input type="checkbox"/> Other: |
| F2 | Hazardous building materials | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> F2/AS1 | <input type="checkbox"/> NZS4223 | | | <input type="checkbox"/> Other: |
| F3 | Hazardous substances etc | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> F3/AS1 | | | | <input type="checkbox"/> Other: |
| F4 | Safety from falling | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> F4/AS1 | <input type="checkbox"/> FSP Act | | | <input type="checkbox"/> Other: |
| F5 | Construction & demolition hazards | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> F5/AS1 | | | | <input type="checkbox"/> Other: |
| F6 | Lighting for emergency | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> F6/AS1 | | | | <input type="checkbox"/> Other: |
| F7 | Warning systems | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> F7/AS1 | <input type="checkbox"/> AS/NZS1668 | <input type="checkbox"/> NZS4512 | <input type="checkbox"/> NZS4515 | <input type="checkbox"/> Other: |
| F8 | Signs | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> F8/AS1 | | | | <input type="checkbox"/> Other: |
| G1 | Personal hygiene | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G1/AS1 | | | | <input type="checkbox"/> Other: |
| G2 | Laundrying | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G2/AS1 | | | | <input type="checkbox"/> Other: |
| G3 | Food preparation etc | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G3/AS1 | | | | <input type="checkbox"/> Other: |
| G4 | Ventilation | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G4/AS1 | <input type="checkbox"/> AS1668.2 | | | <input type="checkbox"/> Other: |
| G5 | Interior environment | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G5/AS1 | | | | <input type="checkbox"/> Other: |
| G6 | Airborne and impact sound | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G6/AS1 | | | | <input type="checkbox"/> Other: |
| G7 | Natural light | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G7/AS1 | | | | <input type="checkbox"/> Other: |
| G8 | Artificial light | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G8/AS1 | <input type="checkbox"/> NZS6703 | | | <input type="checkbox"/> Other: |
| G9 | Electricity | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G9/AS1 | | | | <input type="checkbox"/> Other: |
| G10 | Piped services | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G10/AS1 | <input type="checkbox"/> NZS5261 | | | <input type="checkbox"/> Other: |
| G11 | Gas as an energy source | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G11/AS1 | | | | <input type="checkbox"/> Other: |
| G12 | Water supplies | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G12/AS1 | <input type="checkbox"/> AS/NZS3500.1 | <input type="checkbox"/> AS/NZS3500.4 | | <input type="checkbox"/> Other: |
| G13 | Foul water | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> G13/AS1 | <input type="checkbox"/> AS/NZS3500.2 | <input type="checkbox"/> BS5572 | | <input type="checkbox"/> Other: |
| G14 | Industrial liquid waste | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> G14/AS1 | | | | <input type="checkbox"/> Other: |
| G15 | Solid waste | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> G15/AS1 | | | | <input type="checkbox"/> Other: |
| H1 | Energy | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> H1/AS1 | <input type="checkbox"/> NZS4214 <input type="checkbox"/> NZS4218 | <input type="checkbox"/> ALF Design Manual <input type="checkbox"/> NZS4243 | | <input type="checkbox"/> Other: |

Waiver/modification/alternative solution to NZ Building Code required for following parts of code:

[State nature of waiver or modification of building code required]

COMPLIANCE SCHEDULE DETAILS

(Not required for PIM only applications)

[Specified systems are defined in regulations; if you are not sure whether your building has specified systems, talk to the BCA or your architect]

- ☐ The specified systems for the building are as follows: [complete table below]
- ☐ The following specified systems are being altered, added to, or removed in the course of the building work: [complete table below]
- ☐ A compliance schedule is required for the cable car system
- ☒ No compliance schedule is required. There are no specified systems in the building

If there is a specified system(s), please select which of these are contained in the building:

SECTION 7

| Existing | New | | Existing | New | |
|--------------------------|--------------------------|---|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | 1) Automatic systems for fire suppression (e.g. sprinkler systems) | <input type="checkbox"/> | <input type="checkbox"/> | 12) Audio loops or other assistive listening systems |
| <input type="checkbox"/> | <input type="checkbox"/> | 2) Automatic or manual emergency warning systems for fire or other dangers | <input type="checkbox"/> | <input type="checkbox"/> | 13) Smoke control systems |
| <input type="checkbox"/> | <input type="checkbox"/> | 3) Electromagnetic or automatic doors or windows (e.g. ones that close on fire alarm activation) | <input type="checkbox"/> | <input type="checkbox"/> | 14) Emergency power systems for, or signs relating to, a system or feature specified in clauses 1 to 13 |
| <input type="checkbox"/> | <input type="checkbox"/> | 4) Emergency lighting systems | <input type="checkbox"/> | <input type="checkbox"/> | 15) Any or all of the following systems and features, so long as they form part of a building's means of escape from fire, and so long as those means also contain any or all of the systems or features specified in clauses 1-6, 9 and 13: |
| <input type="checkbox"/> | <input type="checkbox"/> | 5) Escape route pressurisation systems | <input type="checkbox"/> | <input type="checkbox"/> | 15a) Systems for communicating spoken information intended to facilitate evacuation; and |
| <input type="checkbox"/> | <input type="checkbox"/> | 6) Riser mains for use by fire service | <input type="checkbox"/> | <input type="checkbox"/> | 15b) Final exits (as defined by clause A2 of the building code); and |
| <input type="checkbox"/> | <input type="checkbox"/> | 7) Any automatic backflow preventer connected to a potable water supply | <input type="checkbox"/> | <input type="checkbox"/> | 15c) Fire separations (as so defined); and |
| <input type="checkbox"/> | <input type="checkbox"/> | 8) Lifts, escalators, travelators or other systems for moving people or goods within buildings | <input type="checkbox"/> | <input type="checkbox"/> | 15d) Signs for communicating information intended to facilitate evacuation; and |
| <input type="checkbox"/> | <input type="checkbox"/> | 9) Mechanical ventilation or air conditioning systems | <input type="checkbox"/> | <input type="checkbox"/> | 15e) Smoke separations (as so defined) |
| <input type="checkbox"/> | <input type="checkbox"/> | 10) Building maintenance units for providing access to the exterior and interior walls of buildings | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | 11) Laboratory fume cupboards | | | |

ATTACHMENTS

The following plans and specifications are attached to this application:

[All plans and specifications must meet the minimum requirements set out in the regulations or required by the building consent authority. Please refer to the schedule included with this form for complete details of plans, specifications and documents which may be required to support your application]

- ☐ Project Information Memorandum
- ☐ Certificate attached to Project Information Memorandum
- ☐ Evidence of ownership
- ☐ Development Contribution Notice
- ☒ Plans and Specifications [list]

SECTION 8**GENERAL**

Debtor: [the person responsible for the account]

☒ Owner ☐ Agent ☐ Other:

Address:

Phone:

First point of contact: [for communications with Council]

☒ Owner ☐ Agent ☐ Other:

Address:

Phone:

Signed by the owner:

Signature: WA Harrison

Name: WA Harrison

Date: 10-11-08

OR

Signed by the agent:

[on behalf of, or with authority from, the owner]

Signature

Name:

Date:

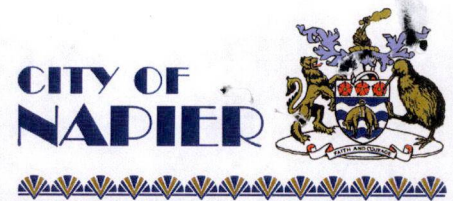
Privacy Information:

The information you have provided on this form is required so that your building consent application can be processed under the Building Act 2004. The Council collates statistics relating to issued building consents and has a statutory obligation to regularly forward these to Statistics NZ. The Council stores the information on a public register which must be supplied (as previously determined by the Ombudsman) to whosoever requests the information. Under the Privacy Act 1993 you have the right to see and correct personal information the Council holds about you.

SECTION 9

NAPIER CITY COUNCIL

Building Details Checklist



MAIN CONTRACTORS

Designer: COLIN MCKENZIE DESIGN LTD.

Builder: _____

Plumber: _____

Drainlayer: _____

Gasfitter: _____

Electrician: _____

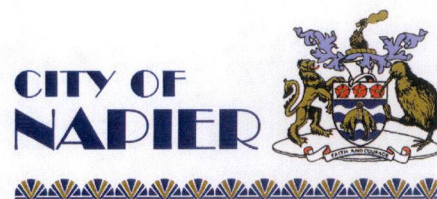
Other: _____

CHECKLIST

- a) Two copies of building plans and specifications, showing all necessary plans, elevations, cross sections and details. ☒
 - b) Two copies of the site plan showing dimensions of the proposed building from boundaries of the site and easements within the site. The preferred scale is 1:200. ☒
 - c) Two copies of subfloor bracing design and calculation. Detail all pile types and fixings. ☒
 - d) Two copies of wall bracing design and calculations. Detail fixing of wall bracing elements. ☒
 - e) Two copies of truss layout and one copy of the design certificate. ☒
 - f) Two copies of all fire and egress details, full specification of fire wall construction, fire doors and windows etc ☒
 - g) Two copies of engineering calculations and drawings. A design certificate could reduce processing time. ☒
 - h) One copy of any supervision advice, where supervision is necessary. A report will be required after the engineer has finished his supervision. ☒
 - i) Two copies of ground test details and reports. ☒
 - j) One copy of the report of the ground nature and any steps to be taken to prevent a danger to the building from such things as falling debris. ☒
- Note: Ground that does not have a ground bearing capacity of 100 kPa will require to have the foundations specifically designed**
- k) One copy of a drainage block plan. Show boundary lines and outline of the building at a 1:200 scale. ☒
 - l) Two copies of all plumbing, drainage and stormwater details. ☒
 - m) Two copies of electrical details where required by the Building Act. ☒
 - n) Two copies of all mechanical services details i.e. sprinkler systems, lifts, air conditioning systems etc. ☒
 - o) Levels to be shown to establish site drainage. ☒
 - p) Details of backflow prevention. ☒
 - q) One copy of all test results i.e. percolation tests. ☒

NAPIER CITY COUNCIL

Fees, Charges and Deposits



| APPLICATION RECEIPT NUMBER: | | FINAL RECEIPT NUMBER: | |
|--|-----------|--|------------|
| 550903 | | 557164 | |
| Date: 10/11/08 | | Date: 19/12/08 | |
| FEE | AMOUNT | FEE | AMOUNT |
| Administration | \$ 189.00 | DBH Accreditation Fee | \$ 11.00 |
| Plan Check | \$ 280.00 | Financial Contribution Infill Non Standard | \$ |
| BRANZ Levy | \$ 100.00 | Water Capital Contribution | \$ |
| DBH Levy | \$ 197.00 | Sewer Capital Contribution | \$ |
| Inspections | \$ 975.00 | Stormwater Capital Contribution | \$ |
| Compliance Schedule | \$ | Reserves Contribution Rural/Bay View | \$ |
| Water Connection | \$ | Copy Title Fee | \$ 25.00 |
| Water Meter & Box | \$ | | |
| Bay View Water Capital Contribution | \$ | Peer Review | \$ |
| Sewer Connection | \$ | Section 73 or 77 Certificate | \$ |
| Stormwater Connection 5436 | \$ 960.00 | Backflow Preventer | \$ |
| Vehicle Crossing Bond | \$ | Water Disconnection | \$ |
| Street Damage Deposit | \$ 300.00 | Stormwater Disconnection | \$ |
| Microfiche Charge | \$ | Sewer Disconnection | \$ |
| Dev Control Engineer | \$ | Services Engineer | \$ 42.00 |
| Planning Check | \$ 40.00 | Roading Engineer | \$ 50.00 |
| Resource Consent Fee | \$ | Development Contribution | \$ |
| Financial Contribution Infill Housing | \$ | Well Sealing | \$ |
| Reserves Contribution Commercial/ Industrial | \$ | | |
| | | Total | \$ 3169.00 |
| | | Less Deposit Paid | \$ 200.00 |
| | | TOTAL AMOUNT DUE | \$ 2969.00 |

Consent Allocation Sheet

The following Inspectors are competent to process Building Consent

No.: BC 081098

Consent Application Received by mail ☐

Cat level of consent

1

(The category level indicated next to each inspector is their current competency level. With some work above 2.3 requiring technical support.)

Building Construction

John Brydon (T/L)

Cat. 3.1



T/L = Technical Leader

Clive Buttery

Cat. 3.1



Gary Marshall

Cat. 3.1



Graham Randle

Cat. 2.3



Peter Hellyer

Training

Contractor

Cat. _____



Plumbing and Drainage System

Rod Jarvis (T/L)

Cat. 3.1



T/L = Technical Leader

Malcolm Smith

Cat. 3.1



Peter St. George

Cat. 3.1



Steve Anderson

Cat. 2.3



Murray Aitken

Cat. 1.2



Contractor

Cat. _____



Engineering Peer Review Required

Cat Level

☐ 2.3 to 3.3

☐ 3.4 & above

Yes



No



If "yes" give job copy to Senior to decide which engineer will carry out the review

Fire Service Design Review Unit

Yes



No



If "yes" give job copy to Senior for that copy to be forwarded to Fire Services

Sufficient information has been provided to commence processing this Building Consent (refer: TPBCP-40F002 (Insert))

Name:

Malcolm

Signature:

Mal

Date:

10 / 01 / 08

NAPIER CITY COUNCIL

INSPECTION SHEET

081098



DIRECT LINE TO BOOK INSPECTIONS Phone 835 1545

OWNER: Harrison BUILDER: _____

DRAINLAYER: _____ PLUMBER: _____

ADDRESS: 236 Kennedy Road

THE FOLLOWING MARKED BOXES ARE THE INSPECTIONS TO BE CALLED FOR:

| TPBCP Forms | | | | DATE | INSPECTOR |
|-------------|-------------------------------------|-------------------------------------|--|------|-----------|
| | <input type="checkbox"/> | SITE PRIOR TO WORK BEING STARTED | | | |
| | <input type="checkbox"/> | SITE CLEAR OF TOP SOIL | | | |
| | <input checked="" type="checkbox"/> | FOUNDATION/ FOOTINGS GROUND BEAMS | | | |
| 40F146 | <input type="checkbox"/> | FOUNDATION (BLOCK OR POURED) | | | |
| 40F146 | <input checked="" type="checkbox"/> | FOUNDATION/FLOOR <u>GARAGE</u> | | | |
| 40F146 | <input checked="" type="checkbox"/> | FLOOR SLAB | | | |
| 40F146 | <input type="checkbox"/> | PILE HOLES | | | |
| 40F147 | <input type="checkbox"/> | SUB FLOOR (TIMBER) | | | |
| 40F147 | <input type="checkbox"/> | SUB FLOOR (INSULATION) | | | |
| 40F151 | <input checked="" type="checkbox"/> | SUB FLOOR (PLUMBING & DRAINAGE) | | | |
| 40F157 | <input checked="" type="checkbox"/> | PRE- WRAP (All fixings) | | | |
| 40F150 | <input type="checkbox"/> | CAVITY BATTENS | | | |
| 40F150 | <input checked="" type="checkbox"/> | FLASHINGS PRIOR TO EXTERIOR COATING | | | |
| 40F149 | <input checked="" type="checkbox"/> | MOISTURE TEST (Result _____) | | | |
| 40F149 | <input checked="" type="checkbox"/> | INSULATION | | | |

Please see over

LIGHT TIMBER FRAME C.P.U. BUILDING CHECK LIST

OWNER B & V HARRISON

CONSENT No 0810948

SITE ADDRESS 236 KENNEDY RD

CHECKED BY [Signature]

DATE 26/11/08

Wind Zone LOW Roof Pitch <8 <10 >10 10 Light Heavy / Roof
Change of Use YES / NO Number stories 1 Stud Height 2.400^m
Framing Timber / Steel Specific Design YES / NO Ground Test Req YES / NO
Floor Area 80^m Hazard YES / NO Type

Estimated Value: \$ 100,000.00

| | | |
|-----------------------------------|----------|--|
| Approvals by other departments | <u>X</u> | <input type="checkbox"/> All depts <input type="checkbox"/> Not completed <u>P/D</u> |
| Drawings/specifications | <u>✓</u> | <input checked="" type="checkbox"/> Drawings <input checked="" type="checkbox"/> Specs <input checked="" type="checkbox"/> Manufacturers details |
| Bracing calculations foundations | <u>✓</u> | <input checked="" type="checkbox"/> NZS3604 <input type="checkbox"/> Specific Design |
| Bracing calculations walls | <u>✓</u> | <input checked="" type="checkbox"/> Wind zone <input checked="" type="checkbox"/> Total BUS |
| Timber treatment | <u>✓</u> | <input checked="" type="checkbox"/> Scheduled <input type="checkbox"/> Noted on drawings <input type="checkbox"/> Roof framing |
| Truss system | <u>X</u> | <input type="checkbox"/> PS <input type="checkbox"/> Layout <input type="checkbox"/> Slab thickenings |
| Glass | <u>✓</u> | <input checked="" type="checkbox"/> Window schedule <input type="checkbox"/> Specs NZS4223 |
| Durability | <u>✓</u> | <input checked="" type="checkbox"/> B1 <input checked="" type="checkbox"/> E2 details <input checked="" type="checkbox"/> Roof pitch OK |
| Producer Statement design | <u>—</u> | <input type="checkbox"/> Calculations provided <input type="checkbox"/> PS reqd |
| Building relation to boundary | <u>✓</u> | <input checked="" type="checkbox"/> More than 1m <input checked="" type="checkbox"/> TP signed |
| Check for planning consent notice | <u>✓</u> | <input checked="" type="checkbox"/> NA <input type="checkbox"/> Notice complied with |
| Consent Condition reqd | <u>—</u> | <input type="checkbox"/> Engineer <input type="checkbox"/> Sec 73/77 <input type="checkbox"/> Other |
| Floor levels/street levels | <u>✓</u> | <input checked="" type="checkbox"/> NZS3604 <input checked="" type="checkbox"/> Utilities Engineer signed |
| Foundations concrete/piles | <u>✓</u> | <input checked="" type="checkbox"/> Floor slab <input type="checkbox"/> Ring <input type="checkbox"/> Piles <input type="checkbox"/> Soil test |
| Veneer/Stucco foundation details | <u>—</u> | <input type="checkbox"/> Complies NZS3604 |
| Pole construction details | <u>—</u> | <input type="checkbox"/> SD calcs |
| Reinforcing | <u>✓</u> | <input checked="" type="checkbox"/> NZS3604 <input type="checkbox"/> Specific design |
| Concrete floor | <u>✓</u> | <input type="checkbox"/> Supplementary bars <input checked="" type="checkbox"/> saw cuts <input type="checkbox"/> free joint reqd |
| Fixing down system | <u>✓</u> | <input type="checkbox"/> Type and ϕ OK |
| DPC/Vapour barrier | <u>✓</u> | <input checked="" type="checkbox"/> Under slab <input type="checkbox"/> Top of piles <input type="checkbox"/> Bottom plate |
| Chimney foundation/system | <u>—</u> | <input type="checkbox"/> Structural details |
| Floor Joists | <u>—</u> | <input type="checkbox"/> Spans <input type="checkbox"/> NZS3604 <input type="checkbox"/> Alternative |
| Vents | <u>—</u> | <input checked="" type="checkbox"/> NZS3604 |
| Plates | <u>✓</u> | <input checked="" type="checkbox"/> Single <input type="checkbox"/> Double top |
| Studs | <u>✓</u> | <input type="checkbox"/> > 3m <input checked="" type="checkbox"/> < 3m <input type="checkbox"/> ϕ NZS3604 |
| Lintels | <u>✓</u> | <input checked="" type="checkbox"/> NZS3604 <input type="checkbox"/> composite (tables) |
| Beams | <u>—</u> | <input type="checkbox"/> Tables v <input type="checkbox"/> Specific design |
| Posts | <u>—</u> | <input checked="" type="checkbox"/> Footings <input type="checkbox"/> Connectors <input type="checkbox"/> Timber/steel |
| Ceiling joists/battens | <u>✓</u> | <input type="checkbox"/> Metal <input checked="" type="checkbox"/> Timber <input checked="" type="checkbox"/> ϕ <u>450</u> ^{mm} |
| Ceiling runners | <u>—</u> | <input type="checkbox"/> Reqd if metal battens <input type="checkbox"/> NA - timber battens |
| Ceiling system | <u>✓</u> | <input checked="" type="checkbox"/> Gib <input type="checkbox"/> Other <input type="checkbox"/> Batten ϕ OK |
| Rafters | <u>—</u> | <input type="checkbox"/> NZS3604 <input type="checkbox"/> composite <input type="checkbox"/> SD |
| Under purlins | <u>—</u> | <input type="checkbox"/> NA trussed roof <input type="checkbox"/> Framed to NZS3604 |

| | | |
|------------------------------|---|--|
| Strutting | — | <input checked="" type="checkbox"/> NA trussed roof <input type="checkbox"/> Framed to NZS3604 |
| Roof bracing | ✓ | <input type="checkbox"/> Roof plane <input type="checkbox"/> Roof space <i>HIP ROOF</i> |
| Purlin/tile batten | ✓ | <input checked="" type="checkbox"/> Centres/dimensions OK |
| Cavity battens | — | <input type="checkbox"/> System specified <input type="checkbox"/> Risk matrix |
| Fire wall | — | <input type="checkbox"/> Cross section details |
| Insulation | ✓ | <input checked="" type="checkbox"/> Walls <input checked="" type="checkbox"/> Ceilings <input type="checkbox"/> Type |
| Netting/paper | ✓ | <input type="checkbox"/> Self supporting <input checked="" type="checkbox"/> Netting <input type="checkbox"/> Compatible |
| Roof cladding | ✓ | <input checked="" type="checkbox"/> Pitch <i>15°</i> Material..... <i>COLORSTEEL CORRUGATED</i> |
| Building papers | ✓ | <input type="checkbox"/> Compatibility <input type="checkbox"/> Wind barrier |
| Wall claddings | ✓ | <input checked="" type="checkbox"/> Type and details provided <input checked="" type="checkbox"/> Flashing details |
| Stucco | — | <input type="checkbox"/> Complies with E2 |
| Veneer | — | <input type="checkbox"/> Footing detail <input type="checkbox"/> Cavity |
| Heating if installed | — | <input type="checkbox"/> Makers details provided |
| Natural lighting/ventilation | ✓ | <input checked="" type="checkbox"/> Visual awareness <input checked="" type="checkbox"/> L&V |
| Safety from falling | — | <input type="checkbox"/> Decks <input type="checkbox"/> Stairs <input type="checkbox"/> Handrails |
| Smoke alarms | ✓ | <input checked="" type="checkbox"/> Within 3m of bedrooms <input checked="" type="checkbox"/> Exitway |
| Advise EHO | — | <input type="checkbox"/> Commercial <input type="checkbox"/> NA residential only |
| Sea spray zone | — | <input type="checkbox"/> Within 500m of sea <input type="checkbox"/> Outside zone |
| Inspection sheet copy | ✓ | <input type="checkbox"/> Copy on file |
| Swimming pool | — | <input type="checkbox"/> Details <input type="checkbox"/> Fencing |
| Fees | — | <input type="checkbox"/> Sec 73/77 <input type="checkbox"/> Compliance schedule |

Letter Sent On: 26/11/08

GENERAL COMMENTS

AWAITING TRUSS DESIGN & PRODUCER STATEMENT

TRUSS DESIGN & PS RECEIVED 4/12/08

OK TO APPROVE SUBJECT TO O/D

Note:

1. Until items identified in the letter indicated above, this consent cannot be issued and will be placed on hold until such time as all items have been satisfied.

