

## 8.0 FREQUENTLY ASKED QUESTIONS

**Q: How much should be allowed for expansion?**

**A:** Allow 2 – 3 mm between square edges of Ecoply® sheets. If using Ecoply Flooring, a 5 mm expansion gap is recommended at the perimeter of the floor or deck. Check by calculation for large areas.

**Q: Can power driven nails be used to fix Ecoply?**

**A:** Paslode power driven nails have been tested for fixing Ecoply and Shadowclad® products for particular bracing and cladding applications. For power driven nail specifications refer to technical note *Paslode nail matrix* downloadable from [www.chhwoodproducts.co.nz](http://www.chhwoodproducts.co.nz). Use the Paslode Impulse Compact Nailer fitted with a No Mar(k) work contact element to eliminate any contact marks on the plywood. Adjust the work contact element to the flush position and fire the nail at 90° to the work surface. Hammer any nails flush which are left proud. Do not over drive.

**Q: How close to sheet edges can I nail?**

**A:** Fixings can be placed a minimum 7 mm from the sheet edge.

**Q: Do I have to use stainless steel nails when using Ecoply for bracing?**

**A:** Where fasteners are in contact with H3.2 CCA treated timber or plywood, fasteners must be a minimum of hot dip galvanised. In certain circumstances stainless steel fasteners may be required. Refer to Table 8 of the Ecoply Specification and Installation Guide for these circumstances. Where stainless steel nails are required, annular grooved nails must be used.

**Q: What is the weight of Ecoply?**

**A:** Refer to Table 4a for weight (kg/m<sup>2</sup>) of different Ecoply thicknesses.

**Q: What is the R-value of Ecoply?**

**A:** The thermal resistance or insulating effectiveness of plywood panels can be calculated using NZS 4214. e.g. plywood has a conductivity (k) of 0.13 W/mK so a 12 mm panel has a thermal resistance  $R = 0.012/0.13 = 0.09$ .

**Q: Are there any compatibility issues when using Ecoply with other materials?**

**A:** Adhesives for flexible rubber membranes may react with LOSP treatment and should therefore only be applied to H3.2 CCA treated Ecoply unless the membrane supplier advises differently. Check with the membrane manufacturer if in doubt. H3.2 CCA treatment is also corrosive and this must be taken into account when specifying H3.2 CCA treated plywood next to metals. For further guidance, refer to Tables 21 and 22 in *Acceptable Solution E2/AS1*.

**Q: Can Ecoply be used as a rigid sheathing (air barrier)?**

**A:** Ecoply Barrier has been developed as a rigid air barrier. Refer to Ecoply Barrier Specification & Installation Guide for further information.

**Q: What is the relevance of AS/NZS 2269?**

**A:** Ecoply structural plywood is manufactured to AS/NZS 2269 Plywood Structural. This Standard is referenced by the NZ Building Code Compliance Documents including NZS 3602 *Timber and Wood-based Products for Use in Building*, NZS 3603 *Timber Structures*, NZS 3604 *Timber Framed Buildings*, AS/NZS 1604.3 *Specification for Preservative Treatment, Part 3: Plywood and Acceptable Solution E2/AS1 External Moisture*. Plywood not manufactured to AS/NZS 2269 does NOT meet the requirements of these NZ Building Code Compliance Documents.

**Q: What is the relevance of the PAA stamp?**

**A:** Ecoply is manufactured under a third party audited, product quality control programme by the Engineered Wood Products Association of Australasia (EWPAA) to monitor compliance with AS/NZS 2269. Given that compliance with Standards is not actively policed by Standards New Zealand, this third party auditing provides important peace of mind for users and consumers of Ecoply products.

**Q: What is marine ply?**

**A:** Marine plywood manufactured to AS/NZS 2272 Plywood Marine may contain species of low durability (source: *BRANZ Good Practice Guide – Timber Cladding*). Whilst marine plywood has a Type A glue bond, it is generally specified for its high surface appearance grade and lack of core knots as opposed to structural performance. AS/NZS 2272 limits marine plywood to a number of approved species that pass stringent property requirements for things like moisture permeability. These requirements are different from those in standards from other countries. Marine plywood is rarely treated as it is usually coated with resin or fibreglass or a paint finish for long term durability.

**Q: What should a specification for structural plywood include?**

**A:** A specification for structural plywood should include:

Specification checklist	Example
Quantity/size	20 sheets of 2400 x 1200
Thickness	12 mm
Edge finish	Square edge
Brand name	Ecoply® structural plywood
Reference to Standard	To AS/NZS 2269
Stress grade <sup>1</sup> /layup	F8 (12-24-5)
Surface grade/bond type	CD A-Bond <sup>2</sup>
Accreditation	EWPAA product certified <sup>3</sup>

<sup>1</sup> Stress grades may vary between different manufacturers and products.

<sup>2</sup> Type A-bonds are suitable for permanent exposed applications and structural applications.

<sup>3</sup> The EWPAA JAS-ANZ Product Certification Mark certifies that Ecoply structural plywood products have been manufactured under a third party audited joint product certification programme to monitor compliance with AS/NZS 2269.

**Q: What are F-grades?**

**A:** The stress grading system is a ranking system which utilises the symbol F and a suffix 8, 11 etc as a code to apply a full suite of strength and stiffness properties to plywood products of that stress grade. For plywood of a given thickness, the higher the F-grade, the further it will span. For load bearing applications (e.g. flooring, roofing) the required F-grade as well as the plywood thickness must be specified to achieve the required span. F8 is the most common structural plywood grade found in New Zealand. All Ecoply® structural products are F8 with the exception Ecoply 15 mm roofing and Ecoply 19 mm Longspan Flooring. Other Ecoply Flooring products are also available in F11 upon request.

**Q: What are surface/appearance grades (eg CD)?**

**A:** Appearance grades (eg BB, BD, CD, DD) denote the appearance grade of the plywood including the number and size of knot holes as defined in AS/NZS 2269 and summarised in Table 2 of this manual. The first letter describes the appearance of the face veneer and the second letter describes the back face.

**Q: How long can Ecoply be left exposed to the weather?**

**A:** Untreated Ecoply will maintain its structural integrity when exposed to the weather during construction for up to 3 months. The surface colour will start to silver off and surface checking will become evident. Where the finished appearance of the Ecoply is important, it should be protected during construction. Ecoply is also available H3 treated to resist decay or insect hazard. When used in accordance with this manual, it can be specified to meet the durability requirements of the NZ Building Code, however appearance issues such as surface checking may still occur dependent upon the degree of exposure to weather during construction.

**Q: What treatment levels and types are used for Ecoply?**

**A:** Ecoply is available untreated or preservative treated. Ecoply is treated to the H3 hazard class for above ground use. The standard Ecoply treatment type is H3.2 CCA (Copper Chrome Arsenate) although H3.1 LOSP Azole (Liquid Organic Solvent Preservative) may also be specified where a clear treatment is required. LOSP Azole is the standard treatment type for BB, BD, Ecoply Grooved Lining and Shadowclad®. CCA treatment gives the plywood sheets a green tinge and the drying process after CCA treatment may leave fillet marks on the face of the sheet.

**Q: Does Ecoply have to be treated when used as structural bracing?**

**A:** Ecoply used as bracing must be treated unless it is installed in an interior dry situation. Note, behind exterior cladding and in cavities (even if the Ecoply is covered with building wrap) are not considered to be an interior dry situation.

**Q: Do I have to re-treat cut edges of treated Ecoply?**

**A:** It is important to re-treat any cuts and holes with a brush on remedial treatment such as Metalex Clear End Seal.

**Q: What type of glue is used to manufacture Ecoply?**

**A:** Phenol formaldehyde (PF) resins are used to bond the plywood veneers. This forms a Type A (Marine) bond suitable for structural applications and exterior use. Phenol formaldehyde resins are dark red/brown in colour. Product details printed on the back of Ecoply sheets indicate the 'A Bond'.

**Q: Does Ecoply emit formaldehyde?**

**A:** Formaldehyde occurs naturally in the environment and is emitted by processes such as combustion, decay and naturally by all timber species. Ecoply and Shadowclad meets the lowest formaldehyde emission class (E<sub>0</sub> - less than 0.5 mg/litre). Actual formaldehyde emissions have been tested to be less than 0.3 mg/litre.

**Q: How should Ecoply be installed to maximise its stiffness properties?**

**A:** Structural plywood has greatest stiffness along the long grain of the sheet (i.e. along its length). Therefore, flooring/roofing should be laid across joists/rafters rather than parallel to them.

## 9.0 REFERENCES AND SOURCES OF INFORMATION

- New Zealand Building Code
- CHH Woodproducts technical notes - downloadable from [www.chhwoodproducts.co.nz/document-library](http://www.chhwoodproducts.co.nz/document-library)
- NZS 3640:2003 "Chemical Preservation of Round and Sawn Timber"
- NZS 3602:2003 "Timber and Wood-based products for use in Buildings"
- NZS 3603:1993 "Timber Structures Standard"
- NZS 3604:2011 "Timber Framed Buildings"
- AS/NZS 1170:2011 "Structural design actions"
- AS/NZS 2269:2008 "Plywood Structural"
- AS/NZS 1604.3:2010 "Specification for Preservative Treatment, Part 3: Plywood"
- AS 1684:2010 "Residential Timber Framed Construction"
- AS 1720:2010 "Timber Structure"
- US Product Standard PS1-95
- Acceptable Solution 'E2/AS1 – External Moisture'
- Acceptable Solution 'B2/AS1 – Durability'
- BRANZ Bulletin 345: Flat membrane roofs – design and installation
- BRANZ Bulletin 346: Flat membrane roofs – materials
- BRANZ Bulletin 289: Asphalt shingle roofing
- BRANZ Appraisals 307, 404, 411
- Shadowclad® Specification & Installation Guide
- Ecoply® Barrier Specification & Installation Guide
- Material Safety Data Sheets
- APA ([www.bulldabetterhome.org](http://www.bulldabetterhome.org))
- EWPAA ([www.ewp.asn.au](http://www.ewp.asn.au))

Standards can be purchased online at [www.standards.co.nz](http://www.standards.co.nz)

Building Code Compliance Documents can be downloaded free of charge at [www.dbh.govt.nz](http://www.dbh.govt.nz)

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**NOTES:**

1. This proprietary balustrade system complies with New Zealand Building Code Clauses B1 Structure, F2 Hazardous Building Materials and F4 Safety From Falling Third Edition, subject to:

- all products meeting the required performance specification
- site installation carried out in accordance with intent of this drawing

2. Based on 12mm Viridian "Balustrade 100" toughened safety glass, maximum heights of glass above top anchors for residential occupancies A and C3 of Table 3.3 AS/NZS 1170.1 and anchor spacings are:

- Very high wind zone 1.76 kPa - 1100mm
- High wind zone 1.36 kPa - 1200mm with corner connectors or interlinking handrail
- EUBFSD50 discs and spacers at 600 mm crs for occupancy A, and 400 mm crs for occupancy C3

3. The design of the concrete, timber or steel support for the balustrade is the responsibility of others.

4. A handrail of 32-50mm diameter is required for stairs and ramps exceeding 1:20 slope. Refer NZBC D1/AS1.

5. The Guidance on Barrier Design published by the Department of Building and Housing states that if any part of the balustrade panel is 5 m or higher than the ground or floor below, an interlinking handrail or laminated toughened glass with a top rail or capping to protect the edge should be provided. Fit handrail 900mm above floor level.

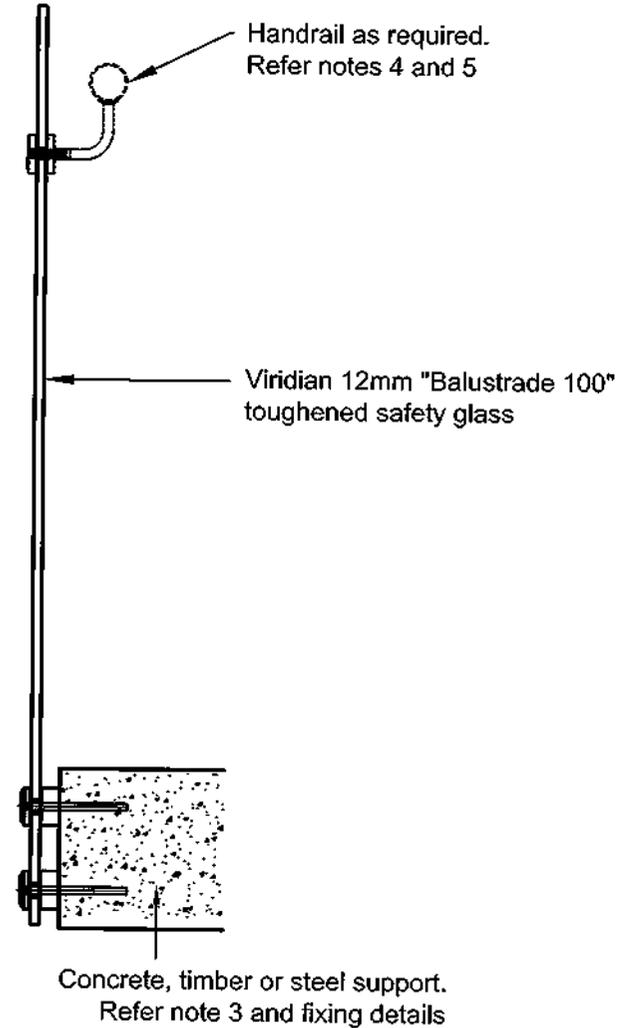
6. Minimum width of glass panel to be 1000mm unless connected by interlinking handrail or mechanical connector to adjacent panels

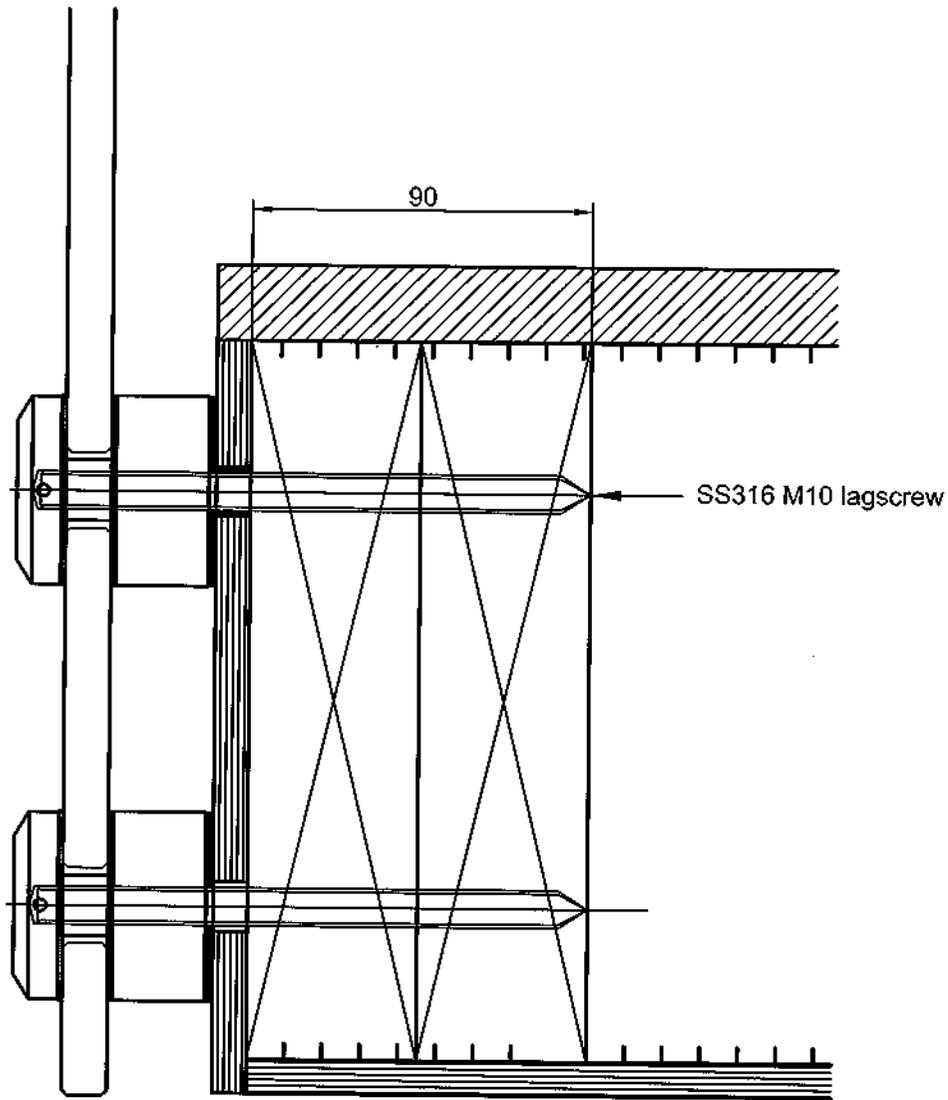
7. Maximum distance from side edge of glass to fixings - 300mm for occupancy A and 200mm for occupancy C3.

8. This system is not suitable for balustrades in areas susceptible to overcrowding such as theatres, cinemas, assembly halls, stadiums etc.

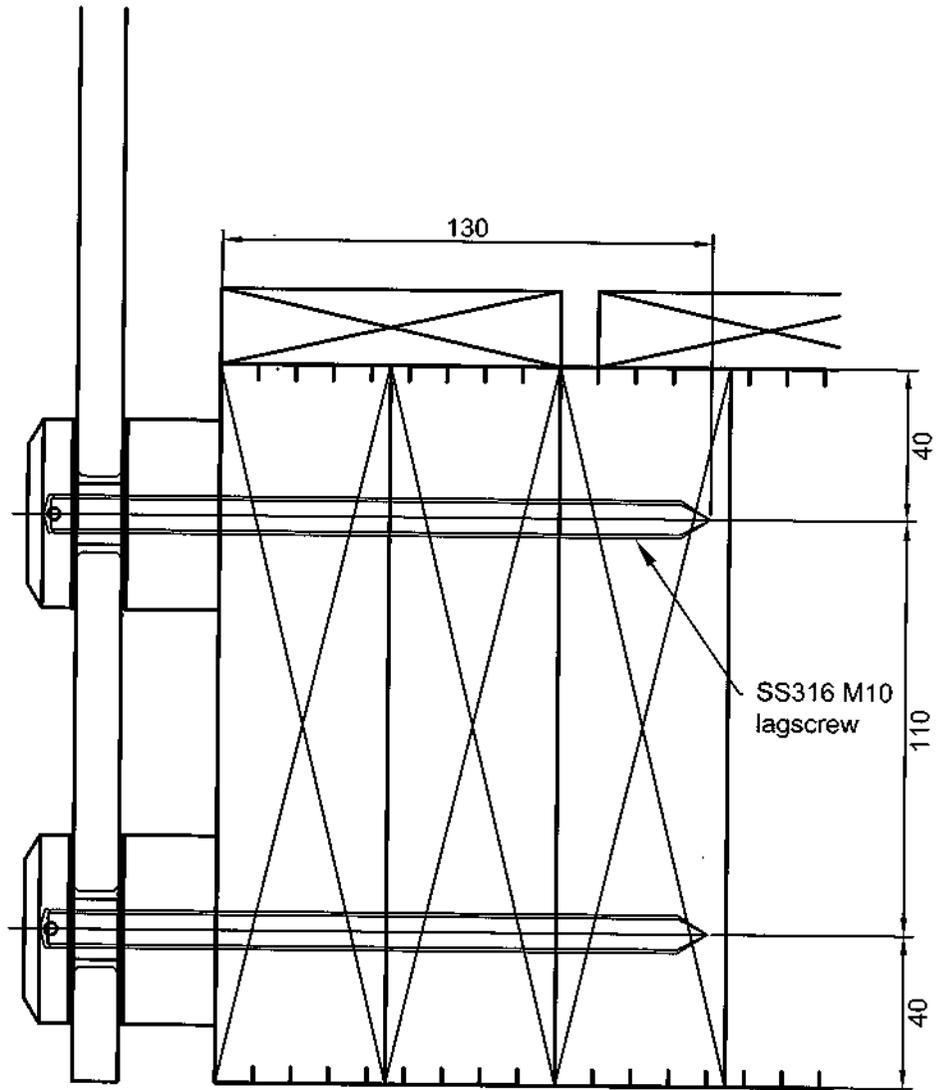
**IMPORTANT**

These drawings are provided as a general guide and may be amended without prior notice. Please contact Euroglass for specific design.





TIMBER - INTERNAL



TIMBER - EXTERNAL

EUROANCHOR RESIDENTIAL BALUSTRADE SYSTEM

24-4-13

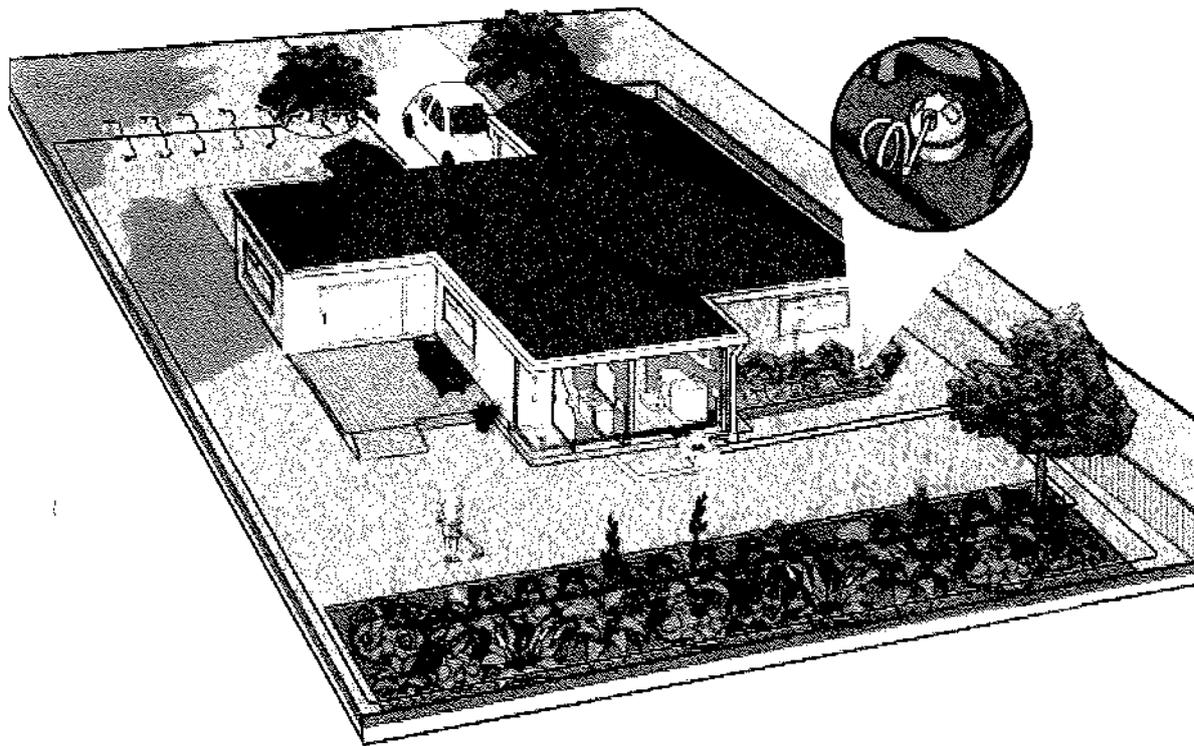
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# Make Your New Home Smarter than The Rest

with a WaterLillee® Garden Irrigation System

fa

2008 Electrical  
New Thinking  
2007 NZ Trad  
New Thinking



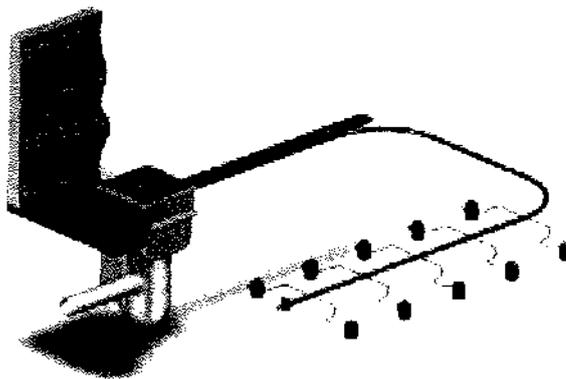
2007 Electrical  
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To find an A  
WaterLillee®  
your area click

Learn more about how the WaterLillee fresh greywater garden irrigation system works? [Click](#)

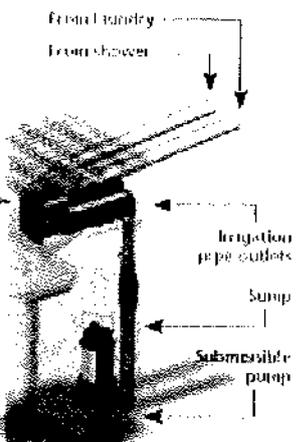
to maintain a lush, green garden all year round,  
of weather conditions or water restrictions.  
yourself water use by up to 50%.  
rely on water use in metered areas.  
all areas of your garden. WaterLillee's  
direct delivery makes it ideal for steep sections  
of gardens.  
no need spent watering garden areas, without  
leaving house!  
at expense of replacing drought damaged plants.  
depending on septic systems.  
bring to your home for future re-sell.



### How it Works:

**WaterLillee® is a smart, convenient and sustainable garden irrigation system that is:**

- Less intrusive than a rainwater tank.
- More efficient than a sprinkler.
- WaterLillee® automatically diverts used water from the bath, shower and laundry and recycles it directly to your garden.
- The water is not stored, it is either used for the garden, or it goes to sewer as normal; there are no odours from stagnant water.
- You can control the water diversion through a simple keypad installed in a convenient location.
- The WaterLillee® uses unique sub surface irrigation pods to create a large flow system which prevents blockages, while ensuring all greywater is dispersed 100mm below ground.



is really growing well. No more worries for me about  
er restrictions, not to mention doing my bit to save  
oo, if water meters are introduced!"



## Paraparaumu

"All summer long during those drought conditions of 2003/4  
we bucketed our grey water to all parts of our garden to  
save our special plants and trees. Then we went to a  
Fieldays at Otaki and learnt about the Watersmart way to  
use our grey water.

For a modest sum we could install a system that would feed  
our greywater to parts of our garden and all we then had to  
do was pull the plug! No more buckets. It sounded like  
heaven and it is".

- David and Janet Macdonald, Otaki

## ing tips

ie age and hardiness of your plants in deciding how much or how often to provide them with greywater.  
ill benefit from an occasional flushing of rainwater or tap water.

rwater your soil with greywater, or overload any sensitive plants or plant material you have recently  
event runoff. Apply water no faster than your soil can absorb it.

or basins to hold the water where you want it; allowing it to soak in for optimum use by your plants.

on to what your plants are telling you. Wilted or curled leaves or leaf drop can be signs of lack of water.  
es, wilted shoot tips, or soft plant tissue can mean over watering.

ly to potted plants or young seedlings unless you alternate with fresh water or dilute the greywater.

greywater extensively on acid-loving plants as greywater is typically high in salts.

er is to be used for irrigation of plants with edible parts, a subsurface irrigation must be used. The only  
are citrus and nut trees.

g greywater on crops to be eaten raw such as lettuce. Use greywater on crops like tomatoes where the  
s are not in contact with the greywater.

ps, use both greywater and fresh water to avoid any pollutant buildup.

and ornamental trees are grateful recipients of greywater.

