

PROJECT SPECIFICATION.

Proposed New Dwelling for

Anthony Hart.

118 Johnston Road.



'Always check the LBP Register to ensure
you building practitioner is licensed'.



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BRANZ Appraised

Appraisal No.548 [2013]

BRANZ Appraisals

Technical Assessments of products
for building and construction

BRANZ APPRAISAL No. 548 (2013)

This Appraisal replaces BRANZ
Appraisal No. 548 (2007) dated
27 July 2007.

Amended 17 December 2013

TEKTON® BUILDING WRAP

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Product

1.1 Tekton® Building Wrap is a synthetic breather-type flexible wall underlay and air barrier for use under direct and non-direct fixed wall cladding on timber and steel framed buildings. The product is manufactured of a coated spun-bonded polypropylene.



Scope

2.1 Tekton® Building Wrap has been appraised for use as a flexible wall underlay on timber framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with absorbent wall claddings directly fixed to framing; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1; and,
- situated in NZS 3604 Wind Zones up to, and including 'Very High'.

2.2 Tekton® Building Wrap has been appraised for use as a flexible wall underlay on steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer subject to specific design; and,
- situated in NZS 3604 Wind Zones up to, and including 'Very High'.

2.3 Tekton® Building Wrap has been appraised for use as a flexible wall underlay over rigid wall underlays on timber and steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1 for timber framed buildings or specific design for steel framed buildings; and,
- situated in NZS 3604 Wind Zones up to and including 'Extra High'.

2.4 Tekton® Building Wrap has also been appraised for use on buildings subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of Tekton® Building Wrap into their design in accordance with the declared properties and the instructions of Marshall Innovations Limited.

Approved Building
Consent Documents

BC0176/20

Ashburton District Council

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Tekton® Building Wrap, if used, designed, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet, or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1(a), not less than 50 years, B2.3.1(b), 15 years and B2.3.2. Tekton® Building Wrap meets these requirements. See Paragraphs 9.1 and 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the cladding system, Tekton® Building Wrap will contribute to meeting this requirement. See Paragraphs 12.1 – 12.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Tekton® Building Wrap meets this requirement and will not present a health hazard to people.

3.2 This is an Appraisal of an **Alternative Solution** in terms of the New Zealand Building Code compliance.

Technical Specification

4.1 Tekton® Building Wrap is a 100 g/m² light grey sheet polypropylene membrane material approximately 0.6 mm thick.

4.2 The product is supplied in rolls 1.370 m x 74 m and 2.743 m x 37 m. The product is printed with the Tekton® logo repeated along the length of the roll. The rolls are wrapped with an instruction sticker.

Accessories

4.3 Accessories used with Tekton® Building Wrap which are supplied by the installer are:

- Fixings – staples, clouts, screws or proprietary wrap fixings, or other temporary fixings to attach the wall wrap to the framing.
- Wall underlay support – polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to support the wall wrap in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

Handling and Storage

5.1 Handling and storage of the product, whether on or off site, is under the control of the installer. The rolls must be protected from damage and weather. They must be stored on end, under cover, in clean, dry conditions and must not be crushed.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Tekton® Building Wrap. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Timber and Steel Framing

7.1 Studs must be provided at maximum 600 mm centres. Dwangs must be fitted flush between the studs at maximum 1200 mm centres.

General

7.2 Tekton® Building Wrap is intended for use as an alternative to conventional building papers which are fixed over timber and steel framed walls in order to limit the entry of wind into building cavities, and to act as a secondary barrier to wind-driven rain.

7.3 The material also provides a degree of temporary weather protection during early construction. However, the product will not make the building weathertight and some wetting of the underlying structure is always possible before the building is closed in. Hence, the building must be closed-in and made weatherproof before moisture sensitive materials such as wall or ceiling linings and insulation materials are installed.

7.4 Tekton® Building Wrap must not be exposed to the weather or ultra violet light for a total of more than 60 days before being covered by the wall cladding.

7.5 Tekton® Building Wrap is suitable for use under wall claddings as a wall underlay as called up in NZBC Acceptable Solution E2/AS1, Table 23, except that it must not be used with non-absorbent wall claddings such as vinyl or metal based sidings or weatherboards in direct fixed installations. Tekton® is suitable for use under cavity based wall claddings as a non-absorbent synthetic wall underlay as called up in NZS 2295, Table 2.4 on steel framed buildings. Refer to Table 1.

7.6 Tekton® Building Wrap is also suitable for use as an air barrier to walls that are not lined, such as attic spaces at gable ends, as called up in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.4 (c). Refer to Table 1.

Table 1: NZBC E2/AS1 Table 23 Requirements

NZBC E2/AS1 Table 23 Wall Wrap Properties	Property Performance Requirement	Actual Property Performance
Absorbency	≥ 100 g/m ²	Classified as non-absorbent (see paragraph 7.4)
Vapour Resistance	≤ 7 MN s/g	Pass
Water Resistance	≥ 20 mm	Pass
pH of Extract	≥ 5.5 and ≤ 8	9.78 (Note 1)
Shrinkage	≤ 0.5%	Pass
Mechanical	Edge tear and tensile strength	Edge tear: Machine direction = 228 N Cross direction = 186 N Tensile strength: Machine direction = 4.4 kN/m Cross direction = 3.9 kN/m
Air Barrier	Air resistance: ≥ 0.1 MN s/m ³	Pass

Note 1: Further testing of Tekton® Building Wrap was completed to determine the effect of the high pH level on the wall underlay and materials it is likely to come into contact with during its serviceable life. The testing confirmed that the high pH had no adverse effects on the wall underlay performance, or the performance of other materials.

7.6 In cavity installations where the cavity battens are installed at greater than 450 mm centres, the wall underlay must be supported between the battens to prevent the wall underlay bulging into the cavity space when bulk insulation is installed in the wall frame cavity in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

Stucco Plaster

7.7 Tekton® Building Wrap is suitable for use as a non-rigid backing material for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.1. The wall underlay must be supported with 75 mm galvanised mesh or plastic tape or wire at 150 mm centres run across the cavity battens to limit deflection to a maximum of 5 mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.2.

7.8 Tekton® Building Wrap may also be used as a slip layer over rigid backings for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.3(b).

Structure

8.1 Tekton® Building Wrap is suitable for use in all Wind Zones of NZS 3604 up to, and including, 'Very High' when used as a flexible building underlay, and all Wind Zones of NZS 3604 up to, and including, 'Extra High' when used as an overlay for rigid building underlays.

Durability

9.1 Tekton® Building Wrap meets code compliance with NZBC Clause B2.3.1 (a), not less than 50 years for building wraps used where the cladding durability requirement or expected serviceable life is not less than 50 years, and code compliance with NZBC Clause B2.3.1 (b), 15 years for building wraps used where the cladding durability requirement is 15 years.

Serviceable Life

9.2 Provided it is not exposed to the weather or ultra-violet light for a total of more than 60 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, Tekton® Building Wrap is expected to have a serviceable life equal to that of the cladding.

Control of Internal Fire and Smoke Spread

10.1 Tekton® Building Wrap has an AS 1530 Part 2 flammability index of not greater than 5 and therefore meets the requirements of NZBC Acceptable Solutions C/AS2 to C/AS6, Paragraph 4.17.8 b), for the surface finish requirements of suspended flexible fabric used as an underlay to exterior cladding that is exposed to view in occupied spaces. It may therefore be used with no restrictions in all buildings.

Prevention of Fire Occurring

11.1 Separation or protection must be provided to Tekton® Building Wrap from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

12.1 Tekton® Building Wrap must be used behind claddings that meet the requirements of the NZBC, e.g. such as those covered by NZBC Acceptable Solution E2/AS1, or claddings covered by a valid BRANZ Appraisal.

12.2 Tekton® Building Wrap, when installed in accordance with the Technical Literature and this Appraisal, will assist in the total cladding systems compliance with NZBC Clause E2.

12.3 When used as an air barrier, particular care must be taken to ensure an air tight barrier is achieved, and weather sealing at all openings and penetrations through the cladding meets the requirements of the NZBC.

Installation Information

Installation Skill Level Requirements

13.1 Installation must always be carried out in accordance with the Technical Literature and this Appraisal, by competent tradespersons with an understanding of wall wrap installation.

Wrap Installation

14.1 Tekton® Building Wrap must be fixed to all framing members at maximum 300 mm centres with hot-dip galvanised, large-head clouts 20 mm long, zinc plated 6-8 mm staples, self-drilling screws, or proprietary wrap fixings. The membrane must be pulled taut over the framing before fixing.

14.2 Tekton® Building Wrap must be run horizontally and must extend from the upper-side of the top plate to the under-side of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs. Horizontal laps must be no less than 75 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the membrane. End laps must be made over framing and be no less than 150 mm wide.

14.3 The wall underlay should be run over openings and these left covered until windows and doors are ready to be installed. Openings are formed in the membrane by cutting on a 45 degree diagonal from each corner of the penetration. The flaps of the cut membrane must be folded inside the opening and stapled to the penetration framing. Excess wall underlay may be cut off flush with the internal face of the wall frame.

14.4 Tekton® Building Wrap can be added as a second layer over head flashings in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10.3.

14.5 When fixing the product in windy conditions, care must be taken due to the large sail area created by wide roll widths.

14.6 Any damaged areas of Tekton® Building Wrap, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150 mm and taping, or by taping small tears.

Inspections

14.7 The Technical Literature must be referred to during the inspection of Tekton® Building Wrap installations.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

15.1 The following tests have been carried out on Tekton® Building Wrap by Scion: Folding strength of paper in accordance with AS/NZS 1301.423; edge tear resistance and tensile strength in accordance with AS/NZS 4200.1 and air resistance in accordance with BS 6538-3.

15.2 The following tests have been carried out on Tekton® Building Wrap by BRANZ: Absorbency in accordance with AS/NZS 4201.6, Vapour transmission in accordance with ASTM E 96B, Shrinkage in accordance with AS/NZS 4201.3, Water barrier in accordance with AS/NZS 4201.4 and pH of extract in accordance with AS/NZS 1301.421. A range of these tests were completed before and after Tekton® Building Wrap was exposed to ultra-violet light.

15.3 The Flammability Index of Tekton® Building Wrap has been evaluated in accordance with AS 1530.2.

Other Investigations

16.1 A durability opinion was given by BRANZ technical experts.

16.2 Site inspections were carried out by BRANZ to assess methods used for the installation of Tekton® Building Wrap, and to examine completed installations.

16.3 The marketer's Technical Literature, including installation instructions, have been examined by BRANZ and found to be satisfactory.

Quality

17.1 The manufacture of Tekton® Building Wrap has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. BRANZ has taken note of product certification by ICC-ES and CCMC covering quality aspects associated with the product.

17.2 The quality of supply to the market is the responsibility of Marshall Innovations Limited.

17.3 Building designers are responsible for the design of the building, and for the incorporation of the wall wrap into their design in accordance with the instructions of Marshall Innovations Limited.

17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Marshall Innovations Limited.

Sources of Information

- AS 1530.2 – 1993 Test for flammability of materials
- AS/NZS 1301.421s: 1988 Determination of the pH value of aqueous extracts of paper, board and pulp – cold extraction method.
- AS/NZS 4200.1: 1994 Pliable building membranes and underlays – materials.
- AS/NZS 4201.1: 1994 Pliable building membranes and underlays – Methods of test – Resistance to dry delamination.
- AS/NZS 4201.2: 1994 Pliable building membranes and underlays – Methods of test – Resistance to wet delamination.
- AS/NZS 4201.3: 1994 Pliable building membranes and underlays – Methods of test – Shrinkage.
- AS/NZS 4201.4: 1994 Pliable building membranes and underlays – Methods of test – Resistance to water penetration.
- AS/NZS 4201.6: 1994 Pliable building membranes and underlays – Methods of test – Surface water absorbency.
- BS 6538.3: 1987 Method for determination of air permeance using the Garley apparatus.
- NZS 2295: 2006 Pliable, Permeable Building Underlays.
- NZS 3604: 2011 Timber-framed buildings.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (Amendment 5, 1 August 2011).
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

BRANZ

In the opinion of BRANZ, **Tekton® Building Wrap** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Marshall Innovations Limited**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the technical literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Marshall Innovations Limited**:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Marshall Innovations Limited**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Marshall Innovations Limited** or any third party.

For BRANZ



C Percy
Chief Executive

Date of issue: 16 December 2013

Amendment No. 1, dated 17 December 2013.

This Appraisal has been amended to fix an editorial error.

THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY

APPLICATION AND INSTALLATION

Product Description	THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY is specifically designed for use in Domestic and Commercial type buildings. THERMAKRAFT 215 is a breathable, absorbent bituminous wall and roofing underlay. THERMAKRAFT 215 will provide the following functions: • Reduce wind entry into the cavity, thereby assisting the performance of thermal insulation. • Highly water vapour permeable, thereby allowing excess water vapour which might otherwise condense in the structure, to escape. • Provides a temporary protection against wind, dust, rain and other weathering elements until the external cladding is applied.						
Applications	THERMAKRAFT 215 is suitable as a wall and roofing underlay where Fire Retardancy is NOT required, and with all cladding types. THERMAKRAFT 215 is self supporting to 1200mm rafter/purlin spacing. THERMAKRAFT 215 can be used as an Air Barrier. THERMAKRAFT 215 must not be left exposed to the elements for more than 7 days. Cladding on the same day is recommended. If Fire Retardancy (FI <5) is required, use Thermakraft COVERTEK407.						
Installation Roofing	THERMAKRAFT 215 may be run vertically over purlins with a 150mm lap if roof pitch >8 degrees. Fix securely to purlins with 8mm staples or 20mm clouts. The membrane should be firmly laid to avoid excessive dishing between purlins. THERMAKRAFT 215 may be run horizontally across rafter/trusses with a 150mm lap for roof pitches above 3 degrees. Fix securely with 8mm staples or 20mm clouts.						
Control of Condensation	In climatic regions where condensation risks are high, such as cold or high humidity areas, care needs to be taken in specifying the correct design and installation to prevent moisture build-up in the roof cavities. Factors which adversely affect the condensation risk in roofing systems include; • Humid, and/or cold climatic regions • Warm/Skillion roof construction • Low roof cavity air volume and restricted air movement • Omitting Vapour Control Layers • Ceiling penetrations and entry of warm air into roof cavities • Occupancy activities which have high moisture loading on conditioned spaces • Low pitched roof • Bulk insulation • Building structures ability to naturally dry Construction Moisture Skillion and Warm Roof Construction are particularly sensitive to moisture accumulation and the design and installation of roof construction needs to take into account the higher condensation risks. Refer MRM Code of Practice for details.						
Storage	THERMAKRAFT 215 should be stored on end in dry conditions. Protect from the weather and direct sunlight.						
Roll Dimensions	<table> <tr> <td>1250mm x 40.0m = 50m²</td> <td>20kg</td> </tr> <tr> <td>1250mm x 20.0m = 25m²</td> <td>10kg (2 per pack)</td> </tr> <tr> <td>1450mm x 34.5m = 50m²</td> <td>20kg</td> </tr> </table>	1250mm x 40.0m = 50m ²	20kg	1250mm x 20.0m = 25m ²	10kg (2 per pack)	1450mm x 34.5m = 50m ²	20kg
1250mm x 40.0m = 50m ²	20kg						
1250mm x 20.0m = 25m ²	10kg (2 per pack)						
1450mm x 34.5m = 50m ²	20kg						

For more information regarding **Thermakraft COVERTEK407 FIRE RETARDANT SELF SUPPORTING ABSORBENT BREATHABLE SYNTHETIC NON WOVEN ROOFING UNDERLAY** refer to the "DESIGNER and USER GUIDELINES" - Direct and Cavity Fix, or contact **Thermakraft Customer Services** on **0800 806 595**.

THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY

TECHNICAL SPECIFICATIONS

Technical Data

THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY complies with the requirements of NZBC E2/AS1 Table 23.

Nominal Grammage 400g/m²

NZBC E2/AS1 TABLE 23 AS A WALL UNDERLAY REQUIREMENTS

NZBC E2/AS1 TABLE 23 WALL UNDERLAY PROPERTIES	PROPERTY PERFORMANCE REQUIREMENTS	PROPERTY PERFORMANCE
Absorbency	≥100 gsm	Pass
Vapour Resistance	≤7 MN.s/g	Pass
pH of Extract	≥6 and ≤9	Pass
Shrinkage	≤0.5%	Pass
Water Resistance	≥100mm	Pass
Air Barrier	≥0.1 MN.s/m ³	Pass
Duty		Heavy

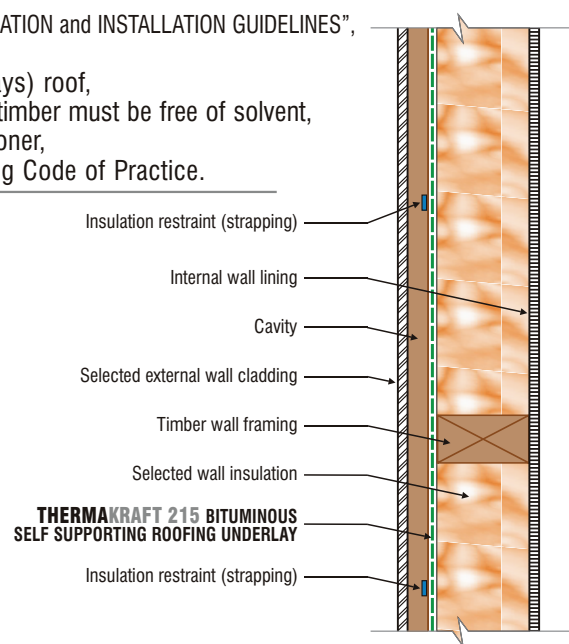
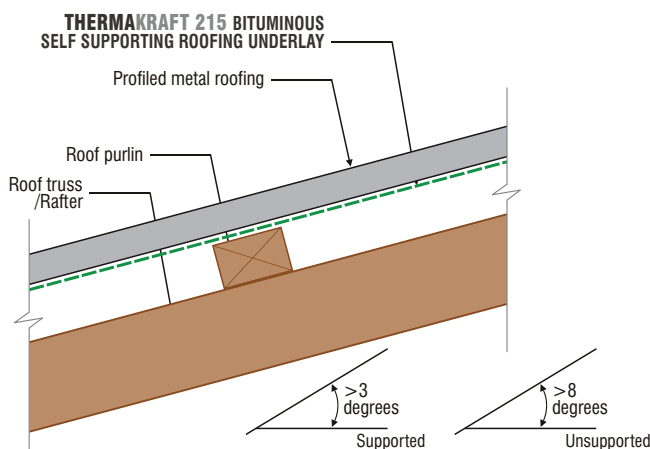
NZS2295:2006 Classification

Flammability Index		Non Fire Retardant
Wind Zone	R2	Up to Very High
NZS2295:2006 Classification	R2	Self Supporting

Durability/Limitations

For **THERMAKRAFT 215** to meet the Performance Requirements of NZBC Clause B2, Durability B2.3.1(a) 50 years and B2.3.1(b) 15 years, E2 External Moisture, **THERMAKRAFT 215**:

- must be installed in accordance to the "APPLICATION and INSTALLATION GUIDELINES",
- run length no greater than 10 metres,
- is not left exposed for more than (7 days) roof,
- when used on LOSP treated timber, the timber must be free of solvent,
- installed by a licensed building practitioner,
- installed in accordance with the Roofing Code of Practice.



The recommendations contained in **Thermakraft's** literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to any conditions contained in the Warranty. All product dimensions and performance claims are subject to any variation caused by normal manufacturing process and tolerances. Furthermore, as the successful performance of the relevant system depends on numerous factors outside the control of **Thermakraft** (for example quality of workmanship and design), **Thermakraft** shall not be liable for the recommendations in that literature and the performance of the **Product**, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code, regulations and standards.

GIB EzyBrace® 2011 Software



Demand Calculation Sheet

single storey

V06/11

Job Details

Name New Dwelling
Street and Number 118 Johnston Road
Lot and DP Number
City/Town/District Ashburton
Designer J Hannon
Company Name J B H Draughting Ltd
Date 29/02/2020



Building Specification

Select Lining Option

10 or 13 mm GIB® Plasterboard

Number of storeys single
Floor Loading 2kPa
Foundation Type slab

Single Floor
Cladding Weight heavy
Roof Weight light
Room in Roof Space no
Roof Pitch (degrees) 25
Roof height above eaves (m) 2.3
Building height to apex (m) 4.7
Ground to lower floor level (m) 0.2

Complete Single Floor
Column only

Stud Height (m) 2.4
Building Length (m) 21.9
Building Width (m) 9.3
Building Plan Area (m2) 163

Building Location

Wind Zone

High

Select by Building Consent Authority Map

or Preference High
Wind Region Preference selected
Lee Zone Preference selected
Ground Roughness Preference selected
Site Exposure Preference selected
Topographic Class Preference selected

Earthquake Zone

1

Soil Type

D&E (deep to very soft)

Annual exceedance probability

1/500 (NZS3604:2011 default)

Bracing Units required for Wind

Demand W (BU)		Walls single
along	slab	467
across	slab	1055

Bracing Units required for Earthquake

Demand along / across E (BU)	
Walls	
single	
slab	660

WALL BRACING LEGEND ALONG - Ver 2

Brace Line	Element Length	Code	Min Length	Description	BU/m Wind Rating	BU/m Eq Rating	Bracing Element Height	BU's Wind Acheived	BU's Eq Acheived
a1	0.650	GS1-N	400	Gib Std One Side Only	50	55	2.400	33	36
a2	0.650	GS1-N	400	Gib Std One Side Only	50	55	2.400	33	36
a3	1.200	GS1-N	400	Gib Std One Side Only	70	60	2.400	84	72
a4	0.950	GS1-N	400	Gib Std One Side Only	50	55	2.400	48	52
a5	0.850	GS1-N	400	Gib Std One Side Only	50	55	2.400	43	47
a6	0.850	GS1-N	400	Gib Std One Side Only	50	55	2.400	43	47
b1	0.600	GS1-N	400	Gib Std One Side Only	50	55	2.400	30	33
b2	1.700	GS1-N	400	Gib Std One Side Only	70	60	2.400	119	102
b3	1.700	GS1-N	400	Gib Std One Side Only	70	60	2.400	119	102
c1	1.200	GS1-N	400	Gib Std One Side Only	70	60	2.400	84	72
c2	0.600	GS1-N	400	Gib Std One Side Only	50	55	2.400	30	33
d1	0.625	GS1-N	400	Gib Std One Side Only	50	55	2.400	31	34
d2	0.600	GS1-N	400	Gib Std One Side Only	50	55	2.400	30	33
d3	0.550	GS1-N	400	Gib Std One Side Only	50	55	2.400	28	30
d4	0.800	GS1-N	400	Gib Std One Side Only	50	55	2.400	40	44
d5	0.800	GS1-N	400	Gib Std One Side Only	50	55	2.400	40	44
d6	2.400	GS1-N	400	Gib Std One Side Only	70	60	2.400	168	144
d7	1.200	GS1-N	400	Gib Std One Side Only	70	60	2.400	84	72
Grand total: 18								1084	1033

WALL BRACING LEGEND ACROSS - Ver 2

Brace Line	Element Length	Code	Min Length	Description	BU/m Wind Rating	BU/m Eq Rating	Bracing Element Height	BU's Wind Acheived	BU's Eq Acheived
m1	0.800	GS1-N	400	Gib Std One Side Only	50	55	2.400	40	44
m2	0.800	GS1-N	400	Gib Std One Side Only	50	55	2.400	40	44
m3	0.850	GS1-N	400	Gib Std One Side Only	50	55	2.400	43	47
m4	0.850	GS1-N	400	Gib Std One Side Only	50	55	2.400	43	47
n1	0.600	GS1-N	400	Gib Std One Side Only	50	55	2.400	30	33
n2	1.000	GS1-N	400	Gib Std One Side Only	50	55	2.400	50	55
n3	1.150	GS1-N	400	Gib Std One Side Only	50	55	2.400	58	63
n4	1.200	GS1-N	400	Gib Std One Side Only	70	60	2.400	84	72
n5	1.800	GS1-N	400	Gib Std One Side Only	70	60	2.400	126	108
o1	1.800	GS1-N	400	Gib Std One Side Only	70	60	2.400	126	108
p1	1.200	GS1-N	400	Gib Std One Side Only	70	60	2.400	84	72
p2	1.000	GS1-N	400	Gib Std One Side Only	50	55	2.400	50	55
q1	1.800	GS1-N	400	Gib Std One Side Only	70	60	2.400	126	108
r1	0.500	BLP-H	400	Gib Braceline One Side - 7min Ecoply One Side	120	135	2.400	60	68
r2	0.500	BLP-H	400	Gib Braceline One Side - 7min Ecoply One Side	120	135	2.400	60	68
s1	1.800	GS1-N	400	Gib Std One Side Only	70	60	2.400	126	108
Grand total: 16								1145	1099

Code	Description	Bracket
BLP-H	Gib Braceline One Side - 7min Ecoply One Side	Yes
GS1-N	Gib Std One Side Only	No

GIB EzyBrace® Systems specification GS1-N

Specification code	Minimum length (m)	Lining requirement
GS1-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard to one side only

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and 600mm centres thereafter.

External Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for external wall bottom plate fixing.

WALL LINING

- Any 10mm or 13mm GIB® plasterboard lining.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

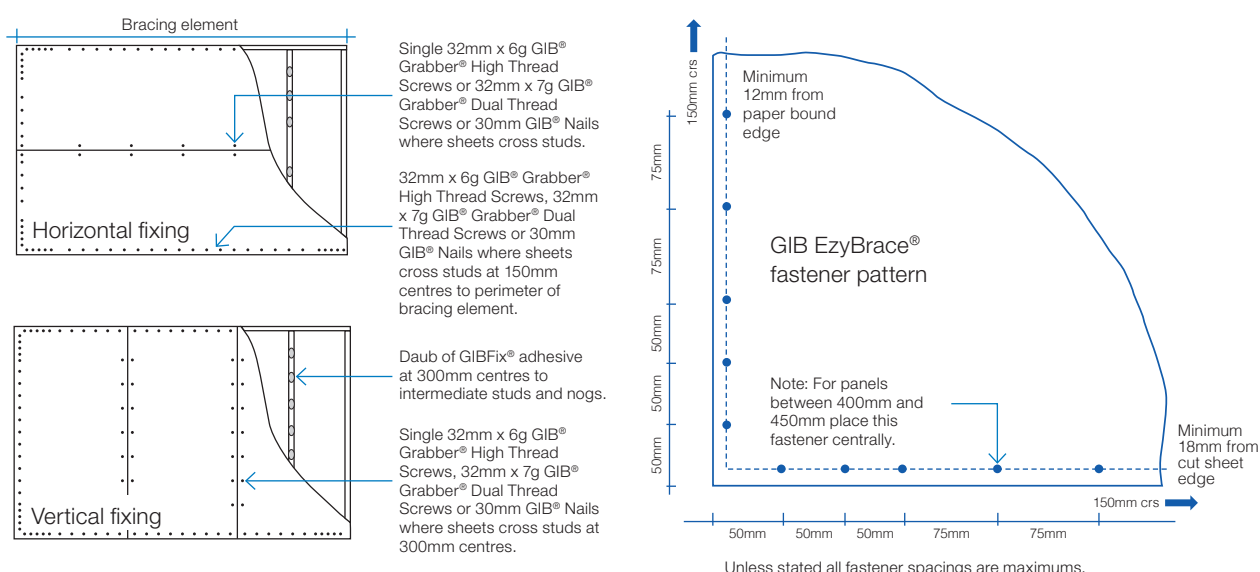
32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



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 the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

GIB EzyBrace® Systems specification BLP-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BLP-H	0.4	10mm or 13mm GIB Braceline® to one side of the frame plus minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure; B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB® HandiBrac is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or
Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of AS/NZ 2269/0 :2012.

WALL LINING

- A layer of 10mm or 13mm GIB Braceline® to one side of the wall plus minimum 7mm structural plywood manufactured to AS/NZS 2269.0 :2012 to the other side.
- Sheets can be fixed vertically or horizontally.
- Plywood is to be fixed vertically with edges supported.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

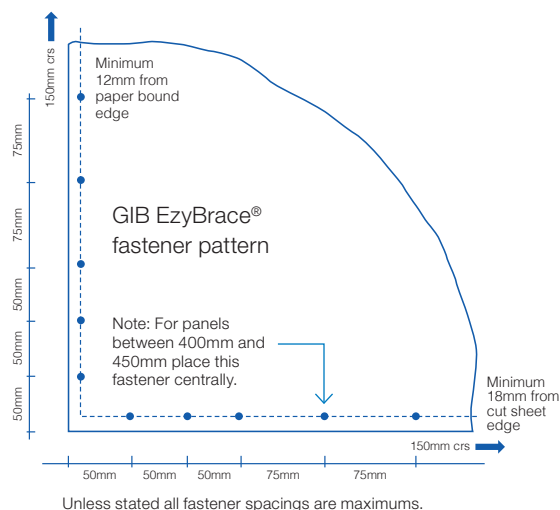
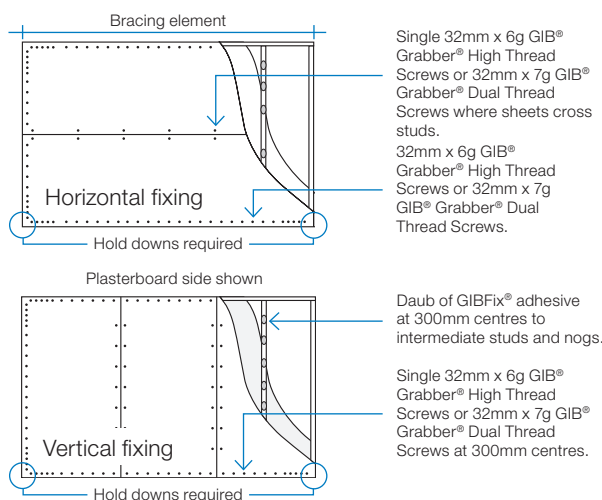
GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

GIB® Plasterboard side: 50,100,150, 225, 300mm from each corner and then 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge. Plywood side: 150mm centres to the perimeter of each sheet. GIB® corner fastener pattern does not apply to the plywood side. 300mm centres to intermediate studs.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



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 the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

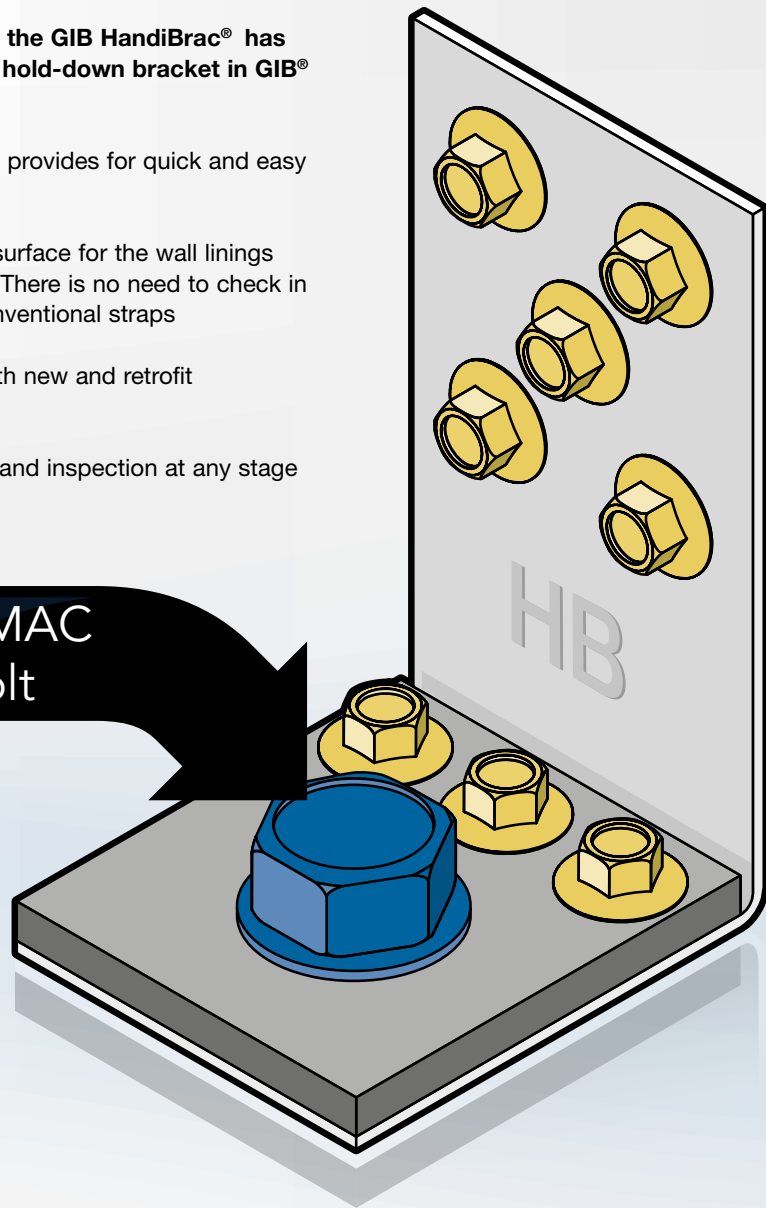
GIB HandiBrac®

Panel Hold-Down Bracket

Developed in conjunction with MiTek™, the GIB HandiBrac® has been designed and tested for use as a hold-down bracket in GIB® BL and UP bracing elements.

- The GIB HandiBrac® registered design provides for quick and easy installation
- The GIB HandiBrac® provides a flush surface for the wall linings because it is fitted inside the framing. There is no need to check in the framing as recommended with conventional straps
- The GIB HandiBrac® is suitable for both new and retrofit construction
- The design also allows for installation and inspection at any stage prior to fitting internal linings

Look for the BOWMAC
unique blue top bolt



Components

GIB HandiBrac® is available in boxes of 10, each containing 5 pairs.

Components per paired pack include:

- 2 x GIB HandiBrac® Brackets
- 2 x Washers
- 16 x Tek Screws
- 2 x BOWMAC screw bolts included within specific GIB HandiBrac® pack

GIB® Bracing Elements

The GIB HandiBrac® is a proprietary product that has been tested and is suitable for use with specified GIB Ezy Brace® systems.

Fixing to Timber Framed Floors

BOWMAC screw bolt or a 150mm by 12mm diameter galvanised coach screw (with a minimum characteristic uplift strength of 12kN).

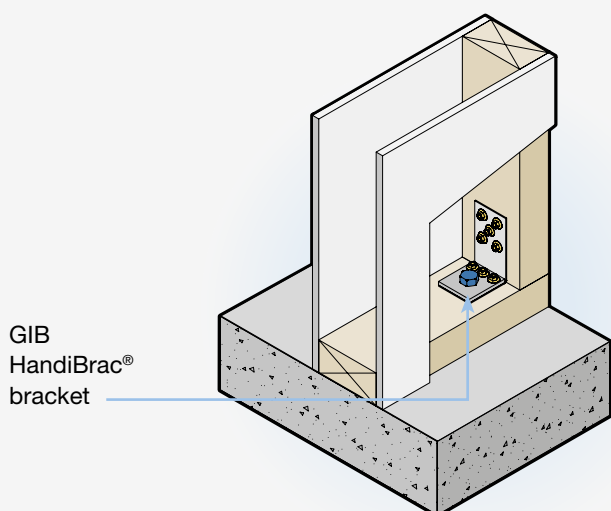
Fixing to Concrete Slabs

BOWMAC screw bolt or an alternative proprietary fixing with a characteristic uplift strength of 15kN

Panel Hold-down Details

Concrete Floor - Internal Wall

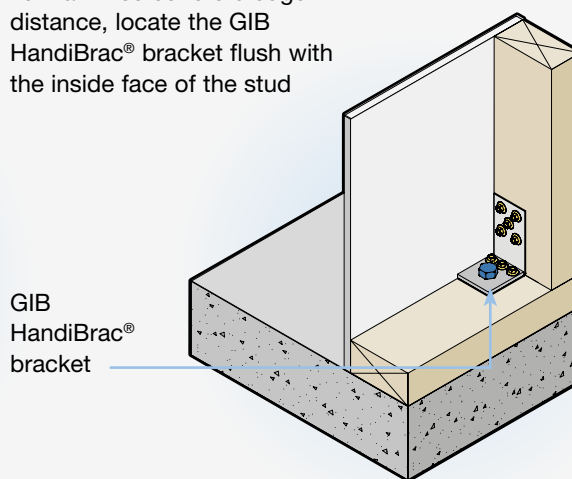
The bottom plate at both ends of the bracing element is fixed using a fastener with a proprietary fixing with a minimum characteristic uplift strength of 15 kN. If included in pack see overleaf instruction to install BOWMAC screw bolt.



Concrete Floor - External Wall

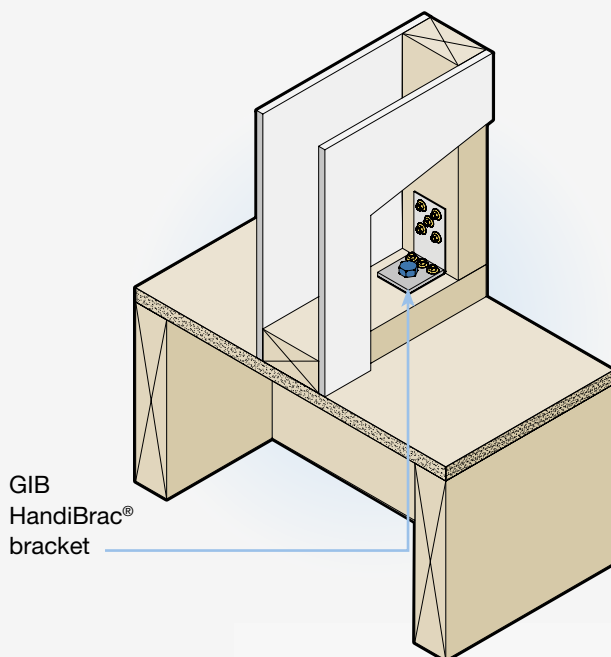
The bottom plate at both ends of the bracing element is fixed using a fastener with a proprietary fixing with a minimum characteristic uplift strength of 15 kN. If included in pack see overleaf instruction to install BOWMAC screw bolt.

To maximise concrete edge distance, locate the GIB HandiBrac® bracket flush with the inside face of the stud



Timber Floor - Internal Wall

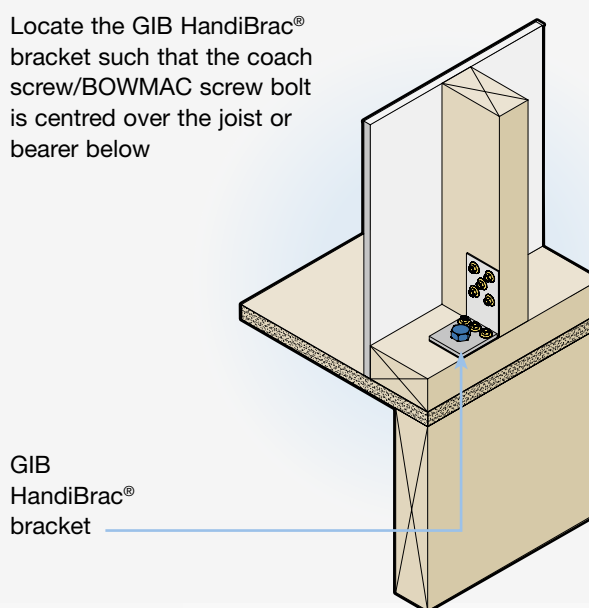
Bottom Plate is fixed using a BOWMAC screw bolt (if supplied) or a 150mm by 12mm diameter galvanised coach screw (with a minimum characteristic uplift strength of 12kN). For BOWMAC screw bolt installations see overleaf.



Timber Floor - External Wall

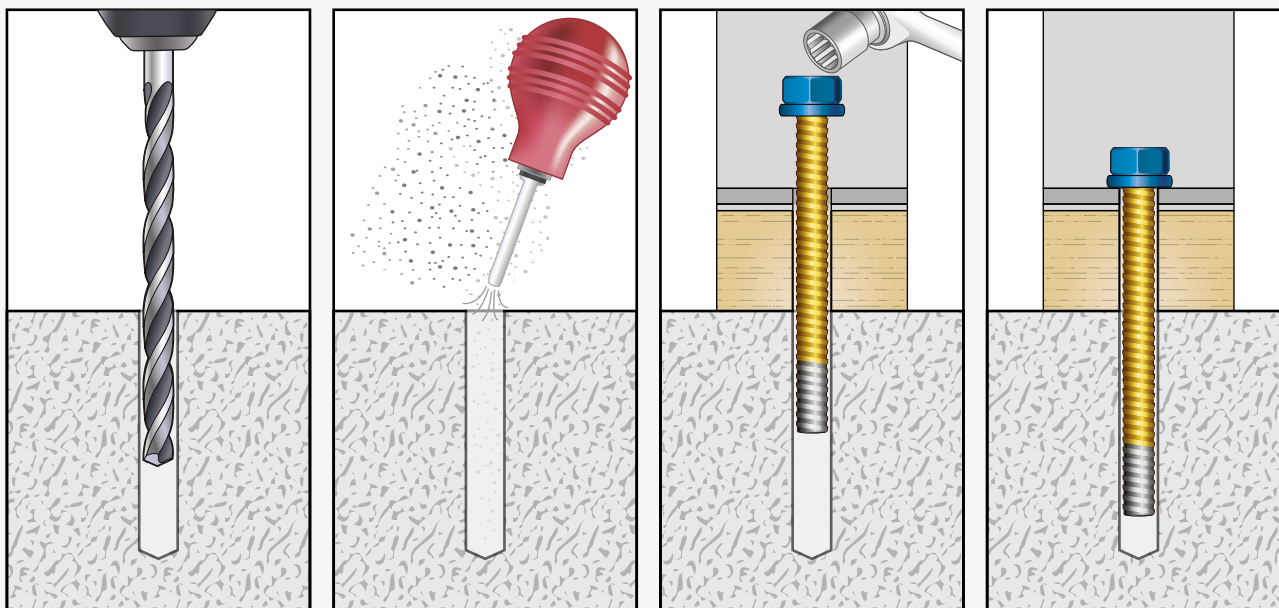
Bottom Plate is fixed using a BOWMAC screw bolt (if supplied) or a 150mm by 12mm diameter galvanised coach screw (with a characteristic uplift strength of 12kN). For BOWMAC screw bolt installations see overleaf.

Locate the GIB HandiBrac® bracket such that the coach screw/BOWMAC screw bolt is centred over the joist or bearer below



Installation of BOWMAC screw bolt

Suitable for use in timber or masonry base material



- Use a 10 mm diameter masonry bit for a solid concrete substrate and an 8 mm diameter bit for fixing to a timber sub-floor.
- Drill a hole into the base material to depth 8 mm deeper than the required embedment and clean out the hole of dust and debris prior to installation of BOWMAC screw bolt.
- Insert the bolt through the GIB HandiBrac® plate and bracket and into the hole.
- Begin tightening the bolt by applying forward pressure when engaging the first thread.
- **Additional forward pressure may be required for installation in high strength, dense base materials.**
- Continue tightening the anchor until the head is firmly seated against the GIB HandiBrac® plate.
- In extremely dense material, use of an impact wrench is recommended.
- Be sure the bolt is at the required embedment depth.
- The installation is now complete.

Installation Tips:

- Use quality hexagonal socket with a ratchet spanner
- During installation debris or dust created by the thread cutting action may cause some resistance to be experienced. This is easily overcome by unscrewing the BOWMAC screw bolt for one turn, or more and then continue to fix to the full embedment.

GIB HandiBrac® is manufactured and distributed by:

MiTek New Zealand Ltd

Auckland Office:

40 Neales Rd, East Tamaki, Manukau 2013, New Zealand

P O Box 58-014, Botany, Auckland 2163, New Zealand

Ph: 64-9-274 7109, Fax: 64-9-274 7100

Christchurch Office:

14 Pilkington Way, Wigram, Christchurch 8042, New Zealand

P O Box 8387, Riccarton, New Zealand

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Internet Site: www.mitek.nz.co.nz

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Distributor:

Winstone Wallboards Ltd

National Support:

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P O Box 12 256, Penrose 1642, Auckland, New Zealand

Ph: 64-9-633 0100, GIB® Helpline: 0800 100 442

Fax: 64-9-633 0101, Free Fax: 0800 229 222

Email: info@gib.co.nz, Site: www.gib.co.nz

The name GIB®, GIB HandiBrac® and the shield device are registered trademarks of Fletcher Building Holdings Limited.

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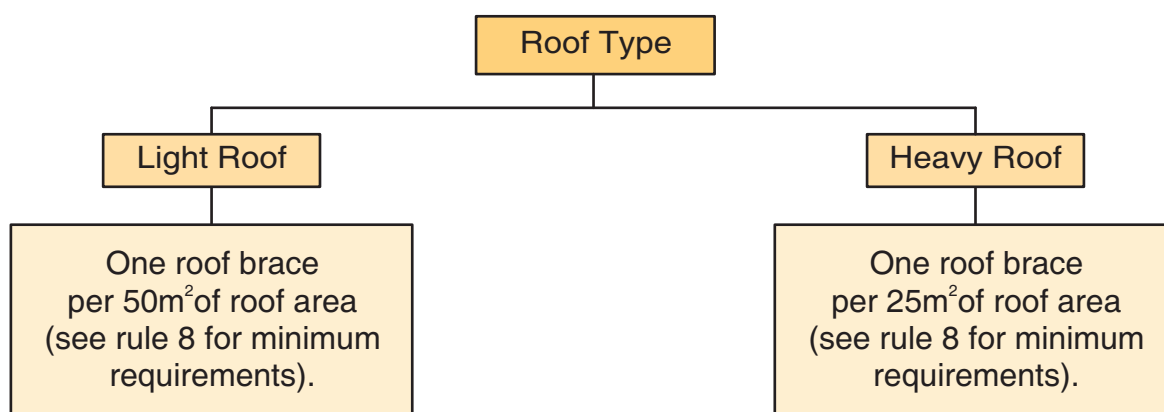




ROOF BRACING SPECIFICATION AS PER NZS 3604:2011

- ★ Covers roof bracing requirements to resist horizontal loads as set out in NZS 3604:2011 Section 10.
- ★ A definitive guide to the description and installation of Roof Plane Braces and Roof Space Braces.

Roof Bracing Requirements



Roof Bracing - Rules & Definitions

1. The bracing described in this brochure covers both framed roofs and fully trussed roofs.
2. Roof planes less than 6m² (e.g. dormers & porches) do not require bracing.
3. Roof braces can consist of either i) Roof Plane Brace or ii) Roof Space Brace or combination of the two.
4. Roof braces are not required on roofs where sarking is installed as per NZS 3604:2011 Clause 10.4.4 or where a ceiling diaphragm is installed and is attached to the rafters.
5. Roof area is the actual plan area of the roof and includes overhangs.
6. A hip or valley rafter running continuously from ridge to top plate can be classed as one roof plane brace.
7. A pair of crossed LUMBERLOK Strip Brace (preferred for ease of installation) can be classed as one roof plane brace and shall be installed as detailed in this brochure.
8. There must be at least one roof plane brace in each roof plane. Each ridge line shall have a minimum of two roof braces.
9. Every design effort should be made to distribute the roof braces as evenly as possible over the entire roof area and run alternately in opposite directions.

Roof Bracing Options

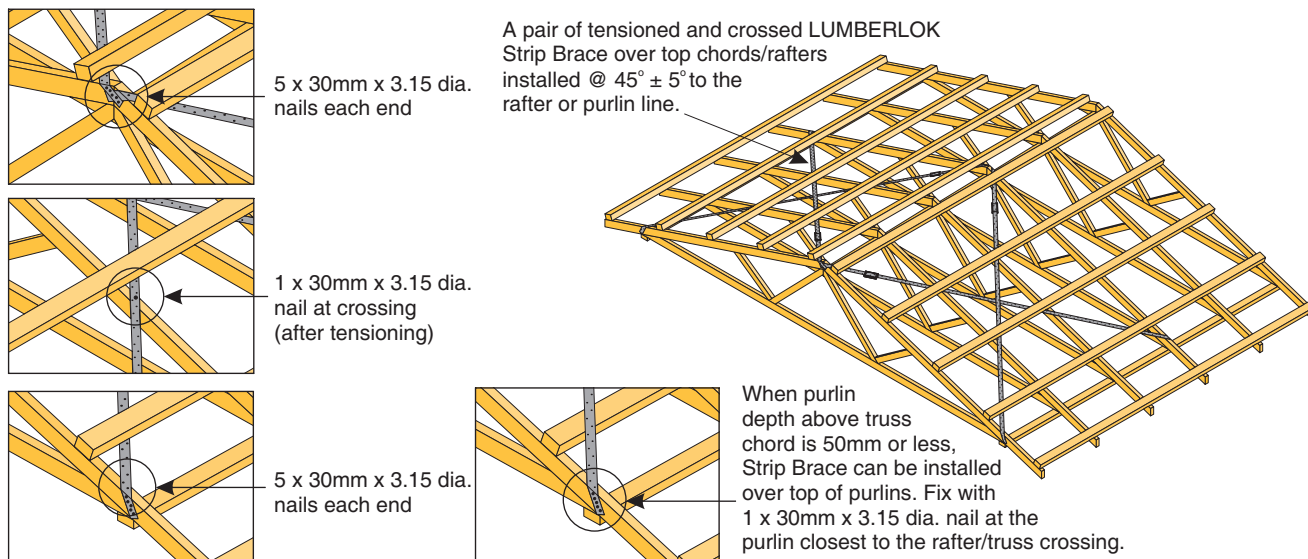
i) ROOF PLANE BRACE

Each roof plane brace can be:

- A hip or valley rafter running continuously from ridge to the top plate in accordance with NZS 3604:2011 Clauses 10.2.1.3.2 or 10.2.1.3.3

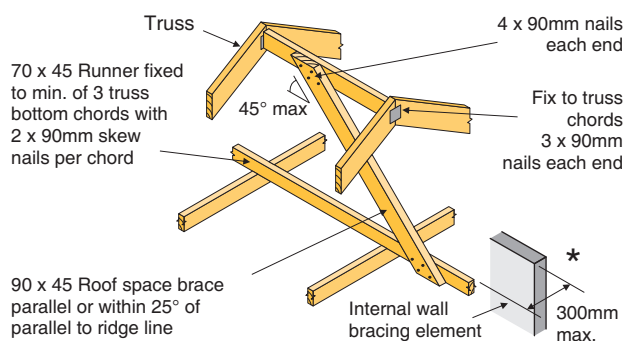
OR

- A pair of tensioned and crossed LUMBERLOK Strip Brace running continuously from ridge to top plate installed as detailed below.