Signature:  Date: 26/11/08

2. If built in accordance with the plans and specification the building work will comply with the building code. The building consent can be issued.

Signature:  Date: 18/12/08

INSPECTORS OFFICE
PHONE: 834-4179
FAX: 835-1545
BC081098



20 November 2008

V. HARRISON
236 KENNEDY RD
NAPIER 4110

Dear Madam

Your application in respect of: **SUPPLEMENTARY UNIT AND RELOCATED GARAGE**
has been examined.

Please contact this Office at your earliest convenience for further information:

1. Please nominate suitably qualified and registered plumber\drainlayer. *Dean Sragle 12746*
2. Confirm where potable water supply will come from i.e. existing water supply or new separate toby, which would require an application for. *Existing*
3. Nominate internal drainage pipework sizes and grades from fixtures. *Kitchen 50mm Balance 40mm 1:40 fall.*
4. Nominate relocated garage stormwater downpipe size, position and drainage to main line. *65mm Downpipe x 2.*
5. Please revisit stormwater drainage as paved area appears to require control via sump. *New Sump.*
6. Confirm that existing stormwater is sized and graded appropriately for the extra volume of water that it will be required to deal with from the supplementary unit\hardstand area. *regraded to 150mm.*

10.12.08 - Ruz

Yours faithfully

[Signature]
M. AITKEN
BUILDING CONSENTS OFFICER

PLEASE NOTE:

1. **Work must not commence prior to issue of consent**
2. **Applications not finalized within 1 month from the above date will be cancelled.**
3. **Statutory time for processing has now stopped and will not commence until the above items have been rectified.**

PLUMBING & DRAINAGE C.P.U. CHECKLIST

OWNER

HARRISON

CONSENT No:

081098

SITE ADDRESS

10236 KENNEDY ROAD

CHECKED BY

MURRAY HITTEN

DATE

20.11.08

ADMINISTRATION

| | | |
|-------------------------|-------------------------------------|---|
| Fees inspections | <input checked="" type="checkbox"/> | Number charged: $x 6 = 450$ |
| Fees administration | <input checked="" type="checkbox"/> | Time charged: $x 1 1/2 = 1620$ |
| 1:200 Site plan | <input checked="" type="checkbox"/> | <input type="checkbox"/> Existing footprint <input checked="" type="checkbox"/> Site copy <input checked="" type="checkbox"/> No:1 file |
| Advise EHO | N/A | <input type="checkbox"/> Food premises <input type="checkbox"/> Hairdressers <input type="checkbox"/> Liquor |
| PIM details | N/A | <input type="checkbox"/> Sewer <input type="checkbox"/> S\W <input type="checkbox"/> Water <input checked="" type="checkbox"/> Other No INFORMATION |
| Name Plumber\Drainlayer | X | Name: DEAN SINGLE 10.12.08 |
| Mark inspection sheet | <input checked="" type="checkbox"/> | <input type="checkbox"/> None required <input checked="" type="checkbox"/> Ticked <input checked="" type="checkbox"/> Denoted |

SPECIFICATION

| | | |
|------------------------------------|-------------------------------------|--|
| Schematic drawings | N/A | <input checked="" type="checkbox"/> Single storey <input type="checkbox"/> Multi-storey |
| Ventilation sanitary rooms\kitchen | <input checked="" type="checkbox"/> | <input type="checkbox"/> None <input checked="" type="checkbox"/> Window <input type="checkbox"/> Mechanical SAVE IT GLASS |
| Durability of materials | <input checked="" type="checkbox"/> | B2 |
| Siting of building not over drains | <input checked="" type="checkbox"/> | <input type="checkbox"/> Existing <input checked="" type="checkbox"/> Clear <input type="checkbox"/> OK to build over EXISTING SEWER TO BE MOVED |
| No: of facilities\type of use | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Commercial <input type="checkbox"/> Accessible |
| Wet area shower | N/A | <input checked="" type="checkbox"/> None |
| Commercial kitchen | N/A | Product: <input type="checkbox"/> Surfaces <input type="checkbox"/> WHB <input type="checkbox"/> Rangehood details |
| Check conditions of subdivision | N/A | <input type="checkbox"/> Sewer <input type="checkbox"/> S\W <input type="checkbox"/> Water <input type="checkbox"/> Other |

STORMWATER – Note: If not required for this BC tick here ☐

| | | | |
|-----------------------------|-------------------------------------|-------------------------------------|---|
| Roof area | HOUSE + GARAGE | X | Roof: 64.88 / 27.88 Paved: 11 Total MCA: 173 10.12.08 |
| Internal gutter | N/A | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> None. Cross sectional area sqmm |
| Overflows | N/A | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> None <input type="checkbox"/> Required size |
| No: size DP's | X | <input checked="" type="checkbox"/> | Number: 2 + 2 Size: 80 / 65 + GARAGE 10.12.08 |
| Size of drain | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> 90mm <input checked="" type="checkbox"/> 100mm <input checked="" type="checkbox"/> 150mm 1:40 / 1:200 GRADE |
| Grade of drain | X | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> As per E1 figure 3 |
| Total paved area controlled | X | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> Existing <input checked="" type="checkbox"/> Less than 60sqm <input checked="" type="checkbox"/> Controlled |
| Levels of paved areas | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> Existing <input checked="" type="checkbox"/> 150mm <input type="checkbox"/> Other |
| Sumps: type 1\type 2 | X | <input checked="" type="checkbox"/> | <input type="checkbox"/> None <input type="checkbox"/> Type 1 <input checked="" type="checkbox"/> Type 2 10.12.08 |
| Bubble sump | X | <input checked="" type="checkbox"/> | <input type="checkbox"/> Mains connection <input checked="" type="checkbox"/> K&C 10.12.08 |
| Stormwater behind walls | N/A | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> Flat site <input type="checkbox"/> Connects via sump |
| Drainage layout | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> Access points |
| New connection required | X | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> Existing <input checked="" type="checkbox"/> Utilities engineer 10.12.08 18.12.08 |
| Pump required\storage | N/A | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> NCC pumped S/W policy |

SEWER DRAIN – Note: If not required for this BC tick here ☐

| | | |
|-------------------------------|-------------------------------------|--|
| Drainage layout | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> G13 <input type="checkbox"/> AS/NZS 3500 |
| Size\grade of drain | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> 100mm <input type="checkbox"/> 150mm <input type="checkbox"/> Other <i>@ 1.60 Min GRADE</i> |
| Ventilation of drain | <input checked="" type="checkbox"/> | <input type="checkbox"/> Existing <input checked="" type="checkbox"/> TV <input type="checkbox"/> DV <input type="checkbox"/> SV <input type="checkbox"/> BV <i>AAV ON KITCHEN</i> |
| Location of services | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> Sewer <input type="checkbox"/> S\W <input type="checkbox"/> Water |
| New connection required | <i>N/A</i> | <input checked="" type="checkbox"/> Existing <input type="checkbox"/> Utilities engineer |
| Regional Council requirements | <i>N/A</i> | <input checked="" type="checkbox"/> Reticulated <input type="checkbox"/> HBRC approval |

WATER – Note: If not required for this BC tick here ☐

| | | |
|------------------------------------|-------------------------------------|---|
| Backflow prevention – Note: BWOFF | <i>N/A</i> | <input checked="" type="checkbox"/> None. Hazard category: <input type="checkbox"/> Utilities |
| Sizing watermain\internal pipework | <input checked="" type="checkbox"/> | <input type="checkbox"/> Watermain <input checked="" type="checkbox"/> Internal <i>POLYBUTYLENE HDPE</i> |
| Distance HWU to kitchen | <input checked="" type="checkbox"/> | <input type="checkbox"/> Existing. Distance: <i>INSTANTANEOUS HWU - 5.75M</i> |
| Type of hot water system | <input checked="" type="checkbox"/> | <input type="checkbox"/> Existing <input type="checkbox"/> Electric <input checked="" type="checkbox"/> Gas <input type="checkbox"/> Solar <i>INSTANTANEOUS</i> |
| Protection of tank supply | <i>N/A</i> | <input checked="" type="checkbox"/> Reticulated <input type="checkbox"/> Protection <i>INSTANT 24</i> |
| Bore water | <i>N/A</i> | <input checked="" type="checkbox"/> Reticulated <input type="checkbox"/> Water analysis |

GENERAL COMMENTS

SEWER FOR EXISTING HOUSE TO BE RELOCATED.

POTABLE WATER FROM EXISTING SUPPLY. 10.12.08

Letter Sent On: 20 / 11 / 08

Note: *CALLER COLIN MCKENZIE 10.12.08 RE UPGRADE TO 150 P/S/W DOUBLE K+C CONNECTION WHICH HE WILL APPLY FOR. ✓ 18.12.08*

CALLER V HARRISON TO ADVISE RE ABOVE - MESSAGE LEFT.

1. This consent cannot be issued and will be placed on hold until all outstanding items identified in the letter sent on the above date have been satisfied.

Signature: *[Signature]* Date: 20 / 11 / 08

2. If built in accordance with the plans and specifications the building work will comply with the Building Code. The building consent can be issued.


Signature: *[Signature]* Date: 18 / 12 / 08



COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952



Search Copy


R. W. Muir
Registrar-General
of Land

Identifier **HB137/77**
Land Registration District **Hawkes Bay**
Date Issued 05 December 1952

Estate Fee Simple
Area 997 square metres more or less
Legal Description Lot 229 Deposited Plan 8434

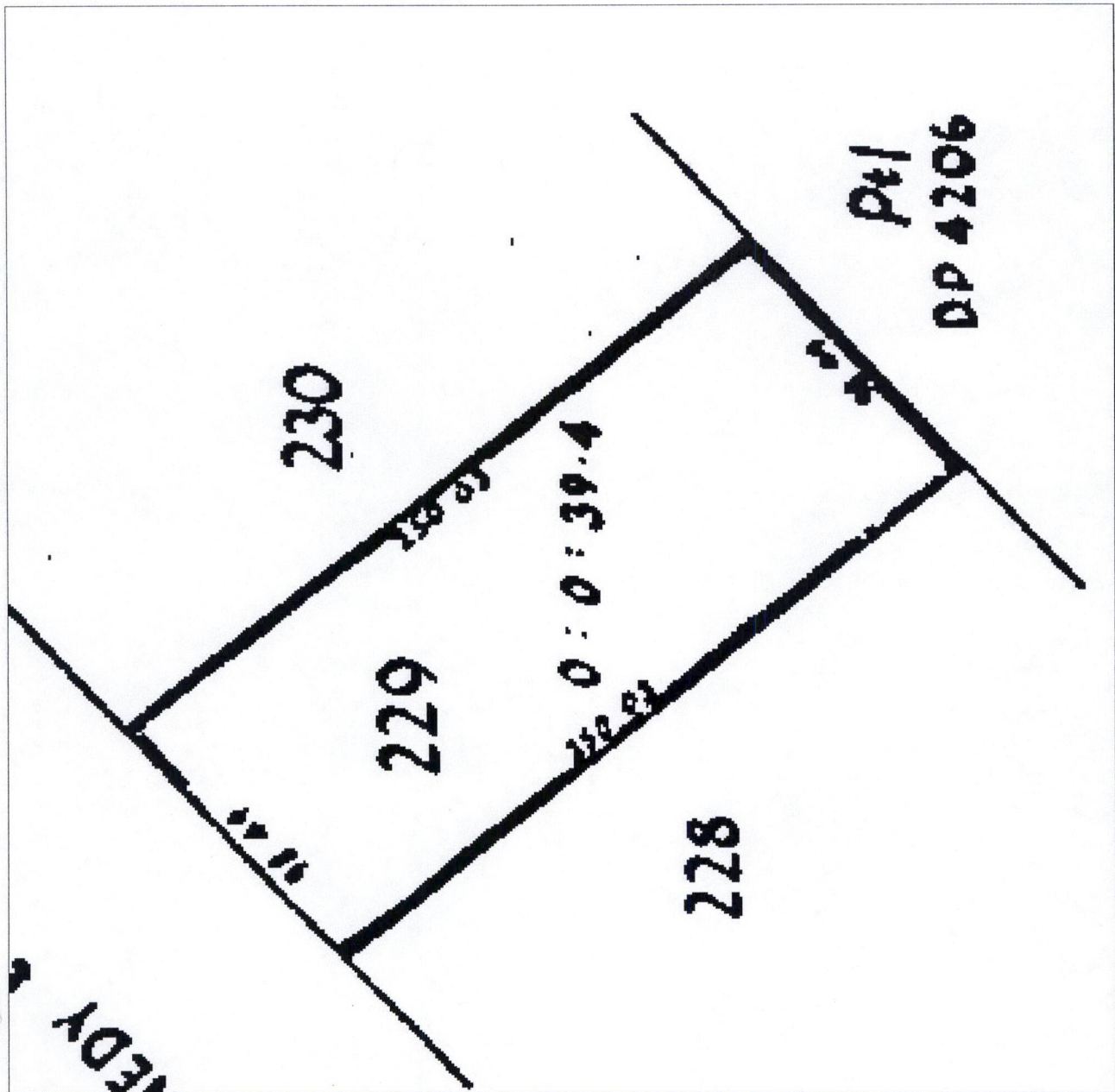
Proprietors
Boyce Glenn Harrison and Vicki Anne Harrison

Interests

Subject to electric power transmission lines rights (in gross) in favour of The Hawke's Bay Electric Power Board created by Transfer 104025

Subject to sewerage rights (in gross) in favour of The Napier City Council created by Transfer 104026

7923497.3 Mortgage to ASB Bank Limited - 12.9.2008 at 2:31 pm

HB137/77

SPECIFICATION OF WORK TO BE
DONE AND MATERIALS TO BE USED
PROPOSED SUPPLEMENTARY UNIT AND
RELOCATE GARAGE ON SITE TO NEW POSITION:

236 KENNEDY ROAD

NAPIER

FOR:

B & V HARRISON

IN ACCORDANCE WITH PLANS,
BRACING CALCULATIONS AND THIS
SPECIFICATION PREPARED BY:

COLIN McKENZIE DESIGN LTD

197 KENNEDY ROAD

NAPIER

PHONE 06 843 6592

FAX 06 843 6596

PRELIMINARY AND GENERAL

All work shall be carried out in accordance with this specification together with all relevant plans and details and comply with New Zealand Building Act and NZS3604:1999.

CONDITIONS OF CONTRACT

The usual conditions of contract shall apply and are to be read with and applied to all trades included in and forming part of this contract. The Agreement referred to a suitable form of contract (Conditions of Contract) shall be provided by the Contractor and is to be completed by all parties before site work is commenced.

BUILDING CONSENT

The builder shall obtain all consents from and pay all fees demanded by Local Authorities before the commencement of the work and give notice for inspections and tests as required.

INSURANCE

The builder shall obtain a **CONTRACTORS ALL RISK'S** policy to cover the building during the construction period.

SUB CONTRACTORS

Sub contractors work is the responsibility of the builder. Their work must be given protection by the builder and any damage suffered by the lack of protection must be repaired at the expense of the builder. Damaged caused by sub contractors to the builders or other sub contractors work shall be repaired by the sub contractor concerned at his own expense.

MAINTENANCE

The builder shall maintain the work carried out for a period of thirty days after the completion of the contract. During that period the builder shall make good any defects in any part of any trade to the satisfaction of Owner.

P.C.SUMS

Where P.C. Sums are mentioned, should the sum not be wholly expended the balance shall be returned to the owner. Alternately, should the P.C. Sum be exceeded, the balance shall be an extra payable by the Owner to the Builder. The P.C. Sum is to cover the cost of the material item based on the retail price ex store.

PRICE FLUCTUATIONS ON LABOUR & BUILDING MATERIAL COSTS

Escalation cost is materials or labour charges that occur after acceptance of tender shall be dealt with as follows.

For the purpose of assessing escalation the contractor shall be entitled to a percentage or other allowance to cover overheads or other costs and profit arising from such escalation.

CONTRACT DOCUMENTS

Shall include this specification and its associated working drawings and it shall be the contractors responsibility to make himself fully conversant with all provisions in these documents before submitting his tender. Tenders will be accepted on the understanding that details of the work are clearly set out in these documents or have been clarified through enquires made to the designer. No claim for compensation due to insufficient or ambiguous details will be recognised, or by the signing of a building contract prior to uplifting of building consent from Council. It is the responsibility of contractor and all sub contractors to confirm the extent of their contract by perusing drawings and specifications to confirm the extent of other contracts. It will be assumed any items requiring supply or installation shown on drawings and specification or shown singularly on drawings or specification will be allowed for in full. No claim for ambiguous detailing will be considered. It is the responsibility of all trades to check and confirm all details and dimensions on site prior to construction or fabrication.

EXCAVATOR

NOTE

General clauses shall be read where they apply to this trade. For tendering assume levels to be as shown on drawings or level.

CLEAR SITE

Site to be cleared within the actual building area of all vegetation and stumps.

EXCAVATE

Excavate to the extent indicated on the drawings for the building. All footing depths shown are minimum. Contractor shall take to solid bearing. Any suspect bearing shall be pointed out in order that an Engineering assessment may be made by Owner.

CONCRETE WORK

PRELIMINARY AND GENERAL

Note all clauses under Preliminary and General of this specification which apply to this section of the work.

MATERIALS

Concrete to be pre-mixed with a test of 17.5mpa after 28 days.

FOUNDATIONS

Footings shall be as detailed on foundation details. Refer to drawings for extent. Refer excavator for minimum depths etc.

CARPENTER AND JOINER

PRELIMINARY AND GENERAL

Note to all clauses under preliminary and general of this specification which shall apply to this section of the work. All work and materials shall conform with NZS3604:1999.

EXPOSED FACES OF TIMBER

All timber which has to be exposed to view in finished surfaces shall be dressed on the appropriate faces unless otherwise specified.

WORKMANSHIP AND FABRICATION

All timbers shall be cut with square, close fittings joints secured with wire nails, bolts and other fixings as detailed or necessary to form structural stability.

TRIMMERS

Lintels and beams, unless otherwise detailed shall be checked 12mm into studs or posts. All joints to be constructed in such a manner so that they will transmit the loads and provide resistance to stresses to which they will be subjected.

JOINERY

Joinery and exposed timber shall be sanded smooth and surfaces left clean of any marks ready for painter.

SKIRTINGS

Architraves, plates and other joinery shall be accurately scribed to the contour of any irregular surfaces against which they may be required to form a close butt joint.

WEATHERING

The contractor shall ensure that all weathering surfaces, throatings and joints shall be properly executed to form weathertight job. All fixings and fixtures shall comply with the requirement of NZS3604:1999 for appropriate exposure zone. All fittings and fixtures shall be as required to suit end use and local environment.

DAMPCOURSE

Provide 2 ply malthoid strips or equal between all timber and concrete walls.

PRIMING

All abutting surfaces of exterior timber shall receive a good coat of priming before being fixed.

PLATES

Bottom and top plates shall be in long lengths, halved or nail plated at wall junctions and jointed over studs.

STUDS AND DWANGS

Studs shall be cut squarely top and bottom and shall be securely nailed to plates with two 100mm spikes to each end. Maximum spacing 600crs. Dwangs shall be cut inbetween studs in partitions and shall be 100x50 spaced at equal centres maximum 800mm.

SEASONING AND MOISTURE CONTENT

All timber shall be thoroughly seasoned by air-drying or kiln-drying. Contractor shall take all necessary precautions to protect from dampness and to ensure that no timber wall linings or joinery is fabricated under damp conditions. It is the contractor's responsibility to ensure that timber of sub standard grade is rejected and not used. All timber used in this contract shall have an approved moisture content and shall be free from objectionable traits. Preservative treatment range and extent shall be as required by NZS3602 – 2003, NZS3640 - 2003 to suit end use environment as stated in summary below.

| <u>SCHEDULE OF TIMBERS</u> | | | |
|-----------------------------|-------------------------------------|---------------------|---------------------------------------|
| <u>LOCATION</u> | <u>TIMBER</u> | <u>SIZE</u> | <u>SPACING</u> |
| Scotia | Pinus radiata | 20x20mm | |
| Skirting | Pinus radiata | 85x12mm bevelled | |
| Scribers and architraves | Pinus radiata | 50x12mm bevelled | |
| Bottom plates | Kiln dried, laser frame or equal | 90x45 | Per manufacturers specification |
| Top Plates | " " | " | " |
| Studs | " " | " | " |

TREATMENT SUMMARY

Suppliers and contractors shall make themselves familiar with the requirements of the N.Z. Standard to ensure correct use of timber.

| | |
|---|--------------------------------------|
| External wall framing and parapets | H1.2 |
| Internal wall framing including bottom plates | H.1 |
| Roof framing, trusses and ceiling joists | Untreated kiln dried radiata pine |

PLUGS

All plugs and grounds in concrete or block shall be approved propriety brands of such depth and shape to resist extraction.

BUILDING PAPER

Building paper shall be Duroid 850L W. building paper or approved.

BUILDING WRAP

Building wrap in accordance with NZBC acceptable solution E2/AS1 fixed per manufacturers recommendations and NZS3604.

INSULATION

Supply and fix insulation as shown on drawings to ceilings and exterior walls. Note: Contractor may use an alternative approved material of equivalent retail and insulation value.

WARDROBES

To be constructed where shown on drawings. Line full height. Provide full width shelf at 1.700 from floor with Pryda closet bar.

LINEN AND STORE CUPBOARDS

To be constructed where shown on drawings. Line full height. Provide shelving as follows:

- Linen - slatted 25mm shelving at 400crs
- Store - customwood shelving at 400crs and 300crs alternately

METER RECESS

Provide recess for electrical meter board where directed to the satisfaction of the Local Authority.

HARDWARE

Allow for the supply of all hardware as required for door handles, locks, hinges, window fittings, door and drawer pulls, stops, angles, vents etc. Provide Pryda flexible door stops to all interior doors. Provide approved towel rail to bathroom.

ALUMINIUM JOINERY

All aluminium window and door joinery shall be of approved manufacture, extent as shown on drawings. Joinery to be complete with timber jamb liners rebated for interior lining.

ROOFING

On purlins or battens as shown and specified on cross section fix roofing per manufacturers specifications and details together with flashings as required to leave roof in a weatherproof-wind proof condition.

LINTELS

Lintels to openings shall be as specified on drawings. All lintels shall bear on a trimming stud each end. Lintels over 2.7 wide or as indicated on plans shall be tied down for uplift using 25x1 m.s. strap top and bottom fixed to lintel/trimmer. Trimmer/floor framing with 30mm x 2.5F.H. nails per NZS3604:1999.