## rgents & soaps

washing machine water to irrigate, you need to beware that detergents and other laundry products  
hemicals to aid in cleaning. Some of these ingredients can be harmful to your plants.

wing product characteristics when planning your overall greywater system and how you will use the  
nerate.

**Acidity** - refers to the relative pH of soil. Lowering the pH of the soil to make it less alkaline is generally  
d beneficial to your plants.

nsidered a plant micro nutrient, required in only very, very small amounts. Most soils provide adequate  
this chemical. Concentrations only slightly higher than those considered beneficial can cause injury or  
ints.

a very necessary nutrient for plant growth. It is extremely beneficial as a supplement to your  
lants.

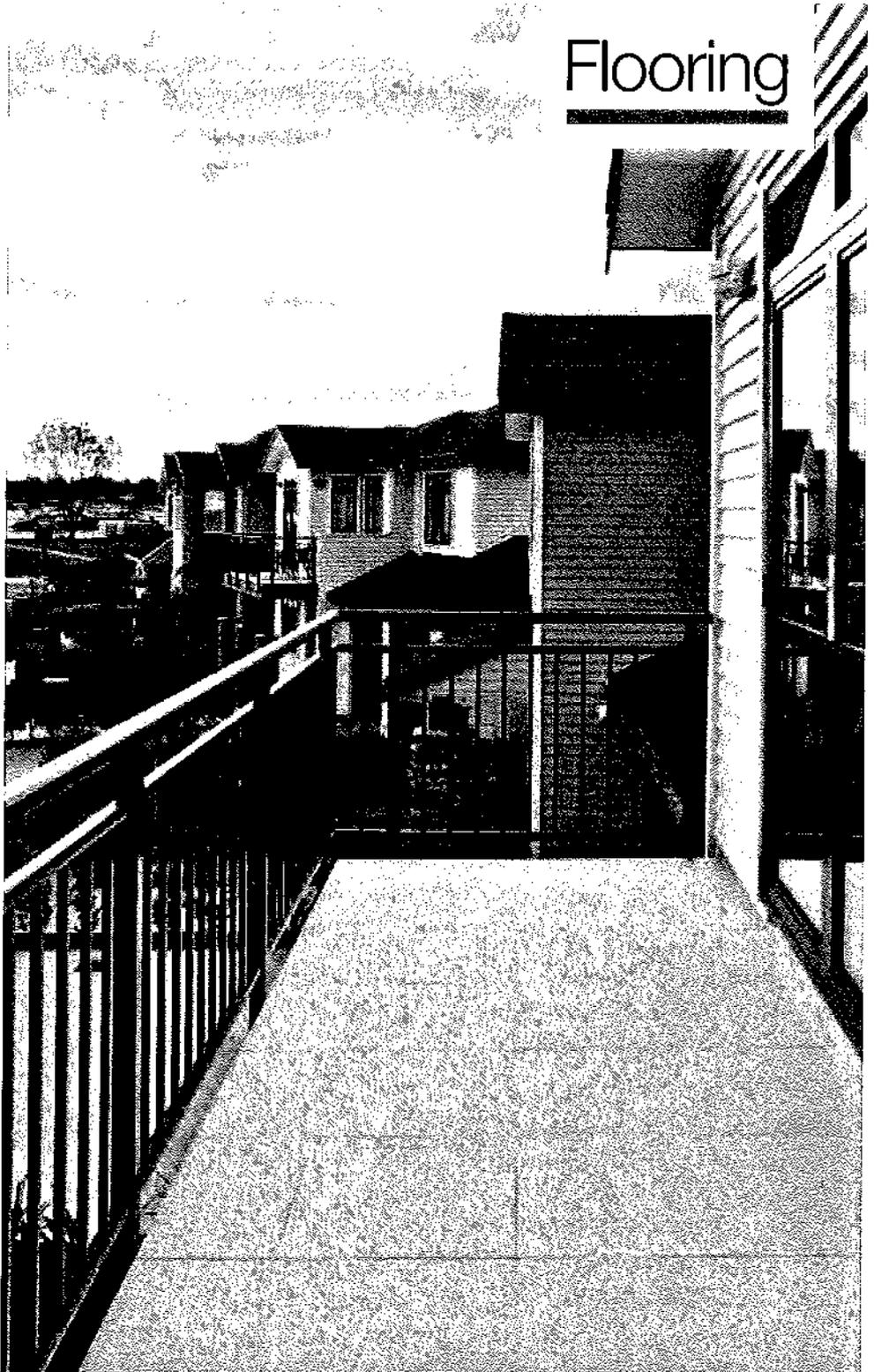
**us** - a necessary plant nutrient, which is very beneficial to your landscape plants.

- a plant nutrient which is, in general, beneficial, though not as necessary in our soils as in more acidic

an act as a plant poison by reducing the plant's ability to take up water from the soil. It can build up in  
dually increasing its toxicity.

undesirable for plants in large amounts, though found in small amounts in many municipal water  
eaches and detergents carry larger amounts of chlorine, but it is generally expended in the washing

Flooring



# Installation Manual

February 2013 / New Zealand



**James Hardie**  
a smarter way™

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## WE VALUE YOUR FEEDBACK

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

**Ask James Hardie™**

Fax 0800 808 988

[literaturefeedback@jameshardie.co.nz](mailto:literaturefeedback@jameshardie.co.nz)

# 1 Introduction

James Hardie manufactures three types of fibre cement flooring products which can be used as a substrate to lay tiles, heavy grade vinyl or cork over for use in dry or wet area applications. These products provide a durable, strong and moisture resistant substrate which helps to minimise tile cracking and reduce damage from moisture ingress.

**Tile and Slate Underlay** is an internal flooring underlay sheet with a pre-marked nailing pattern on the face of the sheet. Its main features are:

- Larger board size which is ideal for bigger bathrooms and other large floor areas being tiled.
- Smaller board size is ideal for smaller bathrooms or hard to get to projects where floor areas are being tiled.
- Can be easily cut with a score and snap knife.
- Pre-sealed to improve tile adhesion.

**HardiePanel™ Compressed Sheet** is an 18mm thick high density sheet which can be used as internal flooring or external decking. HardiePanel Compressed Sheet may be covered with vinyl, tiles, marble, slate or granite etc. It may be used for internal floors where heavy duty, impact resistant or a water resistant floor is required. HardiePanel Compressed is particularly suitable where mortar beds or epoxy screeds are used to create a fall to waste with a tiled finish in areas like bathrooms and laundries.

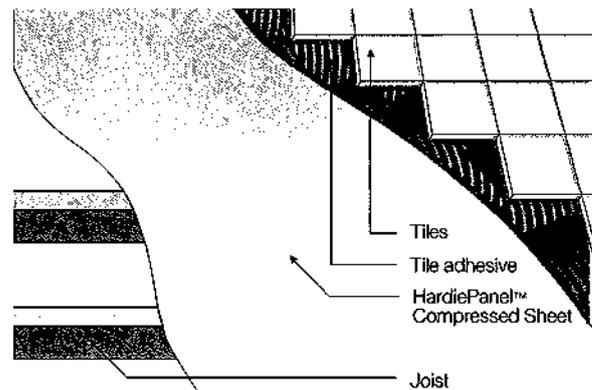
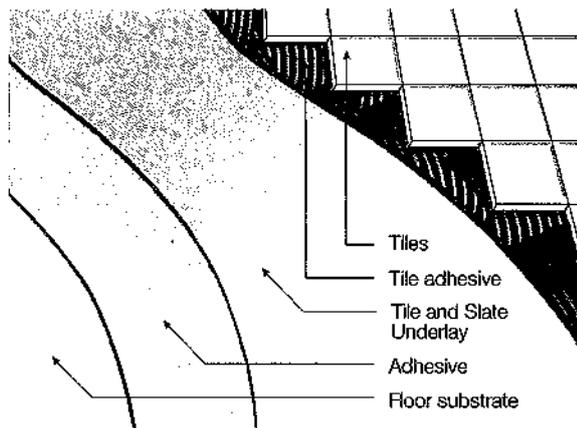
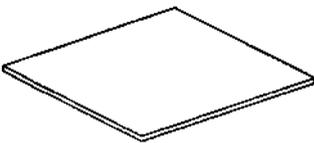
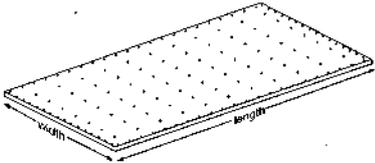
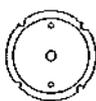
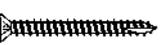
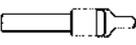


Table 1

James Hardie product information			
PRODUCT	DESCRIPTION	SIZE (MM)	CODE
	18mm HardiePanel Compressed Sheet	2400 x 1200	400094
	Used under tiles / marble / slate/ granite / treadable exterior coatings	1800 x 1200	400096
	Tile and Slate Underlay	1800 x 1200	403341
	6mm underlay sheet with pre-marked nailing pattern on the face.	1800 x 900	400418
	Suitable for tiles	1800 x 600	404110

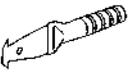
Scyon® Secura™ Interior Flooring is a 19mm thick low density presealed sheet which is used as internal flooring. Please refer to the Scyon Secura Interior Flooring Installation Manual for more details.

Table 2

Accessories supplied by James Hardie					
ACCESSORIES	DESCRIPTION	PRODUCT CODE	ACCESSORIES	DESCRIPTION	PRODUCT CODE
	Underlay nails To fix Tile and Slate underlay 25 x 2.5mm annular threaded galv. nails. Selling unit: 500g	300390		HardieBlade Saw Blade 185mm diameter Used to cut HardiePanel Compressed Sheet	300660
	Compressed Sheet Screw To fix HardiePanel Compressed Sheet Stainless steel 316 50mm x 10g (100/Jar)	300904		Tungsten Carbide Drill Bit 18mm: to predrill holes for Compressed Sheet Screw	300566
	Aluminium 'T' Socket 2400	304103			

**Accessories not supplied by James Hardie**

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

ACCESSORIES	DESCRIPTION	ACCESSORIES	DESCRIPTION
	Backing rod Backing to be used with sealant in movement joints.		Notched trowel For adhesive application on the floor.
	Sander For sanding uneven underlying flooring.		Solvent adhesive Used for adhering underlay onto particle board or plywood floors in tiled applications.
	Sealant Sultable sealant for use in movement joints.		Waterproofing membrane Used over the underlay in wet areas. Use the approved products and applications.
	Level/straight edge For checking straightness of underlying flooring.		Socket adhesive Sika Super Grip® 30mins
	Paslode nail gun B40210 Used to fire nails into Tile and Slate Underlay.		25 x 3.06mm nail D40201 Used in Paslode B40210 nail gun to fix Tile and Slate Underlay
	Score and Snap knife To cut Tile and Slate Underlay		

## 2 Safe working practices

### WARNING – DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA

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

**FAILURE TO ADHERE TO OUR WARNINGS, SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.**

#### James Hardie recommended safe working practices

##### CUTTING OUTDOORS

1. Position cutting station so wind will blow dust away from user or others in working area.
2. Use one of the following methods to cut Tile and Slate Underlay based on the required cutting rate:

##### BEST

- Score and snap
- Hand guillotine
- Fibreshear

##### BETTER

- Dust reducing circular saw equipment with HardieBlade™ Saw Blade and HEPA vacuum extraction.

##### GOOD

- Dust reducing circular saw equipped with HardieBlade™ Saw Blade.

3. Use the following method to cut HardiePanel Compressed Sheet:

##### BEST

- Dust reducing circular saw equipment with HardieBlade™ Saw Blade and HEPA vacuum extraction.

##### GOOD

- Dust reducing circular saw with HardieBlade™ Saw Blade.

##### CUTTING INDOORS

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

##### SANDING/DRILLING/OTHER MACHINING

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

##### IMPORTANT NOTES:

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

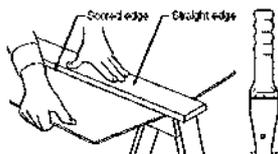
P1 or P2 respirators should be used in conjunction with above cutting practices to further reduce dust exposures. Additional exposure information is available at [www.jameshardie.co.nz](http://www.jameshardie.co.nz) to help you determine the most appropriate cutting method for your job requirements.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

## WORKING INSTRUCTIONS

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

### SCORE-AND-SNAP

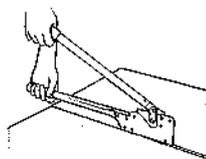
Score-and-snap is a fast and efficient method of cutting James Hardie Tile and Slate Underlay using special tungsten tipped score-and-snap knife.



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

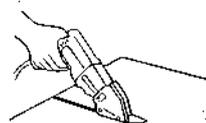
### HAND GUILLOTINE

Tile and Slate Underlay can be cut using hand guillotine method. Make guillotine cut on the off-cut side of line to allow for the thickness of the blade.



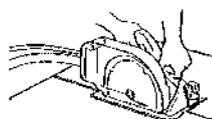
### FIBRESHEAR

An electrically powered, fast, clean and effortless way of cutting James Hardie Tile and Slate Underlay, especially around curves such as archways. Make fibreshear cut on the 'off-cut' side of the line to allow for the thickness of the shear.



### HARDIEBLADE SAW BLADE

The HardieBlade Saw Blade used with a dust-reducing saw connected to a HEPA vacuum allows for fast, clean cutting of HardiePanel Compressed Sheet and Tile and Slate Underlay. A dust-reducing saw uses a dust deflector or a dust collector connected to a vacuum system. When sawing, clamp a straight-edge to the sheet as a guide and run the saw base plate along the straight edge when making the cut.



## HOLE-FORMING

### For smooth clean cut circular holes:

Mark the centre of the hole on the sheet. Pre-drill a 'pilot' hole.

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

### For irregular holes:

Small rectangular or circular holes can be cut by drilling a series of small holes around the perimeter of the hole then tapping out the waste piece from the sheet face.



Tap carefully to avoid damage to sheets, ensuring that the sheet edges are properly supported.

## STORAGE AND HANDLING

To avoid damage, all James Hardie building products should be stored with edges and corners of the sheets protected from chipping.

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

## QUALITY

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

# 3 Framing

## 3.1 GENERAL

All construction must be carried out in accordance with the relevant building regulations and standards. Prior to installation, ensure the new / existing flooring and supporting framing is suitable.

Tile and Slate Underlay is suitable as a substrate for tiles over internal timber, particle board, plywood floors or composite flooring substrates in wet and dry areas.

A waterproofing membrane must be applied over the Tile and Slate Underlay or HardiePanel Compressed Sheet in internal wet areas prior to the installation of tiles.

### Notes

1. Tile and Slate Underlay or HardiePanel Compressed Sheet must not be used on concrete slabs.
2. To build up height of concrete, purpose-made concrete levelling compounds are more suitable.
3. For tiling of internal walls use James Hardie Villaboard® Lining as the tiling substrate.

## 3.2 LOADING CONSIDERATION

HardiePanel Compressed Sheet is a structural flooring product which is fixed directly over the floor joists.

For residential applications, Table 3.1 of AS 1170.1 specifies a concentrated load of 1.8kN applied over an area of 350mm<sup>2</sup> or bigger. For other residential and commercial applications, the concentrated loads of 2.7kN, 3.5kN and 4.5kN are specified applied over an area of 0.01m<sup>2</sup> ie 100mm square applicator.

HardiePanel Compressed Sheet can sustain a maximum allowable loading as per Table 3.

Table 3

Maximum allowable load		
JOIST SPACING (mm)	UNIFORM DISTRIBUTED LOAD (kPa)	CONCENTRATED LOAD (kN)
400	21.1	2.7
600	8.8	

Loads heavier than these specified in the table above must be considered at the design stage.

### Notes

1. The deflection limit of span/200 (sls) has not been exceeded.
2. The concentrated loads can be sustained under load applicator 350mm<sup>2</sup> or greater.
3. The above capacities are working loads that need to be factored in accordance to Section 4 of AS/NZS 1170.0 to get uls loading.
4. A working load of 1kPa has been allowed for partitioning walls and floor coverings while establishing the capacities in Table 3.
5. HardiePanel Compressed Sheet will provide these capacities even if it becomes saturated.

Contact your builder, designer or engineer if in doubt or Ask James Hardie 0800 808 868.

## 3.3 FRAMING SET OUT

### 3.3.1 NEW FLOORS

Timber framing must either be in accordance with NZS 3604 'Timber Framed Buildings' or be as per specific design to AS/NZS 1170 'Structural Design Actions' and NZS 3603 'Timber Structure Standard'.

Floor joists must be 45mm minimum wide.

The framing centres must not exceed those given in this installation manual. When referring to NZS 3604 for floor joist spans, it is recommended that the spans are reduced to 80% of maximum span specified in this standard.

The framing member widths must conform to the sizes provided in this installation manual.

Moisture content in timber floor joists must not exceed 20% at the time of installation of HardiePanel Compressed Sheet.

When fixing Tile and Slate Underlay over wooden particle board or plywood floors, the moisture content in these substrates must be less than 16%.

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

### 3.3.2 FOR TILED FLOORS

For fixing Tile and Slate Underlay, ensure that the substrate is suitably rigid to accept tiles. The deflection in a substrate can crack the floor tiles.

For fixing HardiePanel Compressed Sheet for tiled applications, the floor joists must be provided at 400mm centres maximum and nogs at maximum 1200mm centres to support all sheet edges (refer Figure 9).

### Note

Floor joists @ 400mm c/c maximum spacing is required to ensure minimal deflection. Tile grouts and adhesives can be detrimentally affected by even small deflections. For tiled applications reduce spans specified in NZS 3604 by 20%.

### 3.3.3 FOR UN-TILED FLOORS

Floor joists shall be provided at maximum 600mm centres and nogs at maximum 1200mm centres, to support all sheet edges (refer Figure 6).

## 4 Internal floor — dry area

### 3.3.4 EXISTING TIMBER FLOORS

Remove all existing floor coverings to expose timber flooring. Check floor boards to make sure they are firmly nailed to the floor joist. Loose boards must be re-fixed firmly into floor joists.

Floor boards must be reasonably flat for Tile and Slate Underlay. If the boards are badly warped or cupped the whole floor should be rough sanded to level off the surface before Tile and Slate Underlay is fixed.

Bearers must be in contact with piles. If they aren't, they should be packed to ensure there is no deflection / settlement expected in the floor.

Ensure the floor is clean of dust, dirt and grease before fixing underlay sheets.

### 3.4 SUB FLOOR VENTILATION

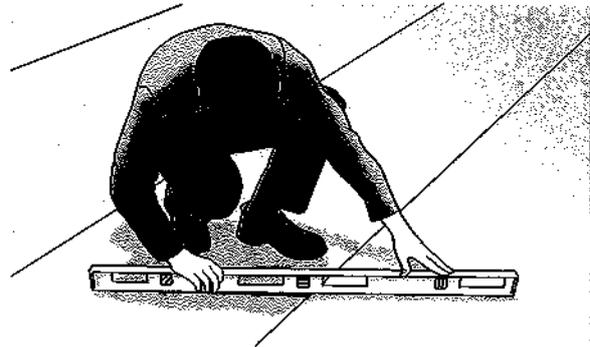
Check that adequate ventilation exists under all timber floors (especially new floors) and that the areas are free from damp. Refer to NZS 3604 for ventilation requirements.

### 4.1 TILE AND SLATE UNDERLAY INSTALLATION

#### SUBSTRATE PREPARATION

##### Step 1

Use a straight edge to check that the floor is not out of level by more than 1mm over a 1m length.



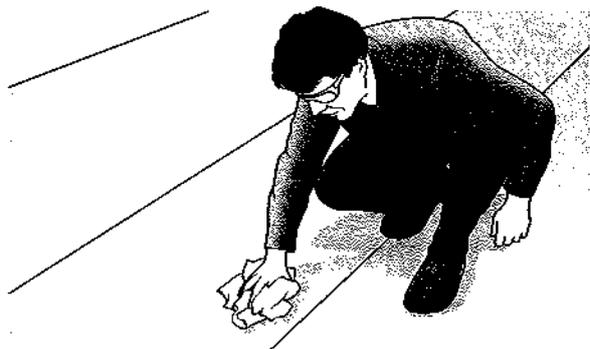
##### Step 2

If the floor is warped or cupped the whole floor should be rough sanded before the underlay is fixed.



##### Step 3

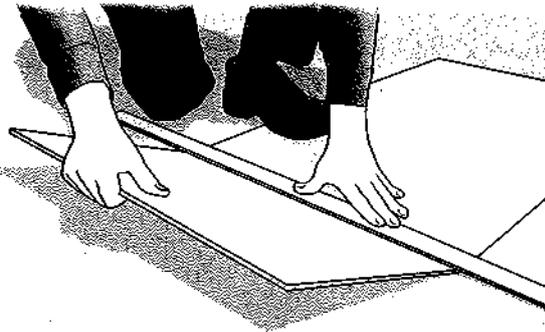
Ensure floor substrate and James Hardie underlay sheets are clean of dust, dirt and grease before fixing underlay sheets.



## CUTTING

Use a straight edge as a guide when scoring Tile and Slate Underlay. Score the face of the sheet.

Firmly support sheet near cut while snapping upward to break.

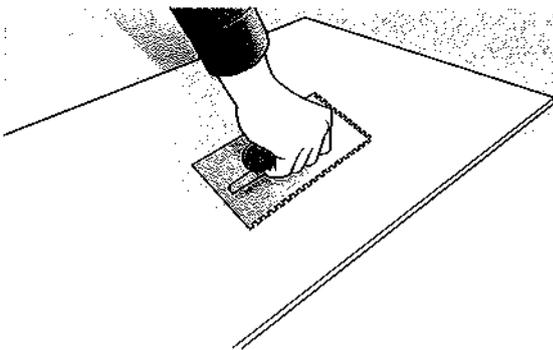


## TILED FLOOR APPLICATIONS UNDERLAY FIXING

When fixing tile and slate underlay over particle board / plywood / composite flooring substrates adhesive must be used in addition to nails.

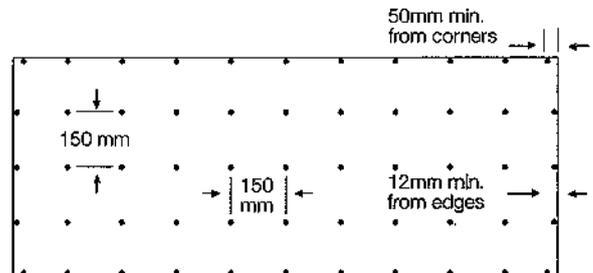
Spread adhesive on the back of the underlay sheet with a 3mm notched trowel/spreader, paying particular attention to the sheet edges. Alternatively apply a 5mm continuous bead of adhesive at 50mm centres, paying particular attention to the sheet edges.

Tile and slate underlay can be fixed only using the nails when fixed to tongue and groove timber floors or hardwood floors.

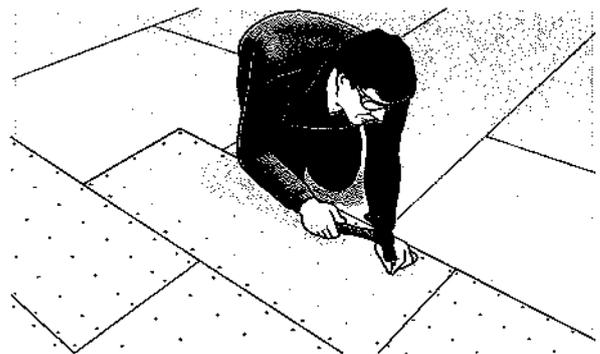


Sheets are laid closely in a staggered (brick) pattern. Sheets are laid perpendicular to the direction of flooring substrate, as joints must not coincide with the joints in the timber floor (minimum offset of 100mm is required for sheet flooring substrates). Ensure Tile and Slate Underlay is fixed to allow 5mm gap between wall and sheet edge. Temporarily fix each sheet with two or three nails to avoid movement. Fill gap between underlay and wall with flexible sealant.

Typical fixing of Underlay Sheet for tiled floors:

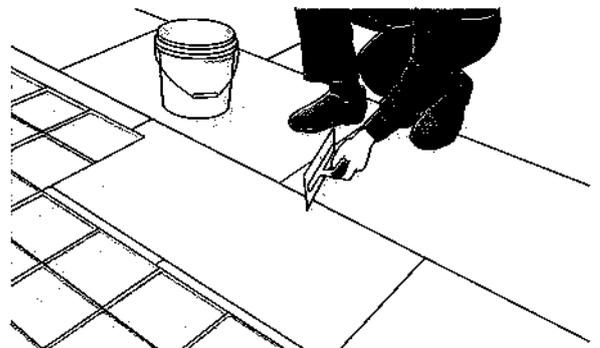


Fix sheets from the centre outwards using the pre-marked nailing pattern, driving fasteners flush with the sheet surface. Use 25 x 2.5mm underlay nails or the 25 x 3.06mm coil nail.



Apply tile adhesive over Tile and Slate Underlay in accordance with adhesive manufacturer's recommendations.

Install tiles in accordance with tile manufacturer's recommendations.



## VINYL FLOOR APPLICATIONS

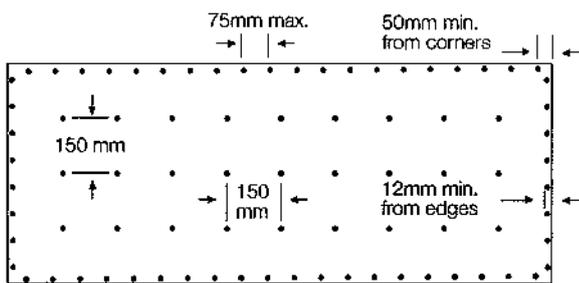
Tile and Slate Underlay must be fixed using nails at 75mm centres at all sheet edges and at 150mm centres in the middle of sheet as per nail dot marks. Over particle board, plywood and composite flooring products the nailing and adhesive application must be used. For tongue and groove timber or hardwood floors the nailing alone is suitable for underlay fixing.

Nails should be driven absolutely flush with the surface of the sheet. Failure to do this can result in nail heads showing through vinyl floor coverings. Do not damage sheet face with hammer indentations. Where minor height variations (3mm or less) occur, these may be levelled out by filling with self levelling compounds instead of sanding. Ensure the sheet is dry prior to applying the vinyl adhesive.

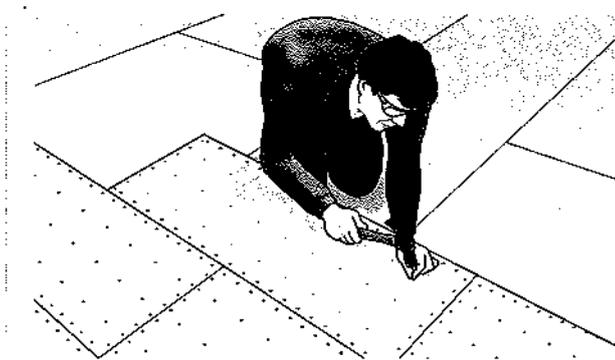
Flush-sand all joints and any other surface roughness/nailed areas with a belt or rotary sander. The Makita belt sander No.9401 fitted with a No.401 vacuum cleaner or other similar belt sander is recommended. Use medium grit sanding belts/papers. All Sanders must be fitted with effective dust collection devices - see recommended Safe Working Practices.

Failure to provide an absolutely smooth, ridge and indention-free underlay surface may cause unsightly blemishes to appear through the vinyl or cork floor coverings.