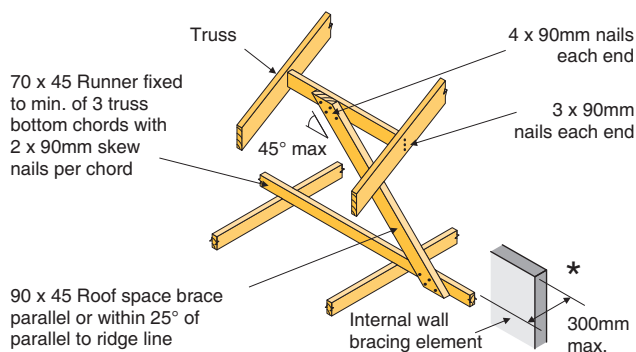


ii) ROOF SPACE BRACE

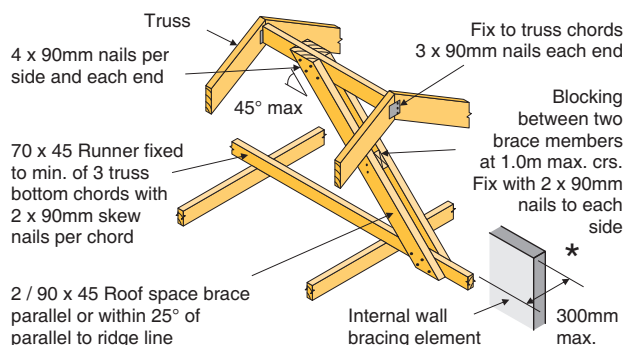
(A) Less than 2m long.



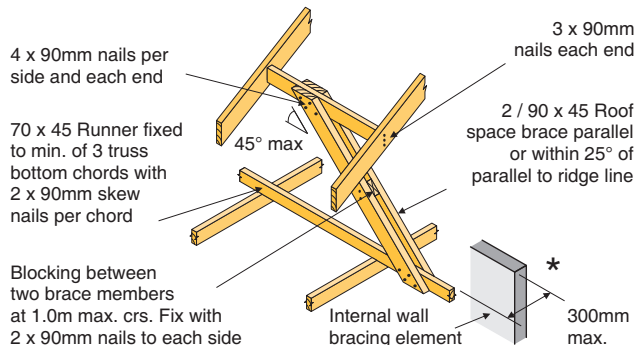
(C) Not directly under the ridge - less than 2m long.



(B) More than 2m long (Max. 4.8m).



(D) Not directly under the ridge - more than 2m long.



* Not required when a ceiling diaphragm complying with Clause 13.5 of NZS 3604:2011 is used.

8.7.5 Holes and checks in plates**8.7.5.1 Top plates**

The sizes of holes or notches shall comply with the dimensions shown in figure 8.19. Where the size of a hole or notch exceeds these dimensions the *plates* shall be strengthened by one of the following methods:

- A 70 mm x 45 mm member x 600 mm long nailed to the exterior side of the *plate* with 4/75 x 3.15 nails on each side of the hole or notch;
- A 70 mm x 45 mm eaves *runner* connected to all *studs* and no more than 250 mm below the *top plate*; or
- A 70 x 45 mm *blocking* fitted between ceiling *joists* or trusses above cut *top plates* and the steel angle shown in figure 8.20.

C8.7.5.1

Strengthening is required against loads vertical to, horizontal to, or along the plate.

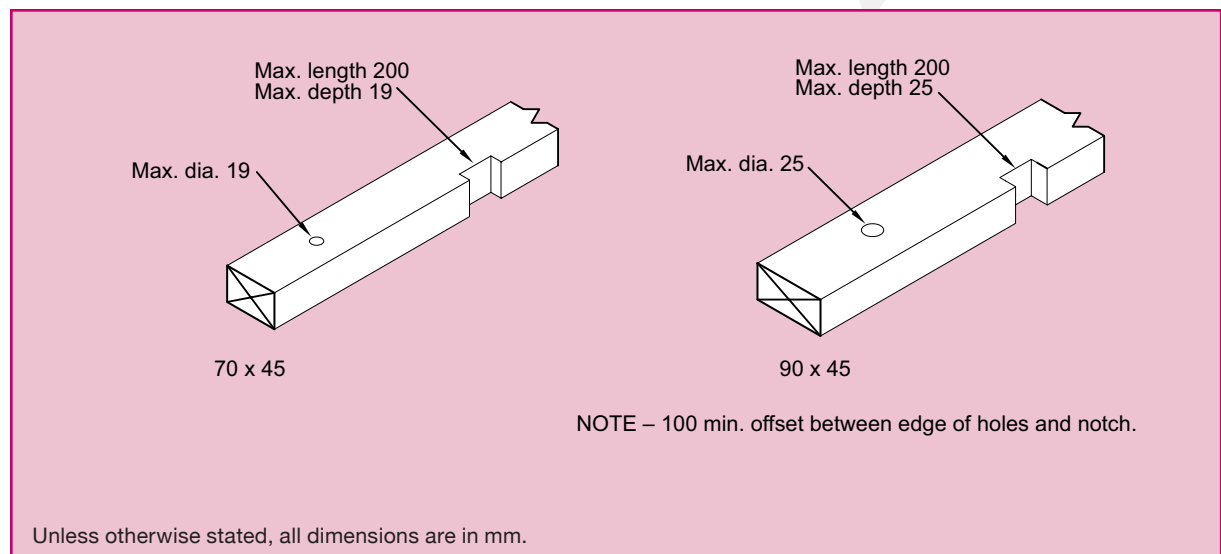


Figure 8.19 – Checking and boring top plates (see 8.7.5.1)

8.7.5.2 Bottom plates Where holes or face notches exceed 50 % of the width of the bottom plate, fix the plate against sideways movement on each side of the hole or notch, with one 100 mm x 3.75 mm nail.

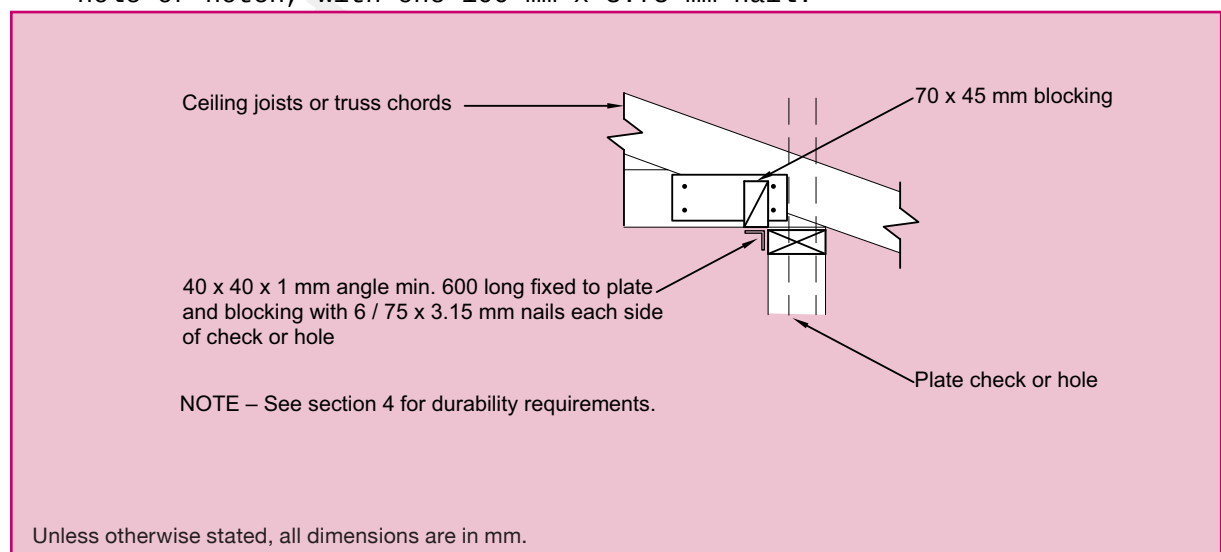


Figure 8.20 – Cut top plate (see 8.7.5.1(c))



LUMBERLOK®

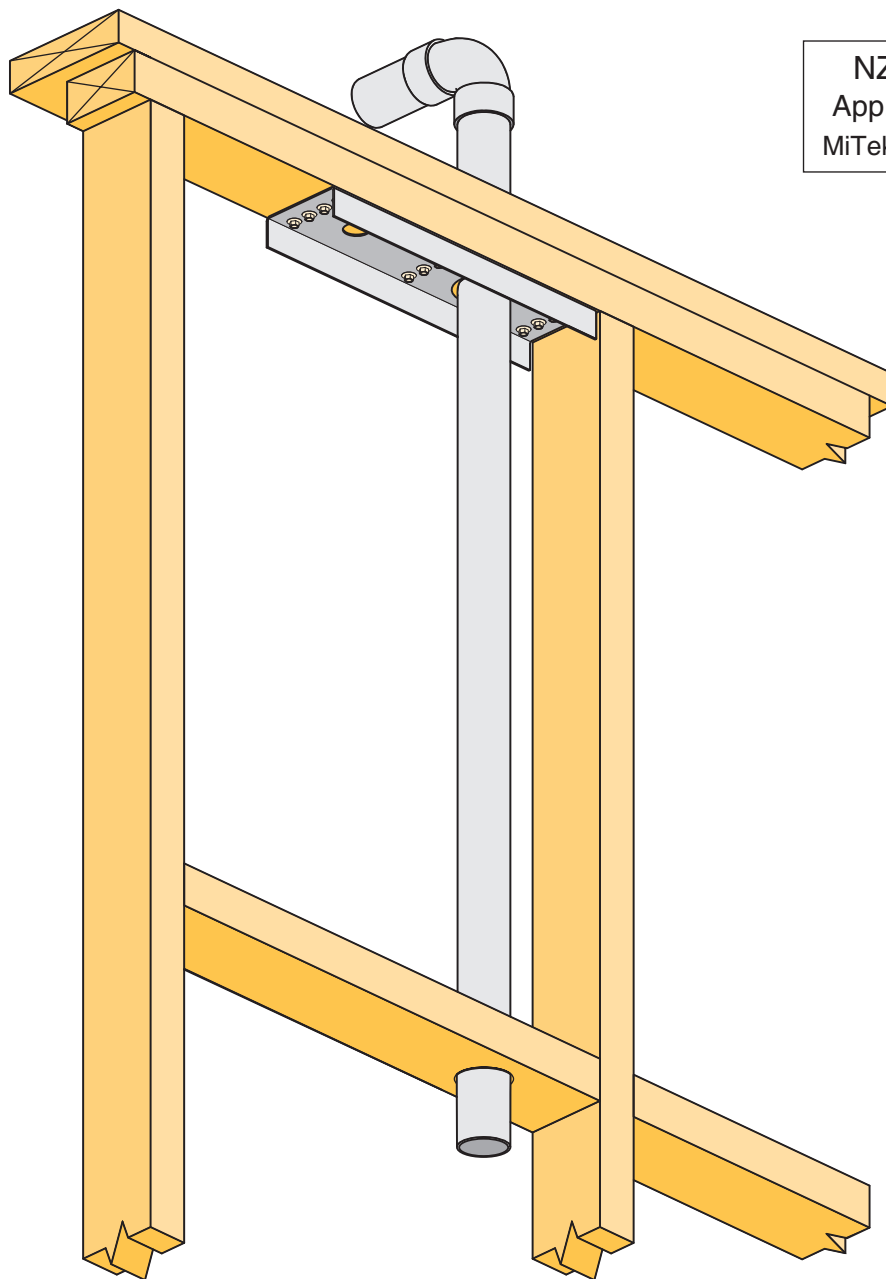
TOP PLATE STIFFENER

08/2011
Approved Building
Consent Documents

BC0176/20

Ashburton District Council

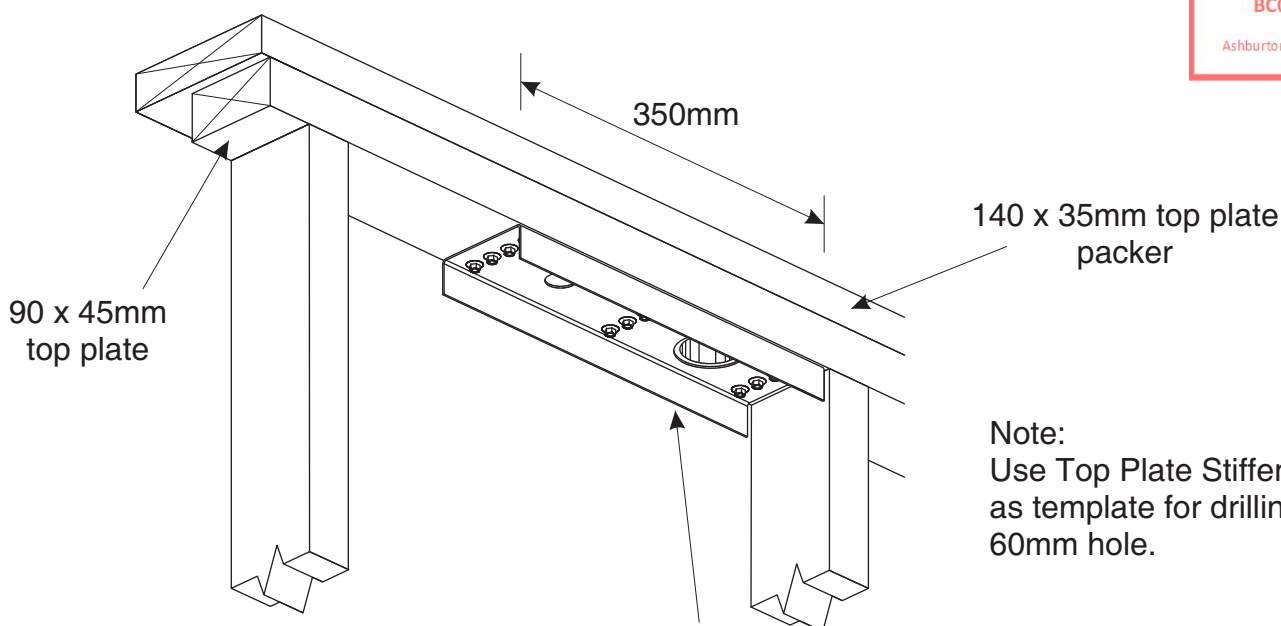
- ★ For internal vacuum systems ducting
- ★ Reinforces the top plate back to FULL STRENGTH!
- ★ Alternative solution to Figure 8.20 NZS 3604:2011



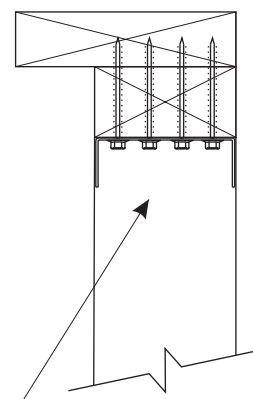
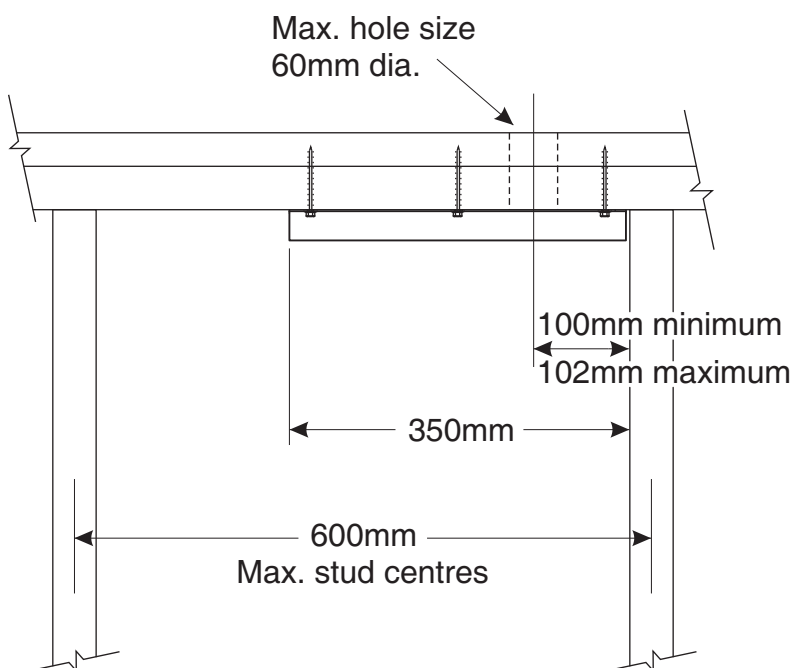
NZ Reg. Design
App. 408133 © 2006
MiTek New Zealand Ltd.



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Fix up into top plate and into packer with 3 rows of 4 x Type 17-14g x 75mm Hex Head Screws (supplied). It may be advisable to drill pilot hole for each screw to assist installation.



Position Top Plate
Stiffener under top plate
as shown within the wall
frame.

Code: TPS
Material: 1.55mm G300 Z275 Galvanised Steel
Packed: 8 x Top Plate Stiffeners per Carton
100 x Type 17-14g x 75mm Hex Head Galvanised Screws



MiTek New Zealand Limited

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MiTek 20/20 Engineering 4.7.301.0

Printed: 14:47:15 03 Mar 2020

PRODUCER STATEMENT for MiTek 20/20[®] TRUSS DESIGN - Version 4.7

ISSUED BY: **MiTek New Zealand Limited**

TO: **MiTek New Zealand Ltd.**

IN RESPECT OF: **MiTek[®] Truss Designs**

This producer statement covers the MiTek 20/20[®] truss design and the structural performance of the GANG-NAIL[®] connector plate for the job reference **PA22634** and may be used by a Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

The MiTek 20/20[®] truss design program has been developed by MiTek New Zealand Limited for the design of MiTek[®] timber roof, floor and attic trusses in New Zealand. The truss designs computed by MiTek 20/20[®] are prepared using sound and widely accepted engineering principles, and in accordance with compliance documents of the New Zealand Building Code and Verification Method B1/VM1; and internationally accepted standard ANSI/TPI 1 - 2002 as an alternative solution, to satisfy the requirements of Clause B1 of the New Zealand Building Code.

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

- i) All proprietary products meeting their performance specification requirements
- ii) The provision of adequate roof bracing and overall building stability
- iii) Correct selection and placement of GANG-NAIL connector plates
- iv) Correct input of Truss Design Data as shown in the Fabricator Design Statement for this job
- v) The design being undertaken by the accredited fabricator under the terms of the software licence
- vi) Timber is graded to the requirements of NZS 3603:1993
- vii) Minimum timber treatment for these MiTek[®] trusses shall be in accordance with B2/AS1 Table 1A and the relevant sections of NZS 3602:2003

I believe on reasonable grounds that the trusses, if constructed in accordance with the MiTek 20/20[®] truss design and shop drawings, will comply with the relevant provisions of the New Zealand Building Code.

MiTek New Zealand Limited holds a current policy of Professional Indemnity Insurance no less than \$500,000.

On behalf of MiTek New Zealand Limited,

Date: Tuesday, 3 March 2020

In Ling Ng, BE (Hons), CPEng, IntPE, MIPENZ (ID: 146585)
TECHNICAL SERVICES MANAGER, MiTek New Zealand Limited

Job: PA22634

Client: TRIDENT
Phone:Site: HART
118 JOHNSTON ROAD
RAKAIADescription: HART
Building Consent No.:
MiTek 20/20 Engineering 4.7.301.0

MiTek New Zealand Limited

Phone: 03 444 6633
Ashburton District Council 03 Mar 2020

BC0176/20

MITEK FABRICATOR DESIGN STATEMENT

This statement is issued by MiTek accredited fabricator **MiTek New Zealand Ltd.**, being licensed to use the MiTek 20/20® software, to the client listed above and may be used by the Building Consent Authority to assist in determining compliance with the New Zealand Building Code.

MiTek 20/20® TRUSS DESIGN DATA

The MiTek 20/20® computer design for this job is based on the following design parameters entered into the program. The Fabricator shall ensure that these job details are current and relevant to the project for the design of the MiTek® trusses.

Job Details		Importance Level :	2	Design Working Life :	50 years
Roof Truss					
Timber Group:	SG10 H1.2	Pitch:	25.000 deg	Nominal Overhang:	600 mm
Roof		Ceiling		Wind	
Material:	Longrun Iron .5mm	Material:	Gib Board 13mm	Area:	High (44.0 m/s)
Dead Load:	0.210 kPa	Dead Load:	0.200 kPa	Pressure Coeff:	Cpe = varies; Cpi = -0.30, 0.20
Restraints:	900 mm centres	Restraints:	600 mm centres	Snow	
Live Load:	Q _r = 0.250 kPa	Live Load:	Q _c = 1.400 kN	Location:	Christchurch (N4) at 130 m
	Q _c = 1.100 kN			Open Ground Load:	1.000 kPa
				Basic Roof Load:	0.490 kPa

The minimum timber treatment for these MiTek® trusses shall be in accordance with B2/AS1 Table 1A and the relevant sections of NZS 3602:2003. The timber for these MiTek® trusses shall be graded to the requirements of NZS 3603:1993. Proprietary fixings and timber connectors shall be selected in accordance with NZS3604:2011 Section 4 - Durability.

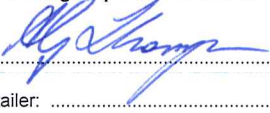
MiTek® Truss List

Legend: * = detail only, ? = input only, Fxx = failed design, Ø = non certified, Unmarked trusses = designed successfully, LB = lateral bracing required
GB = gable brace required

Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)	Truss	Qty	Span (mm)	Pitch (deg)	Spacing (mm)
CJ01	1	3387	25.000	900	J03C	1	2828	25.000	900	T01	1	4020	25.000	900
CJ01A	1	3387	25.000	900	J03D	1	2828	25.000	900	T01A	1	4020	25.000	900
CJ01B	1	3387	25.000	900	J04	1	2017	25.000	900	T01B	1	4020	25.000	900
EN01	1	6080	25.000	856	J04A	2	2017	25.000	900	T01C	1	4020	25.000	900
*HB01	4	3659	18.249	900	J04B	1	2017	25.000	900	T02	1	4044	25.000	900
*HB02	1	3374	18.249	900	J04C	1	2017	25.000	900	T03	8	7680	25.000	900
*HB03	1	2802	18.249	900	*R01	1	1700	25.000	900	T03A	1	7680	25.000	900
*HB04	1	1274	18.249	900	*R01A	1	1700	25.000	900	T04	1	1875	0.000	900
*HB05	1	6247	18.249	900	*R02	4	913	25.000	900	T05	1	1385	0.000	900
J01	2	1987	25.000	900	*R02A	4	913	25.000	900	T06	5	6080	25.000	856
J01A	2	1987	25.000	900	*R02B	1	913	25.000	900	T07	1	6080	25.000	900
J01B	2	1987	25.000	900	*R02C	1	913	25.000	900	T08	1	6080	25.000	900
J02	1	2917	25.000	900	*R03	1	1100	25.000	900	TG01	1	4044	25.000	900
J02A	1	2917	25.000	900	*R03A	1	1100	25.000	900	TG02	1	7680	25.000	900
J03	1	2828	25.000	900	*R04	1	1730	25.000	900	V01	1	3074	25.000	900
J03A	1	2828	25.000	900	*R05	1	7280	25.000	900	V02	1	2174	25.000	900
J03B	1	2828	25.000	900	*R06	10	1455	0.000	900					

Total quantity : 83

The computer design input has been carried out by:

Signed: 

Name of Detailer:

On behalf of: MiTek New Zealand Ltd.

Date: ...Tuesday, 3 March 2020....