BRACING

Bracing to exterior and interior walls shall be angle or sheet bracing as shown on working drawings and bracing calculations.

EAVES

Form eaves as shown on cross sections constructed according to best trade practice.

JOINERY UNITS

Refer to drawings for extent of contract. All kitchen units as shown will be supplied by contractor. Contractor to allow to install. Carcase shall be paint quality customwood with formica work top. Units to be complete with hardware.

MIRROR

Supply and install 760x600 5mm p.p. mirror fixed in a position as directed using spring presto clips.

DOOR FRAMES

Interior: Interior door frames shall be finger jointed radiata pine gib grooved for interior lining.

Doors: Refer to drawings for extent shall be paint quality 1980x760 hollow core with 660 doors to cupboards and service rooms.

ROOF CONSTRUCTION

Rafter construction comprising timber as stated in accordance with this specification and spaced at centres shown on cross section.

EXTERIOR FINISHES

As notated and specified on drawings. All linings fixed per manufacturers instructions and to the satisfaction of Local Authority.

HARDIFLEX SHEATHING

Where 6mm thick fibrolite wall sheathing is used it shall be fixed to dwangs set out at 600mm crs nailing at 225mm crs horizontally and at overlaps to studs at 600mm vertically with 40x2.24 galvanised "Sheer Point" nails. Walls to be first covered with Duroid Light Weight building paper fixed horizontally on walls with 100 overlap sheathing to be of type shown on drawings.

INTERIOR FINISHES

As notated and specified on drawings. All linings fixed per manufacturers instructions and to satisfaction of NZS3604:1999.

WALLS

Generally 10mm gib board stopped by contractor for a paint or wallpaper finish as specified on cross section working drawings.

CEILING

Shall be fixed and finished as specified on cross section working drawings.

PLUMBING

PRELIMINARY AND GENERAL

The subcontractor shall pay attention to that section of the Preliminary and General clauses that relate to his trade. All plumbing work is to be carried out by a registered tradesman and shall be strictly in accordance with New Zealand Building Code.

WORKMANSHIP

Water pipes and tubes are to be set out in straight runs of even gradients avoiding all places where airlocks are likely to occur. Easy bends are used throughout and unless unavoidable elbow fittings shall not be used. In order to prevent sagging and dragging all tubing to be secured by purpose made heavy gauge straps, fixed to structure wherever necessary and of the same metal as the tubing being used. All water pipes to be concealed wherever possible. All pipes at taps, valves and other water letting appliances to be firmly secured to solid dwangs to prevent any movement of piping when such taps, valves or appliances are operated. Tap fittings to have a wide wall flange and no exposed threads or other unsightly arrangements to mar the appearance.

PIPES

Polybutaline to be used for hot & cold water supply. All fittings as supplied by manufacturer and used in accordance with manufacturers instructions. Hotwater supply to be chromed copper where exposed.

FLASHINGS OF FRAMES ETC

These are to be approved gauge aluminium or galvanised iron fitted in accordance with standard building practice.

WATER SERVICE

Allow to lay a 20mm diameter polybutaline line from the Council water supply mains connecting to the Ajax valve.

TERMINAL VENTS

Vent fittings as required and all vents shall be 75mm PVC **concealed within wall** framing, carried through roof and fitted with balloon at top. Note, any branch leg off the main drain which is over 9 metres in length must be fitted with a terminal vent and any secondary toilet pan shall be either back vented or fitted with a terminal vent. Any sanitary fitting required to be back vented shall be done so with PVC pipe of prescribed diameter neatly concealed in wall and terminating above roof level.

NOTE: All fittings which discharge into soil stacks must be back vented.

WATER CLOSETS

An approved pan with hinged plastic seat with buffers and similar cover flap is to be fixed to expansion joint on PVC riser.

Closet to be complete with approved low level flushing cistern.

BUILDING CONSENT FEES

Obtain all necessary consents, pay related fees and give due notices for inspections and tests as required.

WASTES

All wastes to be PVC tube of prescribed diameter sleeved in Novacoil where under concrete floor, provide straight run between fitting and gully.

TRAPS

All traps except if exposed shall be polypropylene with unions at both ends.

TAPS

All taps at outlets to be GREENS range as approved by Owner. Provide combination taps to sink where required.

GUTTERS

Fit to all eaves guttering as specified on drawings complete with 80mm PVC downpipes as required.

ALLOW FOR THE FOLLOWING SERVICES

Refer to drawings to confirm the extent or size of services:

HOTWATER

Supply and install gas infinity 24 with bottle supply.

WASHING MACHINE

Provide outlet and supply for washing machine, washing machine to discharge into supertub by-pass.

TUB

Supply and install supertub in position shown.

EXTERIOR TAPS

Supply and install two number outside brass taps location to be confirmed with Owner prior to installation.

VANITY

Supply and install vanity unit in location or locations as shown on floor plan. Vanity and carcass shall be prefinished from standard range available. Size as noted on drawings.

SHOWER

Supply and connect shower in location as shown on floor plan. Size as noted on drawings.

Shower cubical with pivot safety glass door price on showerline range but confirm with owner prior to installation. Cubical to be complete with approved rosehead mixing valve. (Builder to assist with installation. See Carpenter and Joiner).

DRAINAGE

PRELIMINARY AND GENERAL

The sub contractor shall pay attention to that section of the Preliminary and General clauses that relate to his trade. All drainage work is to be carried out by a registered tradesman and shall be strictly in accordance with New Zealand Building Code.

GULLY TRAPS

Gully traps shall be set out on a concrete foundation and properly connected to drain. Concrete surrounds to gully are to be kept up 150mm above ground and plastered with 2:1 sand and cement trowelled smooth. A cast iron grating to be provided. Purpose made polypropylene gully and cover is acceptable.

INSPECTION PIPES

These are to be provided where required.

SEWERAGE

First quality PVC pipes and fittings true to pattern with even fitting spigot unbroken free from imperfections, diameters as shown on drainage plan.

PIPE LAYING

General reticulations shown on drawings are **DIAGRAMATIC** only. It is the responsibility of this trade to adjust these and allow for all costs and to carry out the work in accordance with recognised practice.

EXCAVATIONS

Drainlayer is responsible for all drainage excavations. Excavations shall be in straight lines to correct depths for gradients and concrete beds.

TESTING AND INSPECTIONS

No sewer lines shall be covered until they have been inspected, tested and approved by the Local Authority.

LAYING DRAINS

Lay all drains as required with a minimum fall of one in one hundred. The drain to have a minimum coverage of 450mm below ground level and all back fill to be rammed. Any portion of the drain which does not comply with the above shall be covered with 75mm of concrete. All soil drains to be firmly bedded throughout in 150mm of pea metal.

STORMWATER DRAIN

Lay the whole of the stormwater drain from the premises to connection as shown using approved PVC pipes. The drainage is to be complete prior to occupation of the premises and to be notified for visual inspection on completion. Drain shall be 100mm diameter, if insufficient fall provide bubble up sump at boundary.

BUILDING CONSENTS AND FEES

Obtain all necessary consents. Pay related fees and give due notices for inspections and tests as required.

ELECTRICAL WORK

PRELIMINARY AND GENERAL

The sub contractor shall pay attention to that section of the Preliminary and General conditions dealing with relations with other trades. All cutting, drilling and fitting necessary for the electrical installation is to be included in this work, but no other work of other trades shall be cut into so that it may cause damage or injury to structural or finished work.

PERMITS AND CONSENTS

The Electrician shall be responsible for obtaining the consent of the Supply Authority to the installation, shall make all arrangements therewith for its connection to the Supply Authority terminals, shall arrange for all inspections and obtain the necessary permits and shall pay all fees in connection therewith.

WORKMANSHIP

All workmanship shall be in accordance with the New Zealand Electrical Wiring Regulations Act 1961 and all amendments thereto. The installation is to be carried out in accordance with the best trade practice by registered and skilled tradesman in accordance with the requirements of the Supply Authority. The Electrician shall provide on the works at all times a competent foreman. Materials shall be installed according to manufacturers instructions and recommendations. The installation of the electrical services shall be in accordance with the details and general intent of the specification and drawings and the electrician shall provide all necessary connections to enable the whole of the installation to be left in full working order. Provide all fittings with lamps and fuses with cartridges, elements of the ratings specified. Leave the works clean and tidy and in full working order.

MAIN INCOMING CABLE

In no case shall the incoming main have a capacity of less than the indicated loadings plus 50% to allow for future extensions of the electrical installation.

SWITCHBOARD

This is to be neatly boxed in with door front as required by the Electrical Supply Authority and is to be placed in position as directed.

LIGHT SWITCHES

P.D.L. Ivory rocker type flush switches.

POWER OUTLETS

Shall be 10amp P.D.L. Ivory flush mounted switches socket outlets, mounting height in all rooms to be 300mm above floor. Power connections to range – oven and hotwater cylinder shall be permanent connections or as required by the Supply Authority. Any special fittings shall be by special arrangement with the owner. One complete set of approved wattage lamps shall be provided to all lighting points.

ON COMPLETION

Remove all trade debris, test all equipment, clean fittings and leave in good working order.

SUNDRY FITTINGS

Provide and install the following positioned as directed by owner on site.

- 12 Interior light fittings
- 2 Exterior light fittings
- 8 Double power points
- 1 T.V. Point
- 1 Telephone jack point including telephone pre-wire
- 1 Shaving point

STOVE

Connect stove as shown on plan. (stove to be supplied by Owner)

WATER HEATER ELEMENT

Provide and install 3k/w element and thermostat to hotwater cylinder of capacity as specified under Plumber.

BATHROOM HEATERS

Supply and install Scope bathroom heater.

ELECTRIC HEATING

Supply and install Scope fan heating of approved capacity wired direct into outlet.

SMOKE ALARMS

Provide smoke alarms in passage (maximum 3.000 from any bedroom). Alarms shall be battery powered with minimum 60 second Hush facility. Alarms to conform with AS3786.

PAINTER (Contract by Owner)

PRELIMINARY AND GENERAL

The sub contractor shall pay attention to that section of the Preliminary and General clauses that relate to his trade.

CODE OF PRACTICE FOR PAINTING

All material and workmanship shall meet the requirements of NZSS CP5 wherever applicable.

MATERIALS, WORKMANSHIP, PREPARATION ETC

All materials shall be taken onto the job in their original containers with seals unbroken. No paint shall be stored in direct contact with finished floor surfaces, nor shall the mixing be carried out on such floors.

PREPARATION OF SURFACES

It shall be the responsibility of the painter to ensure that all surfaces including the surfaces of all successive undercoats are in a suitable condition to enable a first class finish to be obtained.

PUTTY

Where timber has a natural or transparent finish, putty shall be stained to simulate such a finish. After priming for painting, oiling or other preparation for varnishing, all nail holes, cracks, shrinkages and the like shall be neatly filled and stopped with linseed oil putty or other suitable stoppings. Such stopping shall be coloured to match the finished colour where transparent finishes are used.

SCOPE OF WORK:

EXTERIOR:

Refer to plan for content and extent.

GALVANISED:

Flashings primed and given two coats acrylic emulsion gloss finish.

FOUNDATION:

To be sealed and given two coats acrylic

HARDIES PRODUCTS:

To be given two coats acrylic semi gloss brush or texture finish as specified.

STAINED TIMBER:

Timber to be stained shall be stained with an approved stain.

FASCIA/BARDGE:

Where timber used timber to be given one undercoat and two finishing coats acrylic.

INTERIOR:

GIBRALTER BOARD:

Shall be sealed and finished with selected wallpaper to the nett value of \$35.00 per roll neatly butt jointed and fixed with an anti-fungus adhesive or painted with two finishing coats semi-gloss acrylic after sealing coat.

Refer to working drawings cross section for extent.

CEILING:

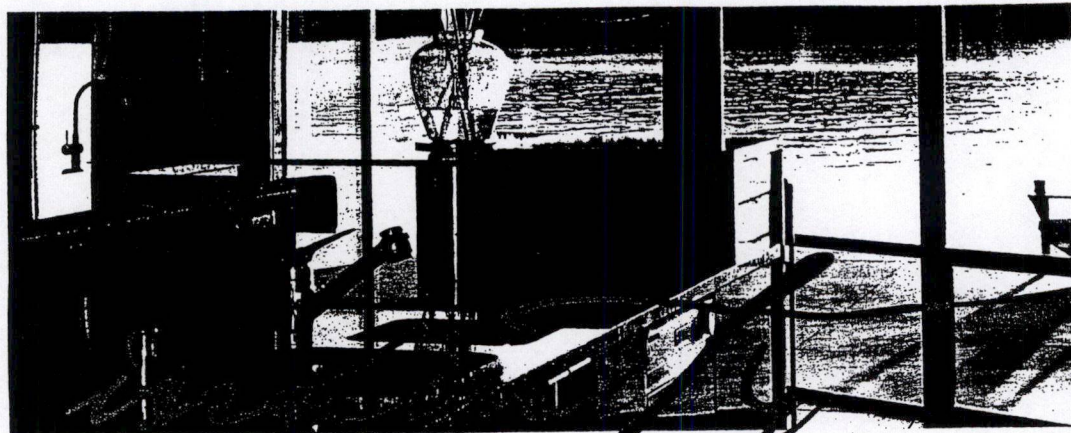
Ceiling to be sealed and given two coats acrylic emulsion.

GENERAL:

All remaining internal timber work shall be stained, varnished or painted.

GAS WATER HEATING

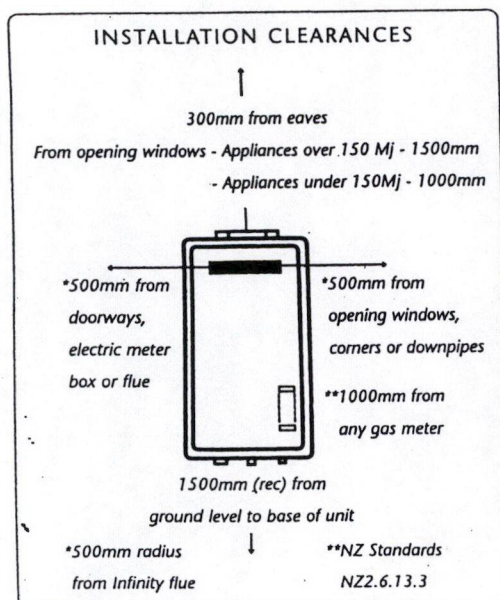
Supply and install Gas Infinity external 24 installed and connected to *bottle supply*
 Note: clearance 500.



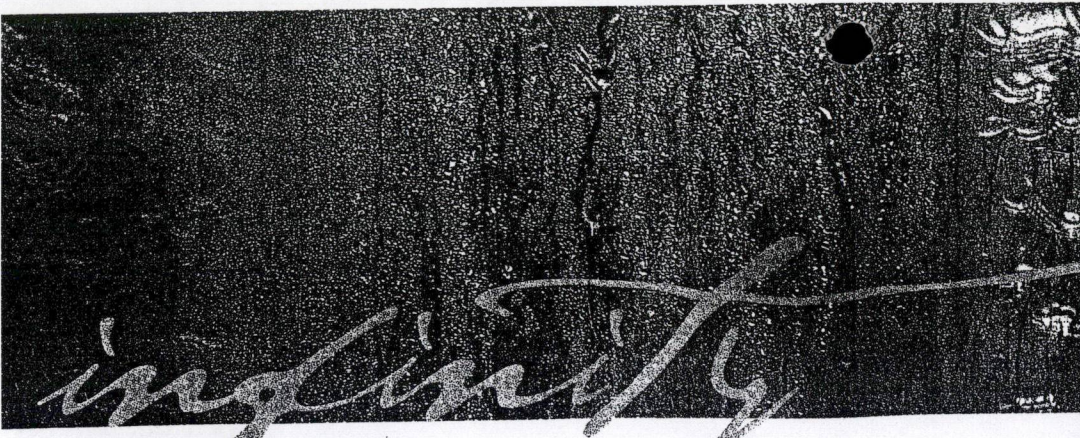
RINNAI INFINITY EXTERNAL MODELS

A Rinnai Infinity unit is mounted on the exterior wall of a dwelling. It can be concealed by installing an Infinity Recess Box or Infinity pipe cover.

The chart opposite features the complete range of Rinnai Infinity units available for both external and internal installation. Select the unit that best reflects your hot water requirements.

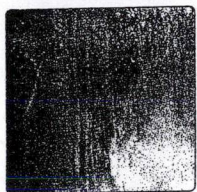


Infinity 24 external model



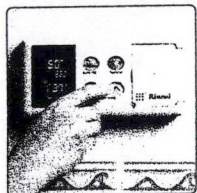
PEACE OF MIND

Rinnai Infinity puts you in control by allowing a maximum hot water temperature to be set on the digital controller when children are around. To keep kids safe from scalding the maximum temperature, in say the bathroom, can be set to 40°C reducing any chance of scalding.



HEAPS OF HOT WATER

Where an exceptionally large constant continuous flow of hot water is required two or more Rinnai Infinity units can be joined together. The Rinnai Infinity Manifold System has been created to meet this demand in commercial applications and some larger domestic homes. (See Rinnai Infinity Manifold System on page 8)



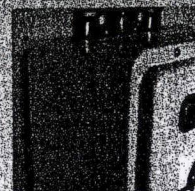
SHOWERPROOF CONTROL

The Showerproof Digital Bathroom Remote Controller is exclusive to Rinnai. It is ideally suited to wet areas. Placed in the shower cubicle it allows the ideal water temperature, anywhere between 37° and 43°C, to be changed from inside the shower while the water is flowing. The maximum temperature available on the bathroom controller is limited to 50°C to prevent scalding.



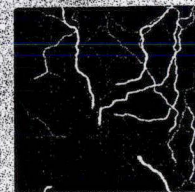
ONLY RINNAI INFINITY PROVIDES WORLD LEADING GAS CONTINUOUS FLOW WATER HEATING

The technology developed by Rinnai continues to set the standard for gas continuous flow hot water systems the world over. In New Zealand it has been adapted to suit our unique conditions. It is your assurance of proven technology you can always rely on.



ALL WEATHER PROTECTION

The New Zealand climate can be severe on any appliance exposed to the outside elements. To protect your Infinity against weather damage Rinnai applies a unique paint finish. In addition a unique case design with seamless rounded corners helps to prevent corrosion.



SPIKE PROTECTION

To keep it safe and to protect against electrical surges only Rinnai Infinity offers spike protection to the electronics.



NATIONWIDE SERVICE NETWORK

You may never need it, but it's reassuring to know that Rinnai Infinity is backed up by a New Zealand wide service network. So wherever you are help is never far away.



OUT OF SIGHT OUT OF MIND

INFINITY RECESS BOX

The Rinnai Infinity unit is, in most situations, mounted on to the outside wall of a home. This will free up room in the home normally taken up by a cumbersome hot water cylinder. Now a Rinnai Recess Box will hide the Infinity. This easy to install unit houses the Infinity unit, the pipe work and the power supply. All these elements are hidden behind a simple hinged door that can be painted to match the house.

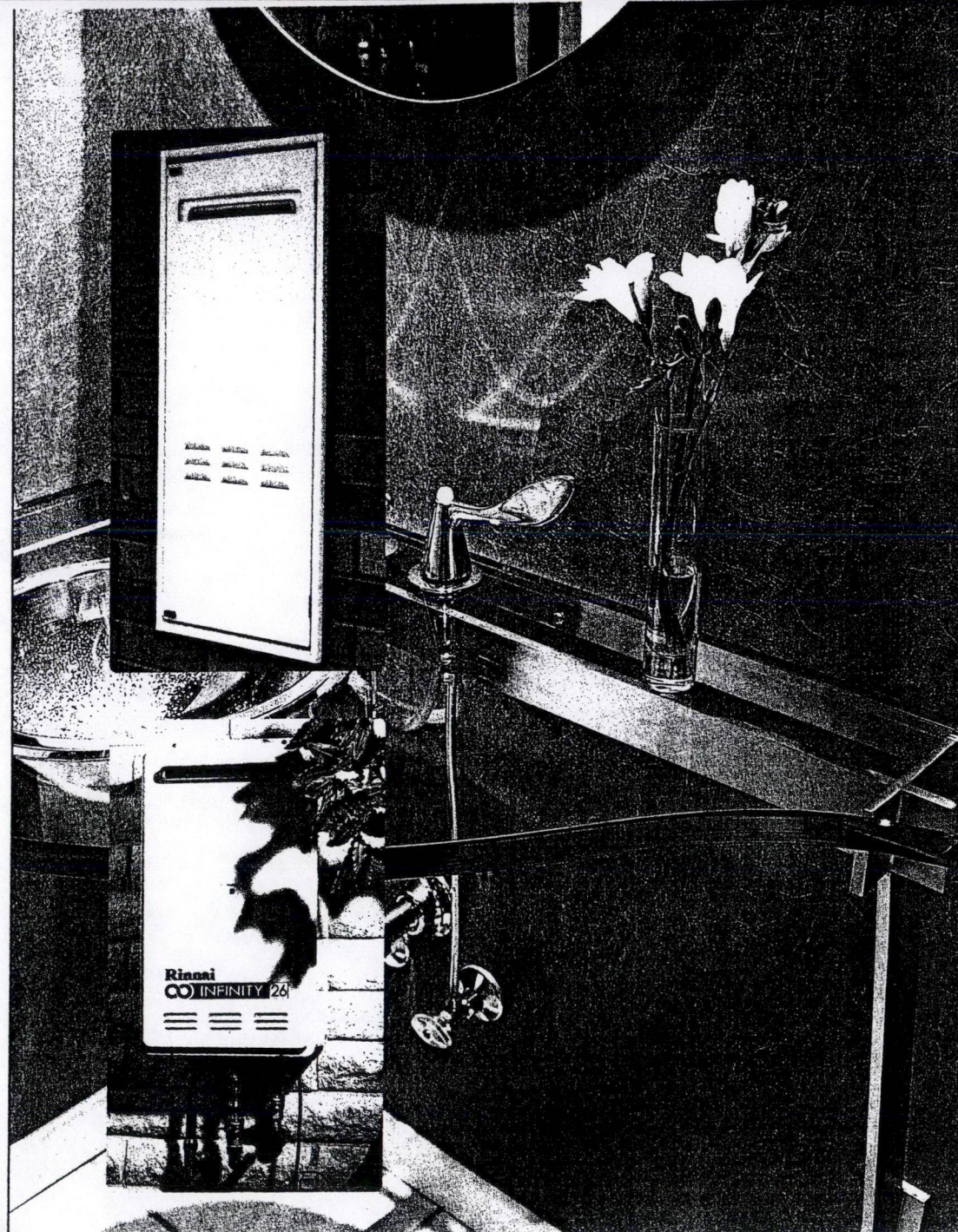
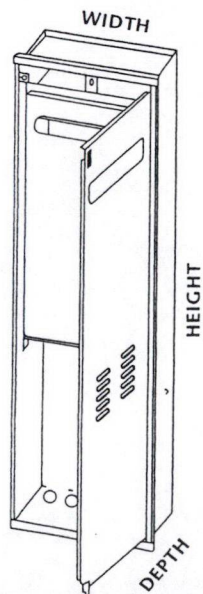
CUTOUT SIZE FOR RECESS BOX

| | |
|--------------------------------|------------------------|
| <i>Infinity 16, 18, 20, 24</i> | <i>Infinity 26, 32</i> |
| 425mm width | 515mm width |
| 945mm height | 945mm height |
| 190mm depth | 240mm depth |

PIPE COVER

To hide the pipes at the base of the Infinity unit, where a Recess Box is not being utilized, Rinnai have developed an attractive pipe cover which is available from your Rinnai dealer.