Typical fixing of Underlay Sheet for vinyl floors:



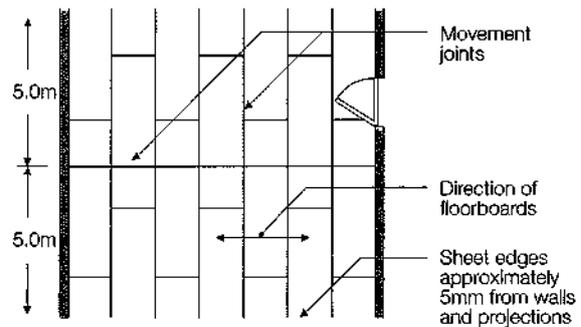
Fix sheets from the centre outwards using the pre-marked nailing pattern, driving fasteners flush with the sheet surface. Use 25 x 2.5mm underlay nails or the 25 x 3.06mm coil nail.



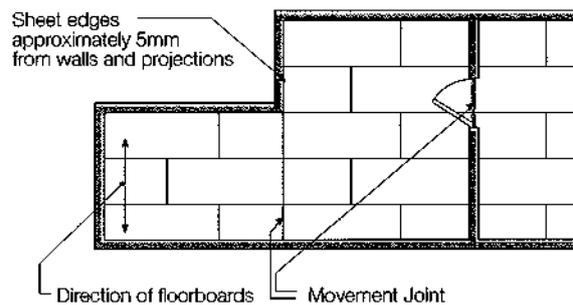
## MOVEMENT JOINTS

Provide movement joints where floor dimensions exceed 5m in one or both directions or where existing structural joints are located.

Position joints symmetrically about the centre of the floor as shown below.

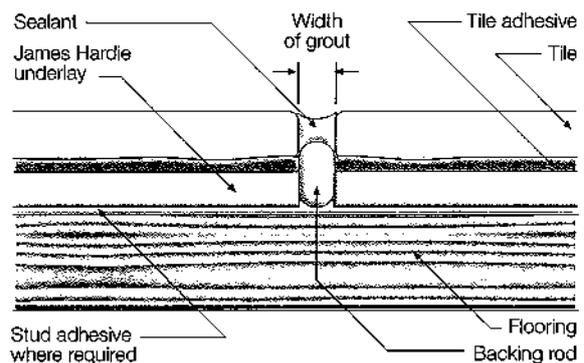


Also provide movement joints where there are changes of direction, such as an L-shaped room, and at doorways where the tiled surface is carried through to the next room as shown.



The movement joint in Underlay sheets must coincide with a joint in the tiles. Place a polyethylene foam-backing rod (PEF) in the bottom of the joint between the underlay sheets and tiles. Fill off the joint with a suitable sealant.

The width of the movement joint should be approximately equal to the width of the grout line. It is important that the movement joints be carried through to the top of the floor surface i.e. they should not be covered by tiles. Do not fill movement joints in Tile and Slate Underlay with grout.



## 4.2 HARDIEPANEL COMPRESSED SHEET INSTALLATION

### SUBSTRATE PREPARATION

For floor joist spacing and size refer to section 3.

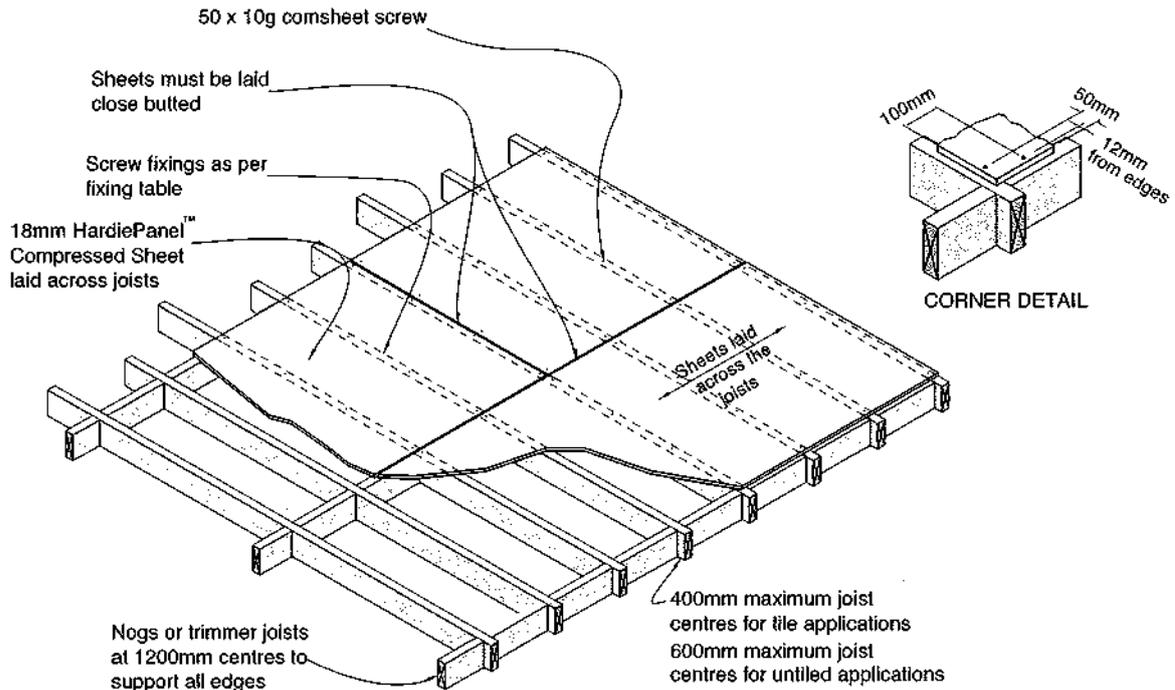


Figure 1: Layout

Table 4

HardiePanel Compressed Sheet fixing	
JOIST SPACING CENTRES	FASTENER MAXIMUM SPACING CENTRES
400mm	400mm
600mm	300mm

Sheet joints must be located on the centre line of a joist or nog. This is to ensure sufficient edge clearance for screw fixing of adjoining sheets along the sheet edges. Refer to Figure 2.

Sheet edges must be butted tightly together for tiling applications.

HardiePanel Compressed sheets must be dry before fixing to framing.

Long-span joists must also be avoided as excessive deflections can occur.

HardiePanel Compressed sheet is structurally stronger when sheets are laid across the joists, i.e. the long side of the sheet at right angles to the joists (refer Figure 1).

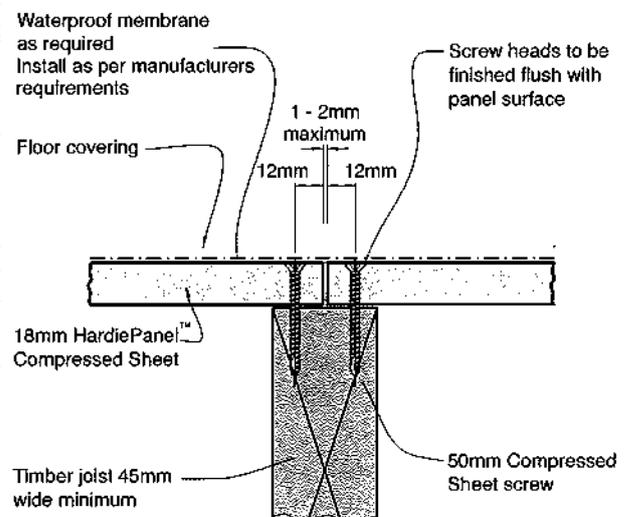


Figure 2: Joint detail

# 5 Internal floor — wet area

Screw fixings centres must be as per the fixing table to all timber framing (refer Table 3). Generally the screw fixings are countersunk 2-3mm below the panel surface. For tiling applications direct over HardiePanel Compressed Sheet the screws can be driven flush with the sheet surface for tiling in dry areas or where the tile adhesive is applied directly over the sheet.

In wet areas that have a waterproof membrane applied the screw fixings must be countersunk 2-3mm maximum below the surface and flushed over with two-part epoxy resin before applying the membrane.

All screw holes in the 18mm sheet must be pre-drilled using the 18mm Tungsten Carbide Drill Bit (refer Figure 3). Holes must be drilled with 1mm clearance over the diameter of the screw to be used.

Fix HardiePanel Compressed with 10g x 50mm Comsheet stainless steel screws (refer Figure 3).

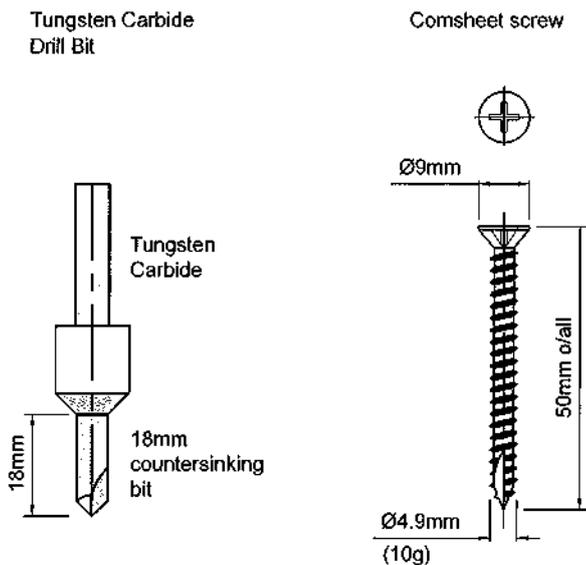


Figure 3: Drill bit and screw

## 5.1 TILE AND SLATE UNDERLAY INSTALLATION

Refer to clause 4.1 Step 1 to 3 for the installation of Tile and Slate Underlay.

### Waterproofing Membrane

A waterproofing membrane must be applied over Tile and Slate Underlay before applying tile adhesive.

Continue to lay tiles as per clause 4 step 4.

## 5.2 HARDIEPANEL COMPRESSED SHEET INSTALLATION

Refer to clause 4.2 for the installation of HardiePanel Compressed Sheet.

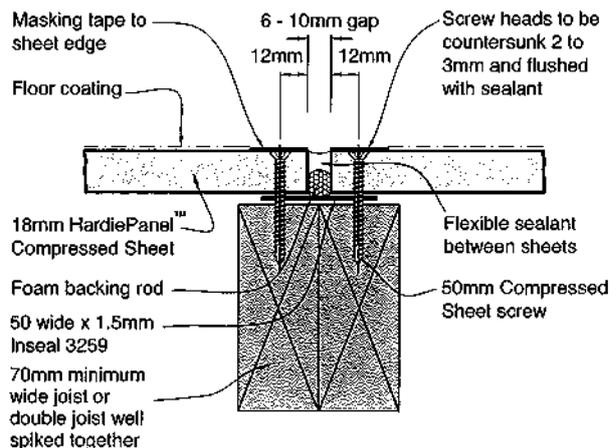
### Waterproofing Membrane

A waterproofing membrane must be applied over HardiePanel Compressed Sheet before applying tile adhesive.

When tiles are continuous over the butt joint of HardiePanel Compressed floors, all joints must be tied with a 200mm-wide strip of fibreglass mesh embedded into the membrane.

## 5.3 CONTROL JOINTS

In internal applications a control joint must be provided in HardiePanel Compressed Sheet at 5m in both directions or at locations where dimensions change. Refer Figure 4. Control joints must be continued through the tiles and filled with a flexible sealant.



### Notes for Figure 4:

1. Prime the joints before applying the flexible sealant.
2. Use only good quality flexible sealant such as Sika Silaflex® MS, Sikaflex® AT-Facade or similar.
3. For paving paint finishes the finish coating must be stopped each side of the flexible sealant to avoid ripping of the paint finish.
4. In some cases the sealant can colour match the finish coating, check with the sealant manufacturer.
5. Joint preparation and priming must be carried out according to the sealant manufacturers instructions.
6. For membrane coatings the joint sealant must be checked for compatibility with the coating applicator as the coating is carried over the sealant joint.

Figure 4: Control joint

# 6 External deck

Refer to Section 3 for framing information / requirements.

HardiePanel Compressed Sheet is resistant to intermittent wetting. However, for durability and long term performance the sheet must have the finishes applied within 90 days of installation. For external decks the minimum fall is 1 to 40.

Finishes over HardiePanel Compressed Sheet can be tile, marble, slate or granite stone finishes, suitable paving paints or specialist applied coatings such as Ados, Nuplex or Dulux. A water proofing membrane must be applied over the HardiePanel Compressed Sheet before applying tiles where there is a living / habitable space under the deck.\*

\*check with your local Territorial Authority for their specific requirements in this area.

## 6.1 HARDIEPANEL COMPRESSED SHEET FIXING

The HardiePanel Compressed Sheet must be dry before fixing to framing. Fixings must be as per Table 4.

The sheets must be laid across the floor joists. All deck and floor applications must be modelled to suit individual sheet sizes.

### Control Joint

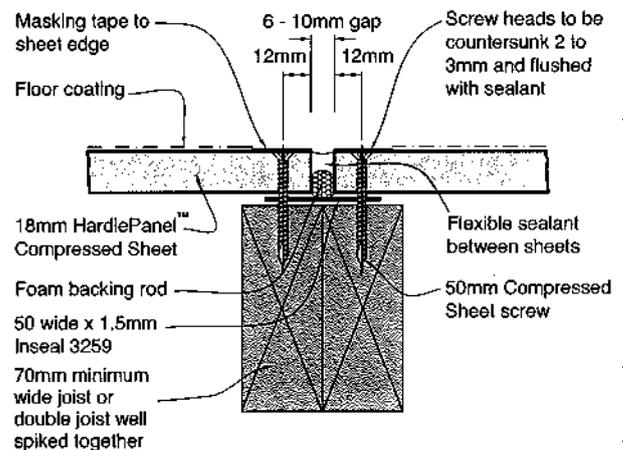
A control joint must be provided around a bay size of 3600 x 2400mm maximum. Where the deck is less than 2000mm wide, a control joint must be provided at 4200mm maximum centres along its length.

## 6.2 JOINTING OPTIONS

There are two methods of sheet joint set out:

### Method 1: Sealant Control Joint

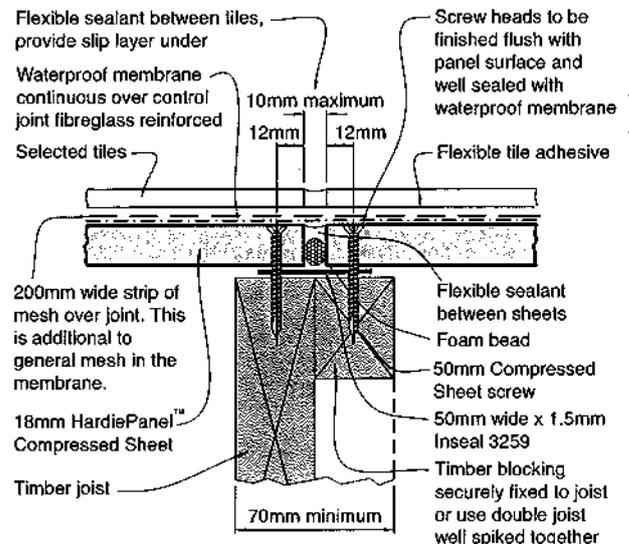
The sheets can be installed using a perimeter sealant control joint (refer Figure 5 or 6) around all sheet edges. Sheet edges are to be spaced minimum 6mm to a maximum of 10mm to allow for the perimeter flexible control joint detail. The tiles are then cut and modelled to suit the sheet size. A full depth sealant joint as in Figure 5 and Figure 6 is required. Sheet edges must be painted / sealed before applying the sealant.



Notes for Figure 5:

1. Prime the joints before applying the flexible sealant.
2. Use only good quality flexible sealant such as Sika Silaflex<sup>®</sup>MS, Sikaflex<sup>®</sup>AT-Facade or similar.
3. For paving paint finishes the finish coating must be stopped each side of the flexible sealant to avoid ripping of the paint finish.
4. In some cases the sealant can colour match the finish coating, check with the sealant manufacturer.
5. Joint preparation and priming must be carried out according to the sealant manufacturers instructions.
6. For membrane coatings the joint sealant must be checked for compatibility with the coating applicator as the coating is carried over the sealant joint.

Figure 5: Un-tiled control joint detail



These joints use materials that must be flexible

Notes for Figure 6:

1. Prime the joints before applying the flexible sealant.
2. Mask out the joint on both faces before applying the sealant.
3. Use only good quality flexible sealant such as Sika Silaflex<sup>®</sup>MS, Sikaflex<sup>®</sup>AT-Facade or similar.
4. Joint preparation and priming must be carried out according to the sealant manufacturers instructions.
5. Tile joint must coincide with sheet joint.
6. For membrane coatings the joint sealant must be checked for compatibility with the coating applicator as the coating is carried over the sealant joint.

Figure 6: Tiled control joint detail

**Method 2: Rigid Bonded Joints**

To achieve a bigger bay size area the sheets can be bonded together to form a rigid joint to achieve a bay size of 3600 x 2400mm as shown in Figure 7 and Figure 8. The tiles can be laid continuously over the rigid joints to form a maximum bay size of 3600 x 2400mm. When the tiled area is greater than the maximum bay size (3600 x 2400mm), a silicone control joint as per Figure 6 must be placed between the adjacent bonded panel. Control joints must continue through the tiles.

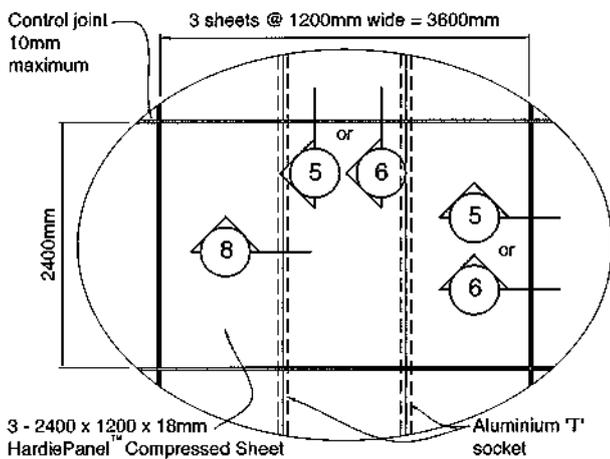
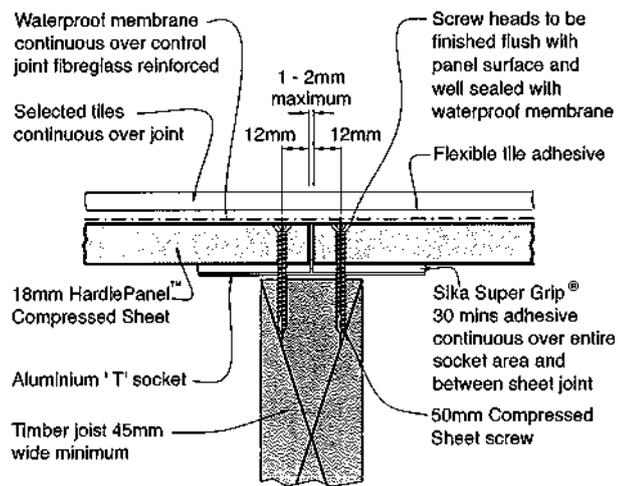


Figure 7: Bay size -- 3600 x 2400mm



These joints use materials that must be rigid

Figure 8: Rigid joint detail

The expressed joints between all adjacent sheets function as control joints.

When covering sheets with paving paints, pebbles or a similar finish; these expansion joints must be carried up through the finishes.

Sheets must be screw fixed at maximum centres as per fixing table to all timber or steel framing (refer Figure 9). The edge distance is 12mm. Keep fixings minimum 50mm one direction and 100mm the other direction for corners. Fix the sheet from the centre working towards the outside to avoid drumminess.

HardiePanel Compressed Sheet must be laid across the joists i.e. the long side of the sheet at right angles to the joists (refer Figure 9).

Screw holes and countersunk holes must be drilled in one operation with the 18mm tungsten carbide drill bits available from stockists of James Hardie building products (refer HardiePanel Compressed Sheet accessories). The recommended drill speed for this bit is 400 to 560 rpm. Incorrect speed will snap the drill bit.

For fixing HardiePanel Compressed Sheet to timber framing use 50mm x 10g stainless steel pozi-drive Compressed Sheet screws available from stockists of James Hardie building products (refer HardiePanel Compressed Sheet accessories).

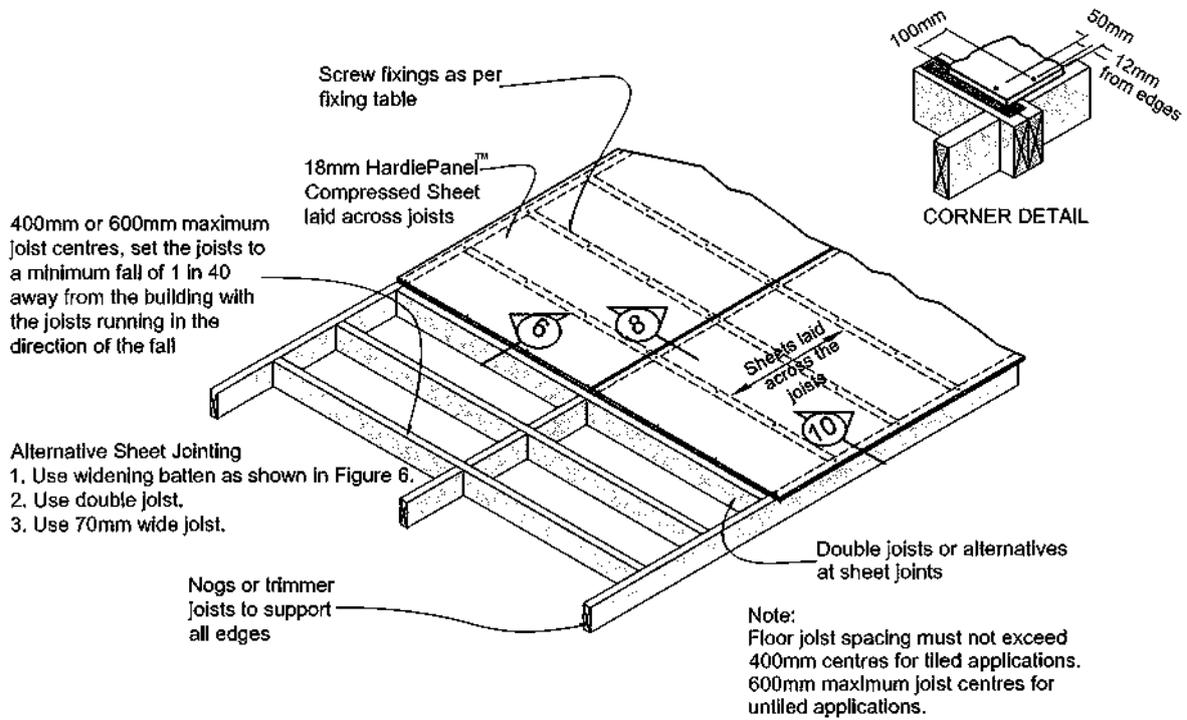


Figure 9: Timber support and screw fixing

Generally, for tiling applications the Compressed Sheet screw head can be finished flush with the sheet surface but when a waterproofing membrane is to be applied the screw head is required to be countersunk below the sheet surface by 2mm min and fill over with an epoxy. Ensure compatibility with the waterproof membrane.

### 6.3 DECK JACKS

Deck jacks can be used with HardiePanel Compressed Sheet at 600mm centres maximum. The HardiePanel Compressed Sheet must be waterproofed on all sides and edges.

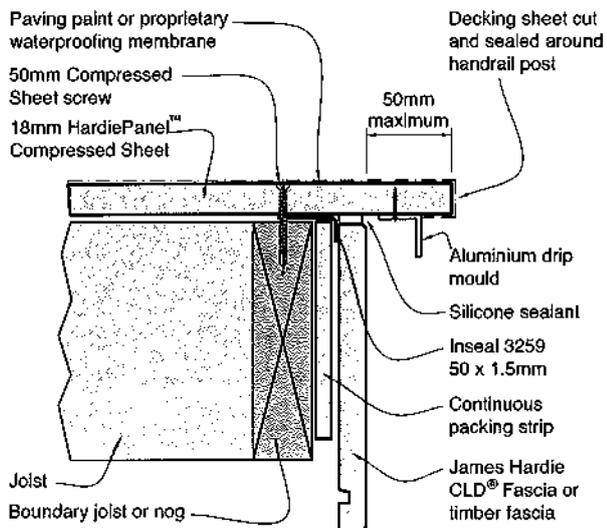


Figure 10: Decking edge for non-tiled decks

# 7 Waterproofing

For all internal wet areas and exterior tile applications HardiePanel Compressed Sheets must be waterproofed in accordance with AS 3740 prior to tiling.

All sheet fixing must be completed to this specification before the primer and waterproofing membrane is applied.

Ensure the sheet is dry and free from surface dust and dirt before applying the primer.

The primer and waterproof membrane can be applied directly over the countersunk screw/flush nail heads. Ensure compatibility.

Apply a coat of suitable primer to the entire surface of the Tile and Slate Underlay / HardiePanel Compressed Sheet. Follow the manufacturer's instructions for coverage areas, and specific instructions. For suitable Waterproofing Manufacturers refer to table 5.

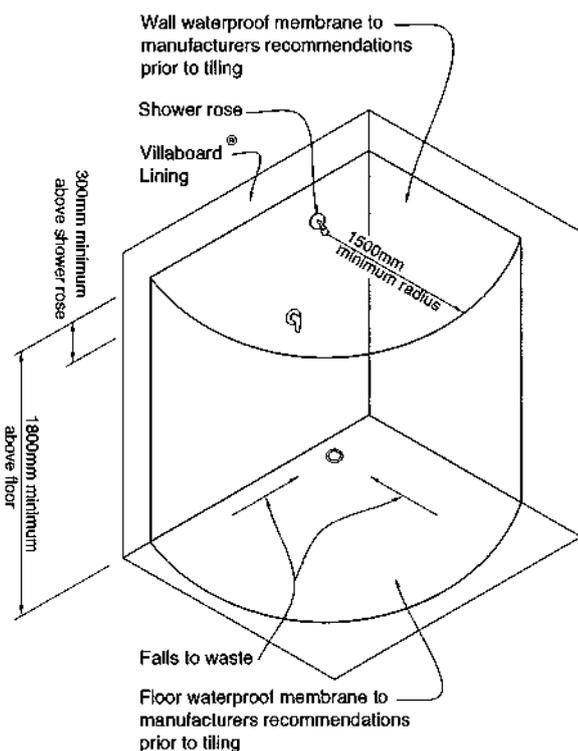
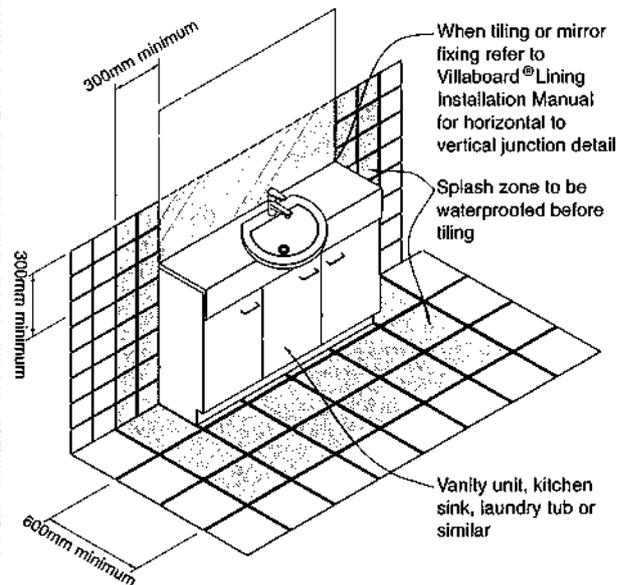


Figure 11: Sealing around splash zones (showers)



Note: The extent of floor or wall waterproofing depends on the extent of water to be splashed over these areas. Recommended area to be waterproofed outside of bath, shower or vanity is a minimum of 300mm on walls and 600mm on floors.