Qualifications and Title:

Job: PA22634
Description: HART
Building Consent No.:
MiTek 2020 Engineering 4.7.301.0

Client: TRIDENT
Phone:

Site: HART
118 JOHNSTON ROAD
RAKAIA

Fixing Report: Page 1
Approved Building
Consent Documents

BC0176/20

Phone: 06 476 22 63
Ashburton District Council 16 Mar 2020

MiTek New Zealand Limited

TRUSS FIXING SELECTION REPORT - Characteristic Loads

Fixings are selected from the LUMBERLOK Brochure 08/2014 (Timber Connectors Characteristic Loadings Data)

MiTek® Truss List

Legend: * = detail only, ? = input only, Txx = failed design, Ø = non certified, Unmarked trusses = designed successfully

Truss	Qty	Span (mm)	Joint	Down (kN)	Uplift (kN)	Bearing	----- Fixing ----- Qty Selected	
CJ01	1	3387	G	0.567	0.371	Cross	1	Pair of Wire Dog Staples
			F	4.931	2.917	Butt	1	JH 47x90
			B	3.930	0.943	Cross	1	Pair of Wire Dog Staples
CJ01A	1	3387	I	2.988	1.680	Butt	1	JH 47x90
			F	0.749	0.476	Cross	1	Pair of Wire Dog Staples
			B	4.004	1.227	Butt	1	JH 47x90
CJ01B	1	3387	C	4.249	1.276	Cross	1	Pair of Wire Dog Staples
			I	2.391	1.101	Butt	1	JH 47x90
			F	0.750	0.478	Cross	1	Pair of Wire Dog Staples
			B	0.838	0.425	Butt	1	JH 47x90
EN01	1	6080	L	4.776	2.707	Cross	1	Pair of Wire Dog Staples
			W	4.776	2.707	Cross	1	Pair of Wire Dog Staples
*HB01	4	3659						Refer NZS3604:2011 Tables 15.6
*HB02	1	3374						Refer NZS3604:2011 Tables 15.6
*HB03	1	2802						Refer NZS3604:2011 Tables 15.6
*HB04	1	1274						Refer NZS3604:2011 Tables 15.6
*HB05	1	6247						Refer NZS3604:2011 Tables 15.6
J01	2	1987	B	3.187	0.921	Cross	2	Pair of Wire Dog Staples
			F	1.117	0.698	Butt	2	JH 47x90
J01A	2	1987	B	3.187	0.921	Cross	2	Pair of Wire Dog Staples
			F	1.117	0.698	Butt	2	JH 47x90
J01B	2	1987	B	3.480	0.810	Cross	2	Pair of Wire Dog Staples
			F	1.355	0.750	Butt	2	JH 47x90
			D	0.825	0.483	Butt	2	JH 47x90
J02	1	2917	B	4.252	1.264	Cross	1	Pair of Wire Dog Staples
			F	1.815	1.286	Butt	1	JH 47x90
J02A	1	2917	B	4.252	1.264	Cross	1	Pair of Wire Dog Staples
			F	1.815	1.286	Butt	1	JH 47x90
J03	1	2828	A	4.472	2.179	Butt	1	JH 47x90
			E	5.155	3.083	Butt	1	JH 47x90
J03A	1	2828	A	3.120	1.038	Butt	1	JH 47x90
			E	3.119	1.788	Butt	1	JH 47x90
J03B	1	2828	A	3.120	1.038	Butt	1	JH 47x90
			E	2.173	1.186	Butt	1	JH 47x90
			C	0.946	0.602	Butt	1	JH 47x90
J03C	1	2828	A	3.142	1.562	Butt	1	JH 47x90
			E	2.494	1.698	Butt	1	JH 47x90
J03D	1	2828	A	3.037	0.752	Butt	1	JH 47x90
			D	0.578	0.377	Butt	1	Pair of 3.15d Nails
			C	4.306	2.545	Cross	1	Pair of Wire Dog Staples
J04	1	2017	F	3.575	0.679	Cross	1	Pair of Wire Dog Staples
			I	0.642	1.046	Butt	1	JH 47x90
			H	1.039	0.222	Cross	1	Pair of Wire Dog Staples
J04A	2	2017	B	3.511	0.821	Cross	2	Pair of Wire Dog Staples
			F	2.057	1.252	Butt	2	JH 47x90
J04B	1	2017	B	3.511	0.821	Cross	1	Pair of Wire Dog Staples
			D	2.057	1.252	Butt	1	JH 47x90
J04C	1	2017	F	4.230	0.561	Cross	1	Pair of Wire Dog Staples
			H	1.005	0.615	Butt	1	JH 47x90
			E	0.902	0.479	Butt	1	JH 47x90
*R01	1	1700						Refer NZS3604:2011 Tables 15.6
*R01A	1	1700						Refer NZS3604:2011 Tables 15.6
*R02	4	913						Refer NZS3604:2011 Tables 15.6
*R02A	4	913						Refer NZS3604:2011 Tables 15.6
*R02B	1	913						Refer NZS3604:2011 Tables 15.6
*R02C	1	913						Refer NZS3604:2011 Tables 15.6
*R03	1	1100						Refer NZS3604:2011 Tables 15.6
*R03A	1	1100						Refer NZS3604:2011 Tables 15.6
*R04	1	1730						Refer NZS3604:2011 Tables 15.6
*R05	1	7280						Refer NZS3604:2011 Tables 15.6
*R06	10	1455						Refer NZS3604:2011 Tables 15.6
T01	1	4020	B	5.787	3.131	Cross	1	Pair of Wire Dog Staples
			F	4.782	3.061	Cross	1	Pair of Wire Dog Staples
T01A	1	4020	B	5.787	3.131	Cross	1	Pair of Wire Dog Staples
			F	4.782	3.061	Cross	1	Pair of Wire Dog Staples
T01B	1	4020	B	7.443	3.738	Cross	1	CT400
			F	13.046	7.375	Cross	1	CT400
T01C	1	4020	B	7.334	3.730	Cross	1	CT400
			F	12.787	7.343	Cross	1	CT400
T02	1	4044	F	3.549	2.015	Butt	1	JH 47x90
			I	3.544	2.031	Butt	1	JH 47x90
T03	8	7680	B	7.613	3.897	Cross	8	CT400
			F	7.613	3.897	Cross	8	CT400

MiTek New Zealand Ltd.

Job: PA22634

Client: TRIDENT
Phone:

Site: HART
118 JOHNSTON ROAD
RAKAIA

Description: HART
Building Consent No.:
MiTek 20/20 Engineering 4.7.301.0

MiTek New Zealand Limited

Fixing Report : Page 2
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BC0176/20

Phone: Ashburton District Council 0477 25 03 Mar 2020

Truss	Qty	Span (mm)	Joint	Down (kN)	Uplift (kN)	Bearing	----- Fixing -----
T03A	1	7680	B	7.270	3.720	Cross	Qty Selected
			L	7.977	3.685	Cross	1 CT400
T04	1	1875	A	2.610	1.046	Butt	1 JH 47x90
			B	1.889	0.998	Butt	1 JH 47x90
T05	1	1385	A	1.284	0.662	Butt	1 JH 47x90
			B	1.284	0.662	Cross	1 Pair of Wire Dog Staples
T06	5	6080	B	5.905	2.944	Cross	5 Pair of Wire Dog Staples
			F	5.905	2.944	Cross	5 Pair of Wire Dog Staples
T07	1	6080	B	6.211	3.096	Cross	1 Pair of Wire Dog Staples
			F	6.211	3.096	Cross	1 Pair of Wire Dog Staples
T08	1	6080	B	11.636	4.984	Cross	1 CT400
			F	13.629	5.856	Cross	1 CT400
TG01	1	4044	H	10.147	5.901	Butt	1 Pair of MultiGrips
			L	10.522	5.926	Butt	1 Pair of MultiGrips
TG02	1	7680	B	15.020	8.394	Cross	1 CT400
			T	15.141	8.113	Cross	1 CT400
V01	1	3074	A			Wide	No fixing selected
V02	1	2174	A			Wide	No fixing selected

Fixing List

Qty	Selected Fixing
39	Pair of Wire Dog Staples
36	JH 47x90
1	Pair of 3.15d Nails
26	CT400
2	Pair of MultiGrips
2	No fixing selected

Note:

- 1) Fixings have been selected based on loading only. Please check that selected fixings are practical for each situation and that appropriate nailing can be applied on site.
- 2) Fixings are selected from the LUMBERLOK Brochure 08/2014 (Timber Connectors Characteristic Loadings Data) with down and uplift characteristic loads of at least the values shown for each joint.



MiTek New Zealand Ltd.

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

AUCKLAND
 40 Neales Road, East Tamaki 2013
 PO Box 58-014, Greenmount 2141
 Phone: 09-274 7109
 Fax: 09-274 7100

HOME OF GANG-NAIL® BUILDING SYSTEMS

www.mitek.nz.co.nz

High Wind 0.9 Snow (100m Altitude) Light Roof 13mm Gib Ceiling	
Standard Trusses	
Lintel Span	Lintel Size
1000	2/90x45 msg8
1800	2/140x45 msg8
3000	2/240x45 MSG8
3600	2/290x45 MSG8
4800	Prolam 315x88 GL12
Girder Trusses (support a roof area of 27m2 max.)	
Lintel Span	Lintel Size
1000	2/140x45 msg8
1800	2/190x45 msg8
3200	2/290x45 msg8
3600	hySpan 2/240x45
4800	Hyne 17C 295x85

High Wind 0.9 Snow (100m Altitude) Heavy Roof 13mm Gib Ceiling	
Standard Trusses	
Lintel Span	Lintel Size
900	2/90x45 msg8
1800	2/190x45 msg8
3000	2/290x45 msg8
3600	hySpan 2/300x45
4800	Steel Beam
Girder Trusses (support a roof area of 27m2 max.)	
Lintel Span	Lintel Size
800	2/140x45 msg8
1300	2/190x45 msg8
2700	2/290x45 msg8
3600	Fitch Beam FB25M
4800	Steel Beam

For Light Roof with 1.35 kPa Snow (200m Altitude) or Very High wind use the Heavy Roof Table

For Heavy Roof with 1.35 kPa Snow (200m Altitude) use Heavy Roof Table but reduce Lintel span by 20% (multiply span by 0.8)

Any lintel that supports brick is to be a Steel beam.



MiTek New Zealand Ltd
 14 Pilkington Way
 Christchurch

Job No: PA 2263A

Date: 03 / 03 / 2020

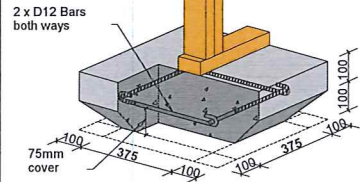
GANG-NAIL®

LUMBERLOK®

BOWMAC®

SLAB THICKENING & STUD REQUIREMENTS

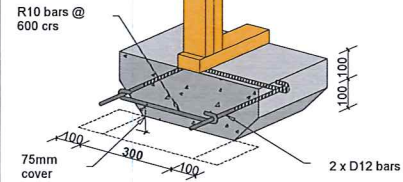
TYPE FP1 375mm² Pad



2

3

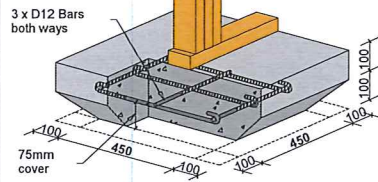
TYPE FS1 300mm Strip



2

3

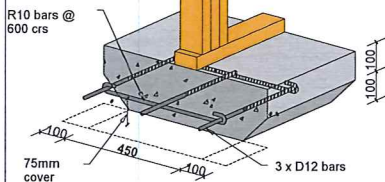
TYPE FP2 450mm² Pad



3

4

TYPE FS2 450mm Strip



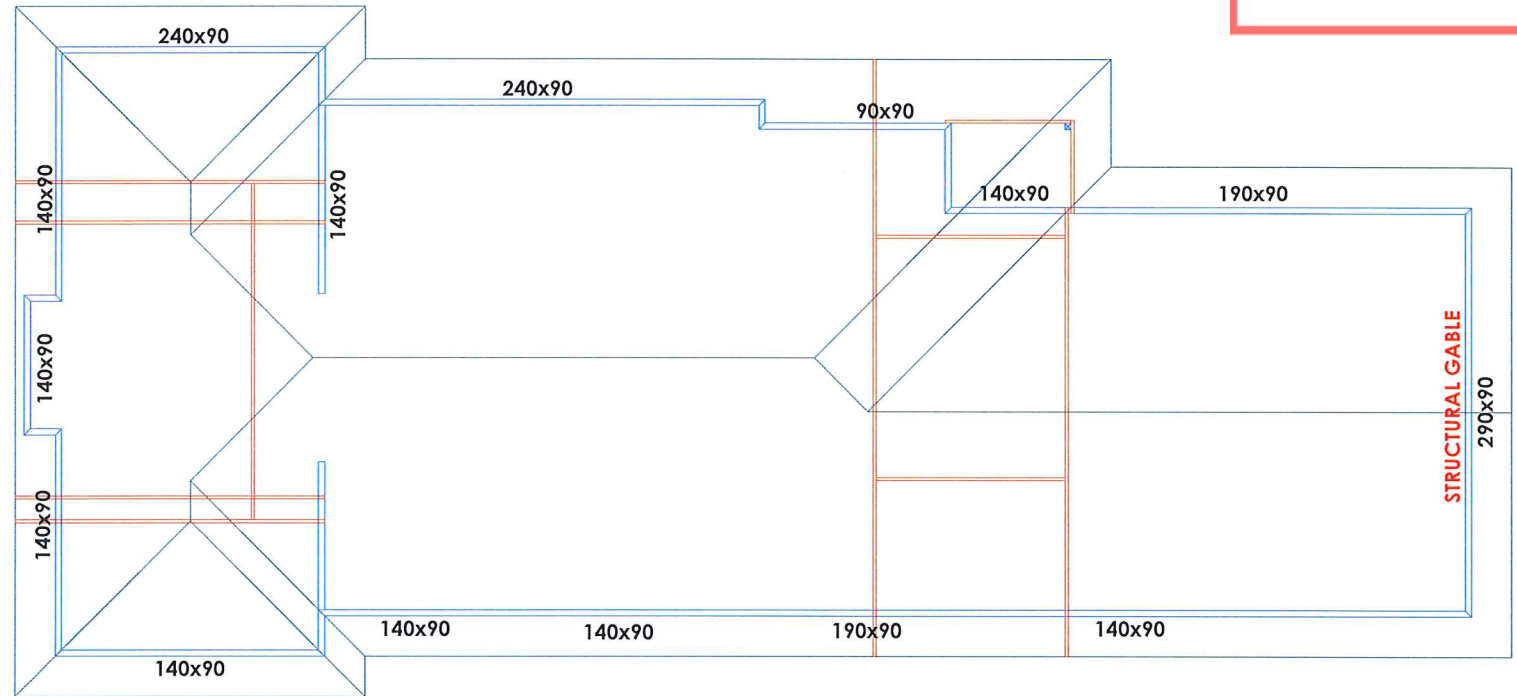
3

4

Notes:
- The numbers found in the hatched areas are the numbers of studs required below each truss
- Standard 100mm reinforcing concrete slab, as per NZS3604:2011

Refer to:
MiTek Internal Load Bearing on Concrete Floor Slabs 10/2011
MiTek Structural Fixings On-Site Guide for Building Code Compliance

Concrete Slab Thickening Guide



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Consent Documents

BC0176/20

Ashburton District Council

NO SLAB THICKENING REQUIRED



Site Address :
HART
118 JOHNSTON ROAD
RAKAIA

Sheet Title :
**For Building Consent
Slab Thickening**

Date : 3 Mar,2020 Drawn : Allan Thompson
Scale : 1: 110 System : MiTek 20/20

Job Details:
Roof Pitch : 25.00deg
Roof Material : Longrun Iron .5mm
Ceiling Material : Gib Board 13mm
Wind Zone : High
Roof Snow Load : 0.490kPa

Truss Centres : 900mm
Roof Live Load : 0.250kPa
Floor Live Load :
Wind Speed : 44m/s
Overhang : 600mm



PrimeCad v4.7.301

Job Title :
PA22634
Sheet :
2
Revision Number :

H1 SCHEDULE METHOD CALCS E2/AS1 – CLIMATE ZONE 3 (SI).

N/S Building Length	W/E Building Length	Stud Height	W,E,S Glazing	N,W,E,S Glazing	Skylight Area	W,E,S Wall Area	N,W,E,S Wall Area	W,E,S Glazing %	N,W,E,S Glazing %	Pass
15.48 m	8.88 m	2.40 m	11.73 m ²	26.71 m ²	0 m ²	80 m ²	117 m ²	14.7%	22.8%	Yes

Wall construction – Any wall type.

Component R Values – Roof R3.3min, Wall R2min, Floor R1.3min, Windows R0.26min, Skylights R0.31

Insulation to be installed to NZS 4246:2016 Energy efficiency.

Recessed Luminaires shall comply with the electricity Safety Regs 2010.

Up to 3m sq of Decorative glazing including louvers allowed.

H1 GLAZING – WEST / EAST / SOUTH		
Orientation	Window #	Glazing Area
East	W15	1.89 m ²
South	W04	0.48 m ²
South	W05	1.62 m ²
South	W06	1.8 m ²
South	W07	1.08 m ²
South	W08	1.08 m ²
West	W09	1.8 m ²
West	W10	0.9 m ²
West	W11	1.08 m ²
Grand total		11.73 m ²

H1 GLAZING – NORTH / WEST / EAST / SOUTH		
Orientation	Window #	Glazing Area
East	W15	1.89 m ²
North	W01	1.05 m ²
North	W12	5.16 m ²
North	W13	6.88 m ²
North	W14	1.89 m ²
South	W04	0.48 m ²
South	W05	1.62 m ²
South	W06	1.8 m ²
South	W07	1.08 m ²
South	W08	1.08 m ²
West	W09	1.8 m ²
West	W10	0.9 m ²
West	W11	1.08 m ²
Grand total		26.71 m ²



Construction R-value Calculator

H1 compliance calculator,
now with BPI calculation.

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it or use the new [Design Navigator message board](#) [i](#).

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel [i](#).

Element Name (optional):

Floors ☐

Walls ☐

Roofs ☒

Roof: Timber framed roof, direct fixed or battened flat ceiling

external surface 0.03	
Roofing	Corrugate iron with building paper v
R-value: 0.01	
Insulation i	3.6
Timber Frame & Cavity	
94mm rafters or joists @ 900mm, battens (covered with insulation) v	
Frame Area: 5%	Cavity Area: 95%
Roof space (still air) 0.11	Roof space (still air) 0.11
Trusses and dwangs	Insulation
R-value: 0.78	
Ceiling Lining	Gypsum plasterboard 13mm v
R-value: 0.06	
internal surface 0.09	
Recessed downlights	
Ceiling area [m ²]:	Number of downlights: Clearance from lamp holder side [m]: i

Resulting R-value:

3.91

m²K/W.

Current NZS4218/H1 Schedule minimum R-value Targets (non-solid construction) [i](#):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets [i](#):



Construction R-value Calculator

[H1 compliance calculator](#),
now with BPI calculation.

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BC0176/20

Ashburton District Council

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it or use the new [Design Navigator message board](#) [i](#).

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel [i](#).

Floors ☐

Walls ☒

Roofs ☐

Wall: Timber frame (direct fixed cladding) ▼

external surface 0.03	
Cladding	Gypsum plasterboard 10mm into still air (garage, etc.) ▼ <i>R-value: 0.1</i>
Air Barrier	none ▼ <i>R-value: 0</i>
Timber Frame & Cavity 90mm, studs @ 600mm, dwangs @ 600mm ▼	
<i>Frame Area: 16.9%</i>	<i>Cavity Area: 83.1%</i>
Timber Frame <i>R-value: 0.75</i>	Insulation 2.6
still Airgap none ▼ <i>R-value: 0</i>	
Wall Lining	Gypsum plasterboard 10mm ▼ <i>R-value: 0.04</i>
internal surface 0.09	

Resulting R-value: **2.1** m²K/W.

Print Page

Current NZS4218/H1 Schedule minimum R-value Targets (non-solid construction) [i](#):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31





Construction R-value Calculator

H1 compliance calculator,
now with BPI calculation.

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it or use the new [Design Navigator message board](#) [i](#).

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel [i](#).

Element Name (optional):

Floors ☐

Walls ☒

Roofs ☐

Wall: Veneer wall with timber framing and bulk insulation (vented) ▼	
external surface 0.03	
Veneer	70mm brick ▼
R-value: 0.06	
Air Barrier	Building paper ▼
R-value: 0.01	
Timber Frame & Cavity	90mm, studs @ 600mm, dwangs @ 800mm ▼
Frame Area: 15.1%	Cavity Area: 84.9%
15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08	15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08
Timber Frame R-value: 0.75	Insulation 2.6
	still Airgap none ▼
	R-value: 0
Wall Lining	Gypsum plasterboard 10mm ▼
R-value: 0.04	
internal surface 0.09	

Resulting R-value:

2.19

m²/K/W.

Print Page

Current NZS4218/H1 Schedule minimum R-value Targets (non-solid construction) [i](#):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets [i](#):

All Zones except NSW	NSW
----------------------	-----



Construction R-value Calculator

Approved Building
Consent Documents

BC0176/20

Ashburton District Council

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "iso-thermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it or use the [Design Navigator message board](#).

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

Floors ☐

Walls ☒

Roofs ☐

Element Name (optional)	2.18 m ² °C/W
Type: Wall: Timber Frame with vented Cavity	
Timber Frame with vented Cavity view detail	
external surface 0.03	
Cladding : Rusticated or shiplap weatherboard	
R-value: 0.16	
Air Barrier : Building paper	
R-value: 0.01	
Timber Frame & Cavity : 90mm, studs @ 600mm, dwangs @ 480mm	
Wall Frame Area: 17.9%	Cavity Area: 82.1%
15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08	15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08
Framing : R-value: 0.75	Insulation : 2.6
	still Airgap: none
	R-value: 0.00
Wall Lining : Gypsum plasterboard 10mm	
R-value: 0.04	
internal surface 0.09	

[Print Page](#)

Current NZS4218:2009 Schedule Method minimum R-value Targets (non-solid construction) [i](#):

	Zone 1	Zone 2	Zone 3
Roof	R-2.9	R-2.9	R-3.3
Wall	R-1.9	R-1.9	R-2.0
Floor	R-1.3	R-1.3	R-1.3
Glazing (vertical)	R-0.26	R-0.26	R-0.26
Glazing (skylights)	R-0.26	R-0.26	R-0.31

Australian Building Code Targets [i](#):

	All Zones except NSW	NSW
Roof	R-4.1	R-6.3
Wall	R-2.9	R-3.8



6 TruBoltTM Stud Anchors

Installation and Performance Details

Anchor size, d_b (mm)	Installation details				Minimum Dimensions*			Reduced Characteristic Capacity			
	Drilled hole $\varnothing$, d_h (mm)	Fixture hole $\varnothing$, d_f (mm)	Anchor effective depth, h (mm)	Tightening torque, T_r (Nm)	Edge distance, e_c (mm)	Anchor spacing, a_c (mm)	Substrate thickness, b_m (mm)	Shear V_a (kN)	Tension N_a (kN)		
									Concrete compressive strength (MPa)		
								20 MPa	20 MPa	32 MPa	40 MPa
M12	12	15	48	50	75	150	97	17.1	8.5	11.2	11.2
			86		130	260	135	17.1	20.3	25.4	25.4
M16	16	19	64	155	100	200	121	28.8	13.1	16.5	18.5
			115		170	340	172	28.8	31.4	39.8	44.5
M20	20	24	80	355	120	240	145	54.7	18.2	23.1	25.8
			145		220	440	210	54.7	44.5	56.3	62.9

* For shear loads acting towards an edge or where these minimum dimensions are not achievable, please use the simplified strength limit state design process to verify capacity.

Reduced Characteristic

Description and Part Numbers

Anchor size, d_b (mm)	Hole $\varnothing$, d_h , (mm)	Effective length, L_e (mm)	Part No.		
					
M12	12	58	T12080	T12080GH	T12080SS
		71	T12100	T12100GH	T12100SS
		93	T12120	–	–
		111	T12140	T12140GH	T12140SS
		151	T12180	T12180GH	–
M16	16	67	T16100	T16100GH	T16100SS
		85	T16125	T16125GH	T16125SS
		110	T16150	–	–
		135	T16175	T16175GH	T16175SS
M20	20	85	T20120	T20120GH	T20120SS
		115	T20160	T20160GH	T20160SS
		170	–	T20215GH	–

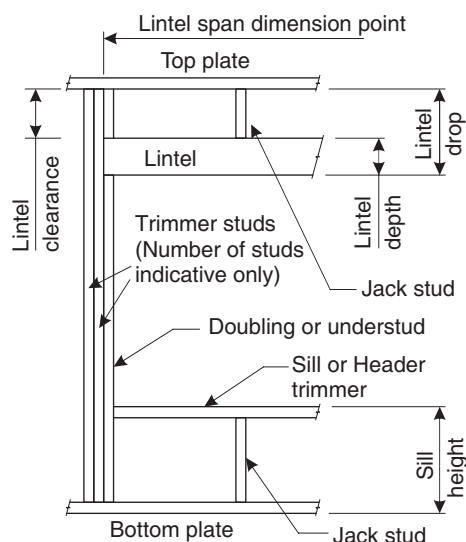


LINTEL FIXING SCHEDULE ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011

NOTE:

- ★ All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20 kPa.
- ★ Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist horizontal loads.
- ★ These fixings assume the correct choice of rafter/truss to top plate connections have been made.
- ★ All fixings assume bottom plate thickness of 45mm maximum. Note: TYLOK options on timber species.
- ★ Wall framing arrangements under girder trusses are not covered in this schedule.
- ★ All timber selections are as per NZS 3604:2011.