Pipe cover

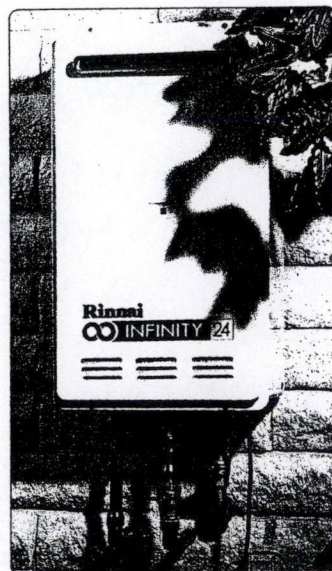
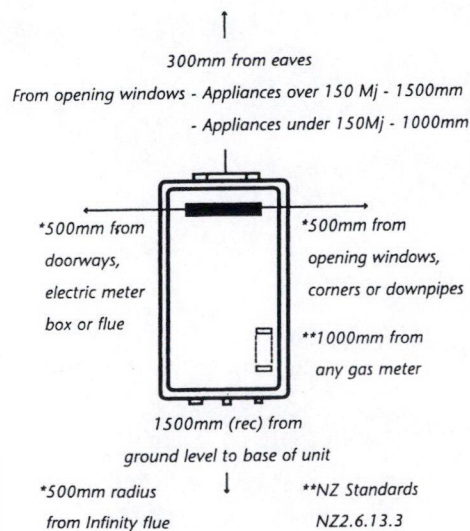


RINNAI INFINITY EXTERNAL MODELS

A Rinnai Infinity unit is mounted on the exterior wall of a dwelling. It can be concealed by installing an Infinity Recess Box or Infinity pipe cover.

The chart opposite features the complete range of Rinnai Infinity units available for both external and internal installation. Select the unit that best reflects your hot water requirements.

INSTALLATION CLEARANCES



Infinity 24 external model

RINNAI INFINITY SINGLE UNIT SPECIFICATIONS

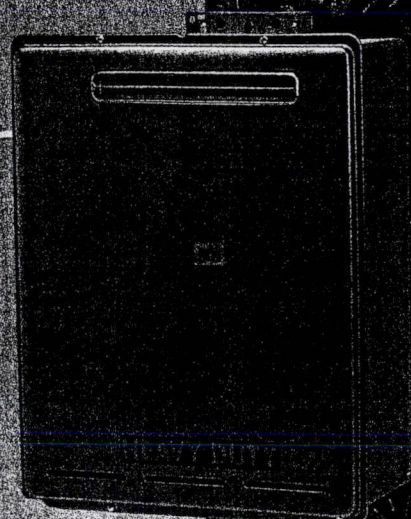
| MODEL | EXTERNAL | | | | | |
|------------------------------|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | INFINITY 16 | INFINITY 18 | INFINITY 20 | INFINITY 24# | INFINITY 26 | INFINITY 32 |
| HEAVY DUTY† | | | | | INFINITY 26 | INFINITY 32 |
| Suitable for | Apartment or 1bth homes | Apartment or 1bth homes | 2bth homes | 2bth+ homes | 2bth+ homes | 2bth+ homes |
| Hot water capacity** | 2.4-16lt/min (960lt/hr) | 2.4-18lt/min (1080lt/hr) | 2.4-20lt/min (1200lt/hr) | 2.7-24lt/min (1440lt/hr) | 2.7-26lt/min (1560lt/hr) | 2.7-32lt/min (1920lt/hr) |
| Height | 530mm | 530mm | 530mm | 600mm | 600mm | 600mm |
| Width | 350mm | 350mm | 350mm | 350mm | 350mm | 470mm |
| Depth | 170mm | 170mm | 170mm | 185mm | 224mm | 220mm |
| Input (max) | 125Mj/hr 35kW input | 160Mj/hr 45kW input | 160Mj/hr 45kW input | 188Mj/hr 52kW input | 199Mj/hr 55kW input | 250Mj/hr 70kW input |
| Water pressure (min) | 80 KPA | 130 KPA | 150 KPA | 220 KPA | 150 KPA | 180 KPA |
| Water temp. range | 37°C to 55°C (When fitted with controllers) | | | | | |
| HEAVY DUTY Water temp. range | preset to 55°C preset to 55°C 55°C, 65°C, 75°C, 85°C 65°C, 75°C, 85°C, 95°C | | | | | |
| Warranty | Domestic: 3 years parts and labour, 10 years on heat exchanger pro rata Heavy Duty models: 3 year parts and labour, 5 years parts only on heat exchanger pro rata | | | | | |
| Water flow (min) | 2.4lt/min | 2.4lt/min | 2.4lt/min | 2.7lt/min | 2.7lt/min | 2.7lt/min |
| Gas type | Natural Gas or LPG | | | | | |
| Controllers | Temperature controller compatibility. NB: Maximum of 3 Deluxe or up to 4 Compact Controllers* - can be fitted with Infinity 26 or 32. Maximum of 3 Deluxe or up to 3 Compact Controllers* can be fitted with Infinity 16, 18, 20 or 24. | | | | | |
| Deluxe | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Compact* | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

†Heavy Duty units available in gunmetal colour only **Raised at 25°C (Unmixed flow rate) #Original Infinity 24 model
Please note: Specifications may change without notice.

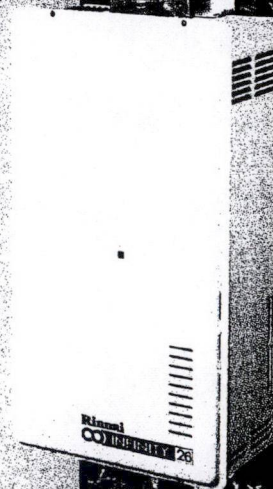
infinity

UNIQUE RINNAI INFINITY HEAVY DUTY

To enhance its life in heavy use commercial applications, Rinnai Infinity Heavy Duty models have a silicon coated heat exchanger. Ideal for situations requiring higher hot water temperatures, the Rinnai Infinity Heavy Duty can be set at up to 95°C.



Infinity 32 Heavy Duty
external model



Infinity 26 FFU
internal model

RINNAI INFINITY INTERNAL MODELS

In certain situations such as an apartment or an ensuite, a compact Infinity unit can be mounted internally with a flue. Various flue options are available depending on the installation.

INTERNAL

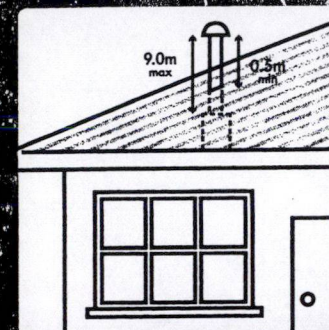
| INFINITY16WF | INFINITY26FFU |
|-------------------------|--------------------------|
| Apartment or 1bth homes | 2bth+ homes |
| 2.4-16lt/min (960lt/hr) | 2.7-26lt/min (1560lt/hr) |
| 538mm | 600mm |
| 350mm | 350mm |
| 170mm | 224mm |
| 125Mj/hr 35kW input | 195Mj/hr 54kW input |
| 80 KPA | 150 KPA |

preset to
55°, 65°, 75°, 85°C

| 2.4lt/min | 2.7lt/min |
|--------------------|-----------|
| Natural Gas or LPG | |

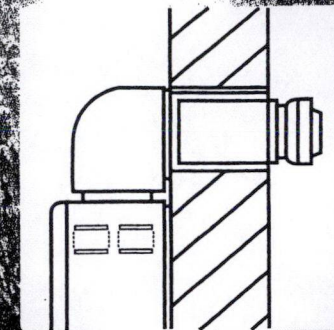


INFINITY INTERNAL FLUE OPTIONS

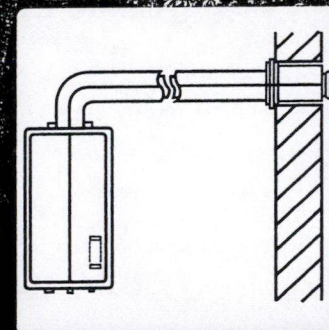


VERTICAL FLUE

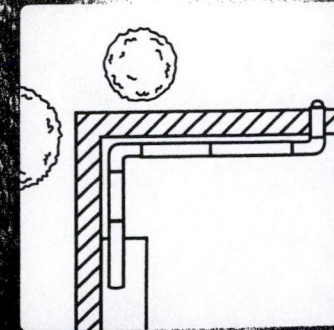
Up to 9.0m total. Over 1.5m vertical requires condensate trap.



DIRECT



EXTENDED FLUE Up to 9m total and 3 bends horizontal or vertical. Over 1.5m vertical requires condensate trap



PLAN VIEW

An example of extended flueing

COLIN McKENZIE DESIGN LTD

ARCHITECTURAL DRAUGHTSMAN

197 Kennedy Road
Napier

Phone - (06) 843 6592

Fax - (06) 843 6596

Name: HARRISON

| | |
|---|---|
| 1. Location of STOREY | foundation <u>single</u> upper of two lower of two |
| SITE WIND ZONE: (Table 2.4) | low <u>medium</u> high / very high |
| EARTHQUAKE ZONE: (Fig. 2.2, Table 2.3) | <u>A</u> / B / C |

SITE ADDRESS

City/Town or District: 234 KENNEDY RD

Street and Number: _____
or

LOT AND D.P. Number: _____

| | |
|--|----------------------------|
| 2. FOR EARTHQUAKE | |
| Roof weight: <u>light</u> / heavy | |
| Average Roof Pitch: <u>15°</u> | |
| Type of Cladding: <u>light</u> / heavy | |
| Earthquake Zone: <u>A</u> | |
| Storey in Roof space: yes <u>no</u> | |
| | $E = 3.6 \text{ BU's/m}^2$ |

| | |
|--------------------------------|-------------------------------|
| 3. FOR WIND | |
| Building Height <u>4.000</u> m | $W =$ BU's/m Along |
| Roof Height <u>1.200</u> m | $W =$ <u>37</u> BU's/m Across |
| Stud Height <u>2.4</u> m | |
| Wind Speed | |

| | |
|----------------------------------|--------------------------------|
| 4. ROOF or BUILDING LENGTH | BL = <u>9.690</u> m |
| ROOF or BUILDING WIDTH | BW = <u>9.2</u> m |
| GROSS ROOF or BUILDING PLAN AREA | GPA = <u>80</u> m ² |

| | | | |
|--|----------------------|---------------------|--------------|
| 5. EARTHQUAKE LOAD (ACROSS and ALONG) $E \times GPA$ | $= 3.6 \times 80$ | $= 288$ | BU's |
| WIND LOAD: ACROSS | W ACROSS $\times BL$ | $= 37 \times 9.690$ | $= 358$ BU's |
| WIND LOAD: ALONG | W ALONG $\times BW$ | $= 37 \times 9.2$ | $= 340$ BU's |

GIBRALTAR BOARD
Wall Bracing Systems

WALL BRACING CALCULATION SHEET B
(For use with NZS 3604 : 1999)

ALONG

| WALL OR BRACING LINE | | BRACING ELEMENTS PROVIDED | | | EARTHQUAKE | | WIND | |
|----------------------|-----------------------|---------------------------|--------------|----------------------|----------------|-----------------------------|---------------|----------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 EQ | 7 EQ | 6 W | 7 W |
| Line Label | Minimum BU's Required | Bracing Element No. | Bracing Type | Length Element (m) L | Rating BU/m EQ | BU's Achieved (BU/m x L) EQ | Rating BU/m W | BU's Achieved (BU/m x L) W |
| (A) | 65 | 1 | GS/19 | 2.000 | | | 65 | 130 |
| (B) | 70 | 2 | GS/2 | 2.400 | | | 90 | 216 |
| (C) | 96 | 3 | BU/1 | 9.00 | | | 125 | 112 |
| D | | 4 | BU/1 | 6.00 | | | 125 | 75 |
| E | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |

TOTALS ACHIEVED

EQ

W

533

TOTALS REQUIRED

EQ

W

340

(From Sheet A)

ACROSS

| WALL OR BRACING LINE | | BRACING ELEMENTS PROVIDED | | | EARTHQUAKE | | WIND | |
|----------------------|-----------------------|---------------------------|--------------|----------------------|----------------|-----------------------------|---------------|----------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 EQ | 7 EQ | 6 W | 7 W |
| Line Label | Minimum BU's Required | Bracing Element No. | Bracing Type | Length Element (m) L | Rating BU/m EQ | BU's Achieved (BU/m x L) EQ | Rating BU/m W | BU's Achieved (BU/m x L) W |
| (M) | 92 | 5 | GS/19 | 2.4 | | | 75 | 180 |
| (N) | 70 | 6 | GS/2 | 1.2 | | | 70 | 84 |
| (O) | 70 | 7 | GS/19 | 2.4 | | | 75 | 180 |
| (P) | 63 | 8 | GS/19 | 2.4 | | | 75 | 180 |
| Q | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |

TOTALS ACHIEVED

EQ

W

624

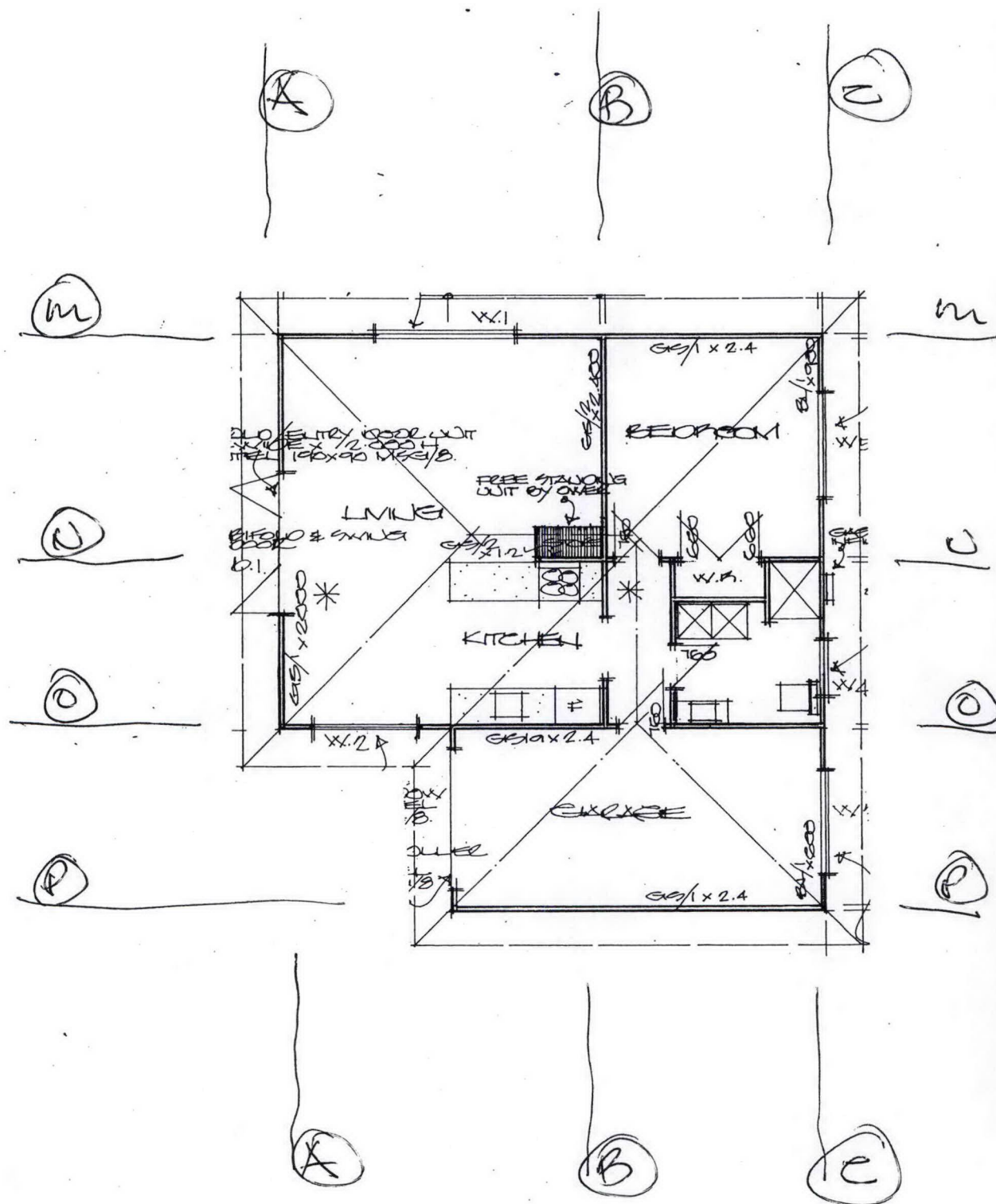
TOTALS REQUIRED

EQ

W

358

(From Sheet A)





Design Steps 4 and 5 – Bracing Units Achieved (Wind and Earthquake)

MARCH 2006

TABLE 1: Bracing Unit Ratings for 10mm GIB® Standard Plasterboard and any other 10mm and 13mm GIB® plasterboard.

| TYPE | LENGTH (m) | LINING REQUIREMENT | OTHER REQUIREMENTS | | BU PER METRE | |
|------|------------|---|--------------------|--|--------------|------------|
| | MINIMUM | | DIAGONAL BRACE | | WIND | EARTHQUAKE |
| GS1a | 1.8 | 10mm GIB® Standard Plasterboard one face fixed horizontal or vertical | yes | | 65 | 55 |
| | 2.4 | | | | 75 | 65 |
| GS2 | 1.2 | 10mm GIB® Standard Plasterboard both sides fixed horizontal or vertical ¹ | no | | 70 | 60 |
| | 1.8 | | | | 80 | 70 |
| | 2.4 | | | | 90 | 80 |

TABLE 2: Bracing Unit Ratings for 10mm GIB Braceline®, 10mm GIB Noiseline® and 10mm GIB Toughline® (fixed with GIB Braceline® screws or GIB Braceline® nails)

| TYPE | LENGTH (m) | LINING REQUIREMENT | OTHER REQUIREMENTS | | BU PER METRE | |
|------|------------|--|--------------------|------------|------------------|------------|
| | MINIMUM | | DIAGONAL BRACE | HOLD-DOWNS | WIND | EARTHQUAKE |
| BL1 | 0.4 | GIB Braceline® one face fixed horizontal or vertical ² | no | yes | 120 | 115 |
| | 0.6 | | no | yes | 125 | 115 |
| BL1a | 1.8 | GIB Braceline® one face fixed horizontal or vertical ² | yes | yes | 130 | 115 |
| BLP | 0.6 | GIB Braceline® one face fixed horizontal or vertical, 7mm D-D plywood on the other ^{1,2} | no | yes | 145 | 135 |
| | 0.9 | | | | 145 | 145 |
| BLG | 0.6 | GIB Braceline® one face, 10mm GIB® Standard on the other face, linings fixed horizontal or vertical ^{1,2} | no | yes | 145 | 130 |
| | 1.2 | | | | 150 ³ | 130 |

Notes:

- 1) Where linings are specified on both faces, each face must be fastened as a bracing element.
- 2) GIB Aqualine® can be used in place of GIB Braceline® in bracing elements 900mm or longer, provided the perimeter of the element is fixed with GIB Braceline® nails or screws spaced at 100mm centres generally, using the GIB Braceline® corner fixing pattern.
- 3) A maximum of 150 BU/m is recommended for any bracing system used with NZS 3604:1999 construction. Higher ratings generate loads beyond the capacity of NZS 3604:1999 timber foundation and slab details. If ratings exceed 150 BU/m, hold downs and foundations must be the subject of specific structural engineering design.

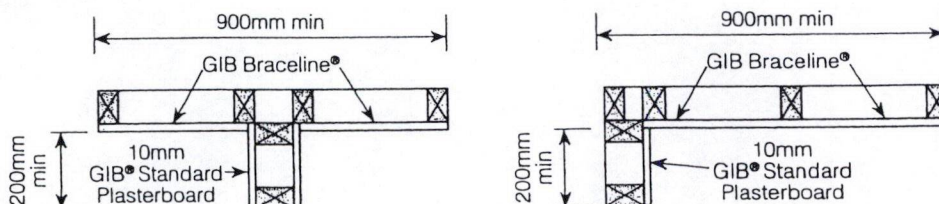
In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow system specifications.

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Guidelines for Intersecting Walls

GIB® Bracing Elements may have intersecting walls with a minimum length of 200mm. Bracing element sheets shall be fixed and jointed as given on pages 30 and 31. Fasteners are required around the perimeter of the bracing element. Vertical joints at T-junctions (illustrated below) shall be fixed and jointed as specified for intermediate sheet joints. **The bracing element length must be no less than 900mm.**



Where a Wall Bracing Element is interrupted by a T or L junction the element is deemed to be continuous for the whole length (900mm in the example illustrated above).

Fixing the Perimeter of a Bracing Element

A bracing element can consist of a part sheet (such as in a 600 mm long BL1 element), or multiple sheets (such as in a 2.4 metre or longer GS1a element). The critical fasteners are located around the perimeter of a bracing element as outlined on the fastener layout pages. The perimeter of a bracing element must be connected to a continuous member such as studs or plates. Connection to a row of nogs is not acceptable.

Fixing in the Field of the Bracing Element

Fixing in the field of a bracing element is conventional and for GIB® wall bracing elements this means that adhesive fixing is recommended, eliminating the need for mechanical fasteners in the body of the sheets.

For GIB® ceiling diaphragms the screw and glue method is recommended resulting in a minimum number of mechanical fasteners along the centre line in the body of the sheets.

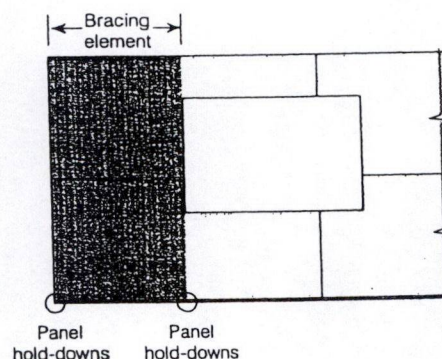
When applied correctly, paper-tape and stopped joints within the bracing element are strong enough to transfer loads within the element and conventional fixing of intermediate sheet joints to framing is sufficient.

Any sheet end butt joints within the field of the bracing element must be back-blocked in accordance with the "GIB® Site Guide".

Consult the "GIB® Site Guide" for further details on recommended fixing details.

Horizontal Fixing

GIB Braceline® linings may be fixed horizontally when linings extend under/over door or window openings. GIB Braceline® fasteners are provided around the perimeter of the bracing element.