Figure 12: Sealing around splash zones (vanities)

Prime sheet and apply coat of selected waterproof membrane with associated mesh as per waterproof manufacturers' recommendations.

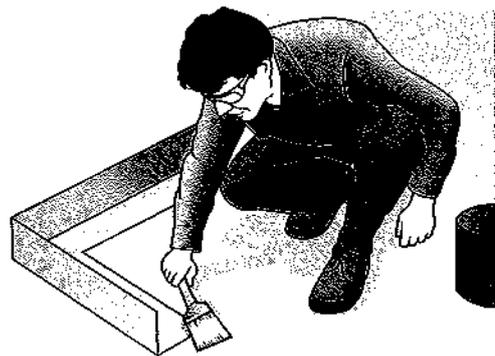


Figure 13: Waterproofing floor to wall

# 8 Finishes

## GENERAL

James Hardie flooring must be finished with a suitable floor covering to suit the intended application. For the suitability and installation requirements of floor coverings, check with the manufacturer.

### Screeds

Where the application requires the flooring have falls created and this was unable to be achieved within the floor framing prior to flooring being installed, a 15mm minimum mortar bed screed may be used. An alternative is an epoxy mortar screed. The surface of the flooring must be thoroughly clean and dry prior to applying the screed as per manufacturer's instructions. To prevent cracking of floor tiles, the mortar bed must be reinforced over all joints in flooring sheets.

### Selection of Tiles

The following brief notes do not cover all aspects of tiling. Further advice should be sought from specialists in these areas.

The importance of choosing the proper tile for a given environment cannot be stressed enough. Manufacturer's catalogues indicate the recommended uses and limitations of their products and should be consulted when unsure.

### Tile adhesives

Because of possible differential movement between tiles and the Tile and Slate Underlay and the HardiePanel Compressed Sheet, only approved flexible adhesive and grouts must be used.

Refer to the adhesive manufacturers' specifications for sheet preparation before applying the flexible tile adhesive.

The recommended brands of waterproof membranes and tile adhesives are shown in Table 5. It is essential that all tile systems such as primers, waterproofing membranes, exterior grade flexible adhesives and grouts are all supplied by the same manufacturer to ensure compatibility of products and warranty protection.

### Marble Floor Tiles

Marble is a relatively weak material and if used as a flooring material should be isolated from structural movement. This can be achieved by modifying the flooring system to incorporate a fully reinforced mortar bed as shown in Figure 15. It is recommended that the services of a tradesperson experienced in the application of marble tiles be obtained.

### Tiling Practice

Refer to the selected tile manufacturer for complete details regarding the laying and fixing of the ceramic tiles, marble, slate and granite stone. Reference can also be made to the BRANZ publication "Good Tiling Practice".

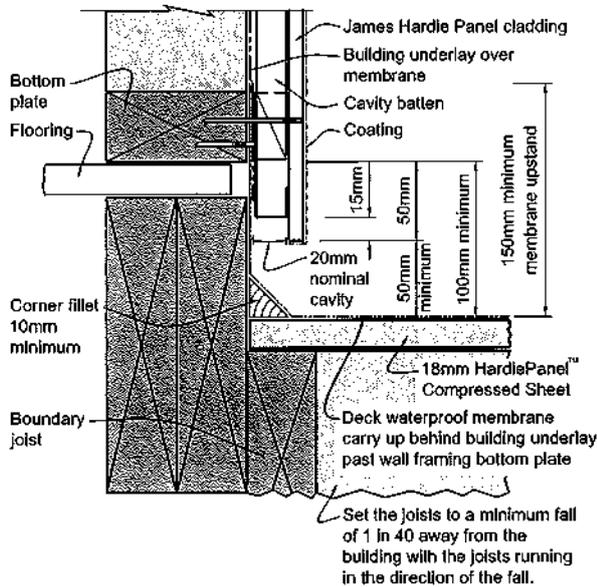


Figure 14: Waterproofing deck to wall junction with cavity

Table 5

### Recommended waterproofing membranes/tile adhesives

Mapel NZ Ltd

Superflex® 'Ardex Liquid Membranes' from Ardex NZ Ltd

Flexi-Seal® from Flexco (NZ) Ltd

DuroSet™ and DuroQik™ from Waterproofing Systems Ltd

Strataflex from Protective Surfaces Limited

ASA Waterproofing Membranes from Bostik

For coverage information of the selected waterproof membrane for walls and floors refer to manufacturer's recommendations. Waterproofing membranes must be applied in accordance with their manufacturers' requirements.

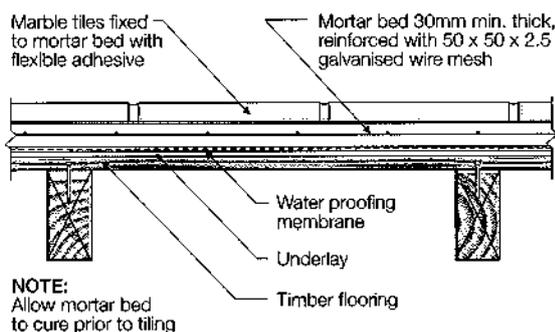


Figure 15: Marble floor tiles

## 9 Maintenance

Regular checks and maintenance of components including sealant, grout and waterproofing must be done as required by the manufacturer.

Certain floor coverings have protective clear coatings which enhance the durability and prolong the life of such floor coverings. For maintenance requirements check with both the floor covering and coating manufacturer.

## 10 Product information

### GENERAL

James Hardie flooring products are cellulose fibre reinforced cement building products. The basic composition is Portland cement, ground sand, cellulose fibre and water.

James Hardie floorings are manufactured to AS/NZS 2908.2 'Cellulose- Cement Products Part 2: Flat Sheets' (ISO 8336 'Fibre Cement Flat Sheets').

James Hardie flooring products are classified Type B, Category 3 in accordance with AS/NZS 2908.2 'Cellulose-Cement Products'.

### PRODUCT MASS

Based on equilibrium moisture content the approximate mass of:

- Tile and Slate Underlay is 8.87 kg/m<sup>2</sup>.
- HardiePanel Compressed Sheet is 33 kg/m<sup>2</sup>.

NOTE: Dry HardiePanel Compressed sheets can vary in moisture content with the seasons and prevailing weather conditions. As a guide a dry sheet can vary between 4% moisture content in summer and 12% in winter.

### DURABILITY

#### Resistance to moisture/rotting

James Hardie floorings have demonstrated resistance to permanent moisture induced deterioration (rotting) by having passed the following tests in accordance with AS/NZS 2908.2:

- Water permeability (Clause 8.2.2)
- Warm water (Clause 8.2.4)
- Heat rain (Clause 6.5)
- Soak dry (Clause 8.2.5)

#### Resistance to Fire

James Hardie floorings are deemed to be non-combustible.

James Hardie floorings have been tested by CSIRO and are classified as a Group 1 material.

James Hardie floorings have the following early fire hazard indices (tested to AS 1530 Part 3).

#### Early fire hazard indices

Flammability (FI)	0
Spread of Flame Index (SFI)	0
Heat evolved index	0
Smoke developed index (SDI)	0 - 1

## Product warranty

February 2013

**WARRANTY:** James Hardie New Zealand ("James Hardie") warrants for a period of 15 years from the date of purchase that the Tile and Slate Underlay and HardiePanel™ Compressed Sheet (the "Product"), will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting, fire and damage from termite attacks to the extent set out in James Hardie's relevant published literature current at the time of installation. James Hardie warrants for a period of 15 years from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials. Nothing in this document shall exclude or modify any legal rights a customer may have under the Consumer Guarantees Act or otherwise which cannot be excluded or modified at law.

### CONDITIONS OF WARRANTY:

The warranty is strictly subject to the following conditions:

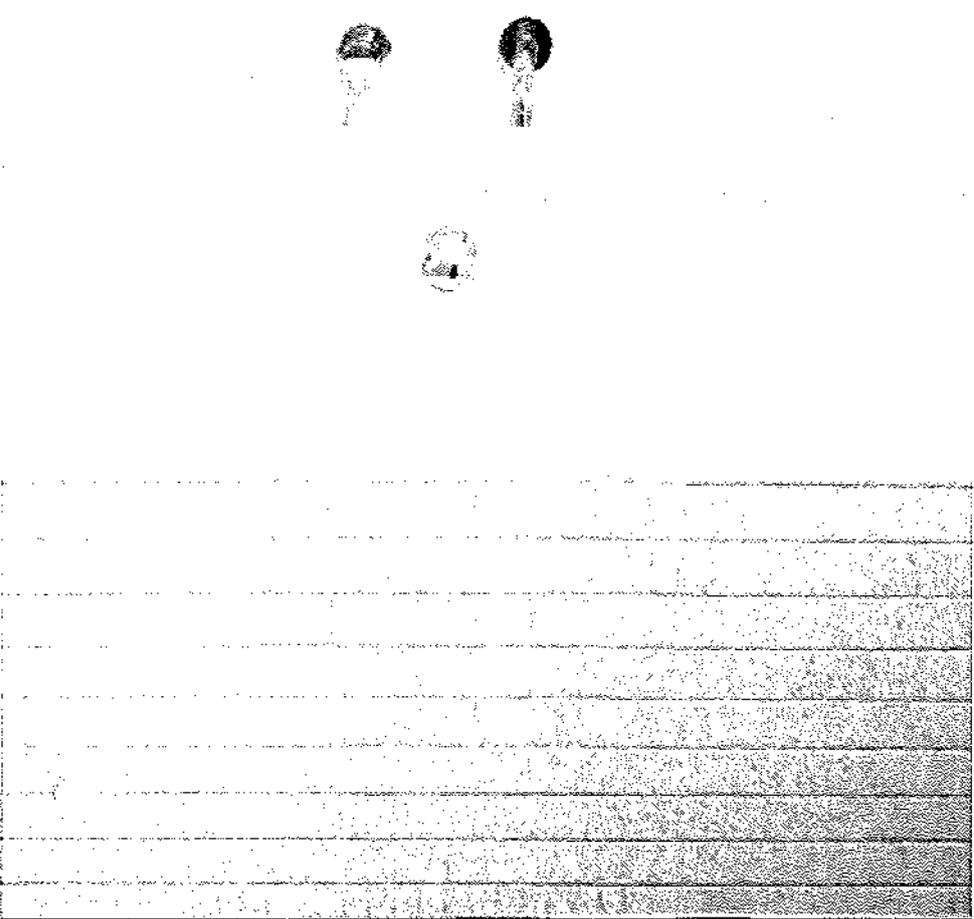
- a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation;
- b) this warranty is not transferable;
- c) the Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice;
- d) the project must be designed and constructed in strict compliance with all relevant provisions of the current NZBC, regulations and standards;
- e) the claimant's sole remedy for breach of warranty is (at James Hardie's option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product;
- f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces);
- g) all warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law;
- h) if meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

**Disclaimer:** The recommendations in James Hardie's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. James Hardie has tested the performance of the Tile and Slate Underlay and HardiePanel™ Compressed Sheet when installed in accordance with the Flooring Installation Manual, in accordance with the standards and verification methods required by the NZBC and those test results demonstrate the product complies with the performance criteria established by the NZBC. However, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (e.g. quality of workmanship and design) James Hardie shall not be liable for the recommendations made in its literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards, as it is the responsibility of the building designer to ensure that the details and recommendations provided in the relevant James Hardie installation manual are suitable for the intended project and that specific design is conducted where appropriate.

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





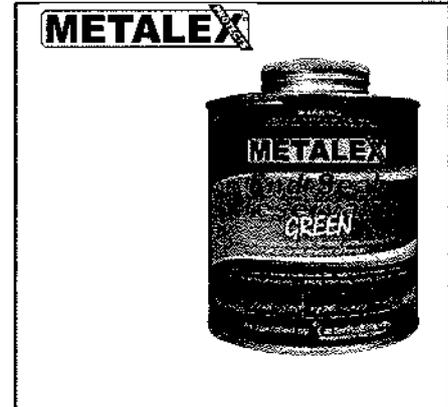
**Ask James Hardie™**

Call 0800 808 868

[www.jameshardie.co.nz](http://www.jameshardie.co.nz)

**HOLDFAST® METALEX® END SEAL TIMBER PRESERVATIVE GREEN  
DATA SHEET**

**Product Code:** 43958 (500ml), 43959 (20L)  
**Product Name:** HOLDFAST® METALEX® End Seal Timber Preservative Green



**Description**

HOLDFAST® METALEX® End Seal Timber Preservative Green is a coating preservative for end sealing timber, natural products and non-synthetic textiles subject to adverse environmental conditions where fungal attack or decay is likely. It can be applied by pressure treatment, brushing, spraying, padding, or dipping.

**Technical Data**

Type:	Metalex (green), Naphthenate solution
Weight per Litre:	820 grams
Flammability:	Non Flammable
Odour:	Mild, hydrocarbon
Viscosity Max (25°C):	Gardner B Max
Specific Gravity (25°C):	0.90 – 0.92
Stability:	Stable under normal conditions of storage.

**Product Information**

- Metalex® End Seal preservative green is specified for use with all CHH Hyspan, Hyjoist, Hyone, Hychord and Hy90 products.
- Active ingredients been used for preserving timber, canvas Hessian and other natural products since the early 1900s.
- They are naturally occurring organic compounds so provide efficacy and safer to use.
- Active ingredients are widely used in USA for high end risk power poles, railway sleeper End Sealing of timber and marina construction.
- Active ingredients are used extensively in remedial and preservative DIY treatments in the UK, Europe, South Africa, USA, Asia and NZ.
- Active ingredients are compliant with NZ standard NZS 3640:2003 for preservation of sawn lumber.

**Features**

- Metalex® End Seal is made with a specially formulated Non Flammable hydrocarbon solvent.
- Supplied Ready to use, no mixing required
- Faster drying than other solvent formulations.
- Minimum Odour, so safer to use than white spirit based aromatic solvents.
- Safe UN approved packaging.

**Applications**

- For extra protection to stop rot and prevent mildew growth
- For use on all woodwork of yachts, launches, plywood craft, caravans, truck and bus bodies
- Will not affect young plants when dry
- Prevents mould on concrete roof tiles, fibrolite etc
- Diluted with used lubricating oil is an economical preservative for soft woods on farm buildings not subsequently to be painted
- Suitable for use in natural fibre textiles such as hessian, scrim or canvas (NB: Use half the concentration specified in directions)
- Metalex® End Seal Preservative Green is suitable for use as a supplementary protection on the cut surfaces of treated timber as referred to in Appendix B5 of NZS 3640:2003 Chemical Preservation of Round and Sawn Timber.

## Packaging

**Colour:** Dark Green Viscous liquid.

## Surfaces

**Preparation:** Apply to unprepared natural surfaces in conditions of lowest moisture content as may be practicable. From neat application to one part to seven varying with end usage.

**Specification:** The coating shall be HOLDFAST® METALEX® End Seal Preservative Green solution diluted with mineral turpentine or power kerosene and applied by dipping and/or brushing and/or spray application.

**Recommended System:** Apply neatly to affected area. Re-coat after 5 - 10 minutes or when first coat is dry.

## Application

**Method:** By dipping brush, roller/brush (lamb's wool), airless or air atomising spray.

**Thinning:** No thinning required. Apply straight from the container.

**Temperature:** In the dried condition no effect on the base material

**Clean:** Mineral turpentine

**Coverage:** Timber - 7 - 10 square metres per litre dependant upon density and moisture content, and the surface finish i.e. either sawn or dressed.

**Drying:** 5-15 minutes per coat depending upon temperature and humidity.

## Application Limitations

Refer to Metalex® End Seal Preservative Green Technical Data Sheet for more detailed information.

HOLDFAST® METALEX® End Seal Preservative Green does not react to galvanising, however to avoid risk of staining it is recommended that Metalex (Green or Clear) should not be put into contact with galvanised or zinc coated surfaces until surface of material being treated with Metalex is completely dry. Further it is recommended that Metalex is not applied to 'Zincalume' coated surfaces.

HOLDFAST® METALEX® End Seal Preservative Green is suitable for use as a supplementary protection on the cut surfaces of treated timber as referred to in Appendix B5 of NZS 3640:2003 Chemical Preservation of Round and Sawn Timber.

Where painting or subsequent gluing operations are specified after the Metalex® End Seal preservative Green treatment, thin only with mineral turpentine and allow minimum drying period of 7 - 10 days before gluing or paint application. We recommend a preliminary adhesion test on all paint systems as results may vary.

## Health and Safety Recommendation

- Apply the usual industrial hygiene
- Adequate ventilation should be provided during application and use.
- Undue contact with the skin should be avoided.
- Individual specific recommendations or application and dilution using HOLDFAST® METALEX® End Seal Preservative Green may be obtained from the Metalex® general sales pamphlet upon request.

## Appendix/CHH Correspondence:

"Why are we doing this?"

This is to ensure that purchased treated LVL products with cut ends are then sealed with Metalex® End Seal Preservative Green by our customers.

We ask you to help drive this initiative as a Merchant of our products so we can together act responsibly in the interests of delivering code compliant product to our customers. *As it is mandatory to reseal and re-instate the treated envelope where the wood product has altered through cutting, drilling, machining, rebating, notching or planing.*

Carter Holt Harvey – Woodproducts will stock and distribute, from our Auckland Distribution Centre, the METALEX® End Seal Preservative 500ml tin can. It is premixed ready to use, quick drying and easy to apply to cut ends of treated product. It is non flammable and is green coloured for easy identification. These are a number of key benefits offered to our customers that will save them time, money and most importantly ensure they have correctly end sealed envelope treated product."

**Dave Thompson, Project Manager – Sales & Marketing, CHH – Woodproducts**

**WARNING: This product is designed for outdoor use. Indoor application may cause odour.**

**Remark**

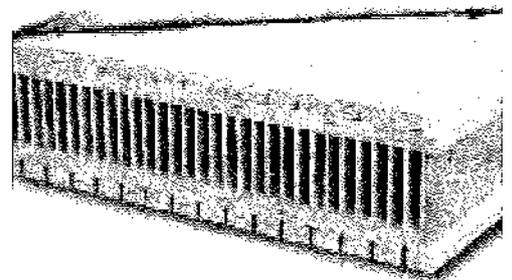
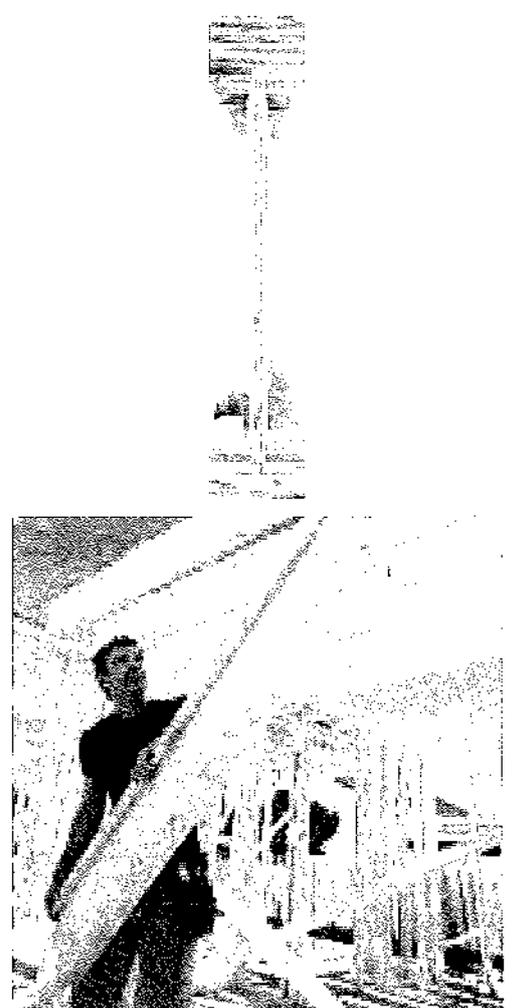
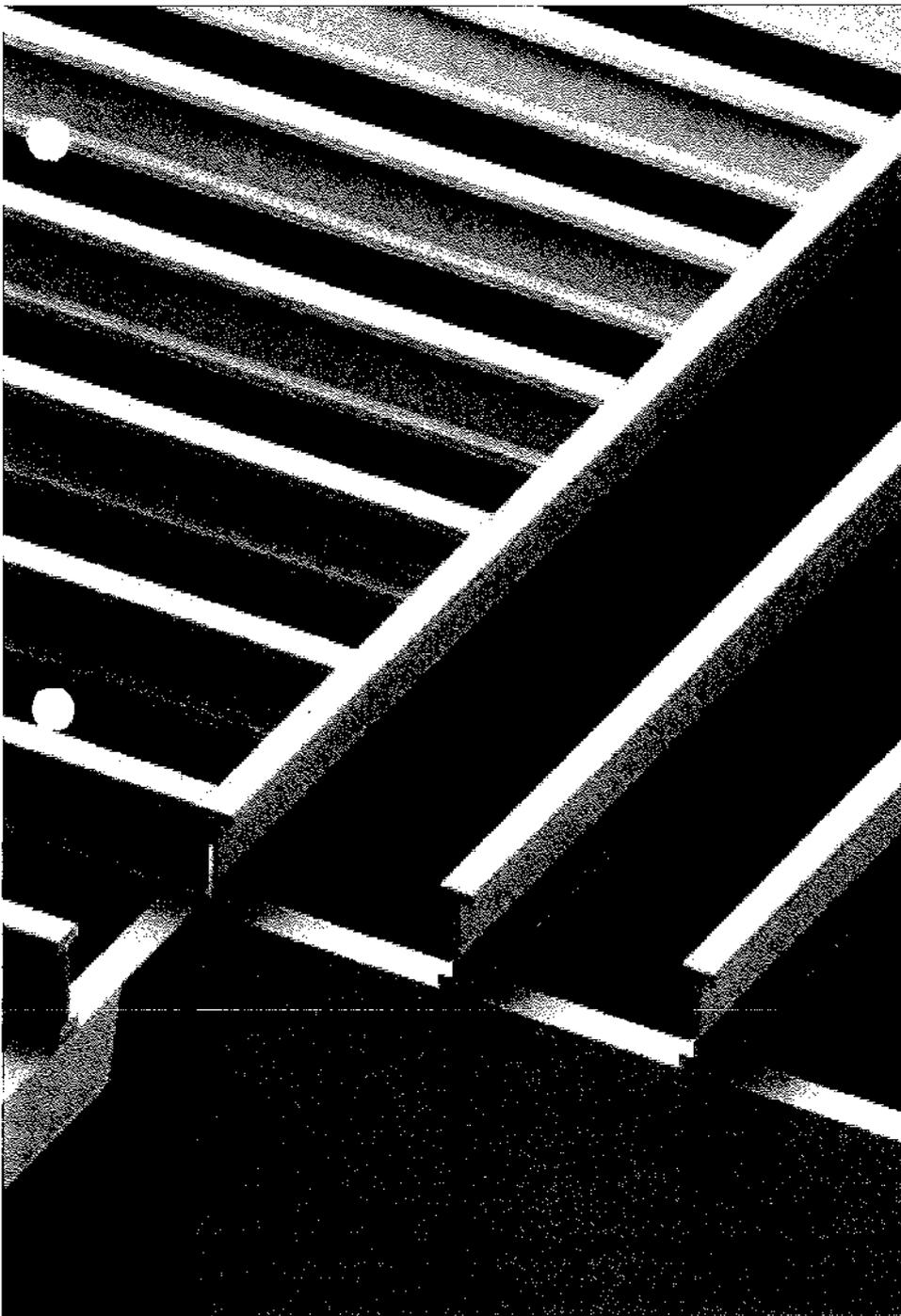
*The directives contained in this documentation are the result of our experiments and of our experience and have been submitted in good faith. Because of the diversity of the materials and substrates and the great number of possible applications which are out of our control, we cannot accept any responsibility for the results obtained. In every case it is recommended to carry out preliminary experiments.*

**Last Updated: 13 March 2008**

ENGINEERED  
JOISTS

hyJOIST

## Design & Installation Guide: 2.1



## More options for more economical floor joist layouts

Select the economy section (HJ240 63, HJ300 63 & HJ360 63) of appropriate depth to accommodate the spans of the main area of the floor. Cater for any larger spans in the floor area using the wider flange options of corresponding depth.

### Quality and performance

- Product quality – Plywood Association of Australasia ‘Product Certified’ for peace of mind
- Technical support – experienced engineering support, simply call 0800 808 131  
– ‘on-the-ground’ specialist technical representatives, willing and able to help
- Responsible conservative design – ‘maintaining the standard for consistency of performance’
- ‘Off the shelf’ convenience – readily available, ex stock via a building merchant, simply cut to length and install
- Treated – Optional LOSP treatment to H3 (equivalent to H3.1) as defined in AS/NZS 1604.4 (refer to treatment technical note on [www.chhfuturebuild.com](http://www.chhfuturebuild.com))



### Design

Consider the ‘hyJOIST SELECTION GUIDE’ below, summarising key parameters involved in selection of the appropriate joist sections. Information contained in this publication applies for floor joists used in houses. For more information refer either to this publication or designIT® software as set out in the following table. Use of designIT will provide a wider range of options and allow more optimum design.