DEFINITIONS



Lintel Supporting Girder Trusses:

Roof Tributary Area	Light Roof				Heavy Roof			
	Wind Zone				Wind Zone			
	L, M, H	VH	EH		L, M, H	VH	EH	
8.6 m ²	G	G	H		G	G	H	
11.6 m ²	G	H	H		G	G	H	
12.1 m ²	G	H	H		G	H	H	
15.3 m ²	H	H	-		G	H	H	
19.1 m ²	H	-	-		G	H	-	
20.9 m ²	H	-	-		H	H	-	
21.8 m ²	H	-	-		H	-	-	
34.3 m ²	-	-	-		H	-	-	

Notes:

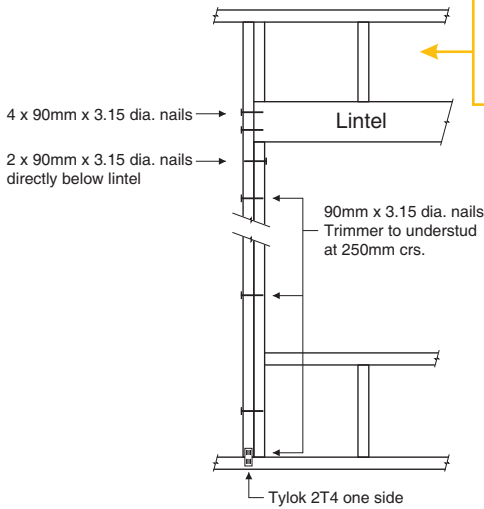
- 1) Roof Tributary Area = approx. 1/2 x (Total roof area on girder and rafter trusses supported by lintel)
- 2) Assumed girder truss is at mid-span or middle third span of lintel
- 3) Use similar fixings for both ends of lintel
- 4) All other cases require specific engineering design

SELECTION CHART FOR LINTEL FIXING

Lintel Span	Loaded Dimension (See Fig. 1.3 NZS 3604:2011)	Light Roof					Heavy Roof				
		Wind Zone					Wind Zone				
		L	M	H	VH	EH	L	M	H	VH	EH
0.7	2.0	E	E	E	E	F	E	E	E	E	E
	3.0	E	E	E	F	F	E	E	E	E	F
	4.0	E	E	F	F	F	E	E	E	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
0.9	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	E	F	F	F	E	E	F	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
1.0	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	F	F	F	G	E	E	F	F	F
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	E	F	F	G	G	E	E	F	F	G
1.2	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	E	F	F	F	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	F	F	G	G	H	E	E	F	G	G
1.5	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	F	F	F	G	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	F	F	G	G	H	E	E	F	G	G
	6.0	F	F	G	H	H	E	E	F	G	H
2.0	2.0	E	F	F	F	G	E	E	F	F	F
	3.0	E	F	F	G	G	E	E	F	F	G
	4.0	F	F	G	G	H	E	E	F	G	G
	5.0	F	F	G	H	H	E	E	F	G	H
	6.0	F	G	G	H	H	E	F	G	H	H
2.4	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	G	H	E	E	F	G	G
	4.0	F	F	G	H	H	E	E	F	G	H
	5.0	F	G	G	H	H	E	F	G	H	H
	6.0	F	G	H	H	-	E	F	G	H	H
3.0	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	H	H	E	E	F	G	H
	4.0	F	G	G	H	H	E	F	G	H	H
	5.0	F	G	H	H	-	E	F	G	H	H
	6.0	F	G	H	-	-	E	F	G	H	-
3.6	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	F	G	H	H	E	F	G	G	H
	4.0	F	G	H	H	-	E	F	G	H	H
	5.0	F	G	H	-	-	E	F	G	H	-
	6.0	G	H	H	-	-	E	F	H	-	-
4.2	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	H	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.5	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.4	F	G	H	H	-	E	F	G	H	-
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
4.8	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.2	F	G	H	H	-	F	F	G	H	-
	4.0	F	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-

LINTEL FIXING OPTIONS

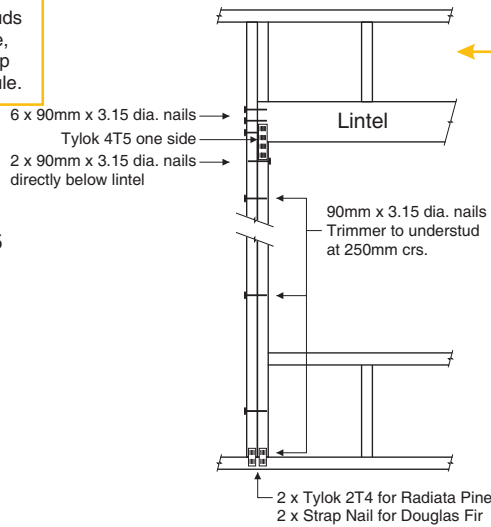
TYPE E 1.4 kN



For fixing of jack studs to lintel & top plate, refer to Stud to Top Plate Fixing Schedule.

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

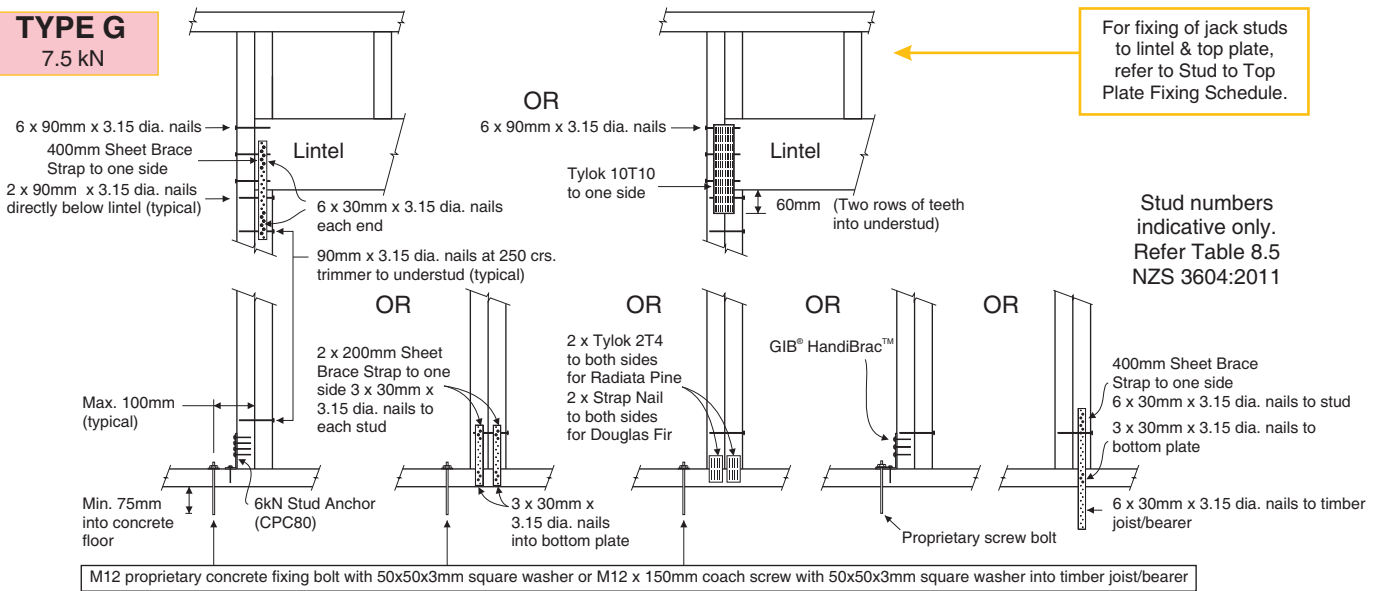
TYPE F 4.0 kN



For fixing of jack studs to lintel & top plate, refer to Stud to Top Plate Fixing Schedule.

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

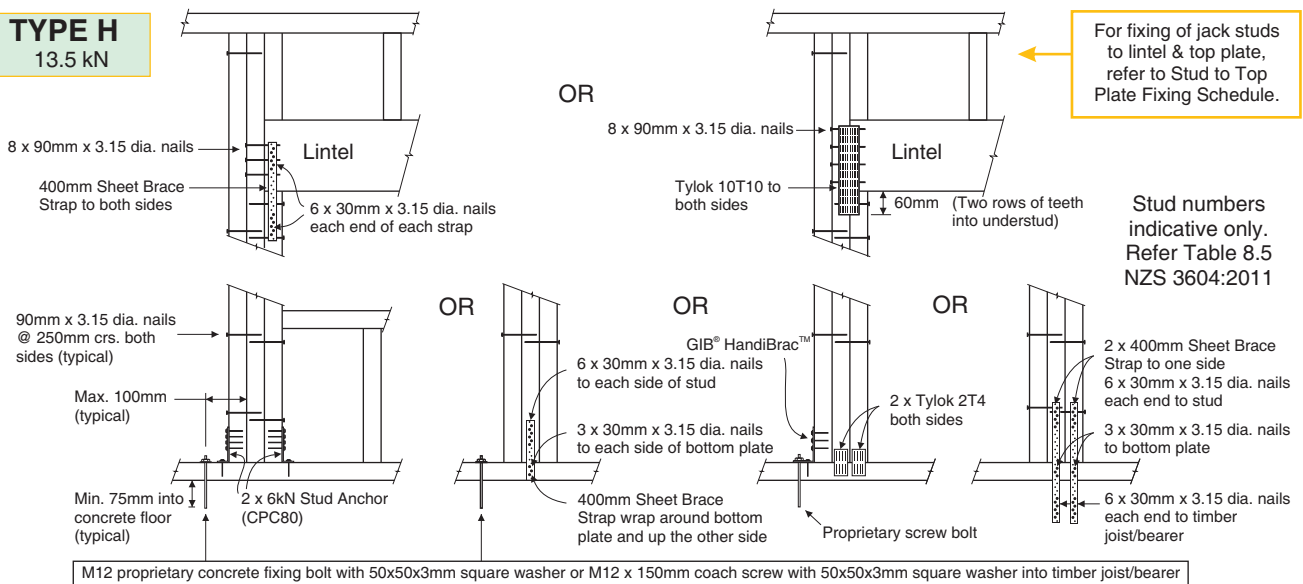
TYPE G 7.5 kN



For fixing of jack studs to lintel & top plate, refer to Stud to Top Plate Fixing Schedule.

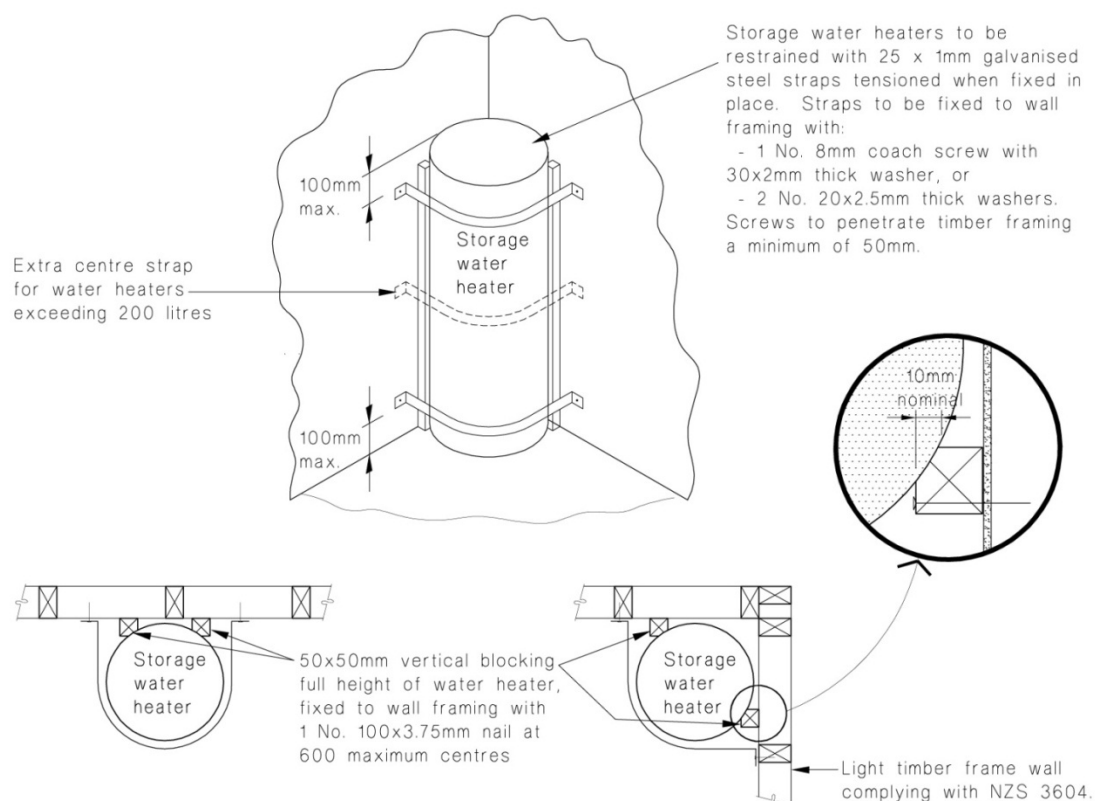
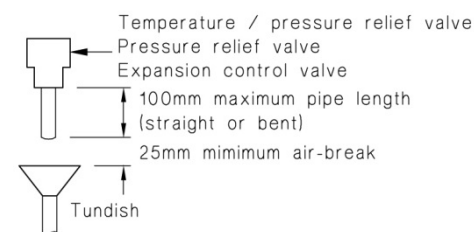
Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

TYPE H 13.5 kN

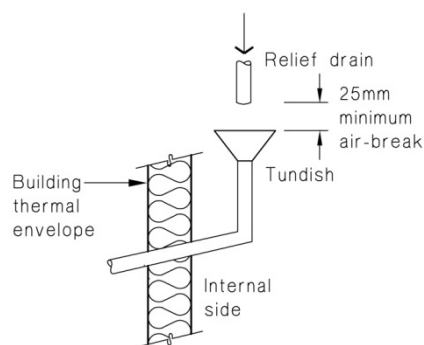


For fixing of jack studs to lintel & top plate, refer to Stud to Top Plate Fixing Schedule.

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

PLUMBING SPEC – Mains pressure (unvented)**Figure 14: Seismic Restraint of Storage Water Heaters 90 – 360 litres**
Paragraph 6.11.4**Figure 12: Relief Valve Drains – Freezing Protection**
Paragraphs 6.7.1, 6.7.4 and 6.7.5**(a) Storage water heater located where freezing likely**

e.g. External to building thermal envelope in cold climates

**(b) Relief drain located where freezing likely**

e.g. Internal storage water heater with drain discharging externally (See figure 13 also)

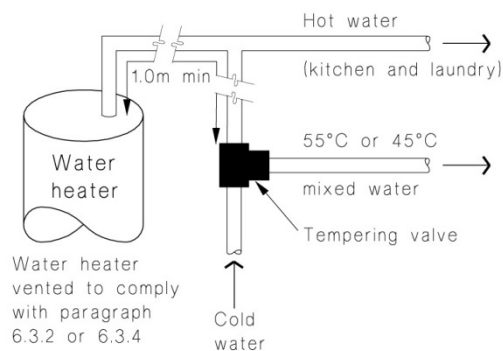
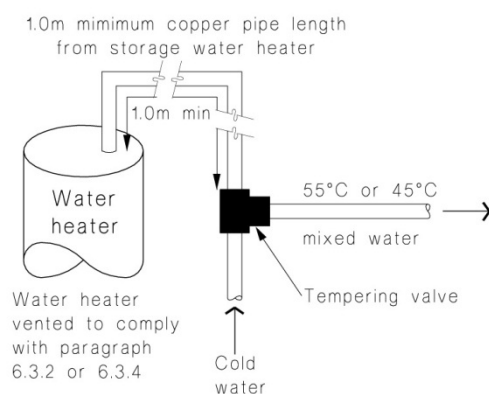
Figure 16: Tempering Valve Installation
Paragraph 6.14.2 a)**(a) With untempered water to laundry and kitchen fixtures and appliances****(b) Where all hot water is tempered**

Figure 8: Mains Pressure Storage Water Heater System (unvented)

Paragraphs 6.1.2 and 6.2.1 b)

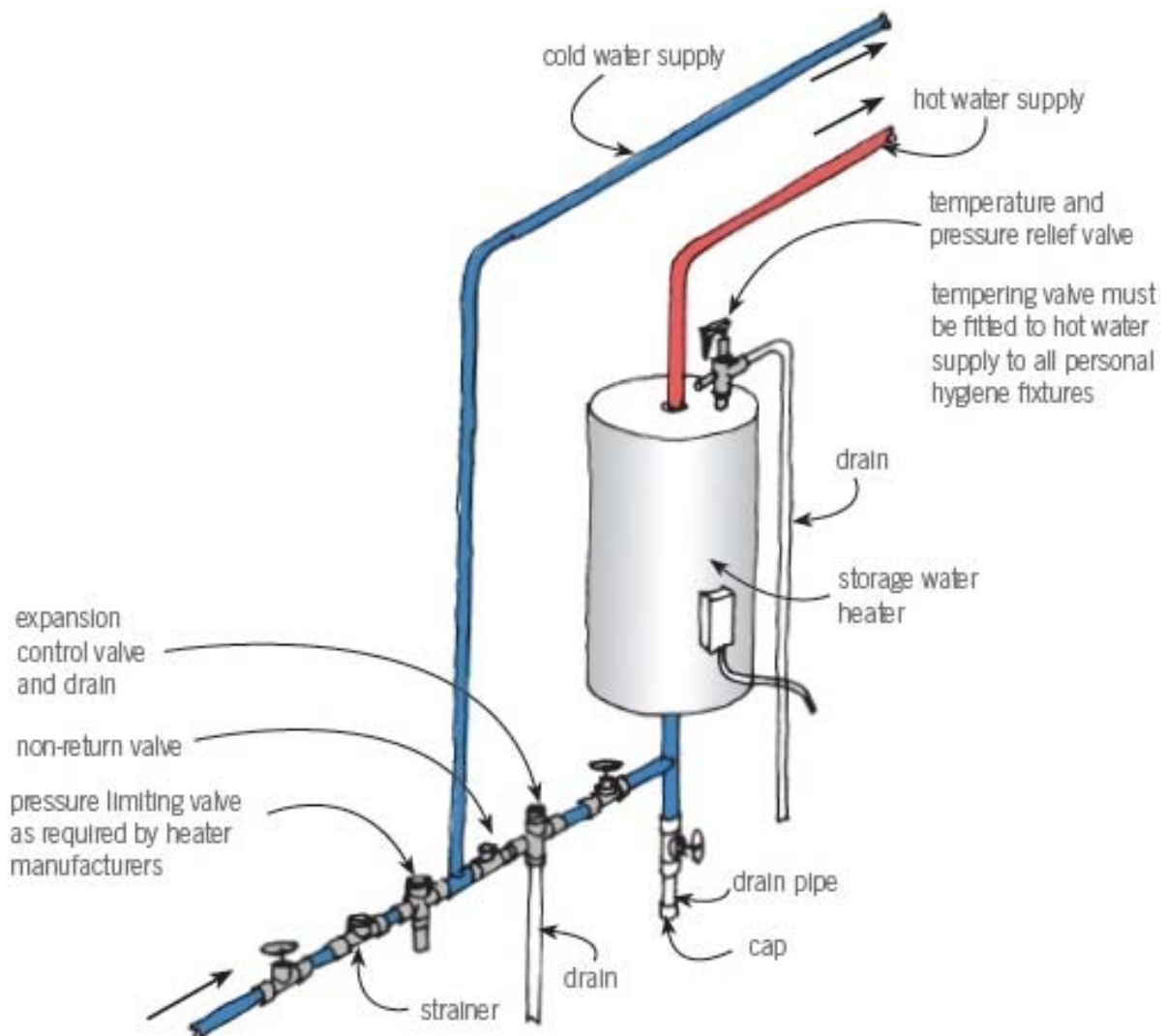
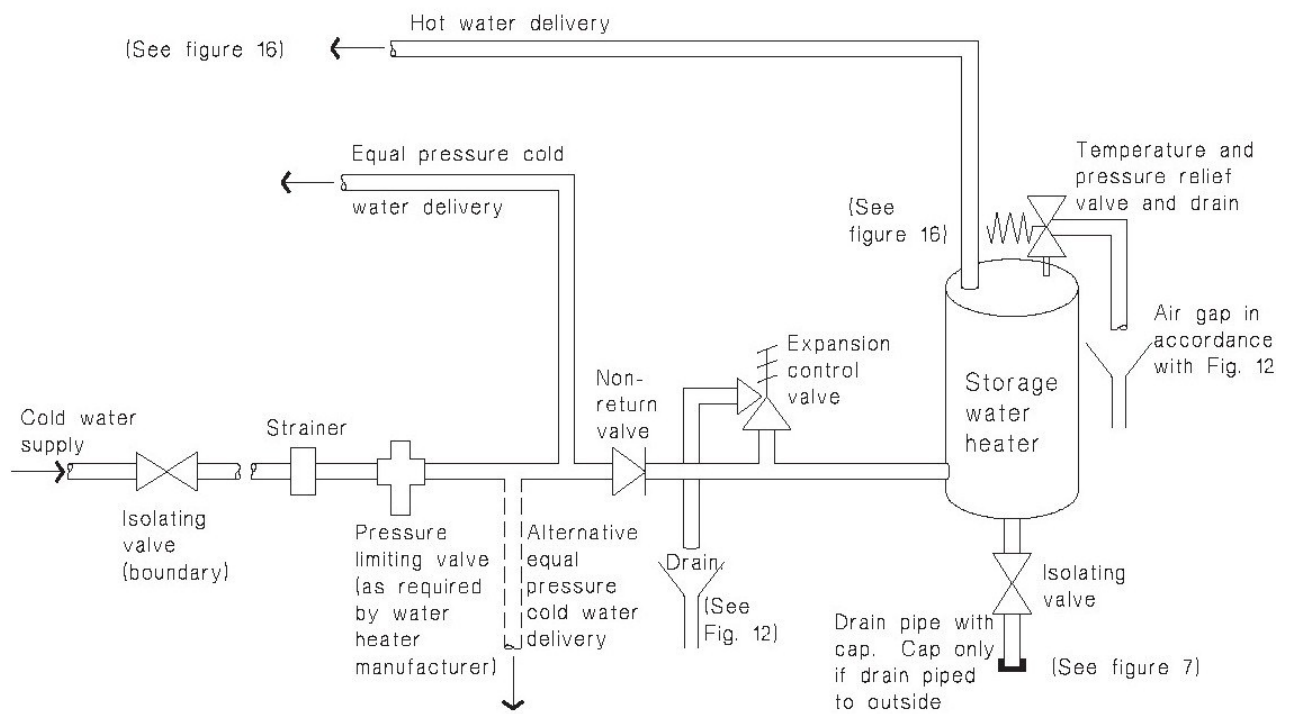


Table 4: Tempering Valve and Nominal Pipe Diameters
Paragraphs 5.3.1 and 6.12.1

	Low pressure (i.e. header tank supply or low pressure)	Low and medium pressure unvented (valve vented) and open vented	Mains pressure
Pressure of water at tempering valve (kPa)	20 – 30	30 – 120	over 300
Metres head (m)	2 – 3	>3 – 12	over 30
Minimum tempering valve size	25 mm	20 mm	15 mm
Pipes to tempering valve	25 mm (see Note 3)	20 mm	20 mm (15 mm optional) (see Note 1)
Pipes to shower	20 mm	20 mm (see Note 4)	20 mm (see Note 5) (15 mm optional) (see Note 1)
Pipes to sink/laundry (see Note 2)	20 mm	20 mm	15 mm
Pipes to bath (see Note 2)	20 mm	20 mm	15 mm
Pipes to basins (see Note 2)	15 mm	15 mm	10 mm

Notes:

1. If supplied by separate pipe from *storage water heater* to a single outlet.
2. This table is based on maximum pipe lengths of 20 metres.
3. 2 m maximum length from *water heater* outlet to tempering valve.
4. 15 mm if dedicated line to shower.
5. 10 mm if dedicated line to shower.
6. Table 3 pipe sizes have been calculated to deliver water simultaneously to the kitchen sink and one other *fixture*.