GIB® Bracing Systems – EzyBrace™ Specification Numbering System

The EzyBrace™ Specification Numbering System is designed to make specification of GIB® Bracing Systems by designers and identification on site by builders and building officials more transparent. Note: the EzyBrace™ Specification Numbering System (and sub-components thereof) are protected by copyright.

GS = GIB® Standard Plasterboard
BL = GIB Braceline®
BLP = GIB Braceline® / Plywood
BLG = GIB Braceline® / GIB® Standard Plasterboard

1 = lined one side
2 = lined both sides
a = angle brace

Therefore,

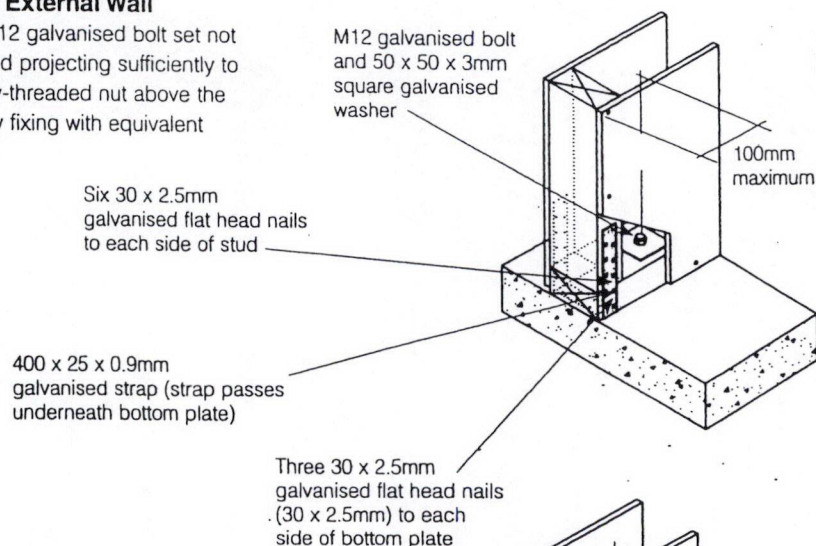
GS1a = GIB® Standard Plasterboard one side with an angle brace
GS2 = GIB® Standard Plasterboard both sides
BL1 = GIB Braceline® one side
BL1a = GIB Braceline® one side with an angle brace
BLP = GIB Braceline® one side, Plywood on the other
BLG = GIB Braceline® one side, GIB® Standard Plasterboard on the other

In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow system specifications.

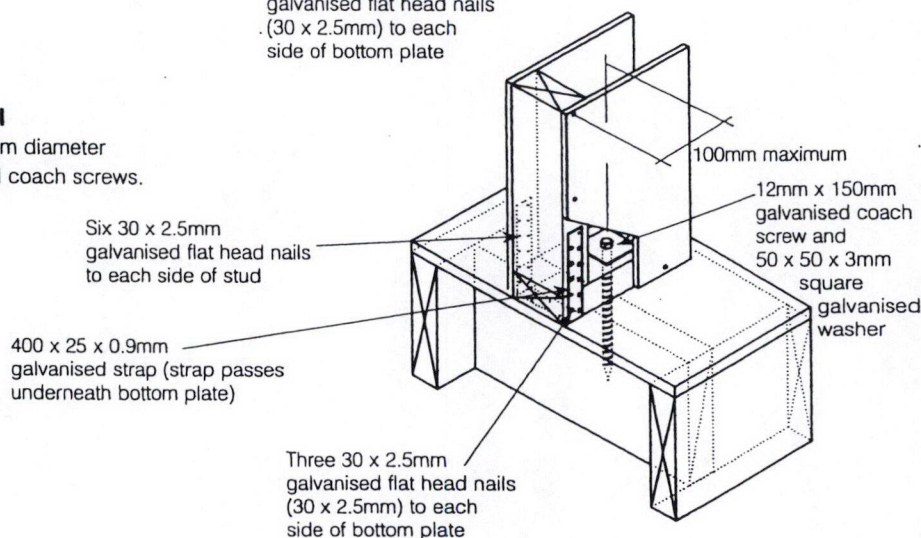
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**Concrete Floor – Internal / External Wall**

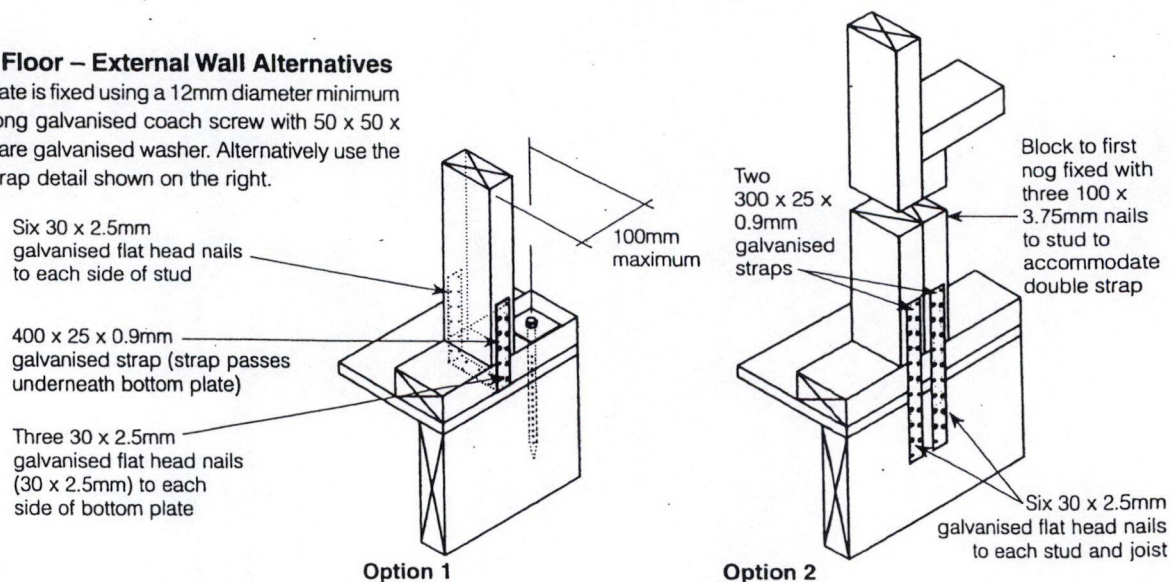
Bottom plate is fixed using an M12 galvanised bolt set not less than 75mm into concrete and projecting sufficiently to allow for a 3mm washer and fully-threaded nut above the timber. Alternatively a proprietary fixing with equivalent capacity may be used.

**Timber Floor – Internal Wall**

Bottom plate is fixed using a 12mm diameter minimum 150mm long galvanised coach screws.

**Timber Floor – External Wall Alternatives**

Bottom plate is fixed using a 12mm diameter minimum 150mm long galvanised coach screw with 50 x 50 x 3mm square galvanised washer. Alternatively use the double strap detail shown on the right.

**Notes:**

Additional thickness and/or corrosion protection is required in exposed and sheltered applications. (Consult NZS 3604:1999). To maintain a flush surface for the wall linings, it is recommended that hold down straps are checked into the framing.

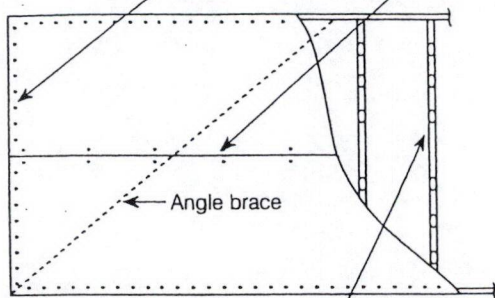
In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow system specifications.



For 10mm GIB® Standard Plasterboard and any other 10mm and 13mm GIB® plasterboard

32mm x 6g GIB® Grabber® Drywall Screws or 30mm GIB® Nails at 150mm centres to perimeter of bracing element

Single 32mm x 6g GIB® Grabber® Drywall Screws or 30mm GIB® Nails where sheets cross studs

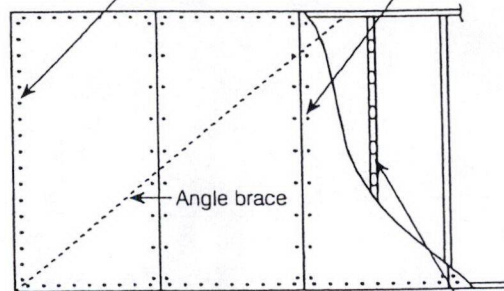


**GS1a (lined one side)
(Horizontal Fixing)**

Daub of GIBFix® adhesive at 300mm centres to intermediate studs

32mm x 6g GIB® Grabber® Drywall Screws or 30mm GIB® Nails at 150mm centres to perimeter of bracing element

Single 32mm x 6g GIB® Grabber® Drywall Screws or 30mm GIB® Nails at 300mm centres

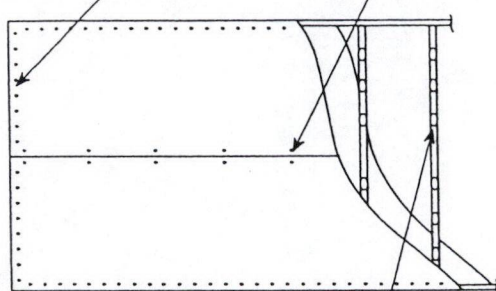


**GS1a (lined one side)
(Vertical Fixing)**

Daub of GIBFix® adhesive at 300mm centres to intermediate studs and nogs

32mm x 6g GIB® Grabber® Drywall Screws or 30mm GIB® Nails at 150mm centres to perimeter of bracing element

Single 32mm x 6g GIB® Grabber® Drywall Screws or 30mm GIB® Nails where sheets cross studs

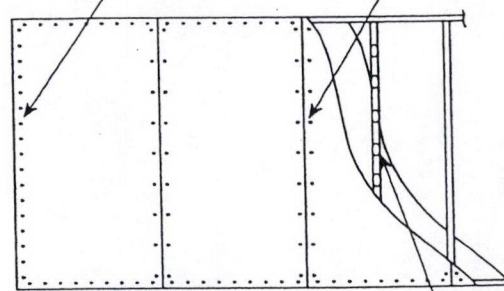


**GS2 (lined both sides)
(Horizontal Fixing)**

Daub of GIBFix® adhesive at 300mm centres to intermediate studs

32mm x 6g GIB® Grabber® Drywall Screws or 30mm GIB® Nails at 150mm centres to perimeter of bracing element

Single 32mm x 6g GIB® Grabber® Drywall Screws or 30mm GIB® Nails at 300mm centres



**GS2 (lined both sides)
(Vertical Fixing)**

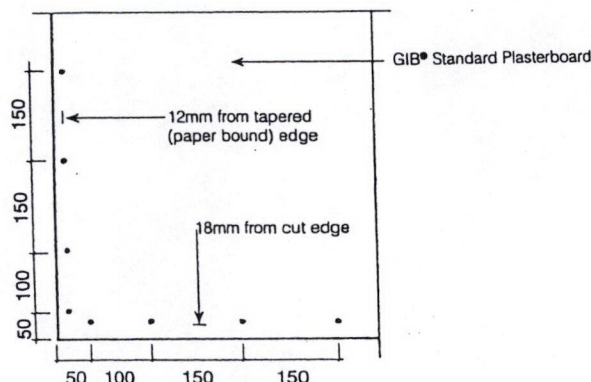
Daub of GIBFix® adhesive at 300mm centres to intermediate studs and nogs

Fixing the perimeter of a GIB® Standard Plasterboard bracing element

Fasteners are placed no closer than 12mm to the tapered (paper bound) machine edge of the GIB® plasterboard sheets. Fasteners are placed no closer than 18mm to a sheet end or a cut sheet edge.

For GIB® Standard bracing elements fasteners are placed at 150mm centres around the bracing element perimeter, starting at 50 and 150mm from the sheet corners.

Fastening pattern for GIB® Standard bracing elements



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow system specifications.

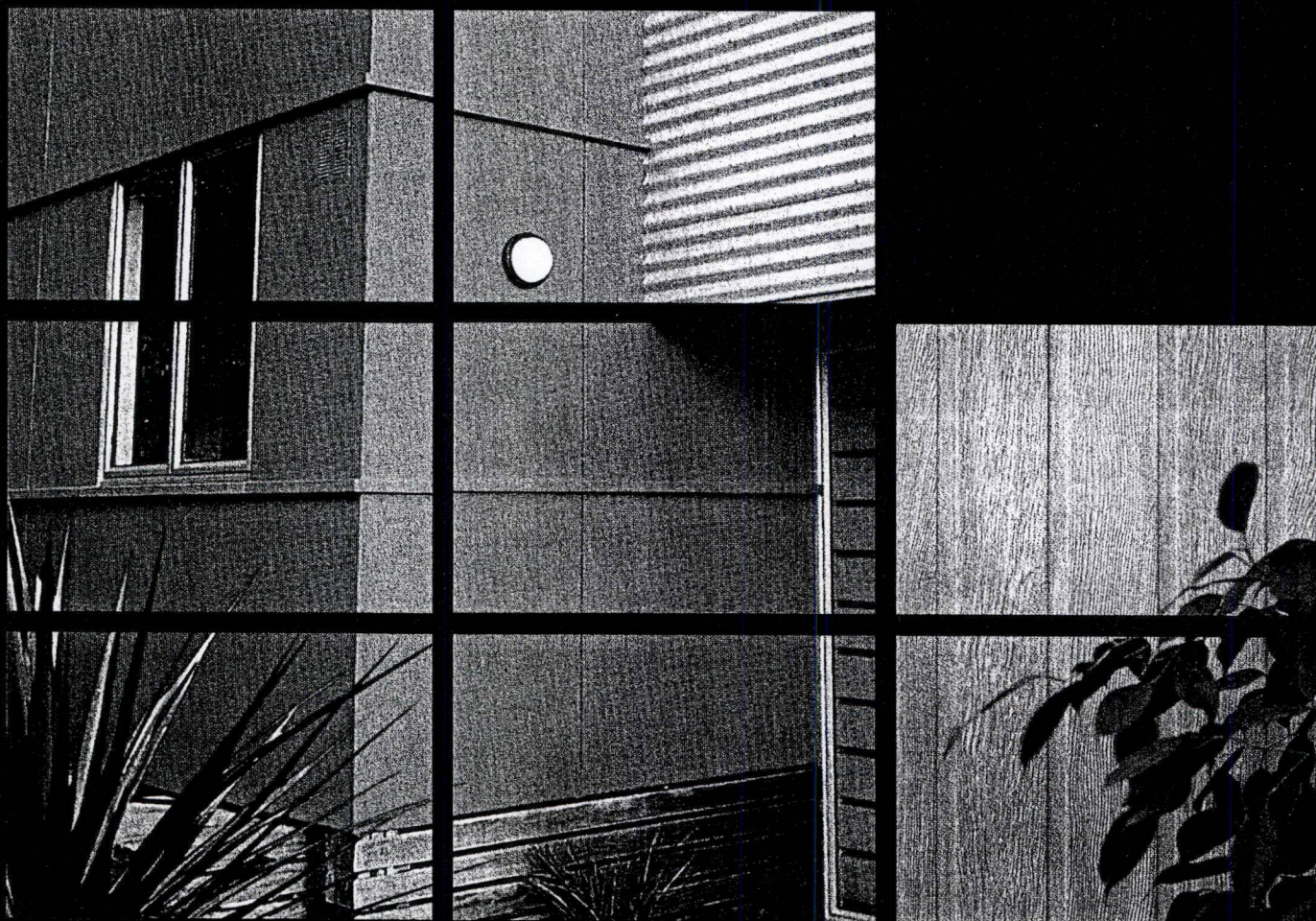
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HARDIFLEX® SHEET

NEW ZEALAND
JUNE 2005

FEATUREBOARD® SHEET

TECHNICAL SPECIFICATION



James Hardie®

Table 1: Definitions of risk
Paragraph 3.1.1, Figure 1

| | | |
|---|-----------------------|---|
| A: Wind zone | Low risk | Low <i>wind zone</i> as described by NZS 3604 |
| | Medium risk | Medium <i>wind zone</i> as described by NZS 3604 |
| | High risk | High <i>wind zone</i> as described by NZS 3604 |
| | Very high risk | Very high <i>wind zone</i> as described by NZS 3604 |
| B: Number of storeys | Low risk | One <i>storey</i> |
| | Medium risk | Two <i>storeys</i> in part |
| | High risk | Two <i>storeys</i> |
| | Very high risk | More than two <i>storeys</i> |
| C: Roof/wall intersection design | Low risk | Roof-to-wall intersection fully protected (e.g. hip and gable roof with <i>eaves</i>) |
| | Medium risk | Roof-to-wall intersection partly exposed (e.g. hip and gable roof with no <i>eaves</i>) |
| | High risk | Roof-to-wall intersection fully exposed (e.g. <i>parapets</i> , <i>enclosed balustrades</i> or <i>eaves</i> at greater than 90° to vertical with soffit <i>lining</i>) |
| | Very high risk | Roof elements finishing within the boundaries formed by the exterior walls (e.g. lower ends of aprons, <i>chimneys</i> , <i>dormers</i> etc) |
| D: Eaves width ⁽¹⁾⁽²⁾ | Low risk | Greater than 600 mm for single storey |
| | Medium risk | 451 – 600 mm for single storey, or over 600 mm for two storey |
| | High risk | 101 – 450 mm for single storey, or 451 – 600 mm for two storey, or greater than 600 mm above two storey |
| | Very high risk | 0 – 100 mm for single storey, or 0 – 450 mm for two storey, or less than 600 mm above two storey |
| E: Envelope complexity | Low risk | Simple rectangular, L, T or boomerang shape, with single <i>cladding</i> type |
| | Medium risk | Moderately complex, angular or curved shapes (e.g. Y or arrowhead) with no more than two <i>cladding</i> types |
| | High risk | Complex, angular or curved shapes (e.g. Y or arrowhead) with multiple <i>cladding</i> types |
| | Very high risk | As for High risk, but with junctions not covered in C or F of this table (e.g. box windows, pergolas, multi-storey re-entrant shapes etc) |
| F: Deck design ⁽³⁾ | Low risk | None, timber slat <i>deck</i> or porch at ground floor level |
| | Medium risk | Fully covered in plan by roof, or timber slat <i>deck</i> attached at first or second floor level |
| | High risk | <i>Enclosed deck</i> exposed in plan or cantilevered at first floor level |
| | Very high risk | <i>Enclosed deck</i> exposed in plan or cantilevered at second floor level or above |

NOTES:

(1) *Eaves* width measured horizontally from external face of wall *cladding* to outer edge of overhang, including gutters and fascias.

(2) Balustrades and *parapets* count as 0 mm *eaves*.

(3) The term *deck* includes balconies, as described in the Definitions.

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Table 2: Building envelope risk matrix
Paragraph 3.1.2, Figure 1

| Risk factor | Risk severity | | | | | | Subtotals for each risk factor |
|--|---------------|-------|--------|-------|------|-------|--------------------------------|
| | LOW | score | MEDIUM | score | HIGH | score | |
| Wind zone (per NZS 3604) | 0 | | 0 | ✓ | 1 | | 0 |
| Number of storeys | 0 | ✓ | 1 | | 2 | | 0 |
| Roof/wall intersection design | 0 | ✓ | 1 | | 3 | | 0 |
| Eaves width | 0 | ✓ | 1 | | 2 | | 0 |
| Envelope complexity | 0 | ✓ | 1 | | 3 | | 0 |
| Deck design | 0 | ✓ | 2 | | 4 | | 0 |
| (Enter the appropriate risk severity score for each risk factor in the score columns. Transfer these figures across to the right-hand column. Finally, add up the figures in the right-hand column to get the total risk score.) | | | | | | | Total risk score: 0 |

Table 3: Suitable wall claddings
Paragraphs 3.1.2, 3.4.1.1, 3.4.2.1, 3.4.2.2, 3.4.3.2, 9.1.1, 9.4.1.2, 9.4.1.3, 9.6, Figure 1

| Risk Score | Suitable wall claddings ^m | |
|--|--|---|
| | Direct fixed to framing | Over nominal 20 mm drained cavity |
| 0 – 6 | a) Timber weatherboards – all types b) Fibre cement weatherboards c) Vertical profiled metal ^{ca} – corrugated and symmetrical d) Fibre cement sheet ^{ca} e) Plywood sheet f) EIFS | a) Masonry veneer ^{ca} b) Stucco c) Horizontal profiled metal ^{ca} – corrugated and trapezoidal only |
| 7 – 12 | a) Bevel-back timber weatherboards b) Vertical timber board and batten c) Vertical profiled metal ^{ca} – corrugated only | a) Masonry veneer ^{ca} b) Stucco c) Horizontal profiled metal – corrugated and trapezoidal only d) Rusticated weatherboards e) Fibre cement weatherboards f) Fibre cement sheet g) Plywood sheet h) EIFS |
| 13 – 20 | a) Vertical profiled metal ^{ca} – corrugated only | a) Masonry veneer ^{ca} b) Stucco c) Horizontal profiled metal – corrugated and trapezoidal only d) Rusticated weatherboards e) Fibre cement weatherboards f) Fibre cement sheet g) Plywood sheet h) EIFS i) Bevel-back weatherboards |
| Over 20 | a) Redesign the <i>building</i> to achieve a lower score, or b) Specific design – The design may need changing to reduce the risk – The <i>building consent authority</i> may require more comprehensive details and documentation providing evidence of <i>weathertightness</i> – The <i>building consent authority</i> , designer or <i>owner</i> may require more inspections – A third party audit of the design may be required. | |
| NOTES: (1) The wall claddings in this table are limited to those covered in this Acceptable Solution. (2) Traditional <i>masonry veneer</i> as per SNZ HB 4236, with minimum 40 mm cavity. (3) Refer Figure 38 for profiles. (4) Except <i>stucco</i> over a fibre cement backing. | | |

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WE VALUE YOUR FEEDBACK

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

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

1 APPLICATION AND SCOPE

1.1 APPLICATION

HardiFlex® Sheet and FeatureBoard® Sheet are manufactured in New Zealand by James Hardie from fibre cement which is a composition of cellulose fibre, Portland cement, sand and water. HardiFlex® Sheet and FeatureBoard® Sheet is a paneled light weight wall cladding solution for residential and light commercial buildings.

- HardiFlex® Sheet is ideal for many general building purposes such as wall cladding, wide soffits, porches and gable ends etc.
- Hardiflex® Sheet is a natural unsanded sheet and is suitable for a paint finish. A variety of jointing methods can be used to achieve the desired look.
- FeatureBoard® Sheet is used to clad exteriors or to achieve special feature looks in areas like gable end walls and entrance ways.
- FeatureBoard® Sheet is a machine moulded, textured fibre cement panel with the appearance of regular-width vertical timber planks spaced with narrow grooves and is supplied pre-primed in manila white.
- FeatureBoard® Sheet grooves are 17mm wide at 100mm centres. uPVC jointers match the profile of grooves on the board.

If you are a specifier...