For specific design of hyJOIST members refer to Technical Note 82, Limit States Design Information available from [www.chhfuturebuild.com](http://www.chhfuturebuild.com)

Design information	Literature	designIT
Spanning capabilities	✓	✓
Bearing requirements	✓	✓
Blocking for lateral support	✓	✓
Transfer of wind / earthquake forces through the floor depth	✓	
Web holes – permitted locations related to size, shape and span	✓	✓
Details for limited notching of flanges (at end supports only)	✓	
Hangers, brackets and fixing requirements for support of joists	✓	✓
Framing for stair voids		✓
Cantilevers for balconies	✓	✓
Joists supporting parallel load bearing walls	✓	✓
Joists supporting perpendicular load bearing walls (including cantilevers)		✓
Continuous hyJOIST blocking for support of load bearing walls	✓	✓
Joists supporting alternative floor mass & floor live loads		✓



# hyJOIST® selection guide

DIMENSIONS FOR DETAILING				hyJOIST® SECTION CODE	WEIGHT OF 5 METRE LENGTH	MAXIMUM HOLE SIZE FOR SERVICES <sup>2</sup>	SPAN - FLOOR JOISTS FOR HOUSES						
OVERALL DEPTH (mm)	CLEAR DISTANCE BETWEEN FLANGES (mm)	FLANGE WIDTH (mm)					JOIST SPACING (mm)				BALCONY CANTILEVER <sup>3</sup>		
		45	63				90	SINGLE SPAN		CONTINUOUS SPAN		450	600
		FLANGE OUTSTAND (mm) <sup>1</sup>					RECOMMENDED SPAN RANGE (m)				MAXIMUM (m)		
		18	27	39									
200	119	HJ200 45			HJ200 45	14.8 kg	118 mm	3.5 to 3.8	3.1 to 3.6	4.0 to 4.5	3.7 to 4.2	1.0	0.9
240	159	HJ240 63			HJ240 63	20.8 kg	158 mm	4.4 to 4.9	4.0 to 4.5	5.0 to 5.5	4.5 to 5.1	1.3	1.2
		HJ240 90			HJ240 90	28.8 kg		4.9 to 5.4	4.5 to 5.0	5.6 to 6.1	5.1 to 5.6	1.5	1.4
300	219	HJ300 63			HJ300 63	27.0 kg	218 mm	5.0 to 5.5	4.6 to 5.1	5.6 to 6.3	5.2 to 5.8	1.5	1.4
		HJ300 90			HJ300 90	30.9 kg		5.6 to 6.1	5.2 to 5.7	6.4 to 7.0	5.9 to 6.4	1.7	1.6
360	279	HJ360 63			HJ360 63	23.6 kg	278 mm	5.6 to 6.2	5.2 to 5.7	6.3 to 6.8	5.6 to 6.0	1.7	1.6
		HJ360 90			HJ360 90	33.0 kg		6.3 to 6.8	5.8 to 6.3	7.2 to 7.8	6.7 to 7.1	1.9	1.8
400	319	HJ400 90			HJ400 90	34.4 kg	318 mm	6.8 to 7.2	6.3 to 6.7	7.6 to 7.9	6.7 to 7.1	2.0	1.9

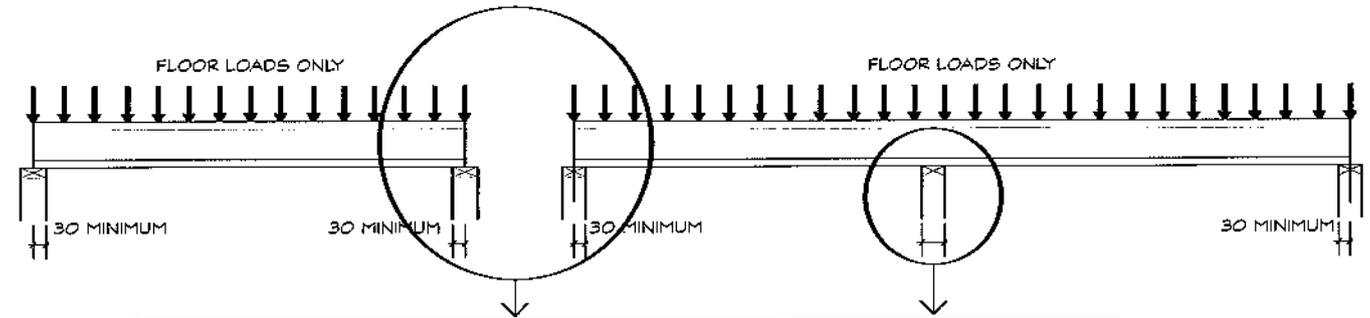
1. Used to determine the thickness of packing to pack web flush with flanges

2. Refer to page 9 / designIT™ for permitted hole locations and limitations

3. Refer to page 10 / designIT for further design information

# Bearing support

## For joists not transferring load from upper walls

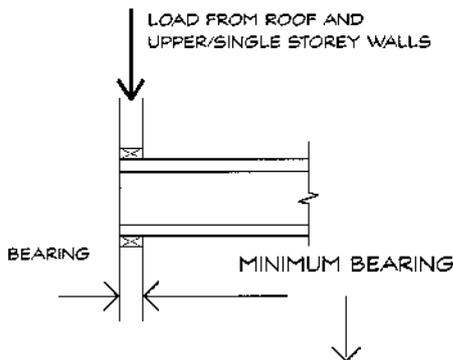


JOIST SPACING (mm)	END SUPPORTS SINGLE OR CONTINUOUS SPANS	INTERMEDIATE SUPPORTS CONTINUOUS SPAN	
	ALL	450	600
MINIMUM BEARING (mm)	30	45	65

designIT<sup>®</sup> may give reduced bearing requirements for specific cases.

## For joists transferring upper storey wall and roof loads at supports

### End supports - single or continuous spans

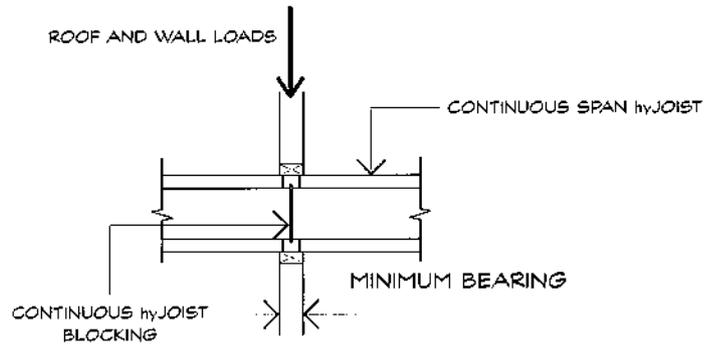


For joists supporting load bearing walls at end supports, provide bearing as specified in the table below or alternatively install continuous hyJOIST<sup>®</sup> blocking/'rimboard'/boundary joist.

LOAD TYPE	JOIST SPACING (mm)	
	450	600
MINIMUM BEARING (mm)		
LIGHT ROOF	45	65 <sup>1</sup>
HEAVY ROOF	65	90 <sup>2</sup>

1. If web stiffeners installed bearing may be reduced to 45 mm
2. If web stiffeners installed bearing may be reduced to 65 mm
3. For all cases bearing may be reduced to 30 mm if continuous full depth blocking or compression blocks are installed
4. Web stiffener installation as per Detail F6
5. designIT may give a reduced bearing requirement

### Intermediate supports - continuous spans

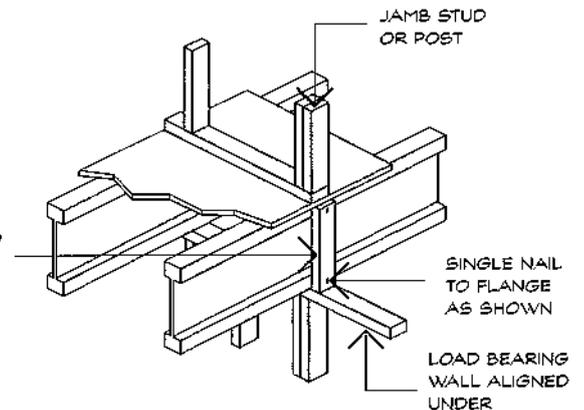


Minimum bearing to be as for joists supporting floor loads only. Load bearing wall to be supported by continuous full depth hyJOIST blocking.

### Concentrated loads from jamb studs/posts

Use compression blocks to transfer loads through to supports as shown. Refer to Detail F18.

ONE OR MORE COMPRESSION BLOCKS OF SIMILAR COMBINED CROSS SECTIONAL AREA TO THAT OF THE SUPPORTED JAMB STUD OR POST



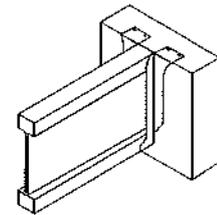
## For lower storey of 2 storey construction

Continuous full depth hyJOIST blocking should be installed to transfer compression loads from load bearing walls to the supports. In most cases continuous hyJOIST blocking will be adequate to support the roof, wall and floor loads. Refer to designIT for confirmation.

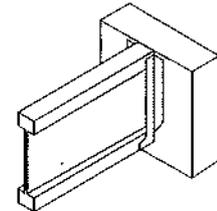
# Support

## Joist hangers for hyJOIST®

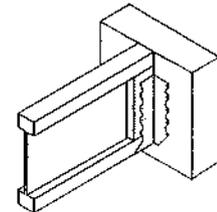
hyJOIST® SECTION CODE	MANUFACTURER OR DISTRIBUTOR	FACE MOUNT HANGERS				TOP MOUNT HANGERS*
		FULL DEPTH		PARTIAL DEPTH*		
		HANGER CODE	MINIMUM N <sup>o</sup> OF NAILS TO BEARER	HANGER CODE	MINIMUM N <sup>o</sup> OF NAILS TO BEARER	
HJ200 45	Pryda			FB47/176	10	LT200/50
	Mitek	JH47190	8	JH47120	8	
HJ240 63	Pryda	LF235/65	8	FB 65/170	12	LT240/65
	Mitek	IBHF24065	8			IBHT 24065
HJ240 90	Pryda	LF235/90	8	FB 94/152	12	LT 240/90
	Mitek	IBHF 24090	8			IBHT 24090
HJ300 63	Pryda	LF290/65	8	FB 65/170	12	LT300/65
	Mitek	IBHF 30065	8			IBHT 30065
HJ300 90	Pryda	LF290/90	10	FB 94/152	12	LT 300/90
	Mitek	IBHF 30090	10			IBHT 30090
HJ360 63	Pryda	LF340/65	10	FB 65/170	12	LT 360/65
	Mitek	IBHF 36065	10			IBHT 36065
HJ360 90	Pryda	LF 350/90	10	LF 290/90	10	LT 360/90
	Mitek	IBHF 36090	10			IBHT 36090
HJ400 90	Pryda	LF 390/90	12	LF 350/90	12	LT 400/90
	Mitek	IBHF 40090	12			IBHT 40090



TOP MOUNT HANGER



FULL DEPTH FACE MOUNT HANGER

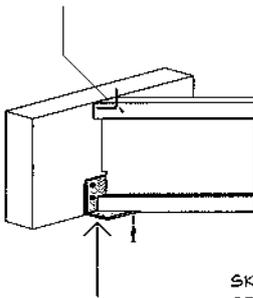


PARTIAL DEPTH FACE MOUNT HANGERS WITH WEB STIFFENERS

1. Nailing specified is for brackets face fixed to hySPAN®, MSG8 or VSG8, J5 (or better) timber bearer or stringer.
2. Brackets to be installed strictly in accordance with bracket manufacturers' recommendations. Note, nails for FB hangers are 35 x 3.15 flat head type; for all other hangers 40 x 3.75 flat head nails are specified.
3. Fix top mount hangers with 4, 35 x 3.75 flat head nails.

## Skew angle bracket for oblique joists

NAIL FIXING TO SUPPORT

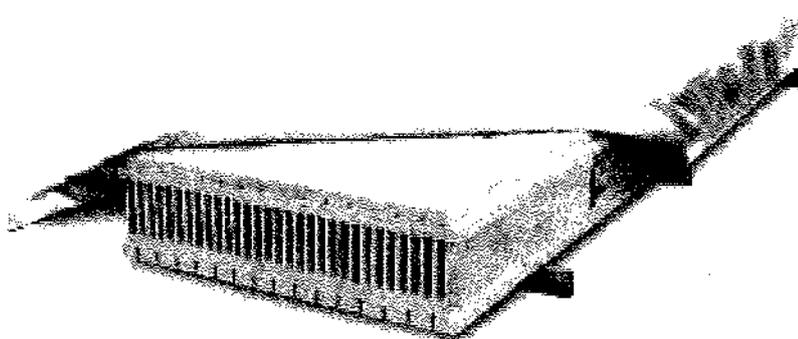


SKEW ANGLE BRACKET  
SPECIFIC DESIGN BY ENGINEER

ALLOWED	NOT ALLOWED	

## Storage

Prior to installation hyJOIST should be stacked on level bearers, at least 150 mm clear of the ground and kept dry.



# Typical floor layout

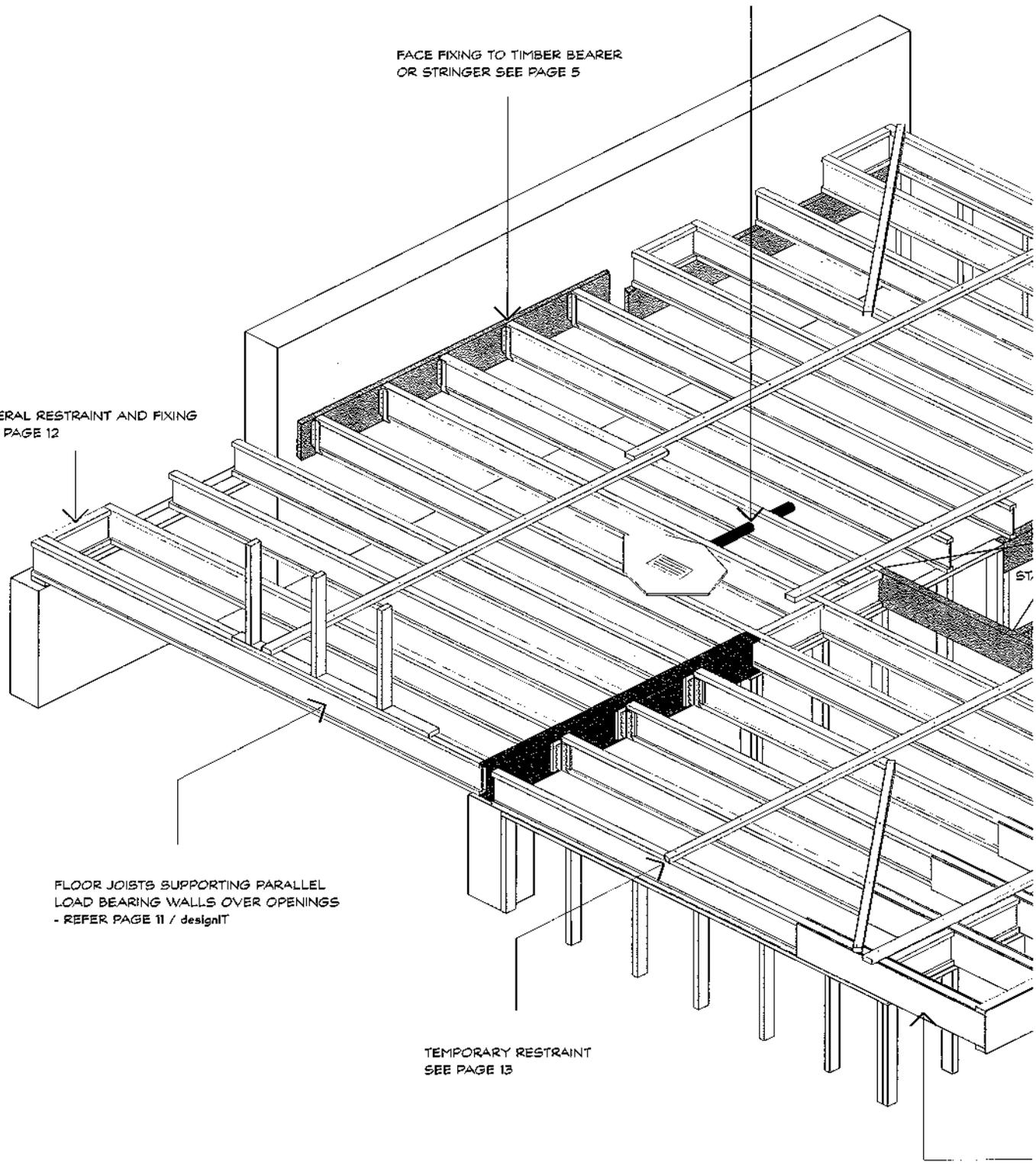
WEB HOLES FOR SERVICES  
SEE PAGE 9 / designIT®

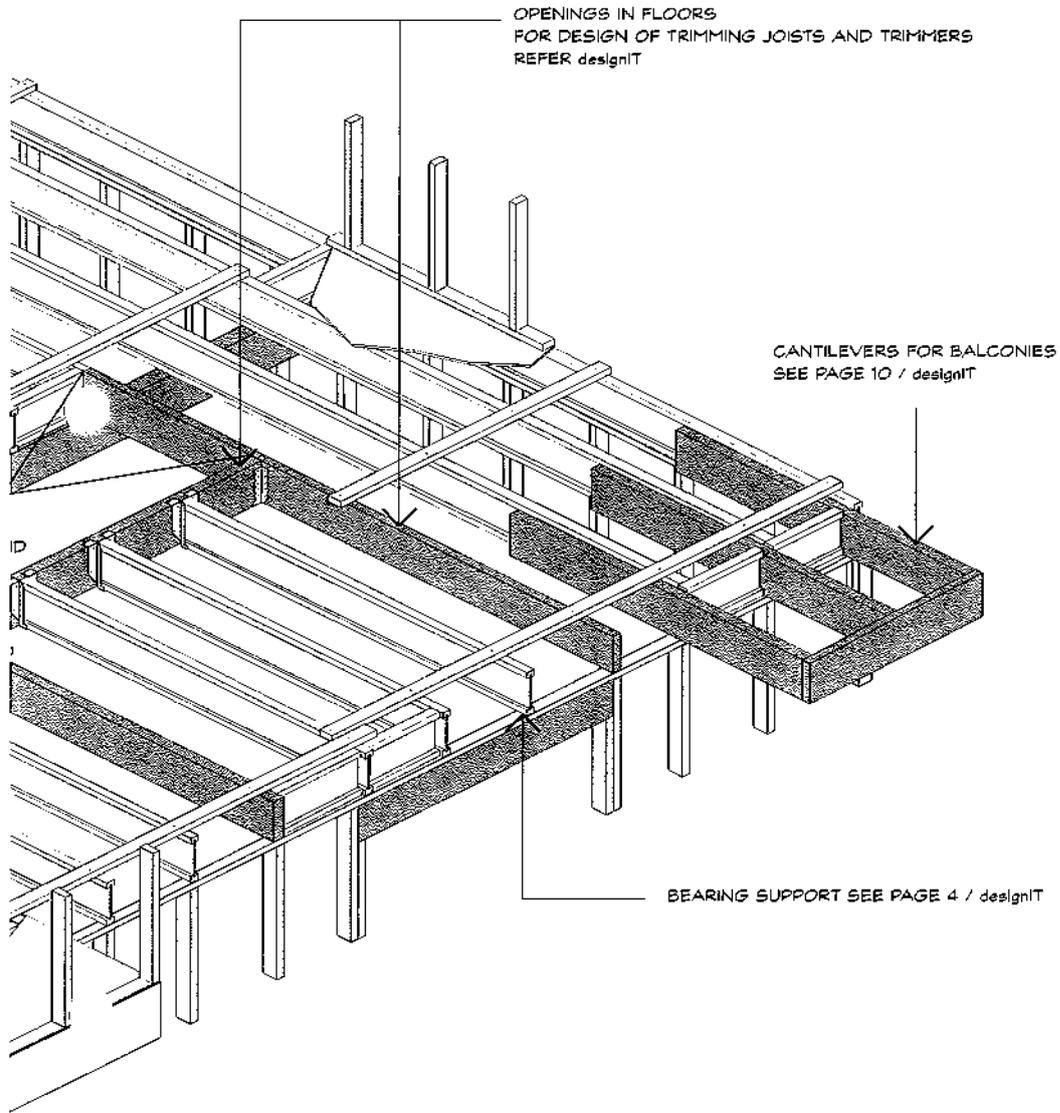
FACE FIXING TO TIMBER BEARER  
OR STRINGER SEE PAGE 5

LATERAL RESTRAINT AND FIXING  
SEE PAGE 12

FLOOR JOISTS SUPPORTING PARALLEL  
LOAD BEARING WALLS OVER OPENINGS  
- REFER PAGE 11 / designIT

TEMPORARY RESTRAINT  
SEE PAGE 13



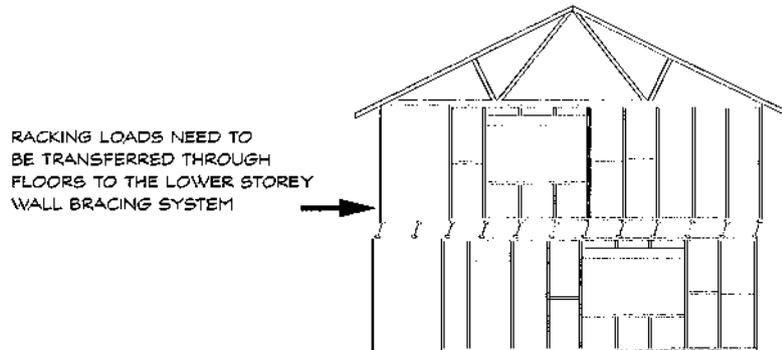


CANTILEVERS TO SUPPORT LOAD  
BEARING WALLS - REFER designIT

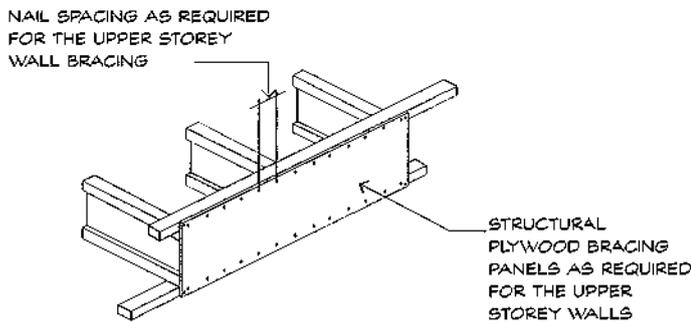
# Transfer of wind and earthquake forces between floors

The design of houses includes quantification of lateral loads due to wind and earthquake. Racking forces determined for design of upper level bracing must be able to be transferred through the floor depth to the lower level. Racking forces in the direction of the joists are catered for by the considerable longitudinal shear capacity of the joists. For forces perpendicular to the joists, blocking and/or perimeter 'rimboard' and their associated fixings (installed to provide lateral restraint) may or may not be adequate. In particular, the fixing of the floor diaphragm to 'rimboard'/blocking and in turn, fixing of 'rimboard'/blocking to the supports must be adequate to resist the horizontal racking force used for design of the upper floor wall bracing system.

Blocking using hyJOIST® with the required fixing is a practical and easy to install solution.



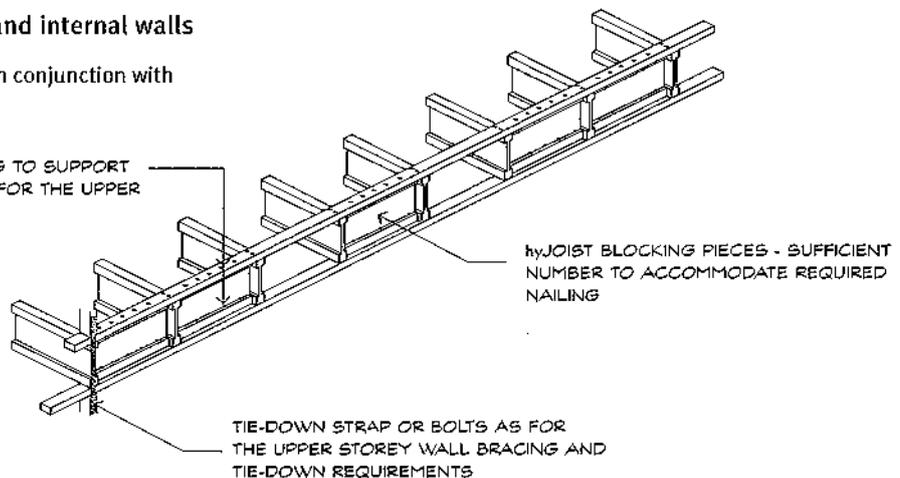
## Using plywood closures – at external walls



## Using hyJOIST® blocking – external and internal walls

At external walls, 'rimboard' may be used in conjunction with hyJOIST blocking.

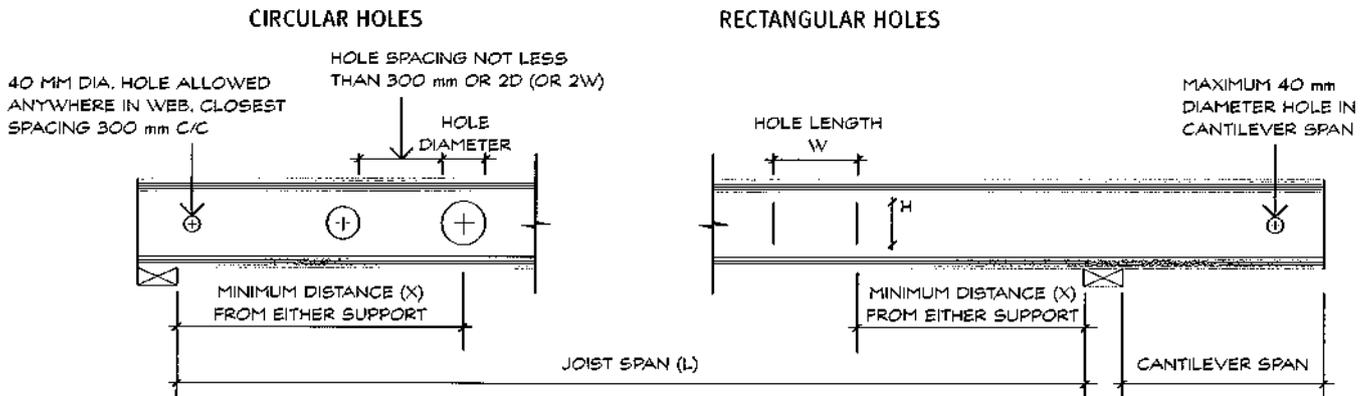
NAIL FIX PLATE TO BLOCKING AND BLOCKING TO SUPPORT TO MATCH CAPACITY OF NAILING REQUIRED FOR THE UPPER STOREY BRACING



# Web holes for hyJOIST®

Holes may be cut through the web of hyJOIST® provided they are located within the central part of the span as specified below.

For hole sizes other than those included below refer to the web hole calculator in designIT®. For cases involving non-uniform loading or where the possibility of locating the hole closer to supports needs to be assessed, use the web hole option in the floor joist calculator in designIT.



hyJOIST SECTION CODE	MAXIMUM HOLE DIAMETER (mm)	MINIMUM DISTANCE FROM SUPPORT 'X'	HOLE DIAMETER (mm)			
			ø80	ø110	ø125	ø150
CIRCULAR HOLES – MINIMUM DISTANCE 'X' FROM SUPPORT – (m)						
HJ200 45	ø118	0.34L	0.16L	0.28L	N/A	N/A
HJ240 63	ø158	0.38L	0.12L	0.21L	0.26L	0.33L
HJ240 90						
HJ300 63	ø218	0.41L	0.10L*	0.15L	0.18L	0.24L
HJ300 90				0.10L*	0.14L	0.20L
HJ360 63	ø278	0.42L	0.3 m*	0.08L*	0.11L	0.16L
HJ360 90		0.40L	0.3 m*	0.3 m*	0.3 m*	0.05L*
HJ400 90	ø318	0.40L	0.3 m*	0.3 m*	0.3 m*	0.08L*

\* Minimum distance from any support is 0.3 metres

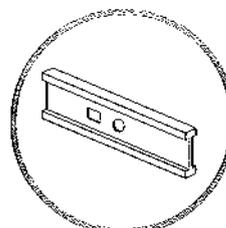
Example, if actual span 'L' = 4.0m then minimum distance 'X' from hole to support (see diagram) is 0.34 x 4.0 = 1.36m

hyJOIST SECTION CODE	HOLE SIZE		PERMITTED LOCATIONS FOR RECTANGULAR HOLES								
	HEIGHT (mm)	LENGTH (mm)	L	Actual Span 'L' in metres							
			X	Minimum distance from the side of the hole to any support – (m)							
HJ200 45	118	250	L	≤ 3.8	4.0	4.2	4.4	4.5			
			X	0.34L	1.36	1.59	1.80	1.90			
HJ240 63	158	330	L	≤ 3.5	5.5						
			X	0.38L	2.13						
HJ240 90	158	330	L	≤ 5.8	6.0	6.1					
			X	0.38L	2.36	2.45					
HJ300 63	218	400	L	≤ 5.2	5.4	5.6	5.8	6.0	6.2	6.3	
			X	0.41L	2.25	2.39	2.54	2.69	2.83	2.91	
HJ300 90	218	400	L	≤ 6.4	6.6	6.8	7.0				
			X	0.40L	2.73	2.88	3.04				
HJ360 63	278	500	L	≤ 5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.8
			X	0.42L	2.37	2.49	2.62	2.75	2.88	3.02	3.15
HJ360 90	278	500	L	≤ 7.2	7.4	7.6	7.7				
			X	0.40L	2.97	3.10	3.17				
HJ400 90	318	600	L	≤ 8.0							
			X	0.40L							

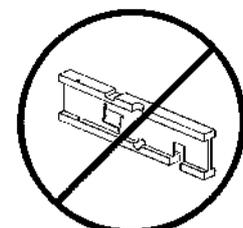
Interpolate to obtain values of 'X' for spans intermediate between the values given

**Notes:**

1. Data applies for floor joists supporting uniform loads (and concentrated live load not exceeding 1.8 kN).
2. Hole locations closer to supports may be possible for some load and support conditions; refer to the 'floor joist calculator' in designIT software or contact Carter Holt Harvey.
3. Spacing between holes to be not less than 300 mm or twice the width (or twice the diameter) of the larger hole.
4. Not more than three holes with width or diameter greater than 80 mm in any span.
5. For cantilever spans holes greater than 40 mm diameter are not permitted.
6. Not more than one rectangular (or square) hole per span.