Table 7: Water Supply Pipework Support Spacing
Paragraph 7.1.3

Pipe material	Pipe diameter (mm)	Maximum distance between supports (m)	
		Vertical pipe	Graded and horizontal pipe
Copper	10 – 15	1.5	1.2
	20 – 25	2.0	1.5
Galvanised steel	15 – 20	2.0	1.5
	25	3.0	2.5
uPVC	15 – 20	2.0	1.0
	25	2.4	1.2
Polyethylene and polybutylene (cold water supply)	15 – 20	1.5	0.75
	25	1.8	0.9
Polybutylene (hot water supply)	15 – 18	1.0	0.6
	20 – 22	1.4	0.7

Note:

The spacing for these pipe materials is based on the pipes being located within the *building* structure.



BRANZ Appraised

Appraisal No. 650 [2014]

HERMPAC VERTILINE VERTICAL SHIPLAP WEATHERBOARD CAVITY SYSTEM

Appraisal No. 650 [2014]

This Appraisal replaces BRANZ
Appraisal No. 650 [2009].

Amended 13 October 2017



Approved Building
Consent Documents

BC0176/20

Ashburton District Council

BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 The Hermac VertiLine Vertical Shiplap Weatherboard Cavity System is a cavity-based shiplap timber weatherboard external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.
- 1.2 The system consists of vertically fixed Herman Pacific Limited shiplap weatherboards, ventilated cavity battens, flashings and accessories and is finished with a premium penetrating oil stain or an exterior paint system to Herman Pacific Limited specifications.
- 1.3 The system incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall frame with a minimum 18 mm drained cavity.

Scope

- 2.1 The Hermac VertiLine Vertical Shiplap Weatherboard Cavity System incorporating stain finished weatherboards and paint finished DuraLarch and Ashin-Dura weatherboards has been appraised as an external wall cladding system for buildings within the following scope:
 - the scope limitations of NZBC Acceptable System E2/AS1, Paragraph 1.1; and,
 - constructed with timber framing complying with the NZBC; and,
 - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
 - situated in NZS 3604 Wind Zones up to, and including Extra High.
- 2.2 The Hermac VertiLine Vertical Shiplap Weatherboard Cavity System incorporating stain finished weatherboards has also been appraised for weathertightness and structural wind loading when used as an external wall cladding system for buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
 - constructed with timber framing subject to specific engineering design; and,
 - situated in specific design wind pressures up to a maximum design differential ultimate limit state [ULS] of 2.5 kPa.



- 2.3 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System incorporating paint finished cedar weatherboards has been appraised as an external wall cladding system for buildings within the following scope:
- the scope limitations of NZBC Acceptable System E2/AS1, Paragraph 1.1; and,
 - constructed with timber framing complying with the NZBC; and,
 - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
 - situated in NZS 3604 Wind Zones up to, and including Medium when dwangs or structural Vertibat cavity battens are at maximum 480 mm centres, and NZS 3604 Wind Zones up to, and including Very High when dwangs or structural Vertibat cavity battens are at maximum 400 mm centres.
- 2.4 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System must only be installed vertically on vertical, flat surfaces.
- 2.5 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. *[The Appraisal of the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone or wind pressure.]*

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:
- Clause B1 STRUCTURE:** Performance B1.3.1, B1.3.2 and B1.3.4 for the relevant physical conditions of B1.3.3 being self-weight, wind, impact and creep [i.e. B1.3.3 (a), (h), (j) and (q)]. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System meets these requirements. See Paragraphs 9.1 - 9.5.
- Clause B2 DURABILITY:** Performance B2.3.1 (b), 15 years and B2.3.2. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System meets these requirements. See Paragraphs 10.1 and 10.2.
- Clause E2 EXTERNAL MOISTURE:** Performance E2.3.2. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System meets this requirement. See Paragraphs 14.1 - 14.5.
- Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System meets this requirement and will not present a health hazard to people.

Technical Specification

- 4.1 System components and accessories supplied by Herman Pacific Limited are as follows:

Hermpac Shiplap Weatherboards

- Hermpac shiplap weatherboards are manufactured from Canadian Coastal Western Red Cedar. Selected weatherboards are also manufactured from DuraLarch and Ashin-Dura.
- The weatherboard lap and rebate profiles are in accordance with NZS 3617 and BRANZ Bulletin 411. The weatherboards are minimum 18.5 mm thick and are available in a range of widths and face profiles. They are supplied in random lengths. Lengths outside of the general specification may be available by special contract.
- Cedar and DuraLarch weatherboards are supplied unfinished for site finishing with stain or paint prior to installation, or prefinished using the flood coat application method by Machinecoat NZ Limited. Ashin-Dura weatherboards are treated to Hazard Class H3.1 and must be paint finished only. They are supplied primed, or prefinished by Machinecoat NZ Limited. Refer to the Appraisals listing on the BRANZ website for details of the Herman Pacific shiplap weatherboard profiles covered by this Appraisal. *[Note: This Appraisal is only valid when weatherboards with profiles as listed are supplied by Herman Pacific Limited.]*

Accessories

- **Herm pac external corner mouldings** – 40 x 40 mm, 42 x 42 mm and the Herm pac ‘Smart Corner’ series of profiled external corner moulds supplied in lengths 1.8 m and longer.
- **Herm pac internal corner mould** – 18.5 x 18.5 mm through to 39 x 39 mm and the Herm pac ‘Smart Corner’ series, supplied in 1.8 m and longer.
- **Herm pac cover boards** – 18 mm thick boards in widths of 69 and 90 mm. The cover boards are supplied in lengths 1.8 m and longer.
- **Herm pac eaves moulding** – 40 x 27 mm, 26 x 15 mm and 30 x 18 mm bevelled profile, supplied in 1.8 m and longer.

[Note: All timber accessories are manufactured from Canadian Coastal Western Red Cedar or Siberian Larch heartwood.]

- **Herm pac J Mould Flashing** – an extruded aluminium J-shaped flashing to cap the ends of the weatherboards at window and door jambs. The J Mould is available 20 and 29.5 mm wide with a 70 mm return and is supplied in 2.4 and 3.0 m lengths.
- **Herm pac aluminium cavity closure** – an extruded aluminium cavity closure available 20 and 40 mm wide. The cavity closure is supplied in 2.4 and 3.0 m lengths.
- **Vertibat cavity battens** – 45 x 20 mm [V1], 45 x 40 mm [V3], 45 x 45 mm [V5], 70 x 20 mm [V2], 70 x 40 mm [V4] or 70 x 45 mm [V6] Radiata pine batten treated to Hazard Class H3.1 or H3.2. The top and bottom edges are bevelled with a slope. The front and back face of the batten is grooved with 20 mm wide x 5 mm deep rebates at 100 mm centres. The grooves are offset on each face.
- **Vertibat cavity batten fixings** [for 40 or 45 mm thick battens when fixed to studs only] – 12 gauge x 65 mm long Grade 304 or 316 stainless steel screws [for 40 mm battens] and 12 gauge x 75 mm long Grade 304 or 316 stainless steel screws [for 45 mm battens].
- **Herm pac stain finished shiplap weatherboard fixings** [for Vertibat and Cavibat battens fixed to dwangs] – silicon bronze, Grade 304 or Grade 316 stainless steel annular grooved Herm pac Crown Head, Rose Head or Flat Head nails. The nail shank must be minimum 3.15 mm diameter and the length must allow minimum 30 mm penetration of the wall frame.
- **Herm pac stain finished shiplap weatherboard fixings** [for 40 or 45 mm Vertibat battens fixed to studs only] – silicon bronze, Grade 304 or Grade 316 stainless steel annular grooved Herm pac Crown Head, Rose Head or Flat Head nails. The nail shank must be minimum 2.8 mm diameter and the length must allow minimum 30 mm penetration of the Vertibat cavity batten.
- **Herm pac paint finished shiplap weatherboard fixings** [for Vertibat and Cavibat battens fixed to dwangs] – Grade 316 stainless steel annular grooved jolt head nails. The nail shank must be minimum 3.15 mm diameter and the length must allow minimum 30 mm penetration of the wall frame.
- **Herm pac paint finished shiplap weatherboard fixings** [for 40 or 45 mm Vertibat battens fixed to studs only] – Grade 316 stainless steel annular grooved jolt head nails. The nail shank must be minimum 3.15 mm diameter and the length must allow minimum 30 mm penetration of the Vertibat cavity batten.
- **Herm pac clinch nails** – 27 x 2.0, 40 x 2.0 or 50 x 2.0 mm Grade 316 stainless steel annular grooved nails with an off-set flat head.
- **Herm pac cover board fixings** – 50 x 2.8 mm silicon bronze, Grade 304 or Grade 316 stainless steel annular grooved Herm pac Crown Head, Rose Head or Flat Head nails.

4.2 Accessories used with the Herm pac VertiLine Vertical Shiplap Weatherboard Cavity System which are supplied by the building contractor are:

- **Flexible wall underlay** – building paper complying with NZBC Acceptable Solution E2/AS1, Table 23, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall underlays.
- **Flexible wall underlay support** – polypropylene strap, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the flexible wall underlay in place and preventing bulging of the bulk insulation into the drainage cavity. *[Note: mesh and wire galvanising must comply with AS/NZS 4534.]*

- **Rigid wall underlay** - Plywood or fibre cement sheet complying with NZBC Acceptable Solution E2/AS1, Table 23, or rigid sheathing covered by a valid BRANZ Appraisal for use as rigid air barrier systems.
- **Flexible sill and jamb flashing tape** - flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
- **Window and door trim cavity air seal** - air seals complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6, or self-expanding, moisture cure polyurethane foam air seals covered by a valid BRANZ Appraisal suitable for use around window, door and other wall penetration openings.
- **Cavibat cavity battens** - manufactured from extruded polypropylene. The battens are cut after extruding to a finished size of approximately 45 mm wide by 18 mm thick. The battens are coloured green and are supplied in 1200 mm long lengths. Cavibat cavity battens are covered by BRANZ Appraisal No. 524 [2012].
- **Cavibat fixings** - 40 x 2.5 mm flat head hot-dip galvanised nails or stainless steel finishing brads used to temporarily fix the battens in place until the cladding is installed.
- **Vertibat cavity batten fixings** [20 mm thick batten] - 40 x 2.5 mm flat head hot-dipped galvanised nails or 50 x 2.87 mm hot-dipped galvanised gun nails to temporarily fix the battens in place prior to installation of the cladding.
- **Vertibat cavity batten fixings** [40 or 45 mm thick battens when fixed to dwangs] - 60 x 2.8 mm flat head hot-dipped galvanised nails or 60 x 2.87 mm hot-dipped galvanised gun nails to temporarily fix the battens in place prior to installation of the cladding.
- **Cavity vent strip** - uPVC, aluminium or stainless steel, punched with 3-5 mm diameter holes or slots complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3.
- **Flashings** - including external corner flashing, internal corner flashing, horizontal inter-storey joint flashing, balustrade and parapet saddle flashing and balustrade and parapet cap flashings. Refer to NZS 3604, Section 4 and NZBC Acceptable Solution E2/AS1, Table 20 and Table 21 for durability and material compatibility requirements.
- **Aluminium joinery head flashings** - as supplied by the joinery manufacturer or contractor.
- **Flexible sealant** - sealant complying with NZBC Acceptable Solution E2/AS1, or sealant covered by a valid BRANZ Appraisal for use as a weather sealing sealant for exterior use.

Finishing System Specification - Stain Finish

- 4.3 Prior to the installation of stain finished weatherboards, the back, face, ends and edges of the Hermpac shiplap weatherboards not supplied prefinished must be sealed with an exterior grade oil-based penetrating stain. At least two coats of an exterior grade quality oil-based penetrating stain must be used over the front face of the Hermpac shiplap weatherboards to protect the weatherboards and give the desired finish colour to the exterior walls. The stain must be recommended for use as a wall cladding stain by the manufacturer and must be applied in accordance with the manufacturer's instructions. Proprietary stain systems have not been assessed, and are therefore outside the scope of this Appraisal. *[Note: Herman Pacific Limited recommends the use of oil based stains manufactured by Resene and WoodX.]*

Finishing System Specification - Paint Finish

- 4.4 Prior to the installation of paint finished weatherboards that are supplied unprimed, the back, face, ends and edges of the Hermpac shiplap weatherboards must be primed in accordance with the Technical Literature for the relevant timber type. All exposed edges, including top edges at sills and all bottom edges of Hermpac shiplap weatherboards and accessories not supplied prefinished, must be finished with at least two coats of an exterior grade acrylic latex paint complying with any of Parts 7, 8, 9 or 10 of AS 3730 to protect the weatherboards and give the desired finish colour to the exterior walls. The paint must be recommended for use as a wall cladding paint for the selected timber by the manufacturer and must be applied in accordance with the manufacturer's instructions. Proprietary paint systems have not been assessed, and are therefore outside the scope of this Appraisal. *[Note: For Hermpac shiplap weatherboards, Herman Pacific Limited recommends using paint with a colour that has a Light Reflectance Value (LRV) of greater than or equal to 40%.]*

Handling and Storage

- 5.1 Handling and storage of all materials supplied by Herman Pacific Limited or the building contractor, whether on site or off-site, is under the control of the building contractor. Hermpac vertical shiplap weatherboards must be stacked flat and true, clear of the ground by a minimum of 150 mm and supported on dry and clean timber bearers at maximum 900 mm centres. They must be kept dry at all times either by storing within an enclosed building or when stored externally an additional secondary cover to the plastic wrapping is required. Care must be taken to avoid damage to edges, ends and the weatherboard surfaces.
- 5.2 Accessories must be stored so they are kept clean, dry and undamaged. All accessories must be used within the maximum storage period recommended by the manufacturer.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Framing

Timber Treatment

- 7.1 Timber wall framing behind the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System must be treated as required by NZBC Acceptable Solution B2/AS1.

Timber Framing

- 7.2 Timber framing must comply with NZS 3604 for buildings or parts of buildings within the scope limitations of NZS 3604. Buildings or parts of buildings outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and AS/NZS 1170. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604. In all cases studs must be at maximum 600 mm centres. Where Vertibat or Cavibat cavity battens are fixed to dwangs, the dwangs must be fitted flush between the studs at maximum 480 mm centres. Where 40 or 45 mm thick Vertibat cavity battens are fixed to studs only, dwangs must be fitted flush between the studs at maximum 800 mm centres.
- 7.3 Additional framing may be required at soffits, internal and external corners and window and door openings for the support and fixing of cavity battens and the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System.
- 7.4 Timber wall framing behind where weatherboards are joined over a cavity batten must be nominal 50 mm thickness [i.e. 45 mm minimum finished thickness].
- 7.5 Timber wall framing must have a maximum moisture content of 24% at the time of the cladding application. *[Note: If Hermpac shiplap weatherboards are fixed to framing with a moisture content of greater than 24% problems may occur at a later date due to excessive timber shrinkage.]*

General

- 8.1 When the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is used for specifically designed buildings up to 2.5 kPa design differential ULS wind pressure, only the weathertightness aspects of the cladding and maximum framing centres are within the scope of this Appraisal. All other aspects of the building need to be specifically designed and are outside the scope of this Appraisal.
- 8.2 Punchings in the cavity vent strip must provide a minimum ventilation opening area of 1000 mm² per lineal metre of wall in accordance with the requirements of NZBC Acceptable System E2/AS1, Paragraph 9.1.8.3 [b]. *[Note: Vertibat cavity battens can be used to provide vermin proofing at the bottom of the cavity. Cavibat cavity battens do not provide vermin proofing to the bottom of the drained cavity and an additional cavity vent strip must be used.]*

- 8.3 The ground clearance to finished floor levels as set out in NZS 3604 must be adhered to at all times. At ground level, paved surfaces, such as footpaths, must be kept clear of the bottom edge of the cladding system by a minimum of 100 mm, and unpaved surfaces by 175 mm in accordance with the requirements of NZBC Acceptable System E2/AS1, Table 18.
- 8.4 At balcony, deck or roof/wall junctions, the bottom edge of the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System must be kept above the top surface of any adjacent roof flashing by a minimum of 35 mm in accordance with NZBC Acceptable System E2/AS1, Paragraph 9.1.3.
- 8.5 All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped for wind zones up to and including Very High, and rigid underlays for buildings in the Extra High wind zone and specifically designed buildings up to 2.5 kPa design differential ULS wind pressure. Unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid underlays are used, the weatherboard fixing lengths must be increased by a minimum of the thickness of the underlay.
- 8.6 Where the system abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the NZBC. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

Inter-storey Junctions

- 8.7 Inter-storey drained joints must be constructed in accordance with the Technical Literature. Inter-storey drained joints must be provided to limit continuous cavities to the lesser of 2-storeys or 7 metres in height, in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.4 [b].

Structure

Mass

- 9.1 The mass of the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is less than 30 kg/m². The system is therefore considered a lightweight cladding in terms of NZS 3604.

Impact Resistance

- 9.2 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System has good resistance to impact loads likely to be encountered in normal residential use. The likelihood of impact damage to the system when used in light commercial situations should be considered at the design stage, and appropriate protection such as the installation of bollards and barriers should be considered for vulnerable areas.

Wind Zones

- 9.3 The VertiLine Cavity System incorporating stain finished weatherboards is suitable for use in all Wind Zones of NZS 3604, up to and including Extra High where buildings are designed to meet the requirements of NZBC Acceptable System E2/AS1, Paragraph 1.1, or up to 2.5 kPa design differential ULS wind pressure where buildings are specifically designed.
- 9.4 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System incorporating paint finished DuraLarch and Ashin-Dura weatherboards is suitable for use in all Wind Zones of NZS 3604, up to and including Extra High where buildings are designed to meet the requirements of NZBC Acceptable System E2/AS1, Paragraph 1.1.
- 9.5 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System incorporating paint finished cedar weatherboards is suitable for use in NZS 3604 Wind Zones up to, and including Medium when dwangs or structural Vertibat cavity battens are at maximum 480 mm centres, and NZS 3604 Wind Zones up to, and including Very High when dwangs or structural Vertibat cavity battens are at maximum 400 mm centres.

Durability

Serviceable Life

- 10.1 Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System installations are expected to have a serviceable life of at least 20 years provided the system is maintained in accordance with this Appraisal and the Hermpac shiplap weatherboards are continuously protected by a stain or paint finish. *[Note: For stain finished weatherboards, this opinion only covers serviceability with regards to structural and weathertightness performance. It does not cover appearance, which may deteriorate significantly, especially when proper and regular maintenance is not carried out.]*
- 10.2 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres and contamination from agricultural chemicals or fertilisers can convert mildly corrosive atmosphere into aggressive environments for fasteners. The fixing of weatherboards in areas subject to microclimatic conditions requires specific design in accordance with NZS 3604, Paragraph 4.2.4, and is outside the scope of this Appraisal.

Maintenance

- 11.1 Regular maintenance is essential to ensure the performance requirements of the NZBC are continually met and to ensure the maximum serviceability of the system.
- 11.2 Regular cleaning [at least annually] of the stain or paint coating is required to remove grime, dirt and organic growth and to maximise the life and appearance of the coating. Grime may be removed by brushing with a soft brush, warm water and detergent.
- 11.3 Recoating of the stain finish will be necessary throughout the life of the cladding system. Restaining must be carried out every 2-3 years or in accordance with the stain manufacturer's instructions. Restaining will be required more frequently on exposed northern and western facing walls. When restaining, care must be taken to ensure bottom edges and shiplap edges are well covered and penetrated with the stain.
- 11.4 Recoating of the paint finish will be necessary throughout the life of the cladding system. Repainting must be carried out every 7-10 years or in accordance with the paint manufacturer's instructions. When repainting, care must be taken to ensure bottom edges and shiplap edges are well covered with the paint.
- 11.5 Annual inspections must be made to ensure that all aspects of the cladding system, including flashings and joints remain in a weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress must be repaired immediately. Sealant, stain or paint coatings, flashings or the weatherboards must be repaired in accordance with the relevant manufacturer's instructions.
- 11.6 Minimum ground clearances as set out in this Appraisal and the Technical Literature must be maintained at all times during the life of the system. *[Note: Failure to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System.]*

Control of External Fire Spread

- 12.1 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is suitable for use on buildings with an SH Risk Group classification, a building height of ≤ 10 m and at a distance of ≥ 1.0 m to the relevant boundary. Refer to NZBC Acceptable Solutions C/AS2 - C/AS6, Paragraph 5.8.1 for the specific exterior surface finishes requirements for other building Risk Groups. *[Note: The scope of this Appraisal limits building heights to 10 m in accordance with the limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 (a). The building heights referenced in Paragraph 12.1 above are as defined in the Definitions Sections of NZBC Clauses C1 - C6 Protection from Fire.]*

Prevention of Fire Occurring

- 13.1 Separation or protection must be provided to the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 - C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 14.1 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System, when installed in accordance with this Appraisal and the Technical Literature will prevent the penetration of moisture that could cause undue dampness or damage to building elements.
- 14.2 The cavity must be sealed off from the roof and sub-floor space to meet code compliance with NZBC Clause E2.3.5.
- 14.3 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet code compliance with Clause E2.3.6.
- 14.4 The details given in the Technical Literature for weather sealing are based on the principle of having a first and second line of defence against moisture entry for all joints, penetrations and junctions. The ingress of moisture must be excluded by detailing joinery and wall interfaces as shown in the Technical Literature. Weathertightness details that are developed by the designer are outside the scope of this Appraisal and are the responsibility of the designer for compliance with the NZBC.
- 14.5 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System, where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirements for junctions, penetrations, etc to remain weather resistant.

Internal Moisture

- 15.1 Buildings must be constructed with an adequate combination of thermal resistance and ventilation, and space temperature must be provided to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate.

Water Vapour

- 15.2 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is not a barrier to the passage of water vapour, and when installed in accordance with this Appraisal will not create a risk of moisture damage resulting from condensation.

Installation Information

Installation Skill Level Requirements

- 16.1 Installation must always be carried out in accordance with the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant Licence Class.

Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System Installation

Wall Underlay and Flexible Sill and Jamb Tape Installation

- 17.1 The selected wall underlay and flexible sill and jamb tape system must be installed by the building contractor in accordance with the underlay and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System. Flexible wall underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75 mm minimum at horizontal joints and 150 mm minimum over studs at vertical joints. Generic rigid wall underlay materials must be installed in accordance with NZBC Acceptable Solution E2/AS1 and be overlaid with a flexible wall underlay. Proprietary systems must be installed in accordance with the manufacturer's instructions. Particular attention must be paid to the installation of the wall underlay and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed wall framing in the opening is protected.

Vertibat Cavity Batten Installation [to Dwangs]

- 17.2 Vertibat cavity battens must be installed horizontally over the wall underlay to the wall framing [dwangs] at maximum 480 mm centres. [Refer to Paragraph 9.5 for the maximum dwang spacings for paint finished cedar weatherboards.] The battens must be installed with the top edge sloping away from the wall underlay towards the back of the weatherboards. The cavity battens must be fixed in place with 40 x 2.5 mm flat head hot-dipped galvanised nails or 50 x 2.87 mm hot-dipped galvanised gun nails [for 20 mm thick battens], or 60 x 2.8 mm flat head hot-dipped galvanised nails or 60 x 2.87 mm hot-dipped galvanised gun nails [for 40 mm thick battens] to temporarily fix the battens in place prior to installation of the cladding.

Vertibat Cavity Batten Installation [to Studs]

- 17.3 40 or 45 mm thick Vertibat cavity battens must be installed horizontally over the wall underlay to the wall framing [studs] at maximum 480 mm centres. [Refer to Paragraph 9.5 for the maximum Vertibat cavity batten spacings for paint finished cedar weatherboards.] The battens must be installed with the top edge sloping away from the wall underlay towards the back of the weatherboards. The cavity battens must be fixed in place with one 12 gauge x 65 mm long Grade 304 or 316 stainless steel screw at each stud crossing [maximum 600 mm centres] for 40 mm thick battens or one 12 gauge x 75 mm long grade 304 or 316 stainless steel screw at each stud crossing for 45 mm thick battens.

Cavibat Cavity Batten Installation

- 17.4 The Cavibat cavity battens must be installed horizontally over the wall underlay to the wall framing [dwangs] at maximum 480 mm centres. [Refer to Paragraph 9.5 for the maximum Vertibat cavity batten spacings for paint finished cedar weatherboards.] The cavity battens must be fixed in place with 40 x 2.5 mm hot-dip galvanised flat head nails or galvanised or stainless steel finishing brads at 400 mm centres. Refer to BRANZ Appraisal Number 524 [2012] for further information.

Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System Installation

- 17.5 Hermpac shiplap weatherboards may be cut on site by power or hand saw. Holes and cut-outs may be formed by using a hole saw.
- 17.6 Hermpac shiplap weatherboards must be dry prior to installation.
- 17.7 Before stain finished Hermpac shiplap weatherboards are installed, the back, face and edges must be sealed with an exterior grade oil-based penetrating stain. During installation, cut ends must be sealed with an exterior grade oil-based penetrating stain.
- 17.8 Before paint finished Hermpac shiplap weatherboards are installed, the back, face and edges must be primed with an exterior grade primer. During the installation of paint finished Hermpac shiplap weatherboards, cut ends must be sealed with two coats of an exterior grade alkyd timber primer.
- 17.9 Before the weatherboards are installed, the corner detail must be prepared to suit the selected option, e.g. external box corner, external corner moulding etc. The necessary flashings must be installed before commencing weatherboard fixing and the cavity closure must be installed continuously around the bottom of the cavity.
- 17.10 Hermpac shiplap weatherboards must be installed starting at the corner of the wall section being clad. The first weatherboard must be installed plumb to assist with the installation of subsequent weatherboards. The weatherboards must overhang the bottom plate by a minimum of 50 mm. The weatherboards should be installed with the lap facing away from the prevailing winds.
- 17.11 Immediately prior to installing the weatherboards over the internal and external corner flashings, a continuous bead of sealant must be applied to the face of the flashing along the fixing line.
- 17.12 Hermpac shiplap weatherboards must be overlapped a minimum of 25 mm with an expansion gap of 2 mm at the overlap. In NZS 3604 Wind Zones up to and including Very High, it is recommended that the top of the weatherboard lap is restrained using the Hermpac clinch nail at every cavity batten. Hermpac clinch nails must be used to restrain the top of the weatherboard lap in the Extra High Wind Zone and specific design wind pressures up to a maximum design differential ultimate limit state [ULS] of 2.5 kPa.

- 17.13 Hermpac shiplap weatherboards must be pre-drilled with a hole slightly smaller than that of the nail. Fix each weatherboard with one nail per board at every cavity batten. Fixing of stain finished weatherboards must be carried out using silicon bronze or Grade 304 or 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails. Fixing of paint finished weatherboards must be carried out using Grade 316 stainless steel annular grooved jolt head nails. The nail shank must be minimum 3.15 mm diameter (2.8 mm diameter for stain finished weatherboards fixed to 40 or 45 mm Vertibat battens fixed to studs only) and the length must allow minimum 30 mm penetration of the wall frame (for Vertibat and Cavibat battens fixed to dwangs) and minimum 30 mm penetration of the batten (for 40 or 45 mm thick Vertibat battens fixed to studs only). The fixing must be located 30-35 mm in from the weatherboard lap and a minimum of 32 mm from the end of the board. and Crown Head, Rose Head or Flat Head nails must finish flush onto the surface of the weatherboard, not into or below the surface. The nail must be installed with a slight upslope to reduce capillary draw. Jolt head nails must be punched a maximum of 2 mm beneath the surface of the board.
- 17.14 Fix weatherboards in full lengths where possible. Where joints are unavoidable, scarf the weatherboard at 30° over a cavity batten and fix with one fixing through the overlapping board.

Aluminium Joinery Installation

- 17.15 Aluminium joinery and associated head flashings must be installed by the building contractor in accordance with the Technical Literature. A 7.5 - 10 mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed after the joinery has been secured in place.

Finishing

- 17.16 The stain manufacturer's instructions must be followed at all times for application of the stain finish.
- 17.17 To prevent swelling of the weatherboard around punched fixings, the fixing must be filled immediately, or alternatively the weatherboard and the head of the fixing must be primed with a premium alkyd timber primer.
- 17.18 The paint coating manufacturer's instructions must be followed at all times for the application of the paint finish. Hermpac shiplap weatherboards must be painted as soon as practicable following fixing and must be clean and dry before commencing. If the Hermpac shiplap weatherboards are exposed to the weather for more than 2 months they must be reprimed with one coat of primer prior to the application of the finishing coats. Allow the recommended drying time between coats and follow the temperature limitations for application.

Inspection

- 17.19 The Technical Literature must be referred to during the inspection of VertiLine Cavity System installations.

Health and Safety

- 18.1 Cutting of Hermpac shiplap weatherboards must be carried out in well ventilated areas and dust masks, eye and hearing protection must be worn.
- 18.2 Safe use and handling procedures for the components that make up the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System are provided in the relevant manufacturer's Technical Literature.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

19.1 The following testing has been completed by BRANZ:

- BRANZ expert opinion on NZBC E2 code compliance for the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is based on testing and evaluation of all details within the scope and as stated within this Appraisal. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System was tested to NZBC E2/VM1. The testing assessed the performance of the Vertibat and Cavibat cavity battens, foundation detail, window head, jamb and sill details, meter box head, jamb and sill details, vertical joints, internal and external corners and balustrade to wall junction. In addition to the weathertightness test, the details contained within the Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the system will meet the performance levels of NZBC Acceptable Solution E2/AS1 for cavity-based weatherboard claddings.
- Fastener pull through testing. BRANZ determined design wind suction pressures, and by comparing these pressures with AS/NZS 1170 pressure coefficients, the fixing requirements were determined for timber framed walls.

Other Investigations

- 20.1 Structural and durability opinions have been provided by BRANZ technical experts.
- 20.2 The performance of timber weatherboard wall cladding products in New Zealand has been considered, including the structural and durability performance, and non-hazardous nature.
- 20.3 Site visits have been carried out by BRANZ to assess the practicability of installation.
- 20.4 The Technical Literature for the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System has been examined by BRANZ and found to be satisfactory.

Quality

- 21.1 The manufacture of Hermpac shiplap weatherboards has been examined by BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 21.2 The quality of materials, components and accessories supplied by Herman Pacific Limited is the responsibility of Herman Pacific Limited.
- 21.3 Quality of installation on site of components and accessories supplied by Herman Pacific Limited and the building contractor is the responsibility of the installer.
- 21.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and joinery, wall underlays, flashing tapes, air seals, cavity battens and the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System in accordance with the instructions of Herman Pacific Limited.
- 21.5 Building owners are responsible for the maintenance of the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System in accordance with the instructions of Herman Pacific Limited.

Sources of Information

- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 4534:2006 Zinc and zinc/aluminium-alloy coatings on steel wire.
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3603:1993 Timber Structures Standard.
- NZS 3604:2011 Timber-framed buildings.
- NZS 3617:1979 Specification for profiles of weatherboards, fascia boards and flooring.
- NZS 4211:2008 Specification for performance of windows.
- BRANZ Bulletin Number 411, April 2001, Recommended Timber Cladding Profiles.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Business, Innovation and Employment, Third Edition July 2005 [Amendment 7, 01 January 2017].
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 13 October 2017.

- This Appraisal has been amended to update the system name, to include Dura-Larch and Ashin-Dura as alternative timber types for selected Hermpac Shiplap weatherboards, and to include paint as an alternative finish.
- This Appraisal has been amended to update the system name [07 December 2017].
- This Appraisal has been amended to update the Appraisal Holders details [18 December 2017].



In the opinion of BRANZ, the **Hermipac Vertiline Vertical Shiplap Weatherboard Cavity System** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Herman Pacific Limited**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Herman Pacific Limited:**
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Herman Pacific Limited**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Herman Pacific Limited** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

16 September 2014

VertiLine Vertical Shiplap Weatherboard **Cavity System**

Installation Specifications

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VertiLine Vertical Shiplap Weatherboard Cavity System

Installation Specifications

1.0 General Information

1.1 Introduction

The VertiLine Vertical Shiplap Cavity System is a cavity-based external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.

The cladding system consists of vertically fixed Hermpac shiplap timber weatherboards installed over ventilated battens, flashings and accessories and is finished with a premium penetrating oil stain or paint finish to Hermpac specifications.

The system incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall frame with an 18-45mm minimum drained cavity.

1.2 BRANZ Appraisal

The VertiLine Vertical Shiplap Cavity System has been appraised by BRANZ. Refer to Appraisal No. 650 (2014).

1.3 CODEMARK Certification

The VertiLine Vertical Shiplap Cavity System has the Codemark Certificate of Conformity. Refer Certificate No. GM-CM30036.

1.4 Hermpac Vertical Shiplap Weatherboards

Hermpac vertical shiplap weatherboards are manufactured from Canadian Coastal Western Red Cedar. Selected vertical shiplap weatherboards are manufactured from DuraLarch (oil/stain or paint finish) and Ashin-Dura (paint finish only).

The weatherboard lap and rebate profiles are in accordance with NZS 3617 and BRANZ Bulletin 411. The weatherboards are minimum 18.5mm thick and are available in a range of widths and face profiles. They are supplied as a random length supply. Select lengths are outside of the general specification and are available by special contract.

1.5 Cavity Battens

The VertiLine Vertical Shiplap Cavity System uses 20, 40 or 45mm thick Vertibat timber cavity battens, or 18mm Cavibat polypropylene cavity battens to separate the weatherboards from the wall frame and form the cavity.

The 20, 40 and 45mm Vertibat batten and 18mm Cavibat batten are installed horizontally over nogs/dwangs to provide support for the weatherboards at fixings points. The 40 and 45mm thick Vertibat batten can be structurally fixed, installed horizontally across the studs where the weatherboards are then fixed into the batten only.

Vertibat cavity battens are 45 x 20mm (V1), 45 x 40mm (V3), 45 x 45mm (V5), 70 x 20mm (V2), 70 x 40mm (V4), 70 x 45mm (V6) thick Radiata pine treated to minimum Hazard Class H3.1. The top and bottom edges are bevelled with a slope. The front and back face of the batten is grooved with 20mm wide x 5mm deep rebates at 95mm centres. The grooves are offset on each face.

Refer to www.cavibat.co.nz and BRANZ Appraisal No. 524 (2012) for full specifications for the Cavibat cavity battens.

1.6 Accessories

Accessories supplied by Hermpac for use with the VertiLine Vertical Shiplap Cavity System include:

- Hermpac external corner mouldings – HP40 (40 x 40mm) and HP42 (42 x 42mm) and the Hermpac ‘Smart Corner’ series, profiled external corner moulds.
- Hermpac internal corner mould – HP41 (18.5 x 18.5mm), through to HP110 (39 x 39mm) profiles and the Hermpac ‘Smart Corner’ series.
- Hermpac cover battens – HP201 (69 x 18mm) and HP202 (90 x 18mm).
- Hermpac cover batten fixings – 50 x 2.8mm silicon bronze, Grade 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails for

stain finish or Grade 316 stainless steel annular grooved Jolt Head nails for paint finish.

- Hermpac eaves moulding – HP32 (40 x 27mm), HP33 (26 x 15mm) and HP7 (30 x 18mm) bevelled profile.
- Screw fixings for 40-45mm thick Vertibat cavity batten fixed to studs only – 12 gauge x 65-75mm long Grade 304 stainless steel screws. Minimum 25mm penetration to frame required.
- Nail fixings for weatherboards – selection options:
- For oil/stain finish for 18-20mm Cavibat or Vertibat battens fixed to nogs/dwangs) – silicon bronze or Grade 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails. Nail shank minimum 3.25mm diameter and length to allow 30mm minimum penetration of the wall frame.
- For CedarOne or paint finish for 18-20mm Cavibat or Vertibat battens fixed to nogs/dwangs – Grade 316 stainless steel annular grooved Hermpac Jolt Head nails. Nail shank must be minimum 3.25mm diameter and the length to allow 35mm minimum penetration of the wall frame.
- For oil/stain finish for 40-45mm Vertibat battens fixed to nogs/dwangs only – silicon bronze or Grade 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails. Nail shank must be minimum 3.25mm diameter and the length to allow 30mm minimum penetration of the wall frame
- For CedarOne or paint finish for 40-45mm Vertibat battens fixed to nogs/dwangs only – Grade 316 stainless steel annular grooved Hermpac Jolt Head nails. Nail shank must be minimum 3.25mm diameter and the length must allow 35mm minimum penetration of the wall frame
- For oil/stain for structurally fixed 40-45mm Vertibat battens fixed to studs only – ref: HC-SHIP40-410A – silicon bronze or Grade 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails. Nail shank must be minimum 2.8mm diameter and the length must allow 30mm minimum penetration of the Vertibat V3-V6 cavity batten.
- For CedarOne or paint for structurally fixed 40 or 45mm Vertibat battens fixed to studs only – ref: HC-SHIP40-411A – Grade 316 stainless steel annular grooved Hermpac Jolt Head nails. Nail shank must be minimum 3.25mm diameter and the length must allow 35mm minimum penetration of the Vertibat V3-V6 cavity batten.
- Hermpac clinch nails – Grade 316 stainless steel annular grooved nails with an off-set flat head.
- Hermpac aluminium flashings – widths to suit specified corners – 2.4m or 3.0m lengths.
- Hermpac J Mould Flashing – for window jambs – 20mm or 29.5mm, 2.4m or 3.0m lengths.
- Hermpac aluminium Cavity Closure – 20mm or 40mm, 2.4m or 3.0m lengths.

1.7 Handling and Storage

Hermpac vertical shiplap weatherboards must be stacked flat and true, clear of the ground by a minimum of 150mm and supported on dry and clean timber bearers at maximum 900mm centres.

The weatherboards must be kept dry at all times either by storing within an enclosed building or when stored externally an additional secondary cover to the plastic wrapping is required. Care must be taken to avoid damage to edges, ends and the weatherboard surfaces.

2.0 Design Information

2.1 Design Responsibility

The Specifier for the project must ensure that the details in this literature are suitable for the intended application and

VertiLine Vertical Shiplap Weatherboard Cavity System

Installation Specifications

that additional detailing is provided for specific design or any areas that fall outside the scope and specifications of this literature.

2.2 Scope

The use of the VertiLine Vertical Shiplap Cavity System as an external vertically fixed wall cladding system for buildings within the following scope:

Stain finished weatherboards with crown/rose/flat head nails. Paint finished DuraLarch and Ashin-Dura weatherboards fixed with annular grooved jolt/crown/rose/flat head nails. Paint finished Western Red Cedar weatherboards fixed with annular grooved crown/rose/flat head nails:

- the scope limitations of NZBC Acceptable System E2/AS1, Paragraph 1.1; and,
- constructed with timber framing complying with the NZBC; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- situated in NZS 3604 Wind Zones up to, and including 'Extra High'.

Any stain or paint finished weatherboards if fixed with annular grooved flat/crown/rose head nails, only for weathertightness and structural wind loading for buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- constructed with timber framing complying with the NZBC; and,
- situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 2.5 kPa.

CedarOne or other paint finished Western Red Cedar weatherboards if fixed with annular grooved jolt head nails:

- the scope limitations of NZBC Acceptable System E2/AS1, Paragraph 1.1; and,
- constructed with timber framing complying with the NZBC; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- situated in NZS 3604 Wind Zones up to, and including Medium when nogs/dwangs or structural Vertibat cavity battens are at maximum 480 mm centres, and NZS 3604 Wind Zones up to, and including Very High when nogs/dwangs or structural Vertibat cavity battens are at maximum 400 mm centres.

For applications which are outside the scope of this literature and details which are not in this literature the specifier must ensure that the design meets the relevant performance requirements of the NZBC.

Hermipac recommends that professional design advice is sought in these circumstances.

2.3 Building Regulations

The VertiLine Vertical Shiplap Cavity System if designed, used and installed in accordance with the statements and conditions of this literature and the supporting BRANZ Appraisal, will meet the following provisions of the New Zealand Building Code:

- Clause B1 Structure
- Clause B2 Durability
- Clause E2 External Moisture
- Clause F2 Hazardous Building Materials

2.4 Ground Clearances

The finished floor level must have a minimum clearance to paved or unprotected ground as required by NZS 3604:2011.

Hermipac weatherboards must overhang the bottom plate

on a concrete slab by a minimum of 50mm as required by NZBC Acceptable Solution E2/AS1, Table 18.

The bottom edge of the VertiLine Vertical Shiplap Cavity System must finish a minimum of 100mm above paved surfaces or 175mm above unprotected ground.

At deck or low pitch roof/wall junctions, the bottom edge of the Hermipac weatherboards must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing by a minimum of 35mm.

2.5 Structure & Framing

Timber wall framing behind the VertiLine Vertical Shiplap Cavity System must be treated as required by NZBC Acceptable Solution B2/AS1.

Timber framing must comply with NZS 3604 for buildings or parts of buildings within the scope limitations of NZS 3604. Buildings or parts of buildings outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and AS/NZS 1170. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604. Use of timber framing must be in accordance with framing manufacturer's specifications.

In all cases studs must be at maximum 600mm centres. Where Vertibat or Cavibat cavity battens are fixed to nogs/dwangs, the nogs/dwangs must be fitted flush between the studs at maximum 480mm centres. Where 40 or 45mm thick Vertibat cavity battens are fixed to studs only, nogs/dwangs must be fitted flush between the studs at maximum 800mm centres.

Note: For CedarOne or painted cedar weatherboards fixed with annular grooved Grade 316 stainless steel Jolt Head nails, nogs/dwangs or structurally fixed Vertibat cavity battens must be at a maximum 480mm centres for NZS 3604 Wind Zones up to, and including Medium and at a maximum 400mm centres for NZS 3604 Wind Zones High and Very High.

2.6 Framing 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 3604:2011.

2.7 Cavity Closure Strip

The VertiLine Vertical Shiplap Cavity System must incorporate a cavity closure strip to close off the bottom of the cavity and provide resistance against the penetration of vermin. The cavity closure strip must be in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3. The cavity closure strip must be manufactured from uPVC, aluminium or stainless steel, and be punched with 3-5mm holes or slots which provide a minimum ventilation opening area of 1000mm² per lineal metre of wall.

2.8 Wall Underlay

The VertiLine Vertical Shiplap Cavity System must be installed over wall underlay complying with NZBC Acceptable Solution E2/AS1, Table 23, or wall underlays covered by a valid BRANZ Appraisal.

All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped for wind zones up to and including 'Very High', and rigid underlays for buildings in the 'Extra High' wind zone and specifically designed buildings up to 2.5 kPa design differential ULS wind pressure.

Unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid underlays are used, the weatherboard fixing lengths must be increased by a minimum of the thickness of the underlay.

2.9 Inter-storey Junctions

Inter-storey drained joints must be constructed in

VertiLine Vertical Shiplap Weatherboard Cavity System

Installation Specifications

accordance with the Technical Literature. Inter-storey drained joints must be provided to limit continuous cavities to the lesser of 2-storeys or 7 metres in height, in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.4(b).

3.10 Hermpac Vertical Shiplap Weatherboards

Hermpac vertical shiplap weatherboards shall be fixed with an approximate 2mm vertical expansion gap at the overlap between boards. Hermpac vertical shiplap profiles are all manufactured in accordance with BRANZ Bulletin 411 (Refer to E2/AS1 page 121, Paragraph 9.4.1.1) and have a 27mm rebate for a 25mm lap.

The weatherboards shall be pre-coated with the selected coating (prior to site delivery and installation) by Hermpac associate Machinecoat (NZ) Ltd, by the flood coat inundation method or in-line spray coat system (subject to coating type selected).

Pre-finished vertical shiplap weatherboards shall be over-coated and maintained in accordance with the coating manufacturer's specification. All cut ends and/or uncoated surfaces shall be double coated during installation to protect against the penetration of moisture, post installation.

The weatherboards shall be fixed to nogs/dwangs (or structurally fixed to 40-45mm Vertibat cavity battens) at 400-480mm maximum centres using Hermpac shiplap weatherboard fixings (refer to Section 1.5 of this specification).

External corners shall be weatherproofed by the use of corrosion resistant corner flashings and corner facings, e.g. Hermpac proprietary profiles HP40, HP42 the Hermpac 'Smart Corner' series or cover battens HP201 and HP202.

Internal corners shall be weatherproofed by the use of corrosion resistant internal corner flashings along with internal mouldings, e.g. Hermpac profiles HP41 and HP110 or the Hermpac 'Smart Corner' series.

3.0 Installation Information

3.1 System Installation

This section of the literature should be read in conjunction with the installation details.

The selected wall underlay and flexible sill and jamb tape system must be installed by the building contractor in accordance with the underlay and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the VertiLine Vertical Shiplap Cavity System.

Flexible building underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75mm minimum at horizontal joints and 150mm minimum over studs at vertical joints.

Generic rigid sheathing materials must be installed in accordance with NZBC Acceptable Solution E2/AS1 and be overlaid with a flexible wall underlay. Proprietary systems shall be installed in accordance with the manufacturer's instructions. Particular attention must be paid to the installation of the building underlay and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed wall framing in the opening is protected.

The selected cavity closure strip must be installed so a minimum 15mm drip edge to the bottom of the weatherboards is maintained at all times.

There are several options available for the installation of cavity battens as outlined below.

Vertibat Cavity Battens to Nogs/Dwangs

Vertibat cavity battens must be installed horizontally over the building underlay to the wall framing (nogs/dwangs) at 400-480mm maximum centres. The battens must be installed with the top edge sloping away from the wall underlay towards the back of the weatherboards. The

cavity battens must be fixed in place with 40 x 2.5mm flat head hot-dipped galvanised nails or 50 x 2.8mm hot-dipped galvanised gun nails (for 20mm thick battens), or 60 x 2.8mm flat head hot-dipped galvanised nails or 60 x 2.8mm hot-dipped galvanised gun nails (for 40 or 45mm thick battens) to temporarily fix the battens in place prior to installation of the cladding.

Cavibat Cavity Battens to Nogs/Dwangs

The Cavibat cavity battens must be installed horizontally over the building underlay to the wall framing (nogs/dwangs) at 400-480mm maximum centres. The cavity battens must be fixed in place with 40 x 2.5mm hot-dip galvanised flat head nails or galvanised or stainless steel finishing brads at 400mm centres. Refer to BRANZ Appraisal Number 524 (2012) for further information.

40 or 45mm thick structurally fixed Vertibat Cavity Battens to Studs

40 or 45mm thick Vertibat cavity battens must be installed horizontally over the building underlay to the wall framing (studs) at 400-480mm maximum centres. The battens must be installed with the top edge sloping away from the wall underlay towards the back of the weatherboards. The cavity battens must be fixed in place with one 12 gauge x 65mm long (for V3 or V4) or 12 gauge x 75mm long (for V5 or V6) Grade 304 stainless steel screw at each stud crossing (maximum 600mm centres). A 25mm minimum penetration of the framing is required.

3.1.1 Aluminium Joinery Installation

Aluminium joinery and associated head flashings must be installed in accordance with the window manufacturer's instructions. A 7.5-10mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6 after the joinery has been secured in place.

3.1.2 Hermpac Vertical Shiplap Weatherboard Installation

Hermpac vertical shiplap weatherboards must not be wet prior to installation. Prior to installation, the back face and edges of the Hermpac shiplap weatherboards must be sealed with an exterior grade oil-based penetrating oil stain or paint. During installation, cut ends and edges and all fresh cuts or exposed timber must be double sealed with an exterior grade oil-based penetrating oil stain or paint.

Hermpac shiplap weatherboards must be installed starting at the corner of the wall section being clad. The first weatherboard must be installed plumb to assist with the installation of subsequent weatherboards. The weatherboards must overhang the bottom plate by a minimum of 50mm. The weatherboards should be installed with the lap facing away from the prevailing winds.

Immediately prior to installing the weatherboards over the internal and external corner flashings, a continuous bead of sealant must be applied to the face of the flashing along the fixing line.

Hermpac shiplap weatherboards must be overlapped a minimum of 25mm with an expansion gap of 2mm at the overlap. The top of the weatherboard lap should be restrained using the Hermpac clinch nail at every cavity batten.

NB: Clinch nails are a proprietary component of all Hermpac cladding systems. We recommend their use on all installations for best performance. Use of clinch nails is mandatory for installations in 'Extra High' wind zones and above.

Hermpac shiplap weatherboards must be pre-drilled on a slight up-slope, with a hole slightly smaller than that of the nail. Fix each weatherboard with one nail per board at every cavity batten.

The fixing must be located 30-35mm in from the weatherboard lap, be located no closer than 32mm (where practical) from the end of the board, and must finish flush onto the surface of the weatherboard, not into or below

VertiLine Vertical Shiplap Weatherboard Cavity System

Installation Specifications

the surface.

Fix weatherboards in full lengths where possible. Where joints are required, scarf the weatherboard at 30° over a cavity batten and fix as per detail 'HC-SHIP-413' or 'HC-SHIP40-413'.

For oil/stain finished weatherboards:

Weatherboard fixing must be carried out using silicon bronze or Grade 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails.

- For 18mm Cavibat or 20, 40 or 45mm Vertibat fixed to nogs/dwangs, the nail shank must be minimum 3.25mm diameter and the length must allow minimum 30mm penetration of the wall frame.
- For structurally fixed 40-45mm Vertibat battens fixed to studs only, the nail shank must be minimum 2.8mm diameter and the length must allow minimum 30mm penetration of the batten.