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

If you are an installer

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

Make sure your information is up to date

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

1.2 SCOPE

The scope of this specification is for the use of HardiFlex® Sheet and FeatureBoard® Sheet limited to buildings which fall within the scope limitations of NZBC Acceptable Solution 'E2/AS1' paragraph 1.1. This manual covers the use of HardiFlex® Sheet and FeatureBoard® Sheet for either construction methods i.e. direct fixed or cavity, used in external walls of timber framed buildings. Please refer to 'E2/AS1' for further information regarding the selection of construction methods for claddings.

This document is intended for use by architects, designers and specifiers who may be involved with the specification of HardiFlex® Sheet and FeatureBoard® Sheet.

1.3 DETAILS

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

1.4 SPECIFIC DESIGN

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

2 DESIGN

2.1 COMPLIANCE

HardiFlex® Sheet and FeatureBoard® Sheet complies with section 9.7.2 of 'E2/AS1'. Information contained in this document is aligned with the requirements of NZBC Acceptable Solution 'E2/AS1'.

2.2 RESPONSIBILITY

The specifier or other party responsible for the project must run through a risk matrix analysis to determine which construction method is to be used. The designer must also ensure that the figures published in this specification are appropriate for the intended application and that additional detailing is performed for specific design or any areas that fall outside the scope of this specification. The designers should ensure that the intent of their design meets the requirements of the NZBC.

All dimensions shown are in millimeters unless noted otherwise. All New Zealand Standards reference in this manual are current edition and must be complied with.

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

2.3 SITE & FOUNDATION

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

2.4 GROUND CLEARANCES

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

2.5 MOISTURE MANAGEMENT

It is the responsibility of the specifier to identify moisture related risks associated with any particular building design. Wall construction design must effectively manage moisture, considering both the interior and exterior environments of the building, particularly in buildings that have a higher risk of wind driven rain penetration or that are artificially heated or cooled.

Walls shall include those provisions as required by the NZBC Acceptable Solution 'E2/AS1' 'External Moisture'. In addition all wall openings, penetrations, junctions, connections, window sills, heads and jambs must incorporate appropriate flashings for waterproofing. The other materials, components and installation methods used to manage moisture in external walls, must comply with the requirements of relevant standards and the NZBC. For further information on designing for weathertightness refer to BRANZ Ltd and the Department of Building and Housing updates on the following websites respectively, www.branz.co.nz and www.dbh.govt.nz.

2.6 STRUCTURE

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

2.7 WIND LOADING

HardiFlex® Sheet and FeatureBoard® Sheet cladding are suitable for use in all New Zealand wind zones up to and including VH as defined in NZS 3604. A specific design is required for all situations where the buildings fall in a specific design (SD) wind zone.

2.8 STRUCTURAL BRACING

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

2.9 FIRE RATED WALLS

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

2.10 ENERGY EFFICIENCY

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

TABLE 1:

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

*as defined in NZS 4218

3 FRAMING

3.1 GENERAL

This HardiFlex® Sheet and FeatureBoard® Sheet technical specification is only suitable for timber-framed buildings. Other framing materials outside the scope of this specification.

3.2 DIMENSIONS

A 45mm (nominal) minimum stud width is required at all sheet edges. Elsewhere a 35mm wide stud may be used.

3.3 TIMBER GRADE

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

3.4 DURABILITY

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

For timber treatment and allowable moisture content information refer to NZS 3602 (Timber and Wood-Based Products for use in Buildings) and NZS 3640 (Chemical Preservation of Round Sawn Timber) for minimum timber treatment selection and treatment requirements. Also refer to framing manufacturer's literature for further guidance on timber selection. Framing must be protected from moisture at sites in accordance with the recommendations of the framing manufacturer.

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

3.5 FRAME CONSTRUCTION

The framing must fully support all sheet edges. The framing must be rigid and not rely on the cladding sheet for stability. All timber framing sizes and set-out must comply with NZS 3604 and as specified in this specification. Use of timber framing must be in accordance with framing manufacturer's specification.

3.5.1 DIRECT FIX CONSTRUCTION METHOD

For direct fixed construction method the following framing is required:

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

3.5.2 CAVITY CONSTRUCTION METHOD

For cavity construction method the following framing is required

- When studs are spaced at 600mm centres maximum then the nogs / dwangs must be provided at 800mm centres maximum.
- When studs are spaced at 400mm centres then the nogs / dwangs may be provided at 1200mm centres.
- An extra stud is required in internal corners. See Figure 22.

3.6 TOLERANCES

In order to achieve an acceptable wall finish, it is imperative that framing is straight and true.

Framing tolerances must comply with the requirements of NZS 3604. All framing shall be made flush.

3.7 CURVED WALLS

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

4 PREPARATION

4.1 BUILDING WRAP

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

4.2 VENT STRIP

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

4.3 CAVITY BATTENS

Buildings with a risk score of 7-20 calculated in accordance with NZBC Acceptable Solution 'E2/AS1' Table 2, require HardiFlex® Sheet and FeatureBoard® Sheet to be installed on a cavity. The cavity battens provide airspace between the frame and the sheet and are considered a 'packer' only in this specification. The timber battens must be minimum H3.1 treated in accordance with NZS 3640 (Chemical preservation of rough and sawn timber) to comply with the durability requirements of B2/AS1.

Cavity battens must comply with following requirements

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

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

No intermediate batten between studs is required:

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

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

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

4.4 FLASHINGS

All wall openings, penetrations, intersections, connections, window sills, heads and jambs must be flashed prior to sheet installation.

Please refer to moisture management requirements in Clause 2.5.

The building wrap must be appropriately incorporated with penetration and junction flashings. Materials must be lapped in such a way that water tracks down to the exterior on the face of building wrap. James Hardie will assume no responsibility for water infiltration within the wall due to poor installation of flashings or building wraps. The selected flashing materials must comply with the durability requirements of the NZBC Acceptable Solution 'E2/AS1'.

5 FIXING HARDIFLEX SHEET & FEATUREBOARD SHEET

5.1 GENERAL

HardiFlex® Sheets and FeatureBoard® Sheets must be kept dry and under cover whilst in storage or during installation. Framing moisture must be not more than a maximum of 24% prior to sheet installation. Every endeavour must be made to keep framing dry once sheet fixing commences.

All sheet edges must be sealed prior to installation. The sheet edges must also be sealed around window/door openings and other penetrations e.g. meter boxes etc.

5.2 FASTENER DURABILITY

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

TABLE 2:

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

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

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

5.3 FASTENER - SIZE AND LAYOUT

HardiFlex® Sheet and FeatureBoard® Sheet must be fixed to framing using the fixings as specified in Table-3 and in accordance with the following requirements

- Nails must have a minimum clearance of 12mm from sheet edges and a minimum of 75mm vertically and 150mm horizontally from sheet corners.
- Nails must finish flush with sheet surface.

TABLE 3:

| SHEET FIXING | |
|-------------------------------|---|
| Direct Fixed to Frame | |
| 40 x 2.8 mm HardiFlex® nails | Fix Sheet at 200mm centres at all sheet edges as well as all intermediate framing |
| Cavity Construction | |
| 60 x 3.15 mm HardiFlex® nails | Fix sheet at 200mm centres at all studs and at 150mm centres at top plate and bottom plate. |

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

5.4 GUN NAILING

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

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

5.5 SHEET LAYOUT

- All sheet edges must be supported by the framing.
- HardiFlex® Sheet must be fixed vertically.
- FeatureBoard® Sheets must be fixed vertically.

6 JOINTING

6.1 GENERAL

HardiFlex® Sheets can be jointed in a number of ways to achieve different panelised look of the walls.

6.2 VERTICAL JOINT

HardiFlex® Sheets could have the following types of vertical joints.

- uPVC Hardijointer Joint
- Flexible Sealant Joint
- Timber Batten Joint
- FeatureBoard® Sheets must be jointed with a purpose made pattern-matching uPVC jointers only.

6.3 HORIZONTAL JOINT

At floor joist levels a horizontal joint must be provided to accommodate the movement resulting from timber joist shrinkage and settlement.

- For HardiFlex® Sheets use a James Hardie uPVC 'h' mould to form a horizontal joint or a purpose made metal 'Z' flashing could also be used to form a horizontal joint.
- For horizontal joints in FeatureBoard® Sheets use 7.5mm uPVC horizontal flashing.

7 FINISHING

7.1 PREPARATION

Painting of HardiFlex® Sheets and FeatureBoard® Sheets is required in order to meet the durability requirements of the NZBC and product warranties. HardiFlex® Sheets and FeatureBoard® Sheets must be dry and free from dirt before painting. Coating must be completed within 3 months of sheet erection.

When using uPVC flashings, the light reflective value of the colour used must be more than 40% as required under 'E2/AS1'. Dark colours cause excessive movement and deteriorate the cladding performance.

10 PRODUCT INFORMATION

7.2 SEALANTS

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

7.3 COATING

Use only quality latex exterior paints complying with AS 3730. Manufacturer's specification for the selected paint must be followed. Note that some paints require undercoat before applying the finish coat. When using uPVC flashings, the light reflective value (LRV) for the colour must not be less than 40%.

Enamel – based paints can be used, utilizing a three-coat system. Refer to the paint manufacturer for details before commencing the coating work. Paint must not be applied when the temperature is below 10° C.

8 STORAGE AND HANDLING

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

9 MAINTENANCE

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

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

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

10.1 MANUFACTURING AND CLASSIFICATION

HardiFlex® Sheets and FeatureBoard® Sheets are a cellulose fibre reinforced cement building product. The basic composition is Portland cement, sand, cellulose fibre and water. The sheets are easily identified by the name 'HardiFlex®' or 'FeatureBoard®' printed at regular intervals on the back face of sheet.

HardiFlex® Sheets and FeatureBoard® Sheets are manufactured to AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheets' (ISO 8336 'Fibre Cement Flat Sheets') standards in New Zealand. James Hardie New Zealand is an ISO 9001 'Telarc' certified manufacturer. HardiFlex® Sheets and FeatureBoard® Sheets are classified Type A, Category 2 in accordance with AS/NZS 2908.2 'Cellulose-Cement Products'.

For Material Safety Data Sheets (MSDS) visit www.jameshardie.co.nz or Ask James Hardie on 0800 808 868.

10.2 PRODUCT MASS

HardiFlex® Sheets are manufactured in two thickness. The 6.0 mm thick sheet has a Mass of 8.6 kg/m² at EMC and the 7.5 mm thick sheet has a Mass of 10.8 kg/m² at EMC.

FeatureBoard® Sheets are 6.5 mm thick and have a Mass of 8.7 kg/m² at EMC.

HardiFlex® Sheets and FeatureBoard® Sheets are defined as a Light Weight Wall Cladding (not exceeding 30kg/m²) as per NZS 3604.

10.3 SHEET SIZES

Available sizes of HardiFlex® Sheets are specified in Table 4.

TABLE 4:

| SHEET SIZES HARDIFLEX® SHEETS - 6.0 MM & 7.5 MM | | | | | |
|---|------------|-------------|------|------|------|
| Thickness (mm) | Width (mm) | Length (mm) | | | |
| | | 1800 | 2400 | 2700 | 3000 |
| 6 | 900 | | ✓ | | |
| 6 | 1200 | ✓ | ✓ | ✓ | ✓ |
| 7.5 | 1200 | | ✓ | ✓ | ✓ |

Available sizes of FeatureBoard® Sheets are specified in Table 5.

TABLE 5:

| SHEET SIZES FEATUREBOARD® SHEETS | | | |
|----------------------------------|------------|-------------|------|
| Thickness (mm) | Width (mm) | Length (mm) | |
| | | 2400 | 2700 |
| 6.5 | 1200 | ✓ | ✓ |

11 SAFE WORKING PRACTICES

10.4 PRODUCT TOLERANCES

Are specified in Table 6.

TABLE 6:

| TOLERANCES | |
|--------------------------|--------------------------|
| Properties | At Equilibrium Condition |
| Approx. Moisture Content | 3% - 5% |
| Width Tolerance | -2mm |
| Length Tolerance | -1mm |
| Thickness Tolerance | +0.4/-0.2mm |
| Diagonal Difference | +/- 3mm |

10.5 DURABILITY

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

10.5.1 RESISTANCE TO MOISTURE/ROTTING

HardiFlex® Sheets and FeatureBoard® Sheets demonstrate resistance to permanent moisture induced deterioration (rotting) by passing the following tests in accordance with AS/NZS2908.2:

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

10.5.2 RESISTANCE TO FIRE

HardiFlex® Sheets and FeatureBoard® Sheets have the following Early Fire Hazard Indices (tested to AS 1530 Part 3).

TABLE 7:

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

WARNING

DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA

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

JAMES HARDIE RECOMMENDED SAFE WORKING PRACTICES

CUTTING OUTDOORS

Position cutting station so that wind will blow dust away from user or others in working area. Use one of the following methods based on the required cutting rate:

BEST

- Score and snap
- Hand guillotine
- Fibreshear

BETTER

- Dust reducing circular saw equipped with HardiBlade® Saw Blade and HEPA vacuum extraction

GOOD

- Dust reducing circular saw equipped with HardiBlade® Saw Blade.

CUTTING INDOORS

- Cut only using score and snap, hand guillotine or fibreshears (manual, electric or pneumatic).
- Position cutting station in well-ventilated area

DRILLING/OTHER MACHINING

When drilling or machining you should always wear a P1 or P2 dust mask and warn others in the immediate area.

JAMES HARDIE RECOMMENDED SAFE WORKING PRACTICES

IMPORTANT NOTES:

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

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

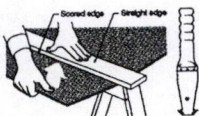
WORKING INSTRUCTIONS

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

SCORE AND SNAP

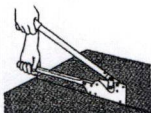
Score and Snap is a fast and efficient method of cutting the product using James Hardie's special tungsten tipped Score and Snap knife.

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



HAND GUILLOTINE

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



FIBRESHEAR HEAVY DUTY

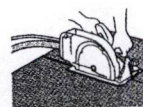
An electrically powered, fast, clean and effortless way of cutting James Hardie building products, especially around curves such as archways. Make Fibreshear cut on the "off-cut" side of the line to allow for the thickness of the shear.



HARDIBLADE® SAW BLADE

The HardiBlade® Saw Blade used with a dust-reducing saw is ideal for fast, clean cutting of James Hardie fibre cement products.

A dust-reducing saw uses a dust deflector or a dust collector connected to a vacuum system. When sawing, clamp a straight-edge to the sheet as a guide and run the saw base plate along the straight edge when making the cut.



HOLE-FORMING

For smooth clean cut circular holes:

Mark the centre of the hole on the sheet.

Pre-drill a 'pilot' hole.

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

For irregular holes:

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



STORAGE AND HANDLING

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

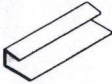
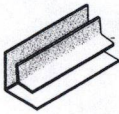
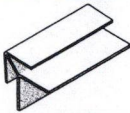

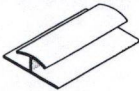
QUALITY

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

12 ACCESSORIES

ACCESSORIES/TOOLS SUPPLIED BY JAMES HARDIE

6MM HARDIFLEX® SHEET

| | ACCESSORY AND MATERIAL NUMBER | SIZE (MM) | MATERIAL / APPEARANCE |
|---|---|------------------------|-----------------------|
|  | 6mm Capping Mould 2400 300539 3000 300540 | 2400 long 3000 long | uPVC/Bone colour |
|  | 6mm PVC Internal Corner 2400 300867 3000 300869 | 2400 long 3000 long | uPVC/Bone colour |
|  | 6mm PVC External Corner 2400 300847 3000 300849 | 2400 long 3000 long | uPVC/Bone colour |
|  | 6mm Horizontal Flashing 302254 | 3000 long | uPVC/Bone colour |
|  | 6mm Hardijointer 2400 300730 3000 300734 | 2400 long 3000 long | uPVC/Bone colour |

6MM & 7.5MM HARDIFLEX® & FEATUREBOARD® SHEETS

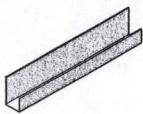



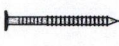



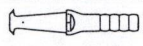

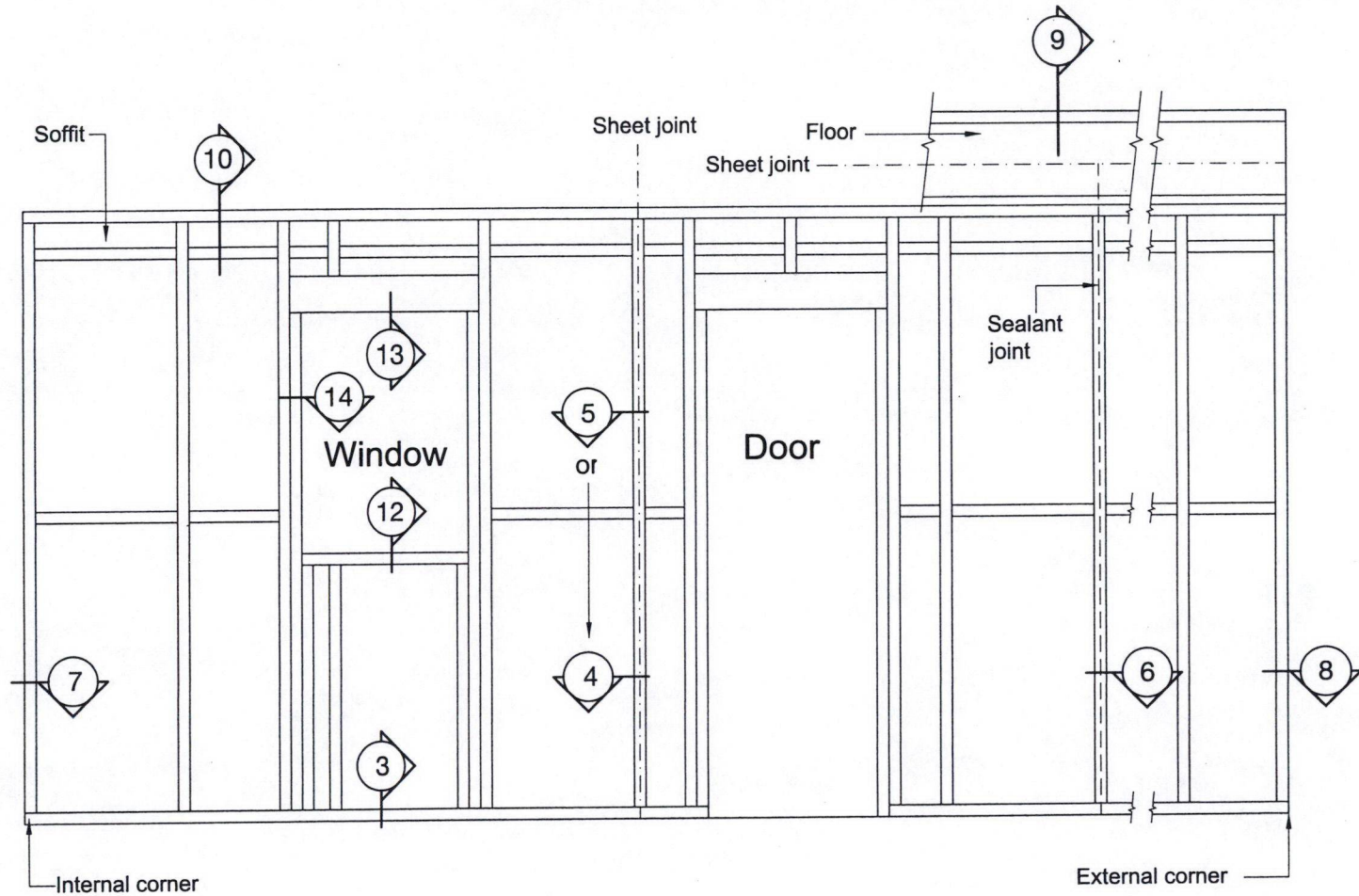
| | ACCESSORY AND MATERIAL NUMBER | SIZE (MM) | MATERIAL / APPEARANCE |
|---|--|-----------------------------------|-------------------------|
|  | Vent Strip 302490 | 3000 long | uPVC |
|  | Horizontal Flashing Jointer 301921 | 100 long | uPVC/Bone colour |
|  | Corner Flashing Jointer 301920 | 50 x 50 | uPVC/Bone colour |
|  | Inseal 3259 1.5mm thick 50mm 300767 80mm 300769 | 50 wide 80 wide | Black Compressible Foam |
|  | HardiFlex® Nail - Jar - 5kg 302781 302782 | 60 x 3.15 ø x 6.8mmø head size | 316 Stainless Steel |
|  | HardiFlex® Nail - Jar - 5kg 302783 302784 | 60 x 3.15 ø x 6.8mmø head size | Hot Dip Galvanised |
|  | HardiDrive Screw - self drilling & embedding timber screw 100 jar 300928 | 7g x 30mm | 306 Stainless Steel |
|  | HardiBlade® Saw Blade 300660 | 4 tooth - 184mm | Diamond Tipped |
|  | Scoring Knife 300914 | | Tungsten Carbide |
|  | Corner Underflashing 303745 | 3000 long | uPVC/Bone colour |

FIGURE 1: DIRECT FIX FRAMING



WALL ELEVATION

Note!
Section notations refer
to dwg numbers.