DO CUT IN WEB AREA AS SPECIFIED



DO NOT CUT, NOTCH OR BORE THROUGH FLANGE

# Cantilevers for balconies

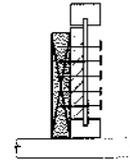
Balcony cantilevers, subject to external weather exposure can be provided using H3.2 preservative treated and protected outriggers as per Details F11 and F12. For weather proofed applications H3.1 treated hyJOIST® can be cantilevered to provide balcony support as per Detail F13.

Outriggers can be dry stress-graded timber or hySPAN®, either nested against the hyJOIST web and bearing on the top of the bottom flange or placed adjacent to the hyJOIST bearing directly on the support. Diagrams illustrating these configurations are shown below.

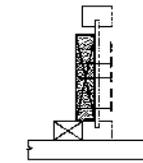
Some options for outriggers are included in the following table. These have all been determined for 2 kPa balcony floor load. For other floor loads and to consider other options refer to designIT®.

hySPAN outriggers are not recommended for use in weather exposed applications. MSG Pine may be treated to H3.2 level for weather exposed balconies.

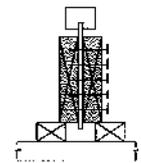
hyJOIST SECTION CODE	JOIST SPACING (mm)	MAXIMUM BALCONY CANTILEVER (m)	OUTRIGGER OPTIONS	
			NESTED OUTRIGGER	ADJACENT OUTRIGGER
HJ200 45	450	1.0	No Suitable Depth Option	150 x 45 hySPAN 190 x 45 MSG8
	600	0.9		150 x 45 hySPAN 190 x 45 MSG8
HJ240 63	450	1.3	2/150 x 45 hySPAN	200 x 45 hySPAN 240 x 45 MSG8
	600	1.2	2/150 x 45 hySPAN	200 x 45 hySPAN 240 x 45 MSG8
HJ240 90	450	1.4	2/150 x 45 hySPAN	Not Recommended
	600	1.3	2/150 x 45 hySPAN	
HJ300 63	450	1.5	200 x 45 hySPAN	200 x 45 hySPAN 240 x 45 MSG8
	600	1.4	200 x 45 hySPAN	200 x 45 hySPAN 240 x 45 MSG8
HJ300 90	450	1.7	2/200 x 45 hySPAN	Not Recommended
	600	1.6	2/200 x 45 hySPAN	
HJ360 63	450	1.7	240 x 45 hySPAN	240 x 45 hySPAN 290 x 45 MSG8
	600	1.6	240 x 45 hySPAN	240 x 45 hySPAN 290 x 45 MSG8
HJ360 90	450	1.9	240 x 63 hySPAN	Not Recommended
	600	1.8	2/240 x 45 hySPAN	
HJ400 90	450	2.0	300 x 45 hySPAN	Not Recommended
	600	1.9	300 x 45 hySPAN	



ADJACENT OUTRIGGER



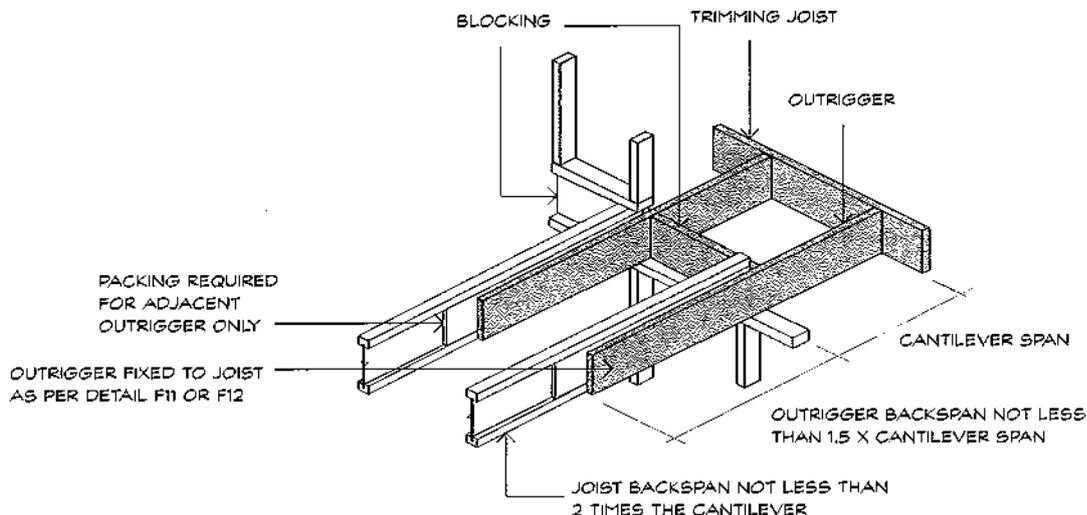
SINGLE SECTION



DOUBLE SECTION

NESTED OUTRIGGER

1 Cut from larger hySPAN section with clearance between flanges.



# Joists supporting parallel load bearing walls

LIGHT ROOF & CEILING													
hyJOIST SECTION CODE	ROOF LOAD WIDTH (m)						ROOF LOAD WIDTH (m)						
	1.8	2.4	3.6	4.8	6.0	7.2	1.8	2.4	3.6	4.8	6.0	7.2	
	MAXIMUM SINGLE SPAN (m)						MAXIMUM CONTINUOUS SPAN (m)						
HJ200 45	2.7	2.5	2.2	2.0	1.7	1.5	2.9	2.5	2.0	1.6	1.3	1.2	
2/HJ200 45	3.5	3.3	3.0	2.8	2.6	2.4	4.1	3.9	3.4	3.1	2.7	2.3	
HJ240 63	3.5	3.2	2.9	2.6	2.2	1.9	3.8	3.3	2.5	2.1	1.8	1.5	
2/HJ240 63	4.5	4.3	3.9	3.6	3.3	3.1	5.4	5.2	4.5	4.1	3.5	3.0	
HJ240 90	4.0	3.8	3.4	3.1	2.9 <sub>65</sub>	2.5 <sub>65</sub>	4.9 <sub>70</sub>	4.3 <sub>90</sub>	3.4 <sub>90</sub>	2.8 <sub>90</sub>	2.3 <sub>90</sub>	2.0 <sub>90</sub>	
HJ300 63	4.2	3.9	3.5	3.2 <sub>65</sub>	2.9 <sub>65</sub>	2.5 <sub>65</sub>	5.0 <sub>70</sub>	4.4 <sub>90</sub>	3.4 <sub>90</sub>	2.8 <sub>90</sub>	2.3 <sub>90</sub>	2.0 <sub>90</sub>	
2/HJ300 63	5.1	4.9	4.6	4.3	4.0	3.8	6.1	5.8	5.1	4.6	4.2 <sub>70</sub>	3.9 <sub>70</sub>	
HJ300 90	4.7	4.5	4.1 <sub>65</sub>	3.8 <sub>65</sub>	3.4 <sub>65</sub>	2.9 <sub>65</sub>	5.6	5.0 <sub>70</sub>	3.9 <sub>70</sub>	3.2 <sub>90</sub>	2.7 <sub>90</sub>	2.4 <sub>90</sub>	
HJ360 63	4.7	4.5 <sub>65</sub>	4.1 <sub>65</sub>	3.7 <sub>65</sub>	3.4 <sub>65</sub>	3.0 <sub>65</sub>	5.5 <sub>70</sub>	5.1 <sub>70</sub>	3.9 <sub>70</sub>	3.2 <sub>90</sub>	2.7 <sub>90</sub>	2.4 <sub>90</sub>	
2/HJ360 63	5.7	5.5	5.1	4.8	4.6	4.4 <sub>65</sub>	6.1	6.0	5.5	5.2 <sub>90</sub>	4.8 <sub>90</sub>	4.4 <sub>90</sub>	
HJ360 90	5.2	5.0 <sub>65</sub>	4.7 <sub>65</sub>	4.0 <sub>65</sub>	3.4 <sub>65</sub>	2.9 <sub>65</sub>	5.9 <sub>70</sub>	5.0 <sub>70</sub>	3.9 <sub>70</sub>	3.2 <sub>90</sub>	2.7 <sub>90</sub>	2.4 <sub>90</sub>	
HJ400 90	5.6 <sub>65</sub>	5.3 <sub>65</sub>	4.9 <sub>65</sub>	4.0 <sub>65</sub>	3.4 <sub>65</sub>	2.9 <sub>65</sub>	5.8 <sub>70</sub>	5.0 <sub>70</sub>	3.9 <sub>70</sub>	3.2 <sub>90</sub>	2.7 <sub>90</sub>	2.4 <sub>90</sub>	

HEAVY ROOF & CEILING													
hyJOIST SECTION CODE	ROOF LOAD WIDTH (m)						ROOF LOAD WIDTH (m)						
	1.8	2.4	3.6	4.8	6.0	7.2	1.8	2.4	3.6	4.8	6.0	7.2	
	MAXIMUM SINGLE SPAN (m)						MAXIMUM CONTINUOUS SPAN (m)						
HJ200 45	2.2	1.8	1.3	NS	NS	NS	1.8	1.5	NS	NS	NS	NS	
2/HJ200 45	2.9	2.7	2.3	2.1	1.7	NS	3.3	2.9	2.1	1.7	1.4	1.2	
HJ240 63	2.8	2.4	1.7	1.4	NS	NS	2.3	1.9	1.4	NS	NS	NS	
2/HJ240 63	3.7	3.4	3.0	2.7	2.2	1.9	4.4	3.8	2.7	2.2	1.8	1.5	
HJ240 90	3.3	3.0 <sub>65</sub>	2.3 <sub>65</sub>	1.8 <sub>65</sub>	1.5 <sub>65</sub>	1.3 <sub>65</sub>	3.1 <sub>90</sub>	2.5 <sub>90</sub>	1.8 <sub>90</sub>	1.4 <sub>90</sub>	1.2 <sub>90</sub>	NS	
HJ300 63	3.4 <sub>65</sub>	3.1 <sub>65</sub>	2.3 <sub>65</sub>	1.8 <sub>65</sub>	1.5 <sub>65</sub>	1.3 <sub>65</sub>	3.1 <sub>90</sub>	2.5 <sub>90</sub>	1.8 <sub>90</sub>	1.4 <sub>90</sub>	1.2 <sub>90</sub>	NS	
2/HJ300 63	4.5	4.1	3.6	3.2 <sub>65</sub>	3.0 <sub>65</sub>	2.5 <sub>65</sub>	4.9 <sub>65</sub>	4.5 <sub>70</sub>	3.7 <sub>90</sub>	2.9 <sub>90</sub>	2.4 <sub>90</sub>	2.0 <sub>90</sub>	
HJ300 90	4.0 <sub>65</sub>	3.6 <sub>65</sub>	2.7 <sub>65</sub>	2.1 <sub>65</sub>	1.7 <sub>65</sub>	1.5 <sub>65</sub>	3.6 <sub>70</sub>	2.9 <sub>70</sub>	2.1 <sub>70</sub>	1.7 <sub>70</sub>	1.4 <sub>70</sub>	1.2 <sub>70</sub>	
HJ360 63	3.9 <sub>65</sub>	3.6 <sub>65</sub>	2.7 <sub>65</sub>	2.1 <sub>65</sub>	1.7 <sub>65</sub>	1.5 <sub>65</sub>	3.6 <sub>70</sub>	3.0 <sub>70</sub>	2.2 <sub>70</sub>	1.7 <sub>70</sub>	1.4 <sub>70</sub>	1.2 <sub>70</sub>	
2/HJ360 63	5.0	4.7	4.2 <sub>65</sub>	3.8 <sub>65</sub>	3.5 <sub>65</sub>	2.9 <sub>65</sub>	5.4 <sub>70</sub>	4.9 <sub>90</sub>	4.2 <sub>90</sub>	3.4 <sub>90</sub>	2.8 <sub>90</sub>	2.4 <sub>90</sub>	
HJ360 90	4.5 <sub>65</sub>	3.7 <sub>65</sub>	2.7 <sub>65</sub>	2.1 <sub>65</sub>	1.7 <sub>65</sub>	1.5 <sub>65</sub>	3.6 <sub>70</sub>	2.9 <sub>70</sub>	2.1 <sub>70</sub>	1.7 <sub>70</sub>	1.4 <sub>70</sub>	1.2 <sub>70</sub>	
HJ400 90	4.5 <sub>65</sub>	3.7 <sub>65</sub>	2.7 <sub>65</sub>	2.1 <sub>65</sub>	1.7 <sub>65</sub>	1.5 <sub>65</sub>	3.6 <sub>70</sub>	2.9 <sub>70</sub>	2.1 <sub>70</sub>	1.7 <sub>70</sub>	1.4 <sub>70</sub>	1.2 <sub>70</sub>	

**Notes:**

1. NS signifies the calculated span is less than 1.2 m.
2. Bearing for single span joists or the end supports of continuous joists, provide at least 30 mm bearing unless signified otherwise by a subscript value adjacent to the quoted maximum span. For the intermediate supports of continuous span joists, provide at least 65 mm bearing unless signified otherwise by a subscript value adjacent to the quoted span - #, signifies that web stiffeners are required together with a bearing of 90 mm.

# hyJOIST® Installation

By separating design considerations from installation requirements the intention is to help builders and designers sort out 'who does what' and minimise the potential for critical matters to 'slip between the cracks'.

There are some aspects of installation that can be regarded by designers and builders as 'basic requirements' to be adopted for installation in the absence of other or additional requirements specified in the design documentation. Requirements that fit into this category are defined and detailed under 'Basic Installation Requirements'.

Other aspects, are categorised as 'Installation details requiring design and specification' because they need selection and individual specification in the design documentation to ensure the design intent is communicated to the builder.

This guide provides a variety of details specific to the use of hyJOIST® floor systems for houses and similar buildings. Details contained in this publication have been appropriately engineer designed and/or tested to determine their suitability. In addition, many details in NZS 3604 and other industry publications are equally applicable to hyJOIST as for conventional timber joisted floors – use them. We do however, caution against any assumption that details published for other I-joist products are suitable or sufficiently complete for use with hyJOIST.

*In all cases it is assumed that installation will be carried out in accordance with a joist layout drawing showing the location, size (section code) and maximum spacings of joists together with reference to any special requirements not included in this guide as 'basic requirements'.*

## BASIC INSTALLATION REQUIREMENTS

Installation requirements specified in this section should be assumed to apply as minimum requirements in the absence of additional or other requirements specified in the design documentation.

### JOIST PLACEMENT

Joists should be accurately placed at not more than the nominated maximum centre to centre spacing so as to provide the support required for flooring and load bearing walls or posts.

12

### FIXING TO SUPPORTS

Joists are to be fixed accurately in position at supports using nails or screws as per Detail F5.

### SUPPORTS

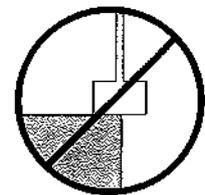
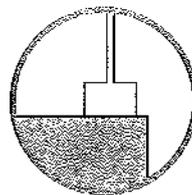
Supports shall be level, dry and have at least the rigidity implied by good framing practice and/or the design criteria specified for supporting components in NZS 3604. (A moisture barrier is recommended where support is directly to masonry or brickwork).

Brackets available for use with hyJOIST are listed on page 5.

### LOCKING AND BEARING AT SUPPORTS (for support of gravity loads)

#### General

- Bearing should be provided to the full width of the hyJOIST bottom flange
- It is good practice to bear over the maximum available width of supports
- Use of web stiffeners can reduce the required bearing however this needs to be specified in the design documentation
- Continuous blocking provides support for load bearing walls directly aligned above supports. At end supports, 'rimboard' or boundary joists can be used as an alternative to continuous blocking to support a load bearing wall.

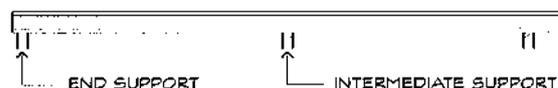


BEAR OVER THE FULL WIDTH OF THE hyJOIST FLANGE



BEAR OVER THE FULL AVAILABLE WIDTH OF SUPPORTS

In the absence of any alternative specification in the design documentation bearing support details can be referred on page 4.



## LATERAL RESTRAINT

### Intermittent blocking (or equivalent) at supports

The fundamental requirement is to install joists plumb and hold them upright at supports. The simplest and most effective way of achieving this is to install square cut hyJOIST® blocking but alternative methods such as the use of 'rimboard', boundary joists, metal strap/brace or plywood closures are acceptable.

For installation of blocking, 'rimboard', boundary joist, metal strap/brace or plywood enclosures refer to Details F1, F2, F3 and F17.

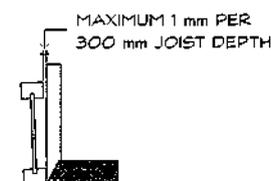
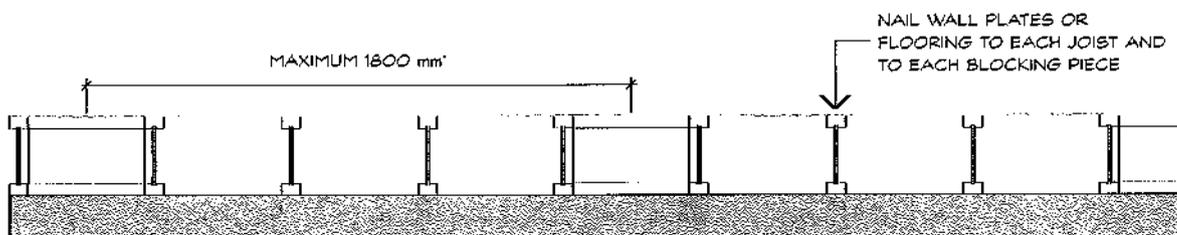


FIGURE 1



BLOCKING OR EQUIVALENT TO JOISTS AT OR NEAR THE EDGES OF THE FLOOR

BLOCK AT INTERVALS NOT EXCEEDING 1.8 m ALONG THE LINE OF SUPPORT

FIGURE 2

\* Blocking in pairs at 3600 mm maximum spacing is equally acceptable

### INTERMEDIATE RESTRAINT (between supports)

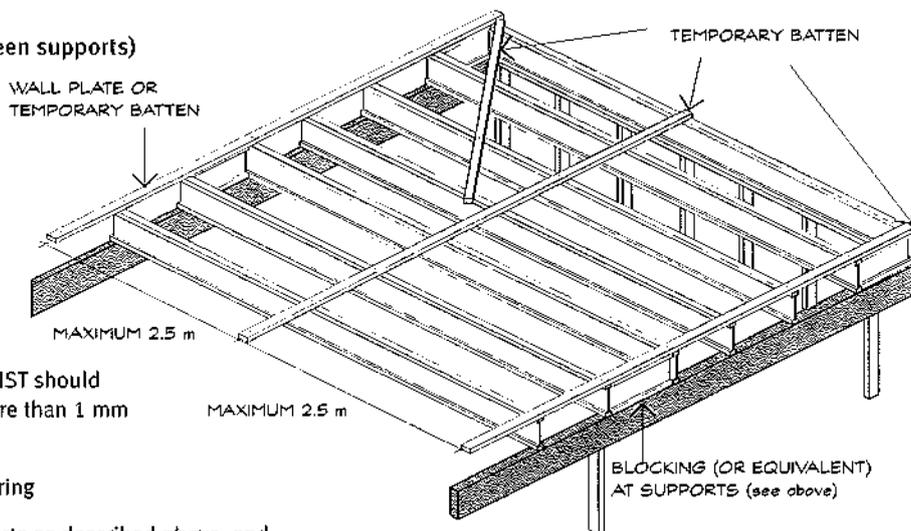


FIGURE 3

For best performance, the top flange of hyJOIST should be held straight between supports – (no more than 1 mm per metre of span deviation from straight)

Before loading joists and attachment of flooring

- Install blocking (or equivalent) at supports as described above, and
- between supports, install temporary battens braced back to a point of rigidity (no more than 2.5 metres apart) to hold the top flange of each joist straight between supports.
- For installation of flooring, progressively work across the floor removing battens as required.

Note: Intermediate blocking is not required and can be a source of annoying nail creaks in the finished structure.

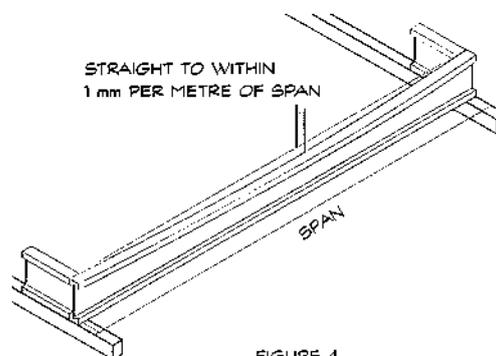


FIGURE 4

### Fixing of Flooring

Flooring may be nailed to joists and to blocking using either 2.8 mm diameter nails, hand driven or 2.5 mm diameter nails, machine driven. Alternatively, for sheet flooring self-drilling Type 17 screws may be used. Fastener lengths should not exceed the lengths given in Table 1. Nail or screw spacing should be at centres recommended for the particular flooring type. Where nail centres are less than 50 mm it is good practice to stagger their location so as to avoid the possibility of splitting. It is strongly recommended that flooring adhesive is used in conjunction with nailing.

TABLE 1

FLOORING THICKNESS	15-20 mm	22 mm
MAXIMUM NAIL/SCREW LENGTHS	50 mm	57 mm

## NOTCHING/CUT BACKS/HOLES WITH hyJOIST®

### Notches or holes in flanges

Flanges may not be notched, planed or bored except as noted below

- 1) At end supports only, one or both flanges may be notched to a maximum depth of 12 mm (per flange) as shown in Detail F7
- 2) At end supports flanges may be chamfer cut but not beyond the line of the support
- 3) Do not bore holes through flanges. Holes up to 6 mm for installation of nails or screws at supports allowed

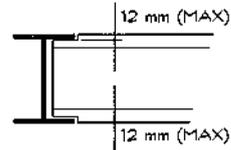
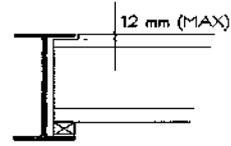
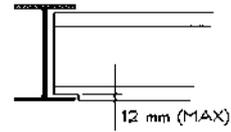
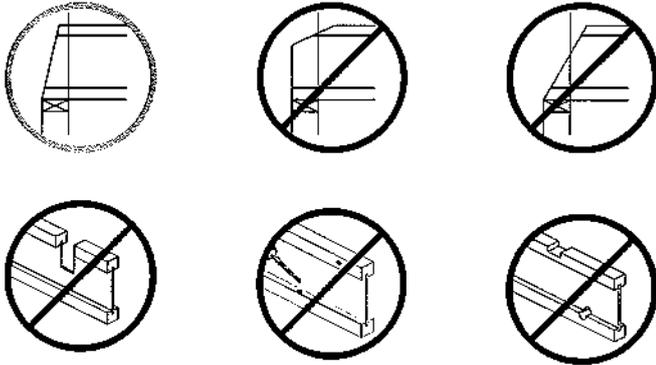


FIGURE 5



### Notches or holes in webs

- 1) At end supports webs may be notched to accommodate the flange of a steel supporting beam within the limitations specified in Detail F8

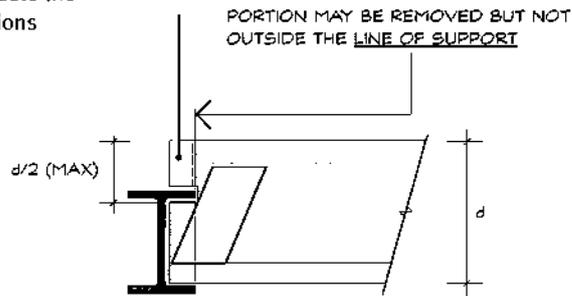


FIGURE 6

- 2) Holes may be cut through the web of hyJOIST® for the installation of service pipes and ducts but there are limitations on the placement, size and shape of holes. In general, larger holes must be located closer to mid-span. Guidance on the positioning of web holes is given on page 9. Alternative locations may be specified in the design documentation for specific load and support cases.

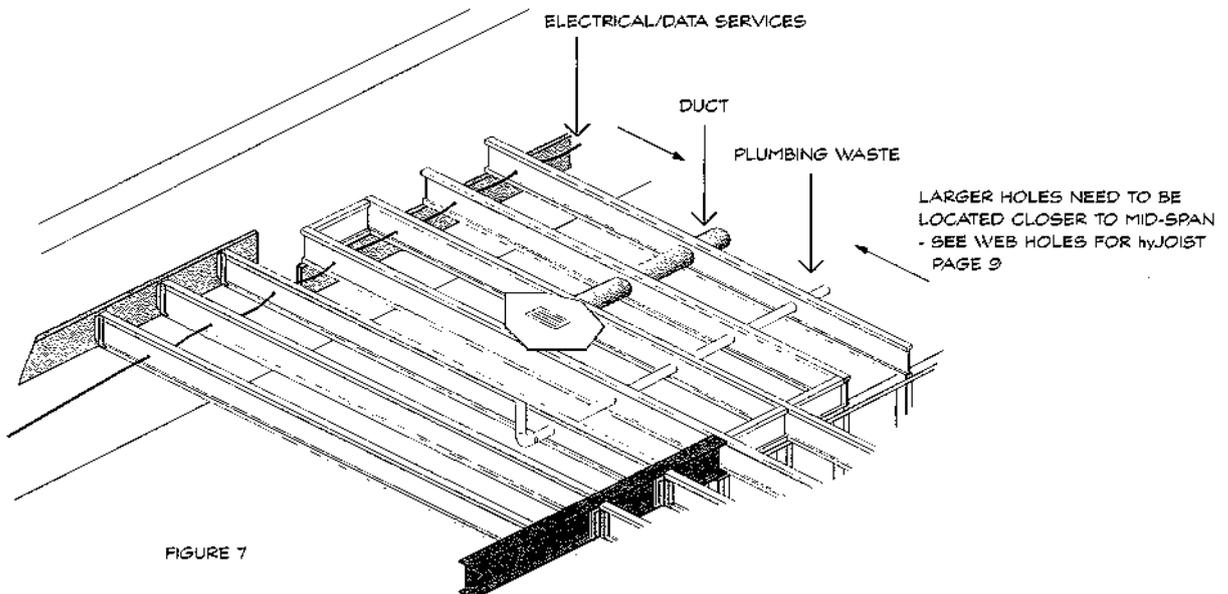


FIGURE 7

## METHOD FOR FRAMING CANTILEVERS SUPPORTING LOAD BEARING WALLS

Some or all of hyJOIST<sup>®</sup> cantilevered to support a load bearing wall may require reinforcement. This requirement needs to be considered in design and specified in the design documentation. Details for reinforcement are given in Details F21 and F22.