For CedarOne and paint finished weatherboards:

Weatherboard fixing must be carried out using Grade 316 stainless steel annular grooved Hermpac Jolt Head nails.

Punch nails 2mm below the weatherboard surface, prime nail holes and fill prior to sanding and finishing.

- For 18mm Cavibat or 20, 40 or 45mm Vertibat fixed to nogs/dwangs, the nail shank must be minimum 3.25mm diameter and the length must allow minimum 35mm penetration of the wall frame.
- For structurally fixed 40-45mm Vertibat battens fixed to studs only, the nail shank must be minimum 3.25mm diameter and the length must allow minimum 35mm penetration of the batten.

3.1.3 Boxed Corners, Cover Battens and Mouldings

External and internal corners must be finished in accordance with the installation detailing.

Most Hermpac 'Smart Corners' mouldings can be fixed by applying a continuous bead of sealant to the inside surfaces of the moulding or the faces of the flashing to which the moulding is to be bonded. Excess coating should be wiped off areas of the moulding intended to contact the adhesive.

Wherever possible, the moulding should be bonded to the flashing prior to installation. If this is not possible, the moulding shall be temporarily held in place while the sealant cures.

A continuous bead of sealant should also be applied at the joint between the moulding and the end-grain cross section of any butted weatherboard and direct to flashing along the line of weatherboard nail fixing (if the weatherboard fixing will pierce the flashing).

Sealant options for Wood-X, Traditional Oil Stains or Resene Waterborne Oil Stains include Bostik Seal N Flex FC or Sikaflex AT Façade (NB: for other stains please check with the manufacturer to determine the most suitable sealant).

Further or sole mechanical support of the Moulding-Flashing interface can be achieved in some cases with a pre-drilled and suitably placed Hermpac nail. The requirement for a continuous bead of sealant as detailed above still applies.

3.1.4 Finishing

At least two coats of an exterior grade quality oil-based penetrating stain must be used over the front face of the Hermpac shiplap weatherboards to protect the weatherboards and give the desired finish colour to the exterior walls. The stain must be recommended for use as a wall cladding stain by the manufacturer and must be brush or Machinecoat NZ Ltd applied. Hermpac recommends the use

of oil based stains manufactured by Wood-X and Resene.

Follow the stain manufacturer's instructions at all times for application of the stain finish.

For paint finish the paint must be recommended for use as a wall cladding paint by the manufacturer and must be brush or Machinecoat NZ Ltd applied.

To ensure a top quality paint finish:

1. Any sharp edges should be removed to provide a radius to aid in uniform paint film coverage.
2. Use a premium alkyd oil or acrylic based primer to envelope prime all cut ends and bare timber surfaces twice.
3. Punch nail holes and prime promptly after punching.
4. Fill holes with a suitable filler and allow to dry.
5. When filler is fully dry and cured, sand area smooth.
6. Apply one coat of an alkyd oil or acrylic based primer to sanded area and allow to fully dry before sanding lightly.
7. Ensure surface is clean and free from any chalking, dirt, dust, mould or other contaminants prior to painting top coats.
8. Apply two coats of premium high quality 100% exterior grade acrylic to surface allowing adequate time for drying between coats.

Timber is a natural product and for best results use a colour with a LRV of 40-45 or above. Please consult with us for a specific recommendation minimum for your chosen timber.

Follow the paint manufacturer's instructions at all times for application of the paint finish.

Refer to Section 4.0 for maintenance requirements.

4.0 Maintenance

Building owners are responsible for the maintenance of the VertiLine Vertical Shiplap Cavity System. Annual inspections must be made to ensure that all aspects of the cladding system, including flashings remain in a weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress, must be repaired immediately. Sealant, coatings, flashings or the weatherboards must be repaired in accordance with the relevant manufacturer's instructions.

Regular cleaning (at least annually) of the surface finish with water and a mild detergent is recommended to remove grime, dirt and organic growth, to maximise the life and appearance of the cladding.

Recoating of the stain finish will be necessary throughout the life of the cladding system. Re-staining must be carried out every 2-3 years in accordance with the stain manufacturer's instructions. Re-staining will be required more frequently on exposed northern and western facing walls. When re-staining, care must be taken to ensure bottom edges and shiplap edges are well covered and penetrated with the stain.

Recoating of the paint finish will be necessary throughout the life of the cladding system. Re-coating must be carried out every 7-10 years in accordance with the paint manufacturer's instructions. When re-coating, care must be taken to ensure bottom edges are well covered and penetrated with the paint.

5.0 Health & Safety

Cutting of Hermpac shiplap weatherboards must be carried out in well ventilated areas and dust masks, eye and hearing protection must be worn.



Hermpac

For further information please contact us
technical@hermpac.co.nz

Auckland
09 421 9840

Wellington
04 586 9674

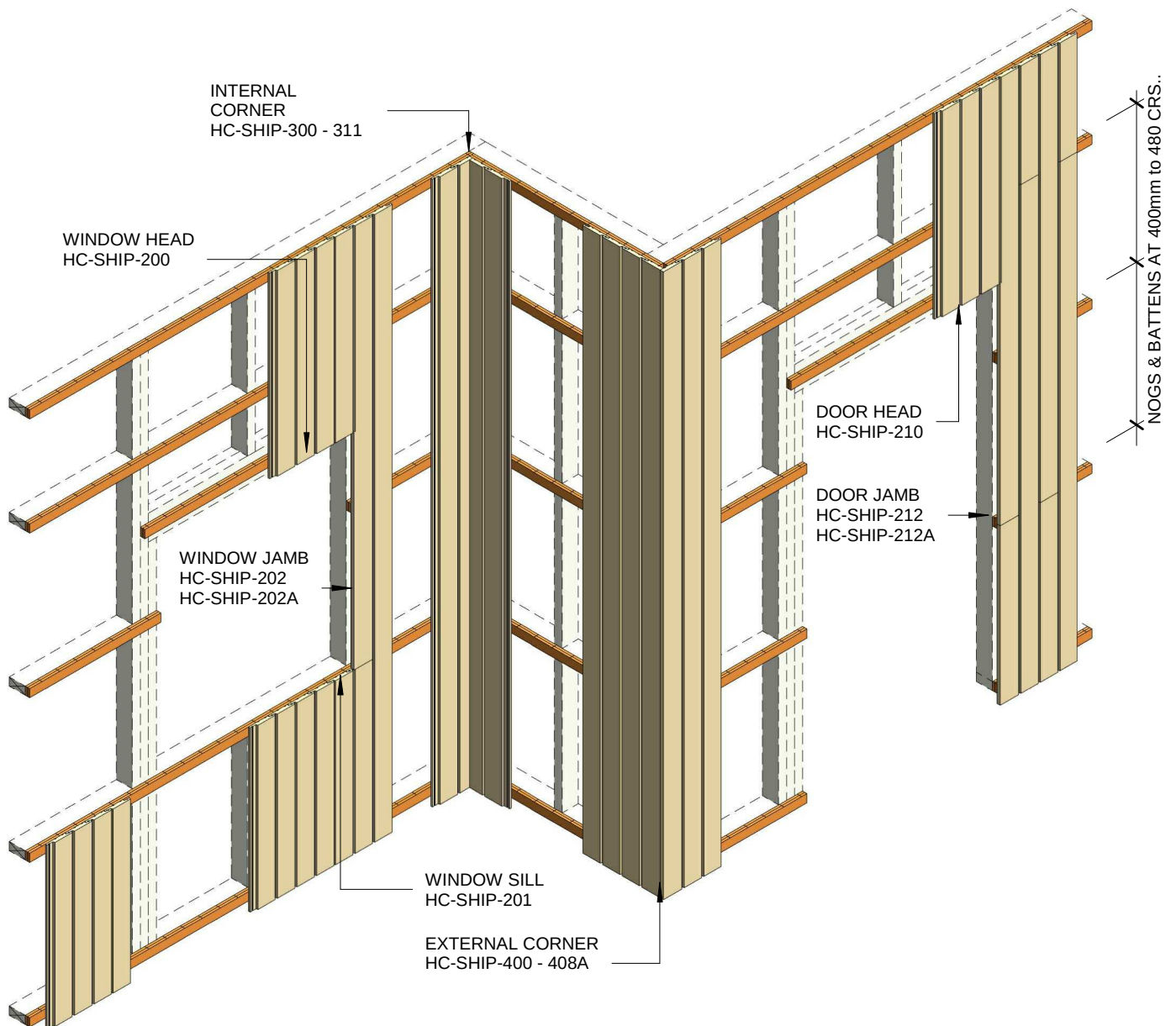
Christchurch
03 341 2163

Note:
Building Underlay and Flashings not shown for clarity.

Approved Building
Consent Documents

BC0176/20

Ashburton District Council



Hermipac

www.hermipac.co.nz
SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System
Isometric View



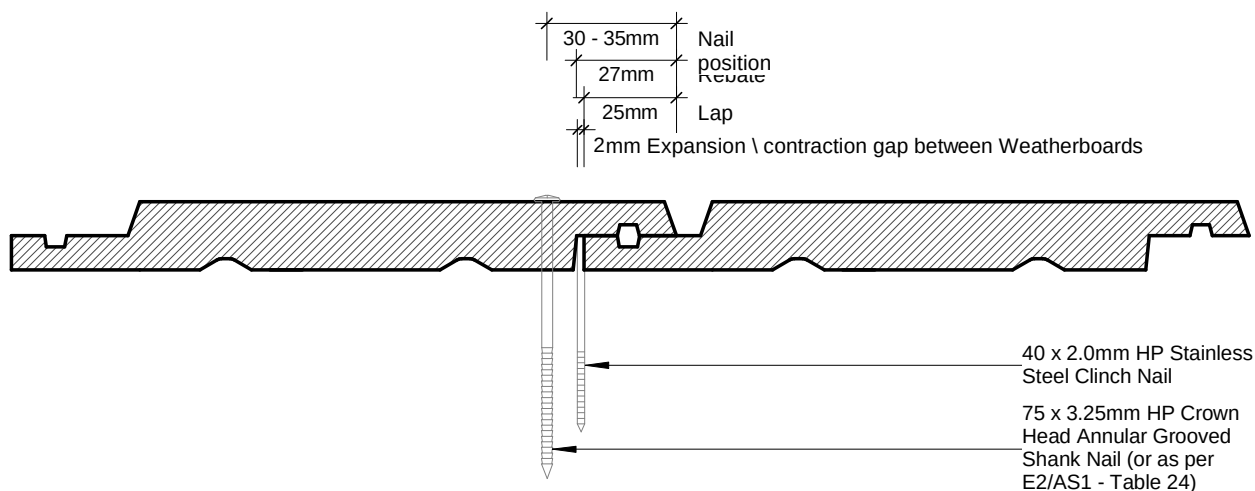
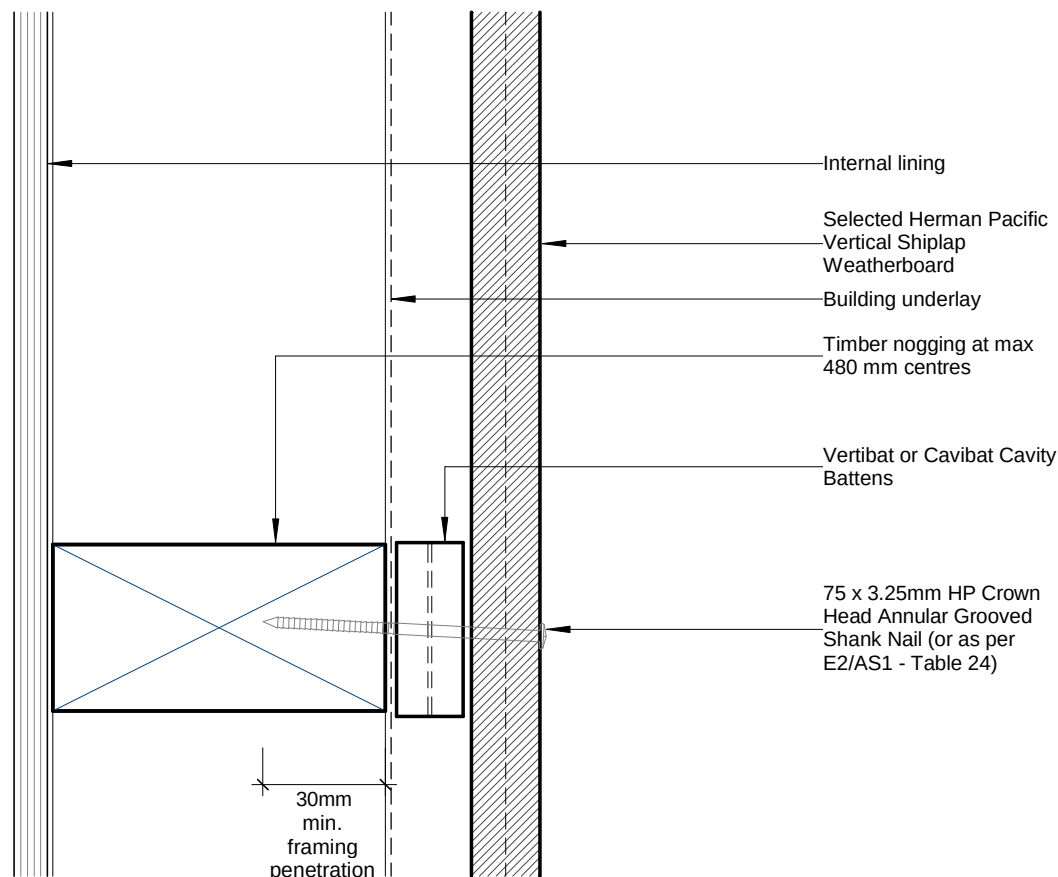
HC-SHIP-002
DRAWING

1 : 25 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

**Hermipac**

www.hermipac.co.nz

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Cavity Fix Vertical Shiplap Weatherboard System

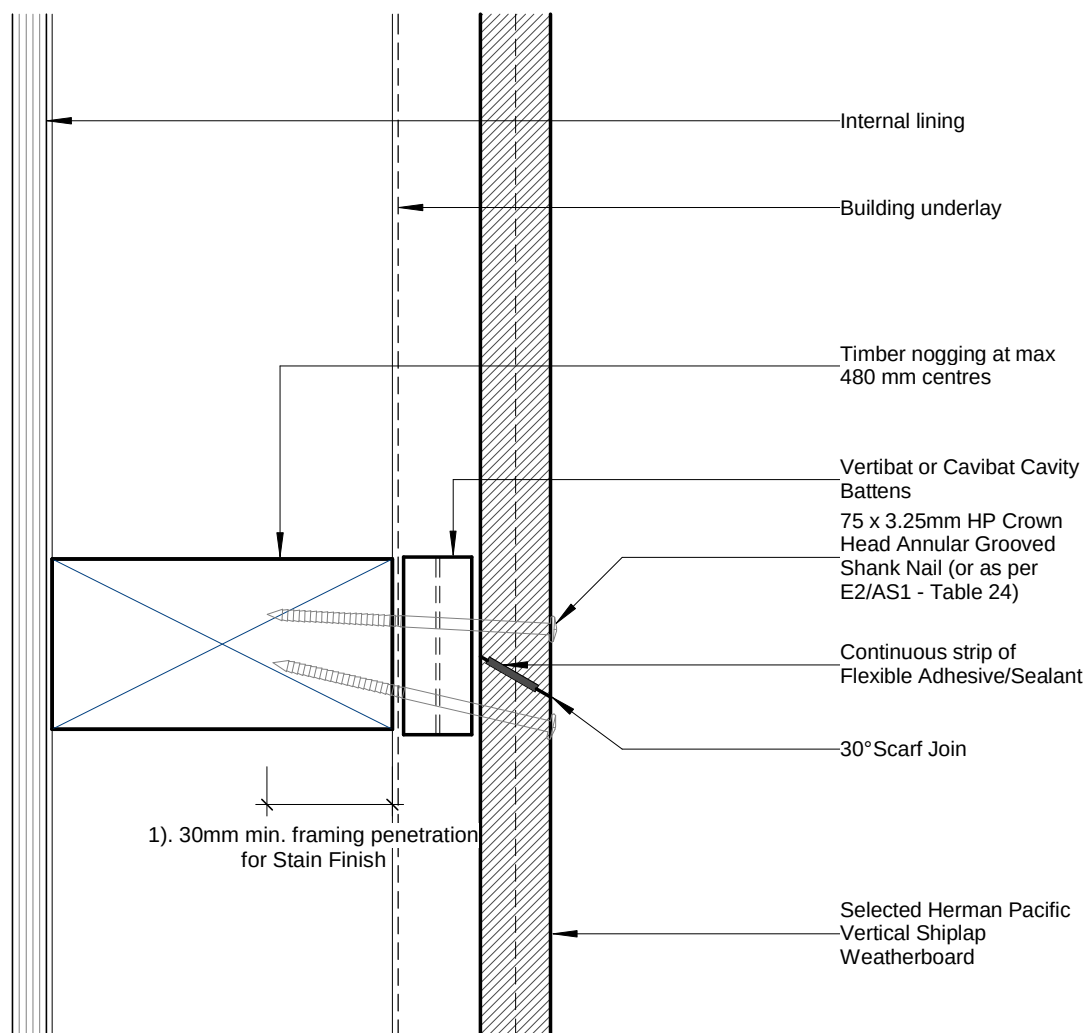
General Detail Cavity Fix, Stain Finish**HC-SHIP-410**

DRAWING

1 : 2 @ A4
SCALE16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be precoated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

**NOTE:**

Cut ends of scarf join must be double coated with oil or stain.

35mm framing penetration using HP Jolt Head Stainless Steel Annular Grooved nail for paint finish


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Cavity Fix Vertical Shiplap Weatherboard System

Scarf Join Stain Finish
HC-SHIP-413

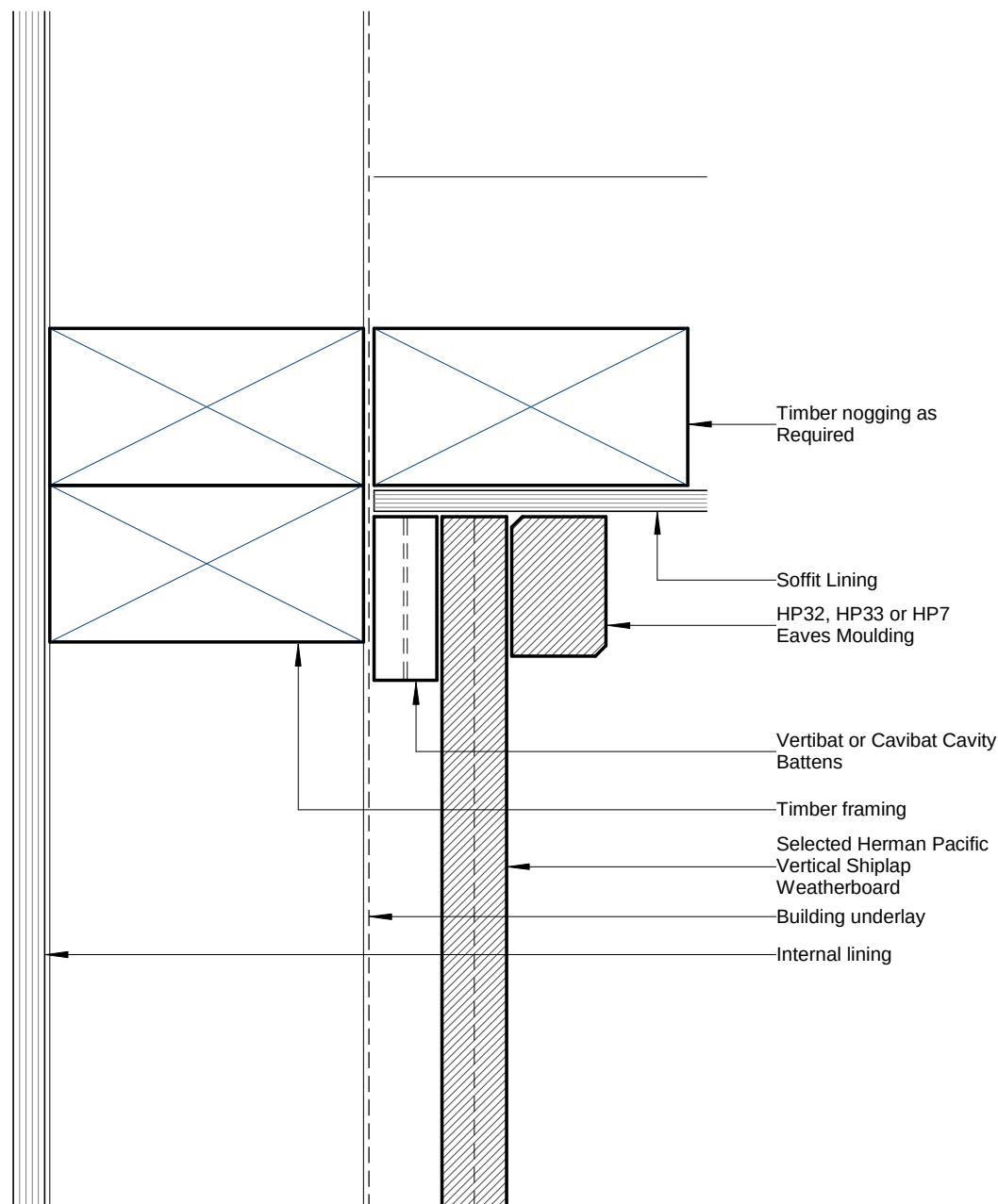
DRAWING


 1 : 2 @ A4
SCALE

 16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be precoated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

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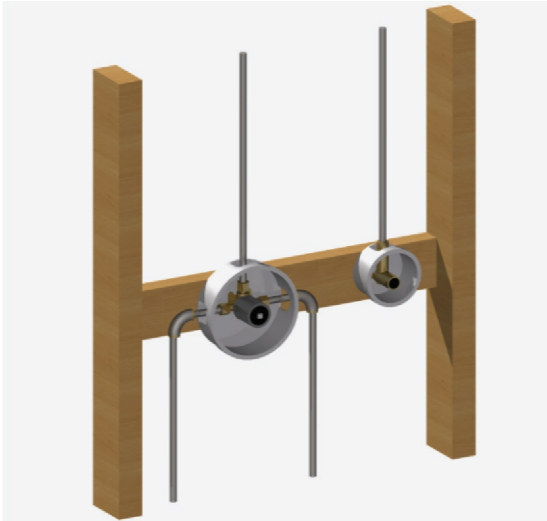
www.hermipac.co.nz

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Cavity Fix Vertical Shiplap Weatherboard System
Soffit Detail, Overhang
**HC-SHIP-601**
DRAWING1 : 2 @ A4
SCALE16/10/2017
ISSUED DATE

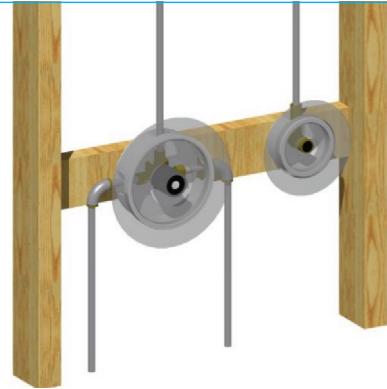
Acrylic-lined shower installation

1



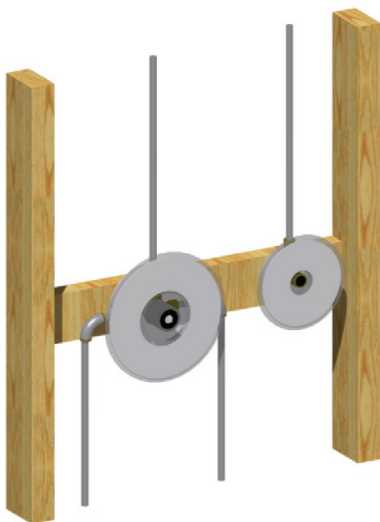
Fix cups to the frame so that they finish flush with the wall stud. Plumb out the fittings.

2



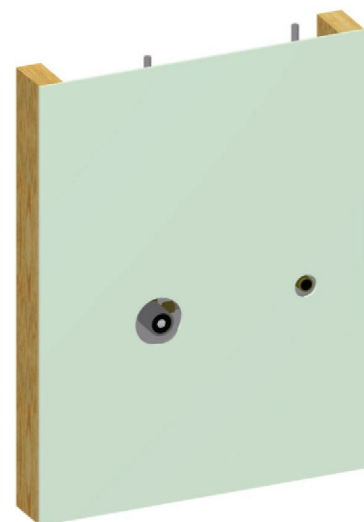
Remove the manufacturer's recommended size access hole for the mixer from the large flange. Remove a 30 mm hole from the small flange. Apply a bead of the supplied sealant to the channel on the flanges and firmly push onto the cups.

3



Remove identical holes from the wall lining to match. Apply the remainder of the supplied sealant to the outside of the flanges.

4



Fix the wall lining. Distribute excess sealant over exposed wall lining core in the holes.