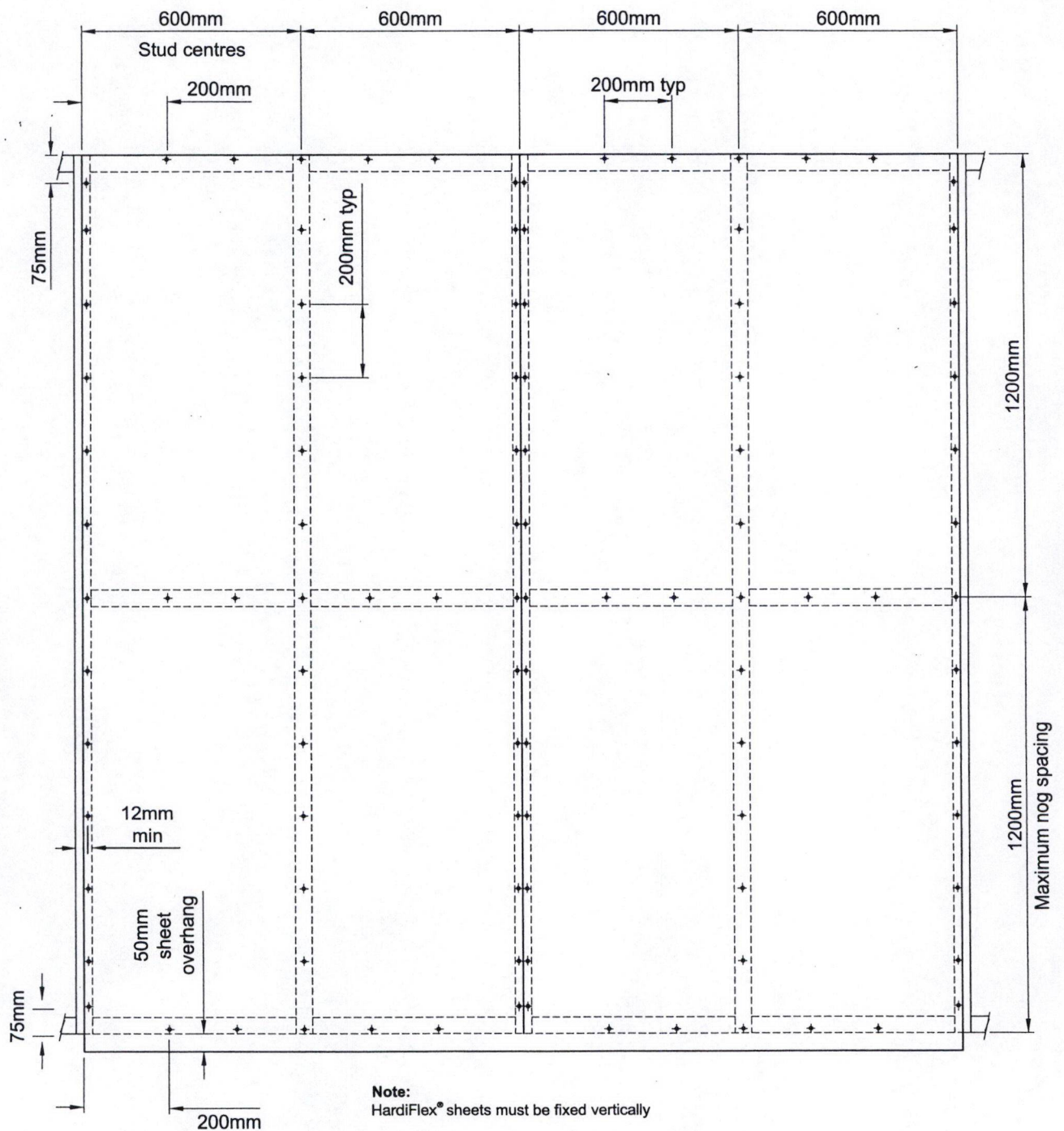


FIGURE 2: DIRECT FIX SHEET FIXING

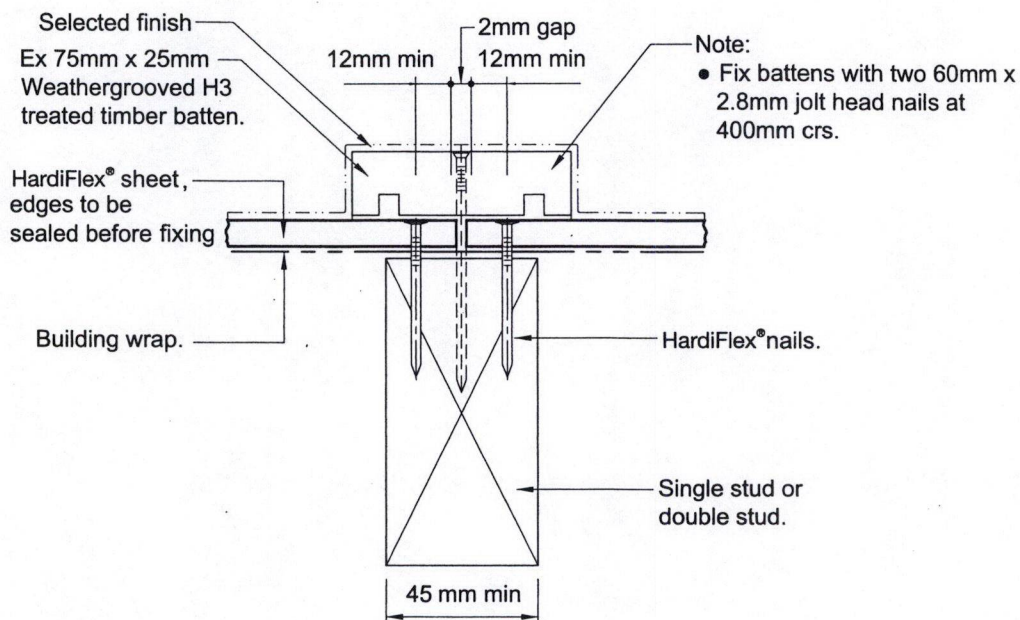


FIGURE 5: DIRECT FIX TIMBER BATTEN JOINT

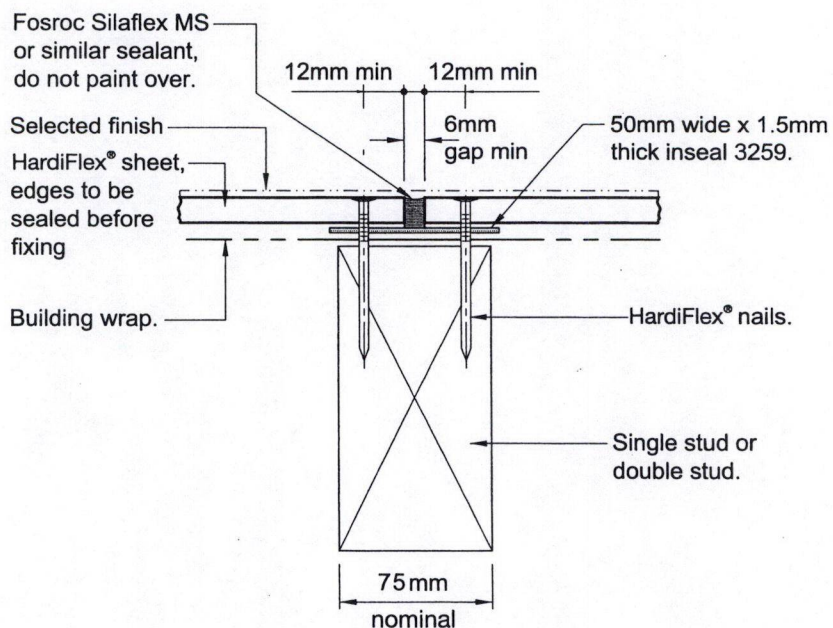


FIGURE 6: DIRECT FIX VERTICAL SEALANT JOINT

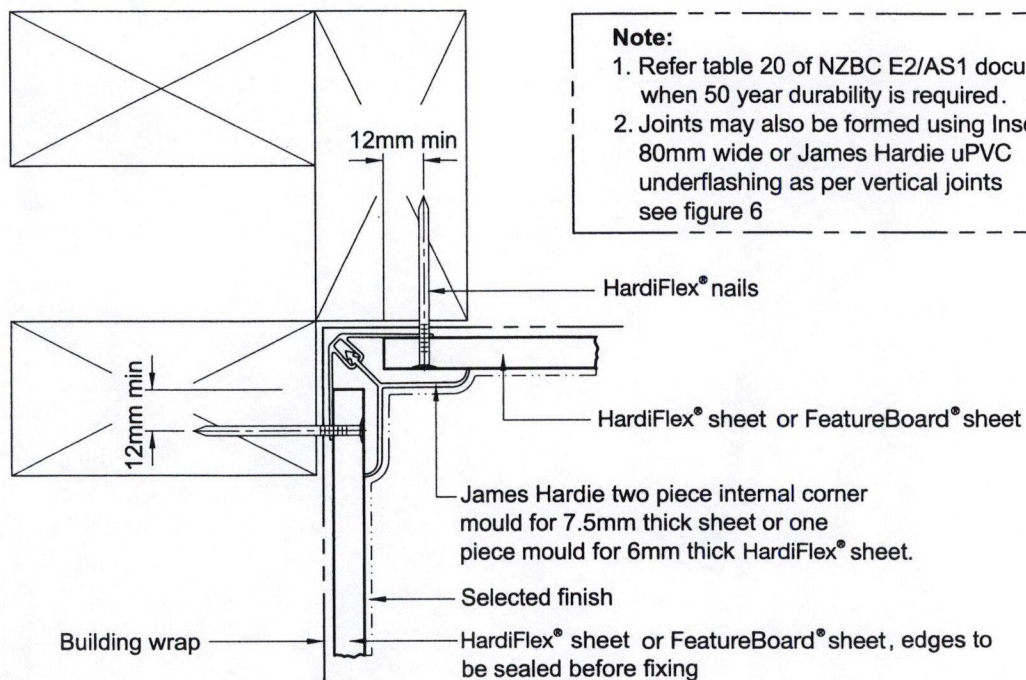


FIGURE 7: DIRECT FIX INTERNAL CORNER JOINT

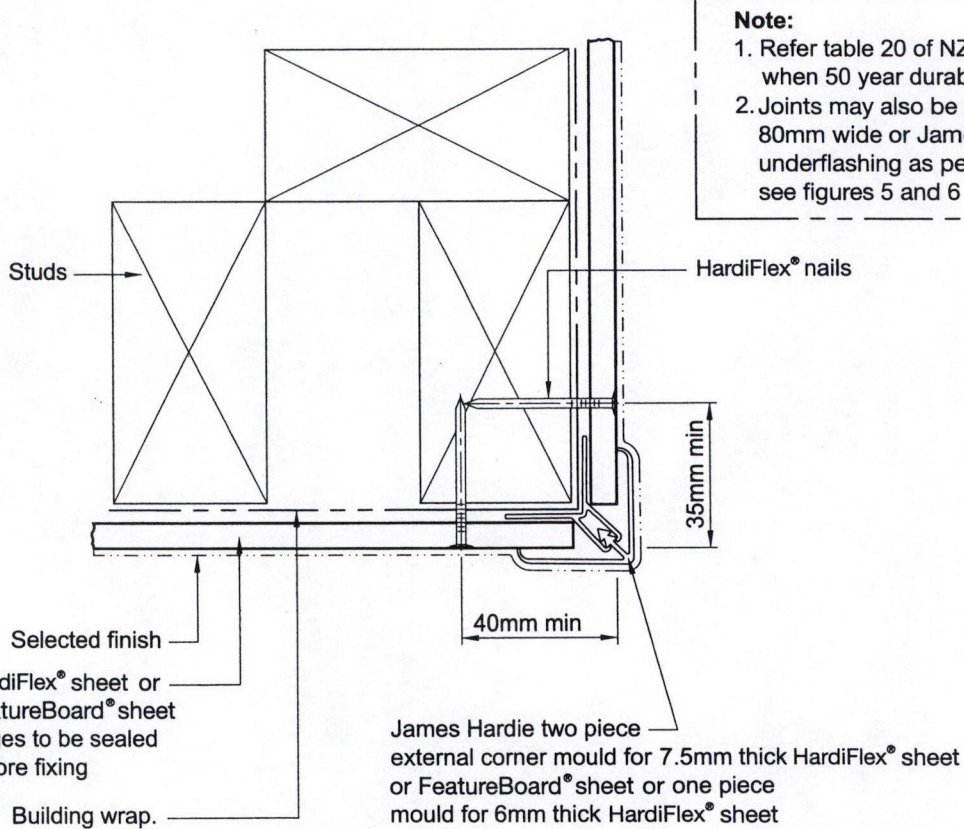
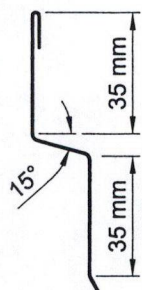


FIGURE 8: DIRECT FIX EXTERNAL CORNER JOINT



Alternative Flashing Option

Note:

1. When 50 year durability is required refer NZBC E2/AS1 document.

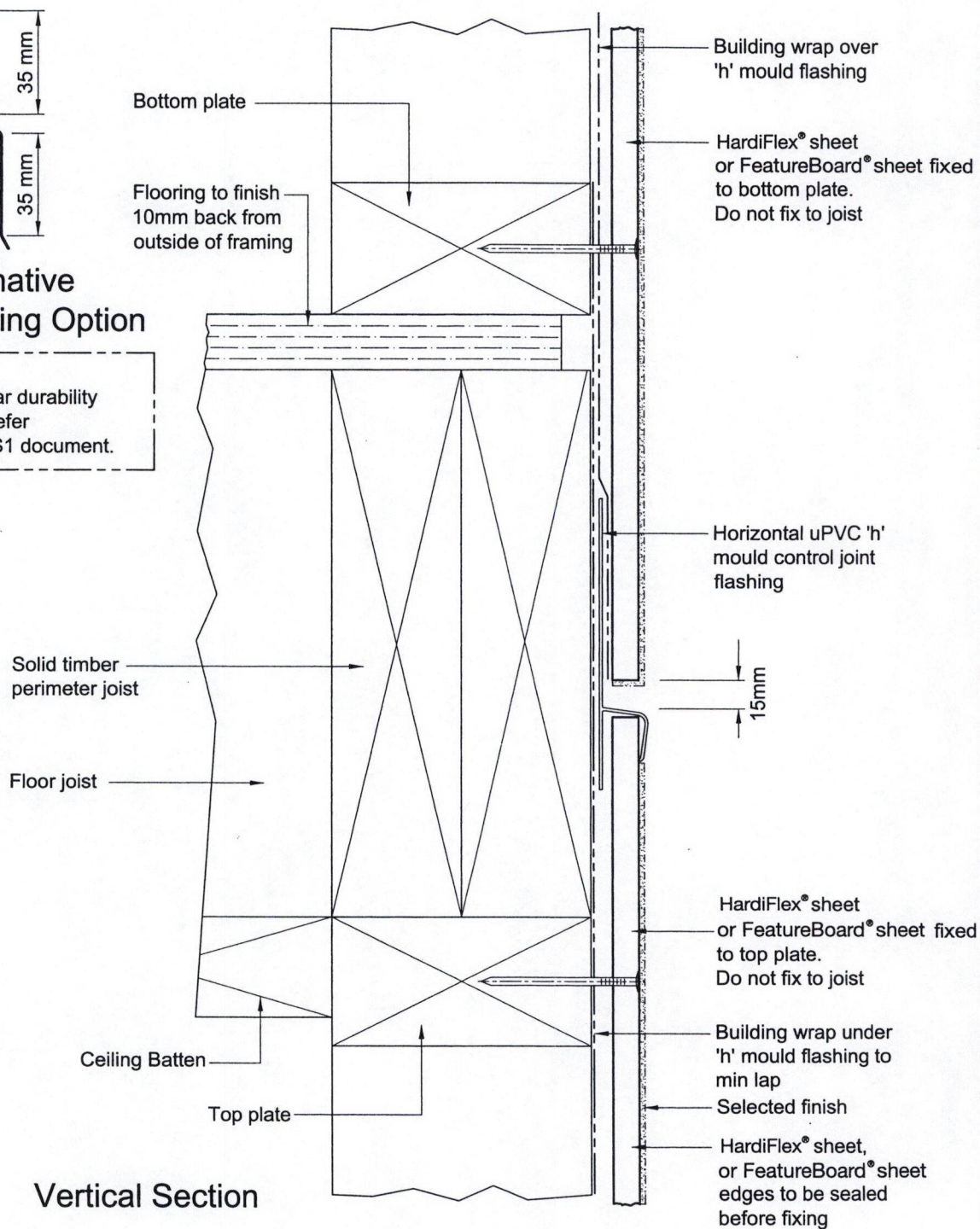


FIGURE 9: DIRECT FIX HORIZONTAL CONTROL JOINT

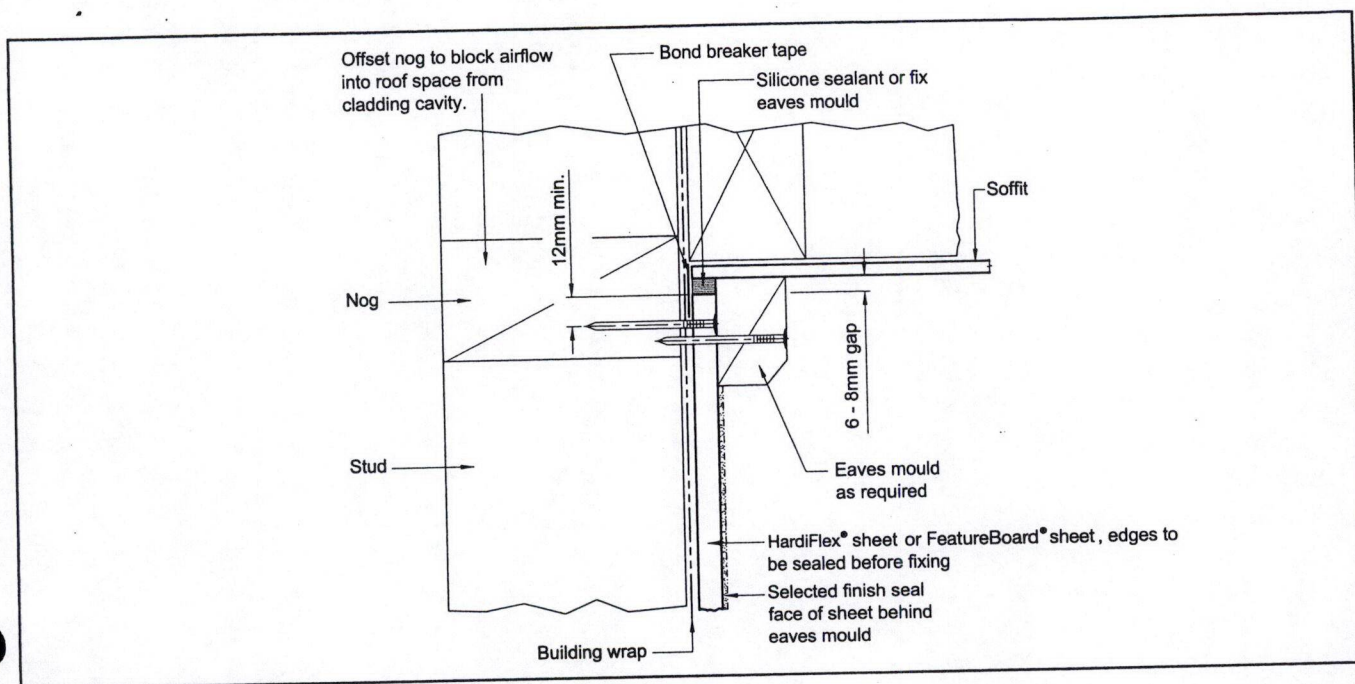


FIGURE 10: DIRECT FIX SOFFIT DETAIL

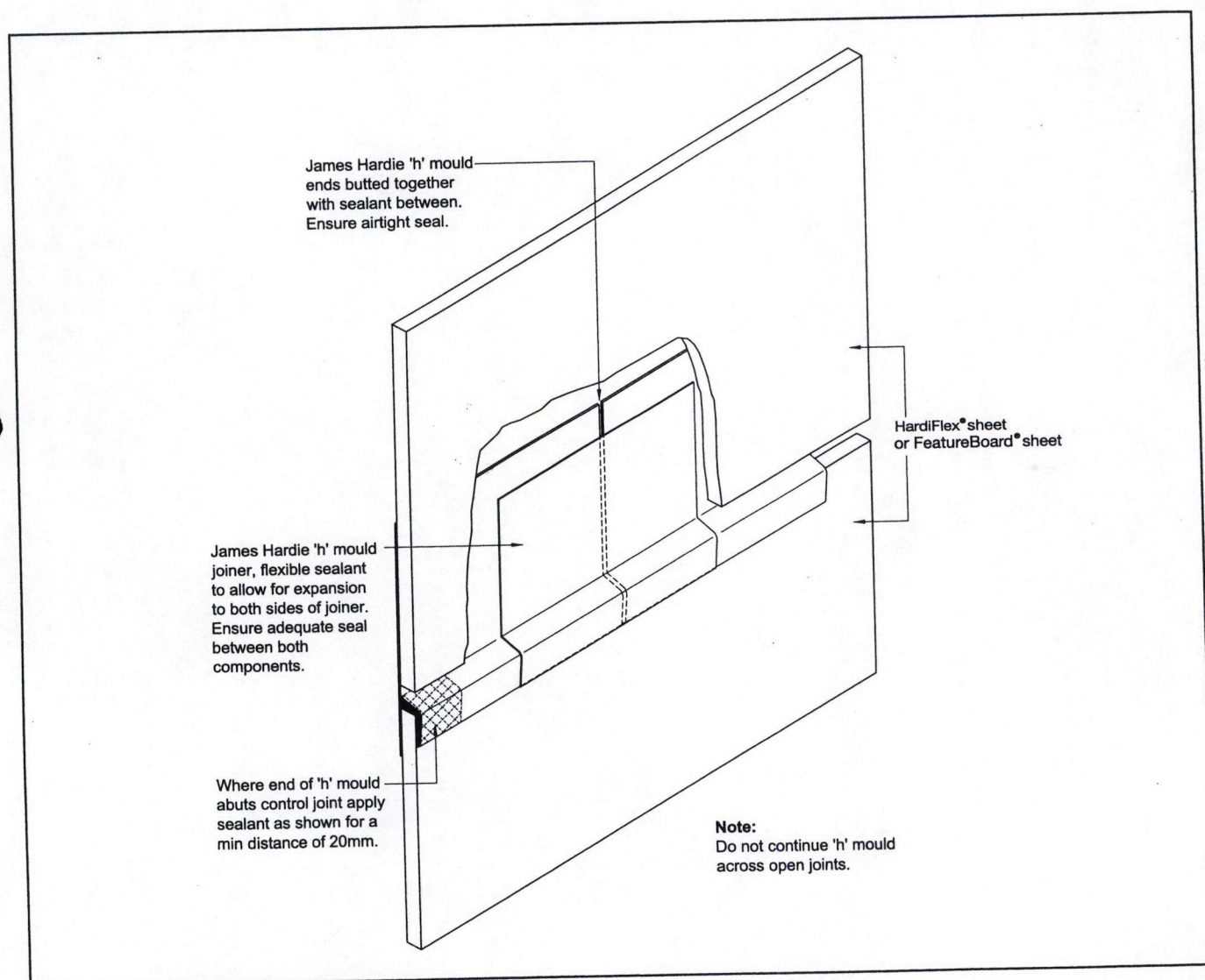
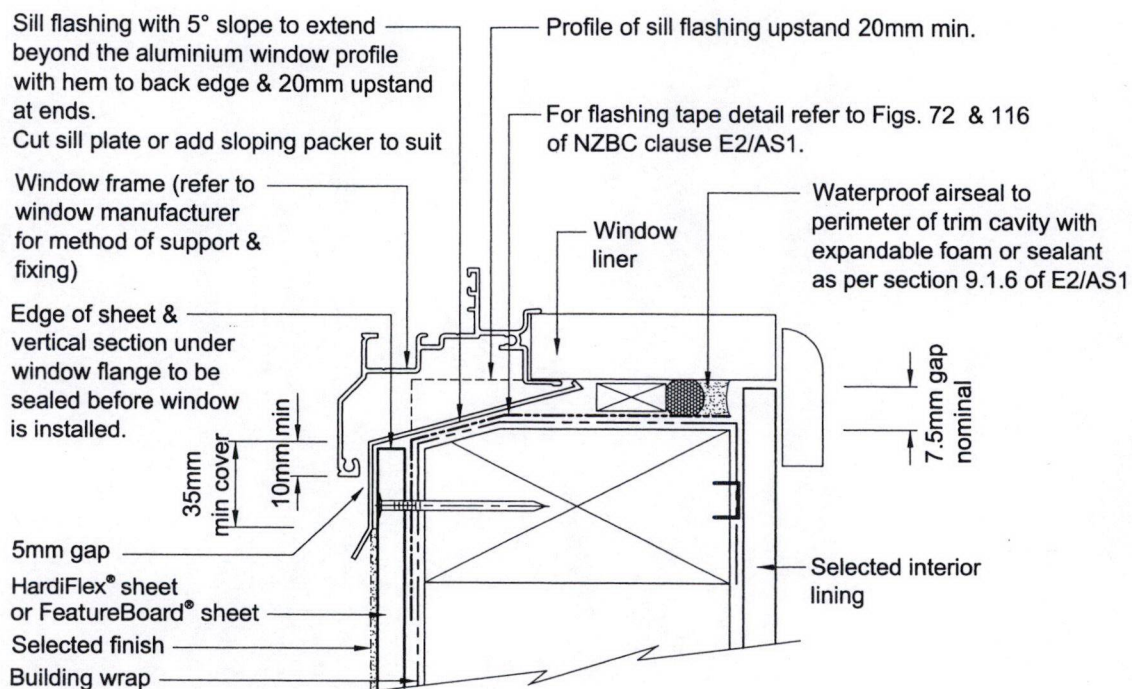


FIGURE 11: DIRECT FIX 'h' MOULD JOINT



Note:

Sill flashing tray to have a min 10mm upstand at each end

General notes for materials section

1. Flashing materials must be selected based on environmental exposure, refer to NZS 3604 and table 20 of NZBC clause 'E2/AS1'.
2. Building wrap must comply with acceptable solution NZBC clause 'E2/AS1' and NZS 3604.
3. Flashing tape must have proven compatibility with the selected building wrap and other materials with which it comes into contact as per table 21 of NZBC clause 'E2/AS1'.