Regardless of whether reinforcement is required or not, cantilevers with span greater than the joist depth are to be installed with continuous blocking at the cantilever support and a trimming joist (or equivalent) providing load distribution at the ends of the cantilevered joists. The use of a trimming detail helps to both stiffen the balcony and limit long term differential deflections. For installation see Detail F15.

Short cantilevers ( $L_c \leq d$ ) may need reinforcement but intermittent blocking only is needed at the cantilever support and the trimming joist need not be included – see Detail F14.

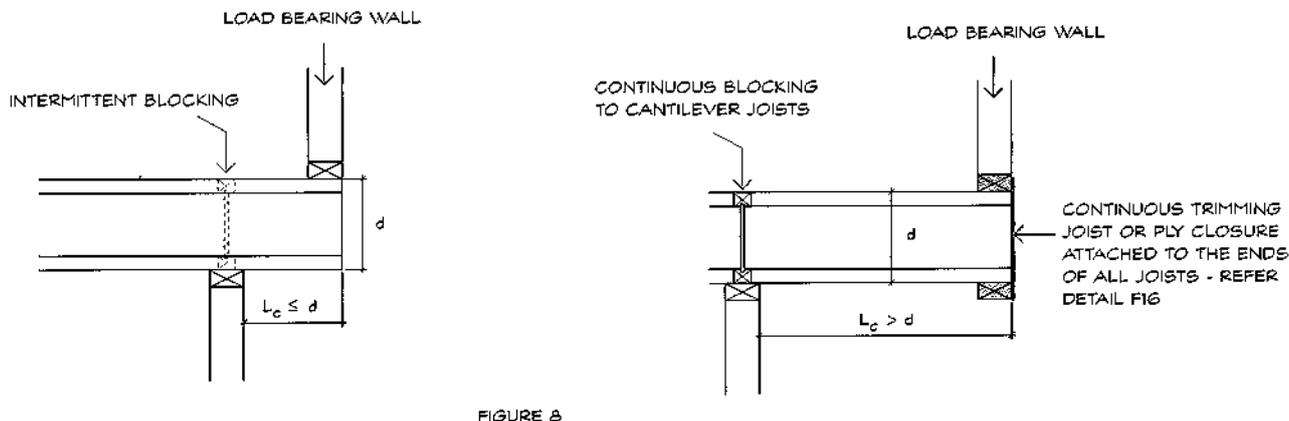


FIGURE 8

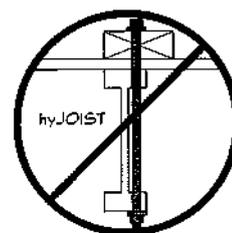
## TIE DOWN AND TRANSFER OF LATERAL FORCES THROUGH THE FLOOR

Requirements for tie down and bracing should be specified in the design documentation.

### Tie-down

In general, tie down details applicable for solid timber joists as specified in NZS 3604 can also be used with hyJOIST except that bolting through the flanges of hyJOIST is not permitted.

Detail F9 and TD1 - TD5 show how bracing walls may be tied down to a hyJOIST floor system.



DO NOT BOLT THROUGH JOISTS

### Transfer of lateral forces through the floor

Lateral wind and earthquake forces determined for the upper storey must be transferred through the floor to the top plate (and the bracing system) of the lower storey. Where these forces are perpendicular to the direction of joists, intermittent blocking or the fixings to 'rimboard' or boundary joists are not likely to be adequate to transfer the full extent of the forces.

For most external walls the simplest answer is to just continue the upper storey bracing (and associated tie-down) through the floor to the top plate of the lower storey wall.

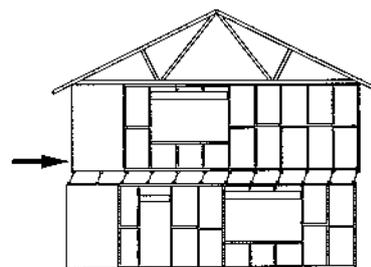
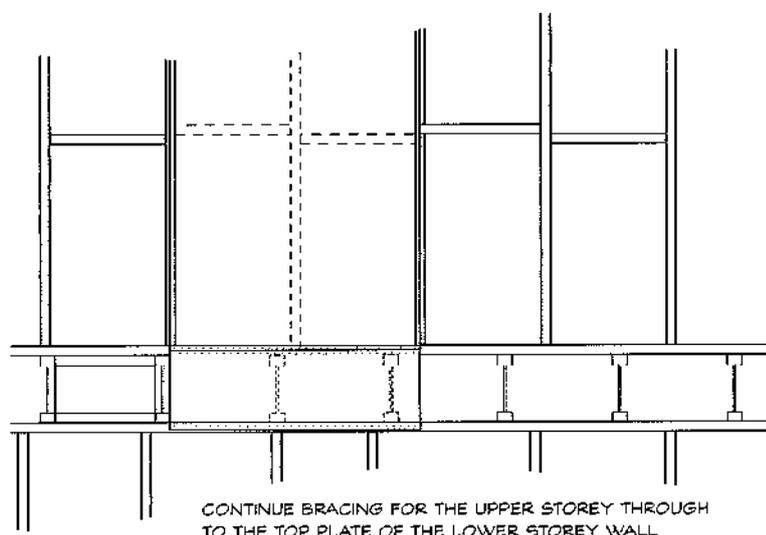


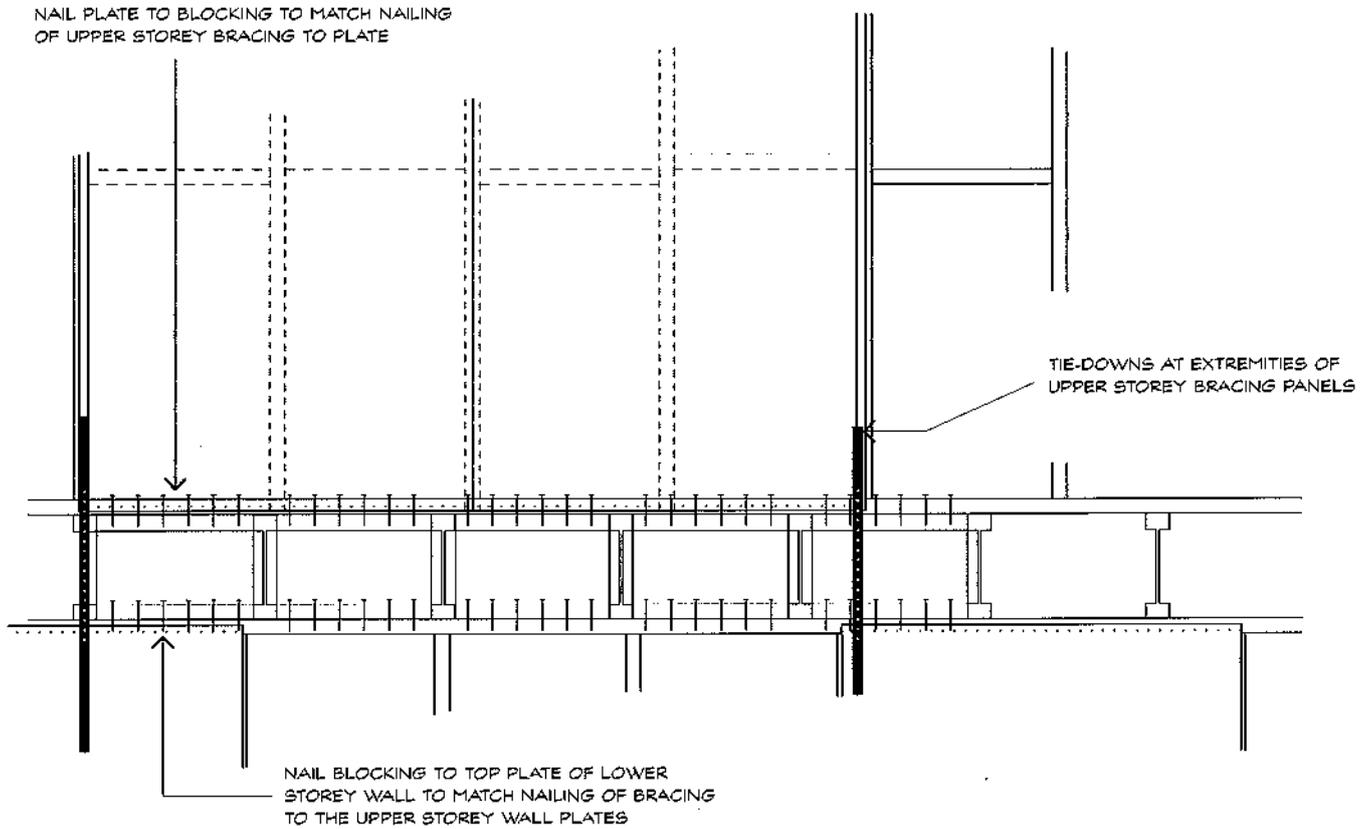
FIGURE 9



CONTINUE BRACING FOR THE UPPER STOREY THROUGH TO THE TOP PLATE OF THE LOWER STOREY WALL

FIGURE 10

Alternatively, or where continuation of bracing is not possible, such as where joists or outrigger joists are cantilevered (or for internal walls) it is recommended that sufficient blocking is provided to accommodate the nailing attachment of the upper storey wall bottom plate to the blocking and the blocking bottom flange to the top plate of the lower storey wall to match the capacity of the nailing of the upper storey bracing to the bottom wall plate. Tie-downs using metal strap or tie rods at the beginning and end of each braced portion of the wall should be carried through the floor to lower storey wall.



16.

FIGURE 11

## PRODUCT FAULTS

Faults in manufacture do occur and faulty product will from time to time reach the market despite even the most stringent controls of the manufacturing process and quality. Please let us know if you receive faulty product – call 0800 808 131 even if you have solved the problem and a claim 'is not worth the hassle'. We want to know so that we can do better.

# INSTALLATION DETAILS REQUIRING DESIGN & SPECIFICATION

The following items need design and specification in the design documentation to communicate the requirements for installation.

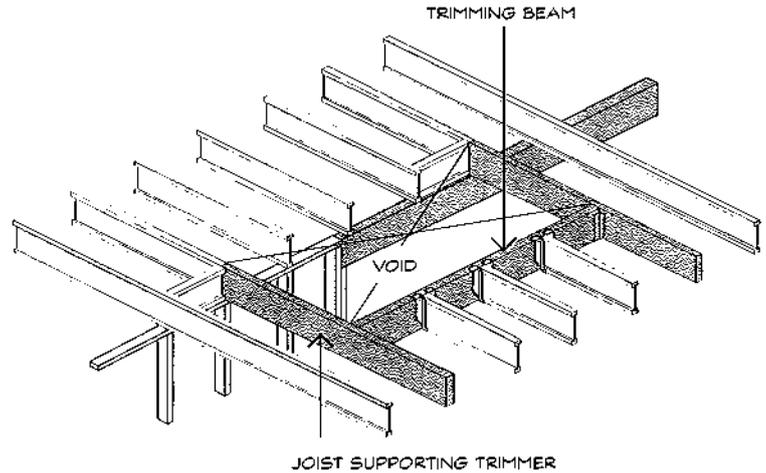
- Joist sizes and spacing for span, loading and flooring
- Method of framing around openings in floors (eg stair voids)
- Method of framing balcony cantilevers
- Reinforcement requirements for cantilevers supporting load bearing walls
- Bearing and support requirements differing from that specified under basic requirements for installation
- Details for tie-down and transfer of lateral forces through the floor beyond that specified in the basic requirements
- Specification of web holes and permitted locations (not within the scope of tables on page 9)

## FRAMING AROUND FLOOR OPENINGS

The size of members needed to frame around floor openings needs to be determined in design and specified in the design documentation for installation.

For convenience the depth of the trimmers and trimming joists are usually chosen to be the same as the depth of the floor joists. The ease of connecting and the greater strength and stiffness of hySPAN® relative to depth in comparison with hyJOIST® makes hySPAN the ideal material for framing both the trimmers and the trimming joists.

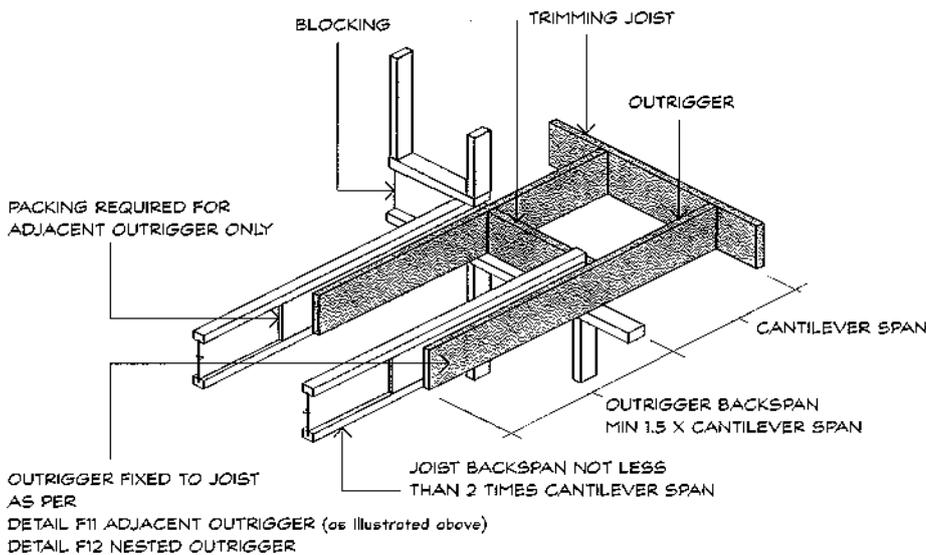
Trimmers and the supporting trimming joists may in some cases be hyJOIST, where structurally adequate. These can be connected using top mount hangers see Joist Hangers for hyJOIST on page 5 and Detail F10.



## METHODS OF FRAMING BALCONY CANTILEVERS

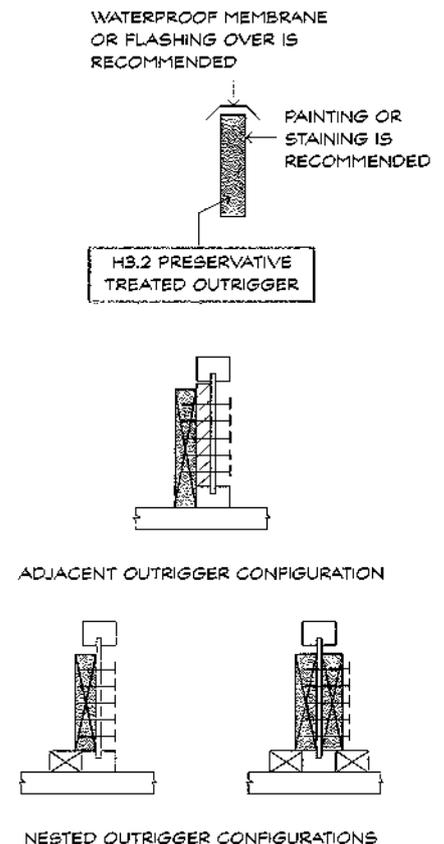
Balcony cantilevers are frequently exposed to wetting and in this circumstance there is a high risk of decay with subsequent loss of strength of the balcony structure. hyJOIST and hySPAN are not suitable for use in fully weather exposed applications but can be treated to a H3.1 level for protection against low level rot and decay and are ideal for use in weather protected balconies. For fully exposed balconies H3.2 treated outriggers can be specified and installed with confidence.

### Balcony cantilevers using outriggers



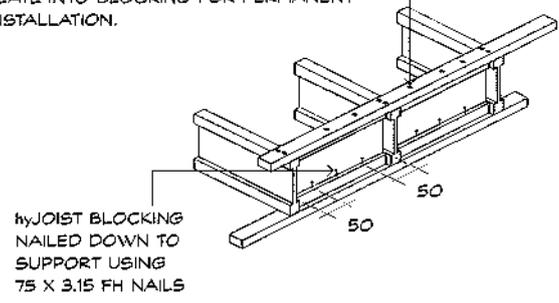
Design should include specification of either the 'adjacent' or 'nested' outrigger detail and the specification of the outrigger material. Outrigger length and quantities can be determined and the installation performed in accordance with the specified detail.

For weather protected or internal balcony cantilevers Detail F13 may be used.



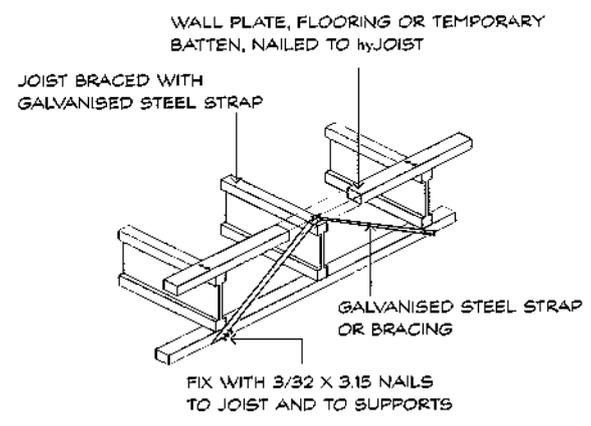
### End restraint - blocking with hyJOIST®

WALL PLATE/FLOORING OR TEMPORARY BATTEN, NAILED TO hyJOIST® JOISTS. NAIL THROUGH FLOORING OR WALL PLATE INTO BLOCKING FOR PERMANENT INSTALLATION.



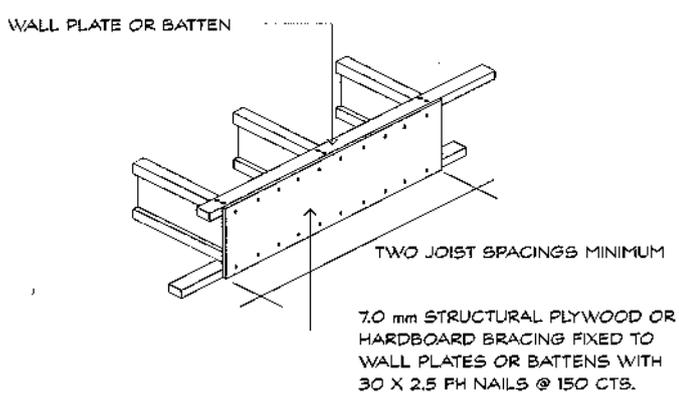
DETAIL F1

### End restraint - using steel strap or bracing



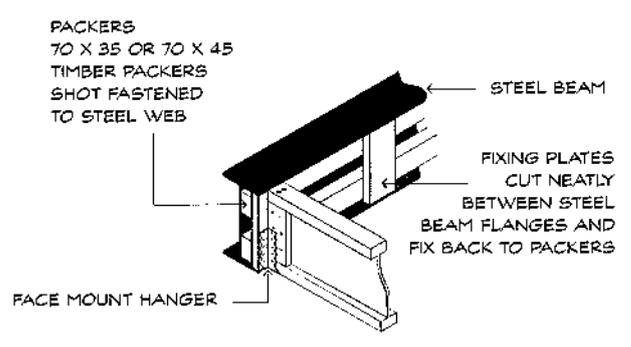
DETAIL F2

### End restraint - using ply or hardboard bracing



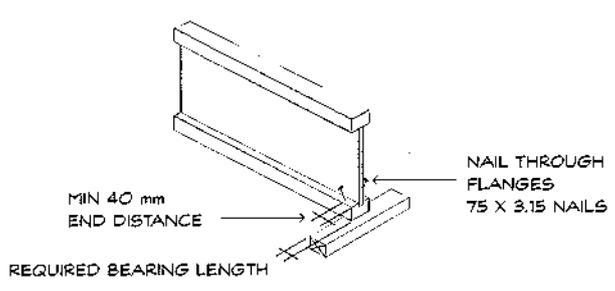
DETAIL F3

### Fixing hyJOIST® to steel beams - using face mount hangers



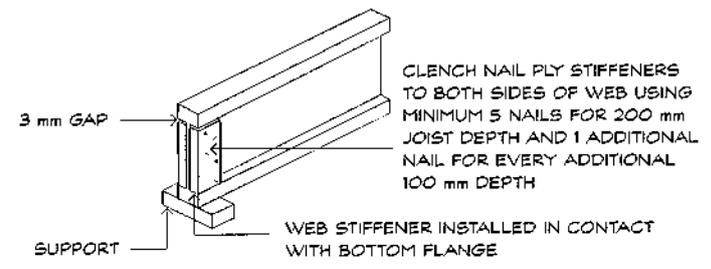
DETAIL F4

### Nailing down to supports



DETAIL F5

### Installation of web stiffeners

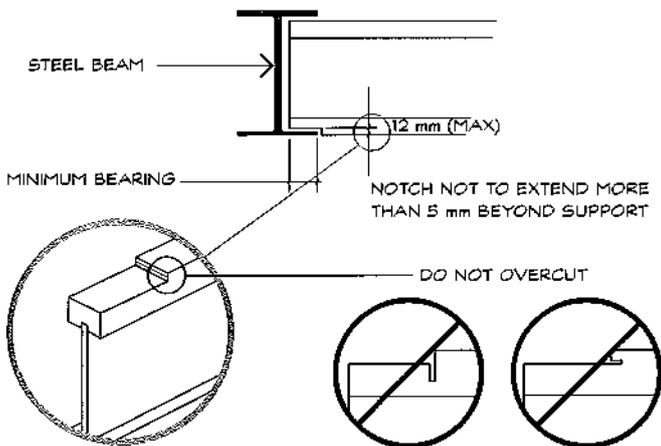
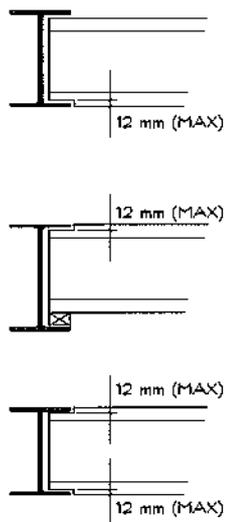


STIFFENER/PACKER THICKNESSES*	NAIL LENGTH
45 mm FLANGE 18 mm	50 mm
63 mm FLANGE 27 mm	75 mm
90 mm FLANGE 39 mm	100 mm

\* Plywood of appropriate thickness is available as an accessory product

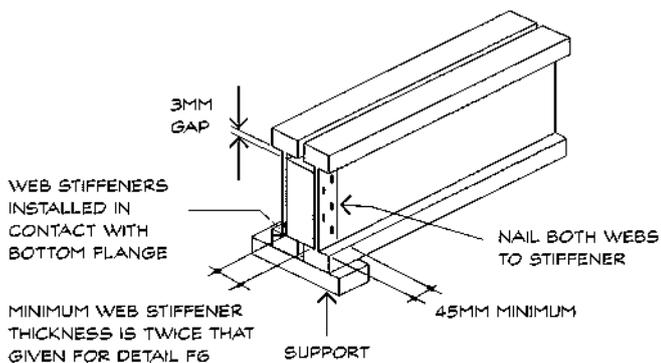
DETAIL F6

## Notching of flanges at end supports



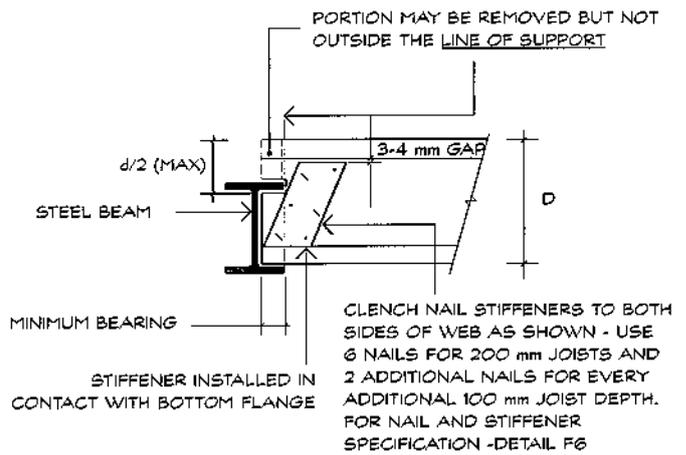
DETAIL F7

## Web stiffeners for double joists



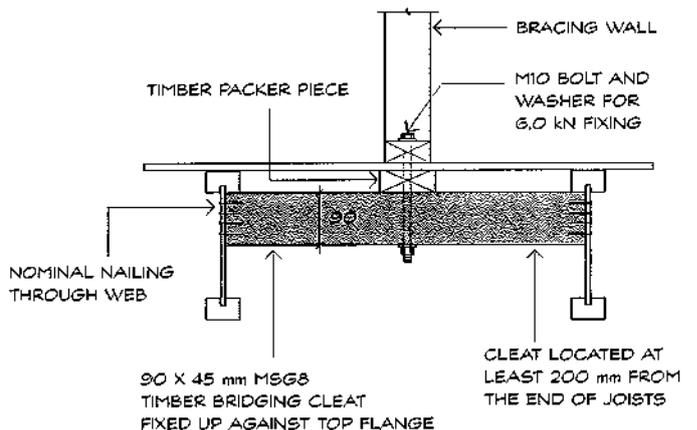
DETAIL F6A

## Notching of webs for steel beam flange



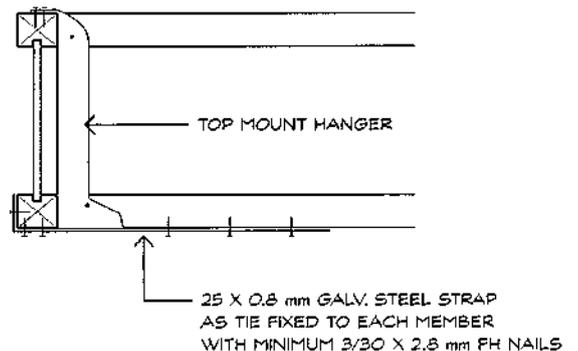
DETAIL F8

## Tie-down to internal bracing wall



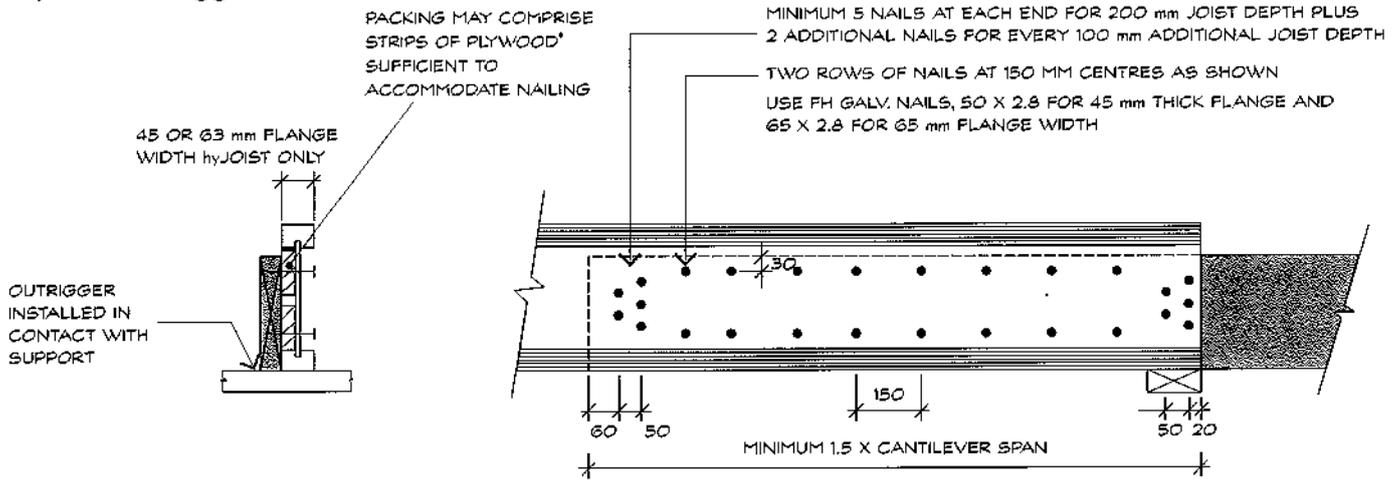
DETAIL F9

## hyJOIST® / hyJOIST connection



DETAIL F10

### Adjacent outrigger



DETAIL F11

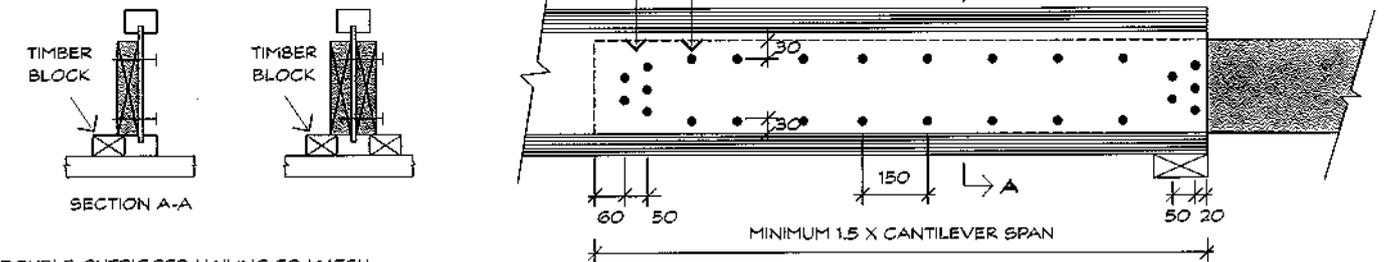
\* Plywood strips of suitable thickness available as accessory product