(Refer to the manufacturer or supplier for technical information on these materials.)

FIGURE 12: DIRECT FIX WINDOW SILL

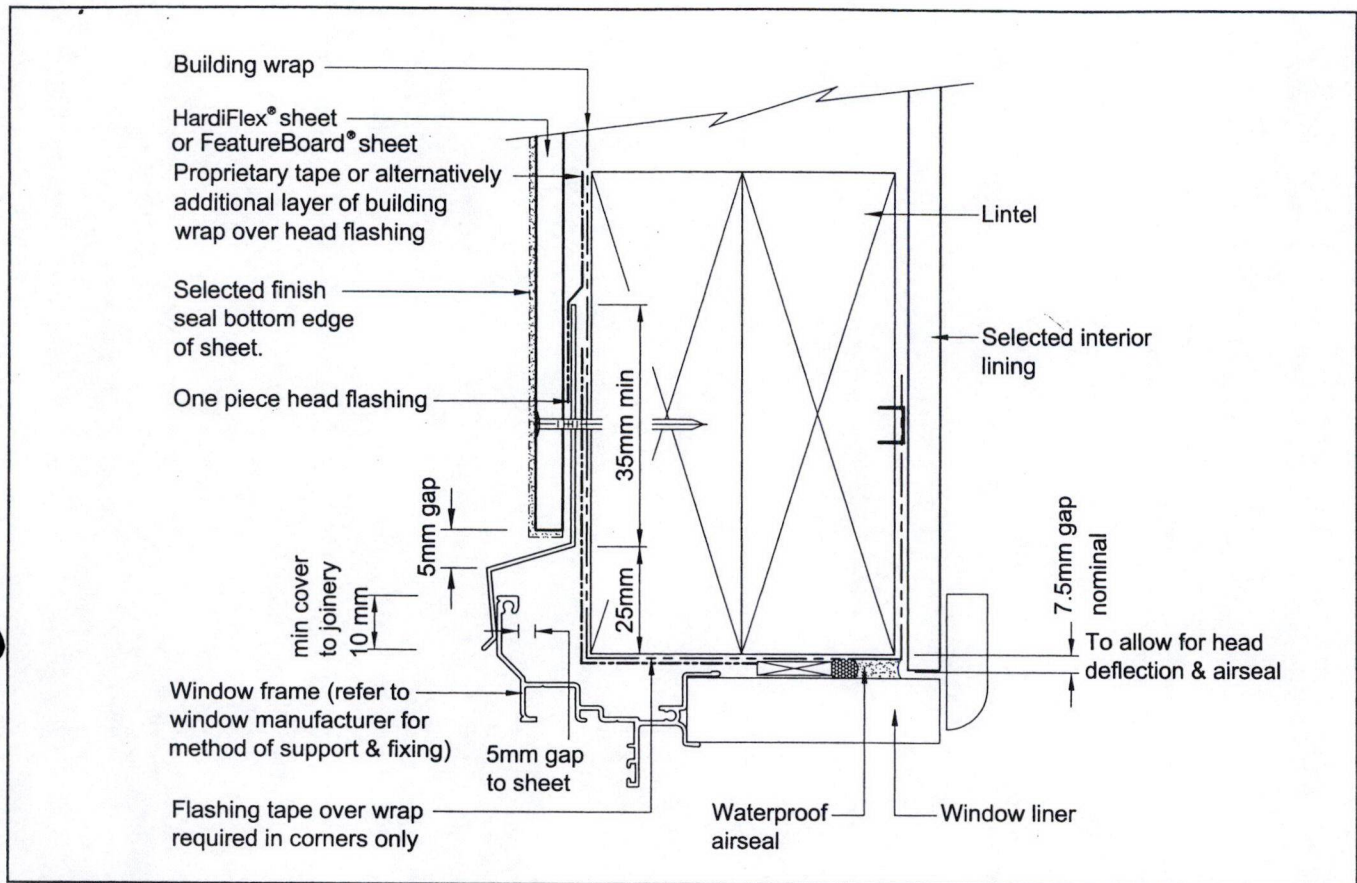


FIGURE 13: DIRECT FIX WINDOW HEAD

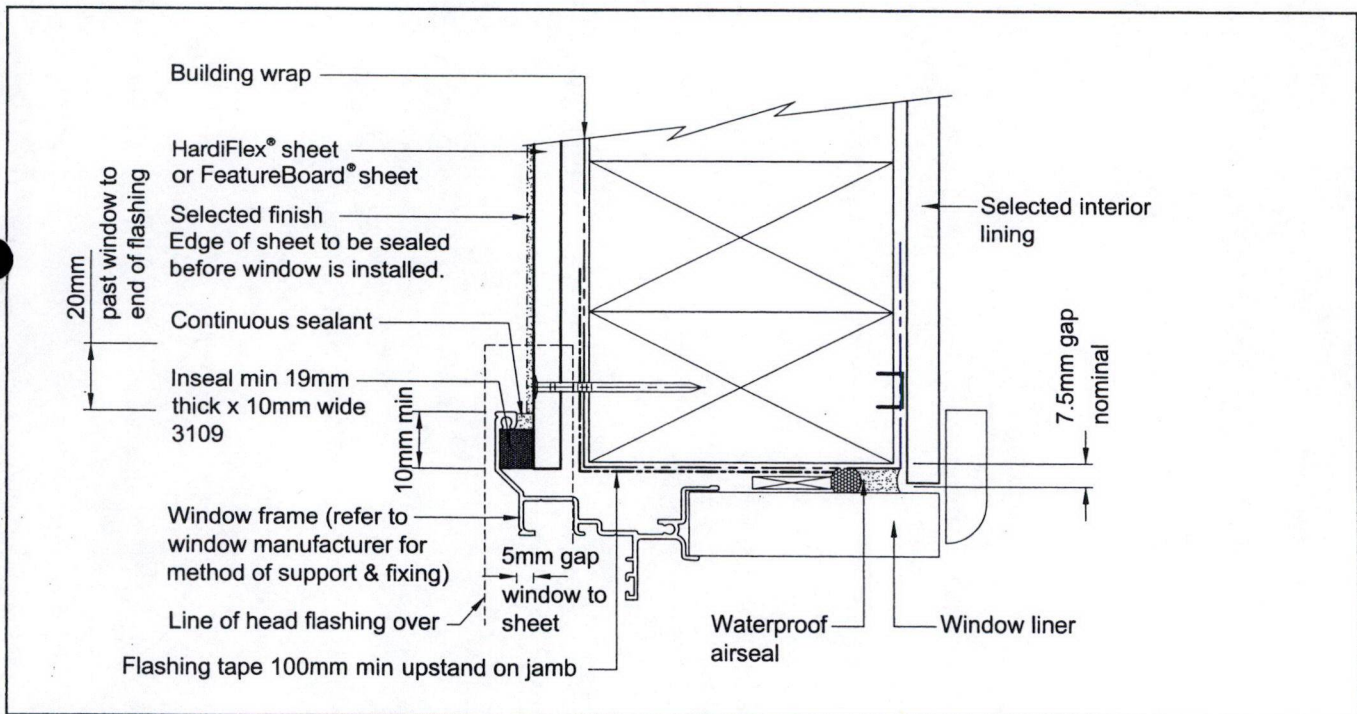


FIGURE 14: DIRECT FIX WINDOW JAMB

Table 10.9 – Purlins or tile battens (see 10.2.1.16.1) – No. 1 Framing and MSG 6

(a) Light roof cladding (see figures 10.16 and 10.17)

| | Maximum span | Maximum spacing and fixing loads in the following wind zones | | | | | | | | | | | |
|-------------------------|--------------|--|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|-----------|------------------|------------------|
| | | Low | | | Medium | | | High | | | Very high | | |
| | | Spacing | Fixing capacity | | Spacing | Fixing capacity | | Spacing | Fixing capacity | | Spacing | Fixing capacity | |
| | | | M ⁽¹⁾ | P ⁽¹⁾ | | M ⁽¹⁾ | P ⁽¹⁾ | | M ⁽¹⁾ | P ⁽¹⁾ | | M ⁽¹⁾ | P ⁽¹⁾ |
| (mm x mm) | (mm) | (mm) | (kN) | (kN) | (mm) | (kN) | (kN) | (mm) | (kN) | (kN) | (mm) | (kN) | (kN) |
| Tile batten size | | | | | | | | | | | | | |
| 50 x 40 | 900 | 400 | 0.3 | 0.4 | 400 | 0.4 | 0.5 | 400 | 0.5 | 0.8 | 400 | 0.7 | 1.0 |
| 50 x 50 | 1200 | 400 | 0.4 | 0.5 | 400 | 0.5 | 0.7 | 400 | 0.7 | 1.0 | 400 | 0.9 | 1.3 |
| Purlin size | | | | | | | | | | | | | |
| 70 x 45 | 900 | 900 | 0.5 | 0.8 | 900 | 0.7 | 1.1 | 900 | 1.0 | 1.5 | 800 | 1.2 | 1.8 |
| 70 x 45 | 900 | 1200 | 0.7 | 1.0 | 1200 | 1.0 | 1.4 | 1000 | 1.1 | 1.7 | 800 | 1.2 | 1.8 |
| 70 x 45 | 900 | 1800 | 1.0 | 1.5 | 1500 | 1.2 | 1.8 | 1000 | 1.1 | 1.7 | 800 | 1.2 | 1.8 |
| 70 x 45 | 1200 | 1000 | 0.8 | 1.2 | 800 | 0.9 | 1.3 | 600 | 0.9 | 1.4 | – | – | – |
| 90 x 45 | 1200 | 1300 | 1.0 | 1.5 | 1000 | 1.1 | 1.6 | 700 | 1.1 | 1.6 | – | – | – |

Periphery roof areas
i.e. higher wind uplift
areas up to 1.5 times
greater than main roof
area wind pressure

0.2 x width 9.6

= 1.92

Main roof area wind
pressure

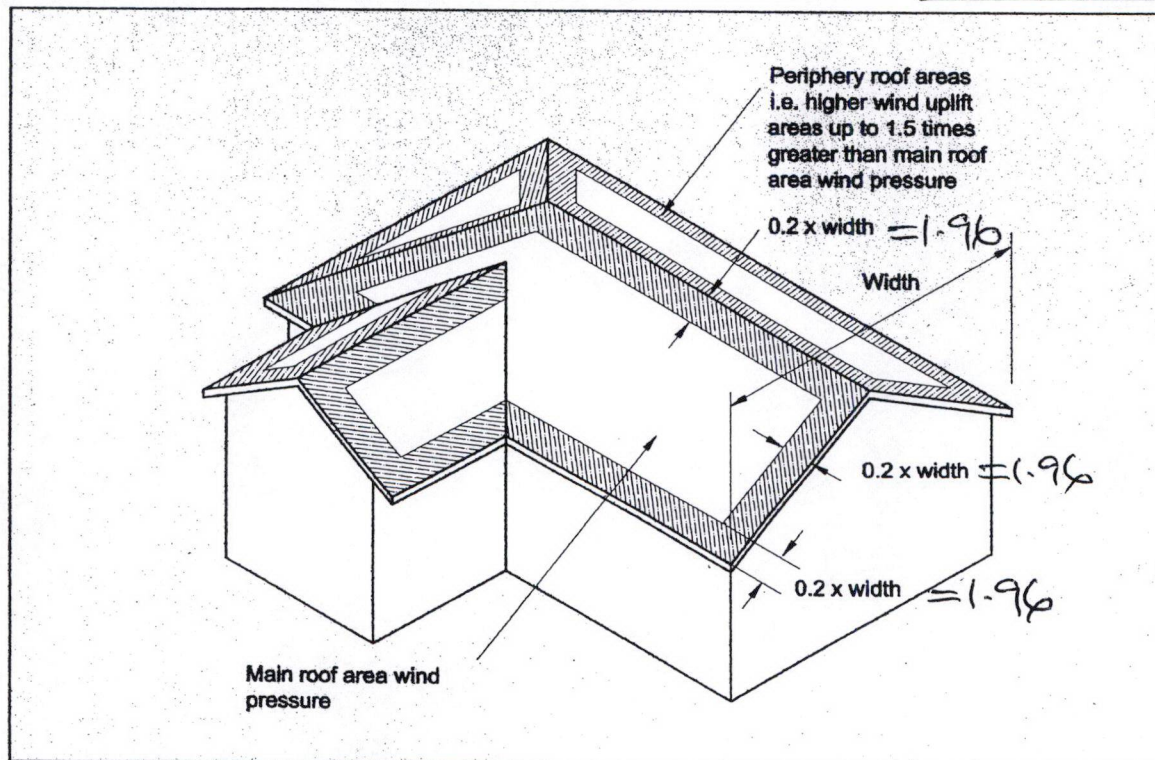


Figure 10.17 – Hip and valley roof showing higher wind uplift areas requiring extra purlin and batten fixings

| Fixing description | Fixing capacity |
|--|-----------------|
| 1/100 x 3.75 nail or 1/90 x 3.15 power driven nails | (kN) 0.4 |
| 2/100 x 3.75 skewed nails or 2/90 x 3.15 power driven nails | 0.7 |
| 2/100 x 3.75 skewed nails + 1 wire dog or 2/100 x 3.75 skewed nails + 1/14 g Type 17 screw to AS 3566* | 2.7 |
| 2/100 x 3.75 skewed nails + 2 wire dogs or 2/100 x 3.75 skewed nails + 2/14 g Type 17 screws to AS 3566* | 4.7 |
| * If screw fixed, screws shall be sufficiently long so as to penetrate rafter by at least 50 mm. | |

PRODUCER STATEMENT

Job Ref: 3206

TRUSS DESIGN CRITERIA

Customer name : Mark Cutting

Site address : Supplemantray Unit Harrison
236 Kennedy Road NapierDESIGN CRITERIA

Roofing - Corrugated Iron
Ceiling - Gib Board (9.5mm)
Top chord purlins - 900 mm
Bottom chord restraints - 600 mm
Standard truss spacing - 900 mm
Standard roof pitch - 15.00 deg

Design wind speed - 44 m/s (ultimate)

Classification - N3

Internal pressure coefficient up - 0.3

The truss designs for this job have been determined using computer software provided by the Technical Division within Pryda Truss Systems. These designs are in accordance with sound and widely accepted engineering principles and comply with the following New Zealand Standards:-

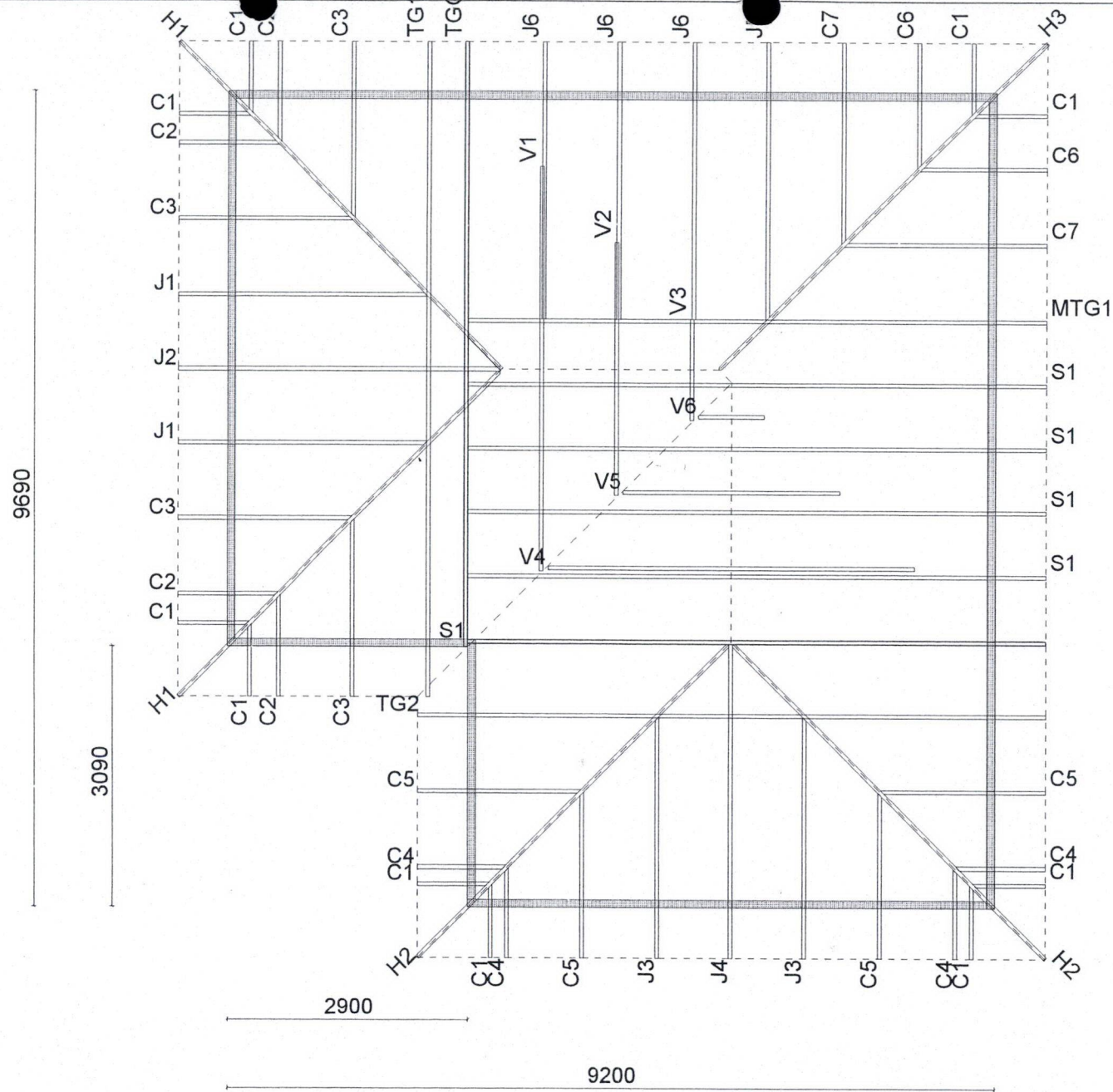
NZ4203 : 1992 General Structural Design and Design Loadings for Buildings
NZ3603 : 1993 Timber Design
AS1649 : 1974 Determination of Basic Working Loads for
Metal Fasteners for Timber

These trusses shall be installed, connected and braced in accordance with the recommendations given in :-

AS4440:2004 Installation of nailplated timber trusses.

We confirm that the trusses for this project have been manufactured in accordance with the fabrication specifications provided by Pryda Truss Systems.

Name : Mike JamesPosition: Quotations Manager.Signed : [Signature]Date : 17/11/08



Level 1

TRUSS REACTIONS REPORT

Job Ref: 3206

Client Details
Mark Cutting

Site Address
Supplemantray Unit Harrison
236 Kennedy Road Napier

O/N : Date Reqd:

| Truss Mark | Support at Joint | (1.4G) (kN) | Max.Reaction (1.2G+1.6Q2) (kN) | Uplift (0.9G+WuUp1) (kN) | Uplift fixing | Special bearing requirement |
|---------------|------------------------|-----------------|--------------------------------------|--------------------------------|------------------|-----------------------------------|
| TGG1 | 1 | 4.3 | 10.1 | -8.6 | 2/CS6(wr) | |
| TGG1 | 6 | 6.4 | 13.4 | -14.0 | 2/CS6(wr) | |
| TG1 | 1 | 2.5 | 6.2 | -5.4 | 2/MG | |
| TG1 | 7 | 2.5 | 6.2 | -5.4 | 2/MG | |
| S1 | 1 | 1.1 | 2.4 | -2.7 | 2/Z NAILS | |
| S1 | 4 | 1.2 | 2.6 | -3.4 | 2/Z NAILS | |
| MTG1 | 1 | 2.4 | 5.9 | -5.1 | 2/MG | |
| MTG1 | 5 | 2.7 | 8.4 | -5.7 | 2/MG | |
| TG2 | 1 | 2.3 | 5.8 | -5.0 | 2/MG | |
| TG2 | 5 | 2.3 | 5.8 | -5.0 | 2/MG | |
| H3 | 1 | 0.8 | 2.3 | -1.6 | 2/Z NAILS | |
| H3 | 3 | 0.8 | 2.3 | -2.3 | 2/Z NAILS | |
| H1 | 1 | 0.7 | 2.2 | -1.2 | 2/Z NAILS | |
| H1 | 3 | 0.6 | 2.1 | -1.7 | 2/Z NAILS | |
| H2 | 1 | 0.6 | 2.2 | -1.2 | 2/Z NAILS | |
| H2 | 3 | 0.6 | 2.1 | -1.7 | 2/Z NAILS | |

Note 1 :

All supports for bearing have been checked for 90mm JD4 and are satisfactory unless the bearing width and/or joint group have been changed, or there is a reference to Note 2.

Fixing Summary :

All trusses not listed require a minimum of 2 Skew Nails

Z NAILS / 20 : Each side of truss
MG / 12 : 10 nails per fixing
CS6(wr) / 2 : Wrap around plate; 4 nails per leg

Legend :

2/Z NAILS Double Z-nails
2/MG Double Multigrip
2/CS6(wr) Double Cyclone Strap 600mm long wrapped