### staggered outrigger installation

OUTRIGGER INSTALLED IN CONTACT WITH hyJOIST® SUPPORT AND TIMBER BLOCK

TIMBER BLOCK OF THICKNESS TO MATCH hyJOIST FLANGE THICKNESS

20

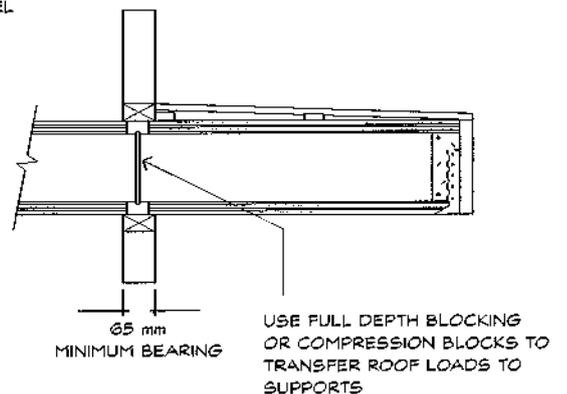
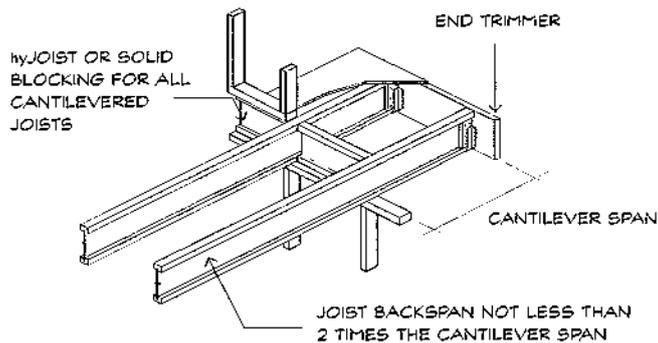


DETAIL F12

DOUBLE OUTRIGGER NAILING TO MATCH AS SHOWN FOR SINGLE OUTRIGGER

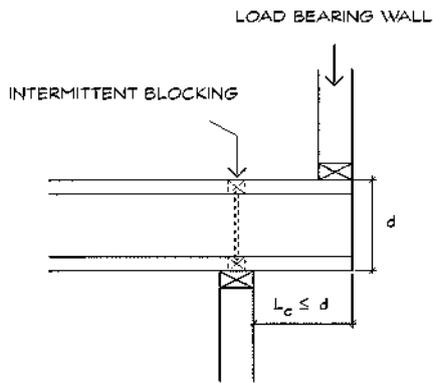
### hyJOIST® cantilever for internal or weather proofed balcony applications

FOR EXTERNAL USE, hyJOIST FLOOR JOISTS MUST BE PROTECTED FROM BECOMING WET BY A FULLY WATERPROOF DECK AND TREATED TO H3.1 LEVEL



DETAIL F13

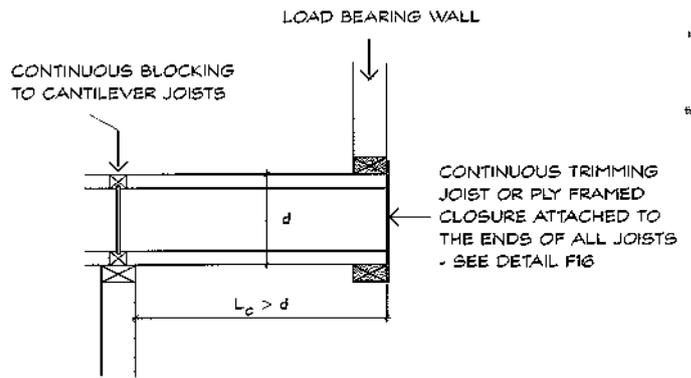
### Short cantilever supporting load bearing wall



WHERE SPECIFIED  
 INSTALL TYPE 1 REINFORCEMENT IN ACCORDANCE WITH DETAIL F21  
 INSTALL TYPE 2 REINFORCEMENT IN ACCORDANCE WITH DETAIL F22

DETAIL F14

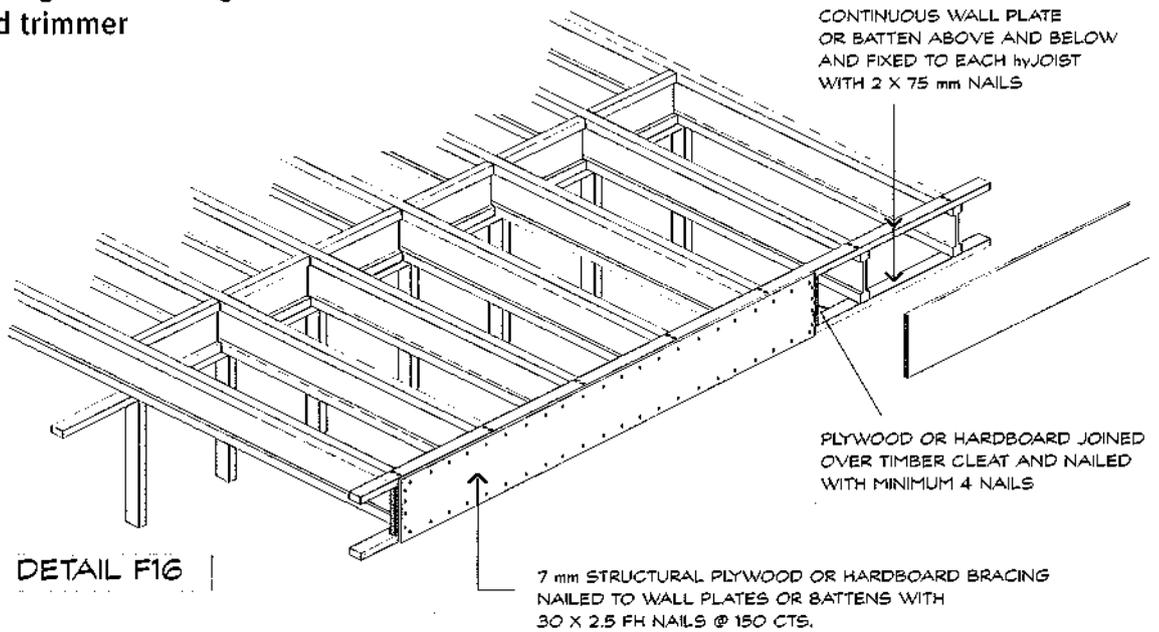
### Cantilever supporting load bearing wall



WHERE SPECIFIED  
 INSTALL TYPE 1 REINFORCEMENT IN ACCORDANCE WITH DETAIL F21  
 INSTALL TYPE 2 REINFORCEMENT IN ACCORDANCE WITH DETAIL F22

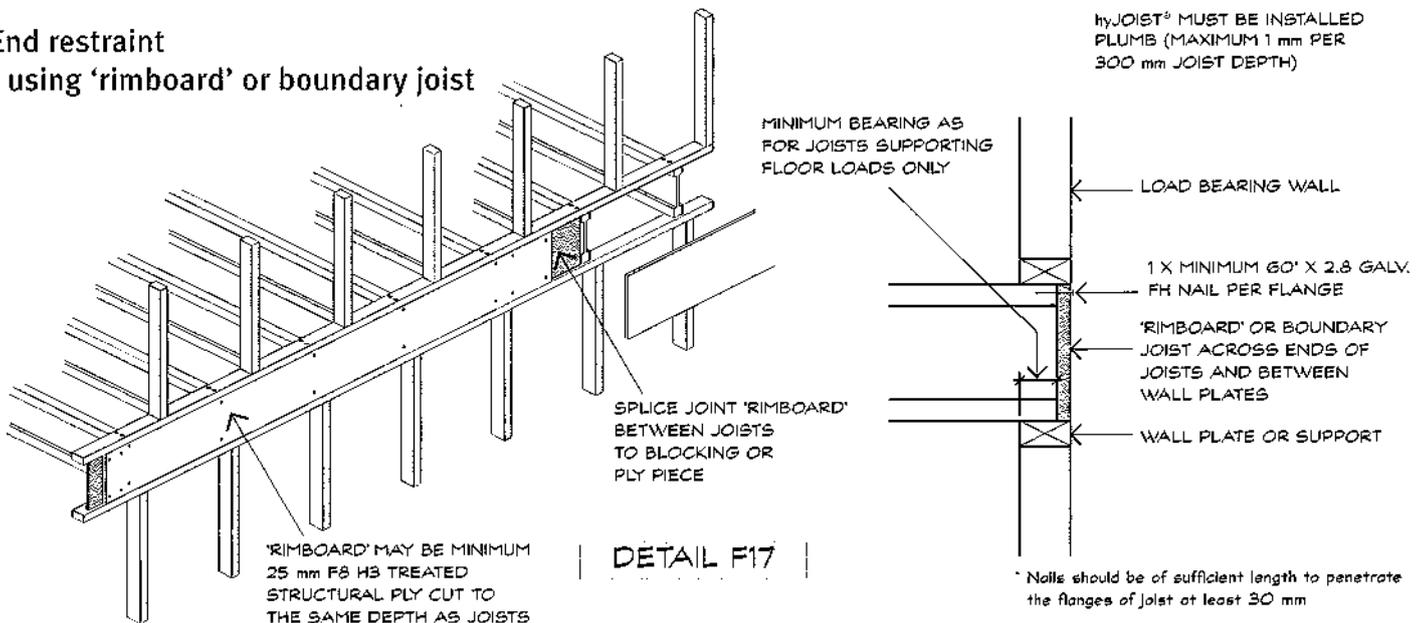
DETAIL F15

### Cantilevers supporting load bearing walls - installation of end trimmer



DETAIL F16

### End restraint - using 'rimboard' or boundary joist

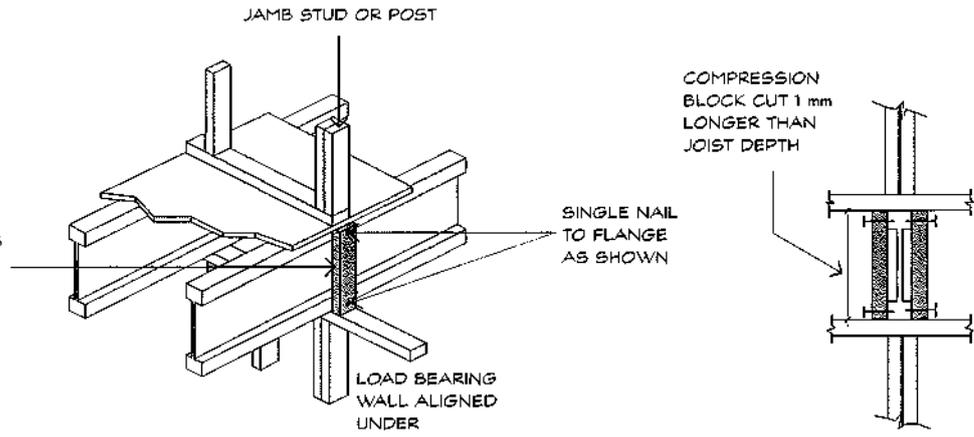


DETAIL F17

\* Nails should be of sufficient length to penetrate the flanges of joist at least 30 mm

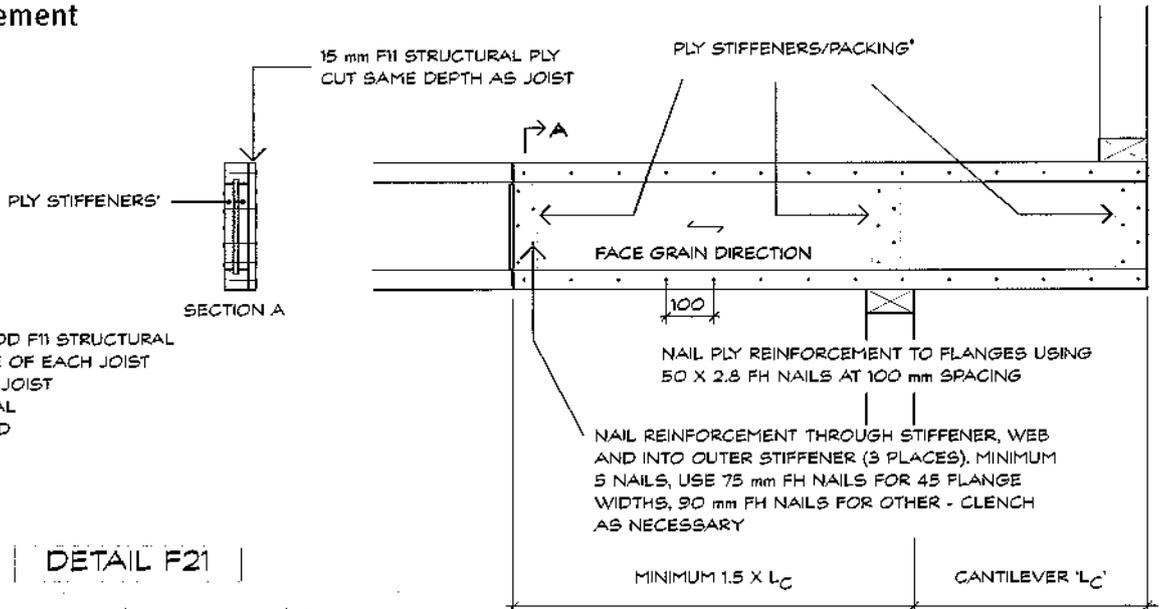
## Installation of compression blocks

ONE OR MORE COMPRESSION BLOCKS OF SIMILAR COMBINED CROSS SECTIONAL AREA TO THAT OF THE SUPPORTED JAMB STUD OR POST



DETAIL F18

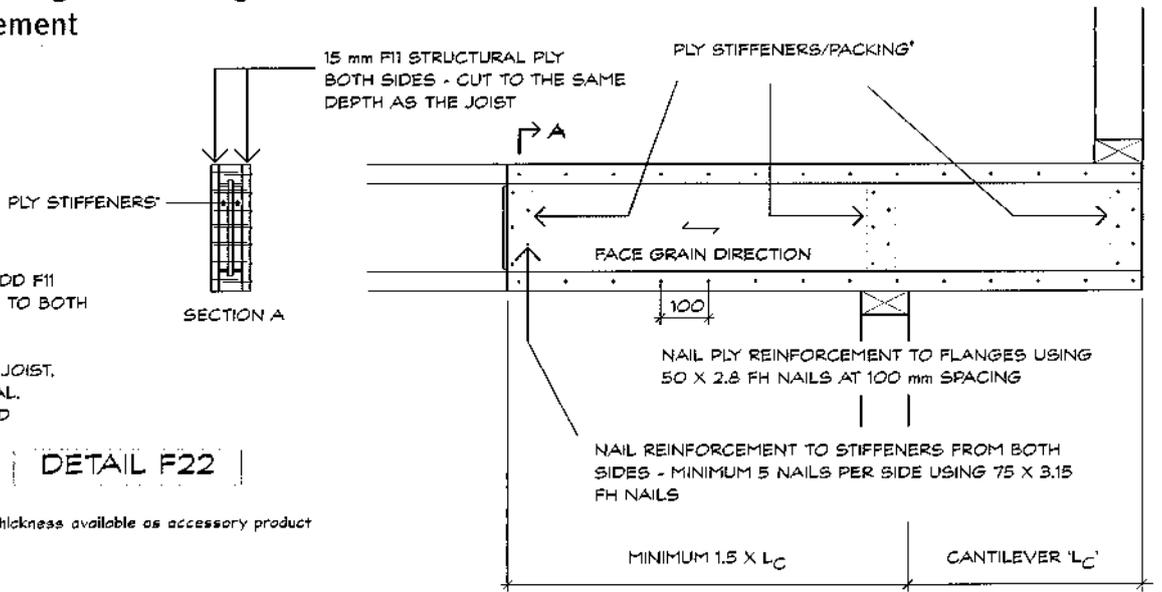
## Cantilever supporting load bearing walls - Type 1 reinforcement



DETAIL F21

\* Plywood strips of suitable thickness available as accessory product

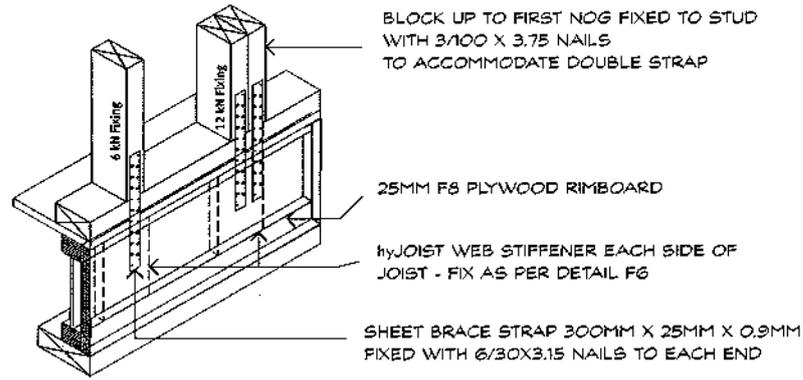
## Cantilever supporting load bearing walls - Type 2 reinforcement



DETAIL F22

\* Plywood strips of suitable thickness available as accessory product

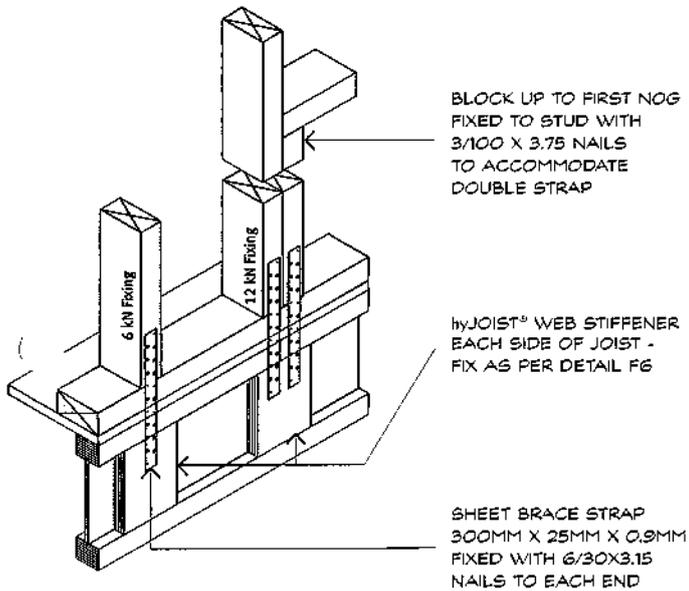
# Tie-down for external bracing wall using Rimboard



6 kN AND 12 kN FIXING DETAILS USING RIMBOARD

DETAIL TD1

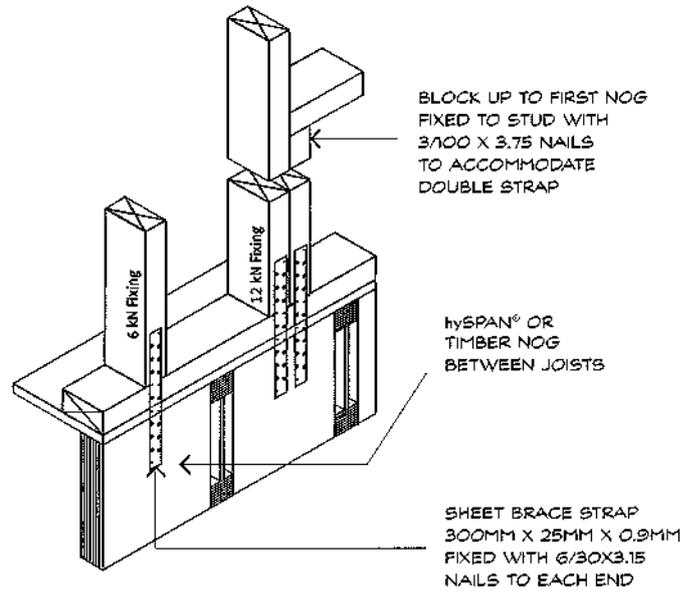
# Tie-down for external bracing walls



6 kN AND 12 kN FIXING DETAILS - BRACING WALL PARALLEL TO JOISTS

DETAIL TD2

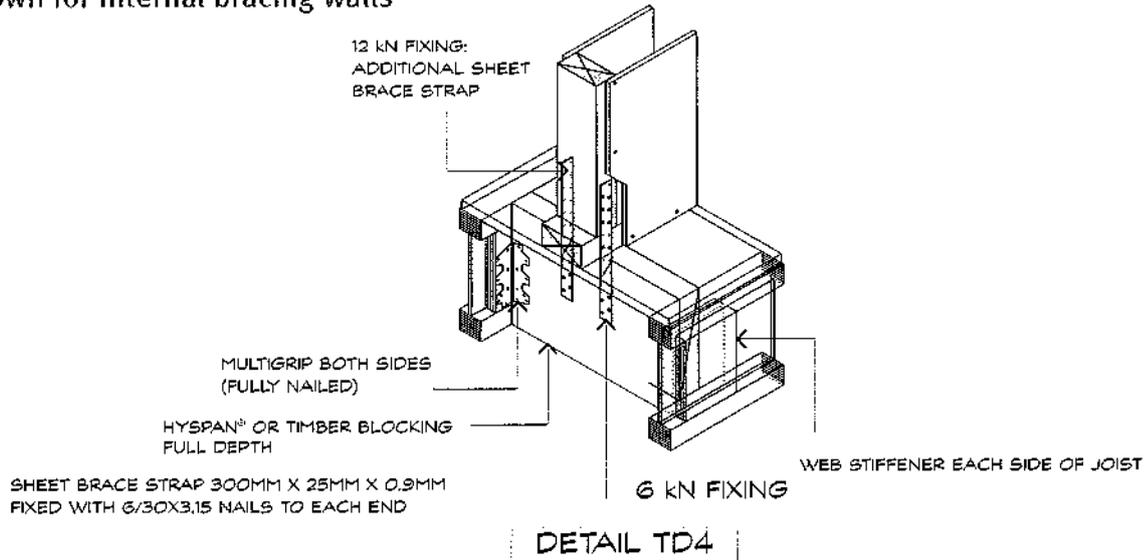
# Tie-down for external bracing walls



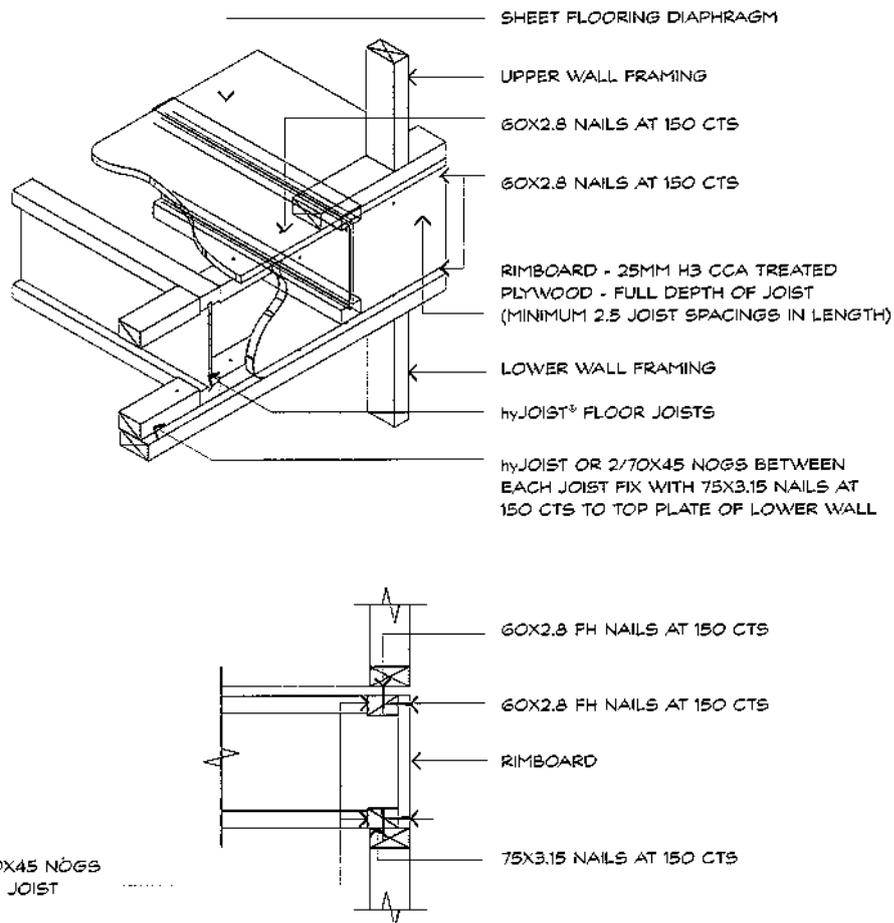
6 kN AND 12 kN FIXING DETAILS - BRACING WALL PERPENDICULAR TO JOISTS

DETAIL TD3

## Tie-down for internal bracing walls



## Bracing transfer through diaphragm floors



**DETAIL TD5**

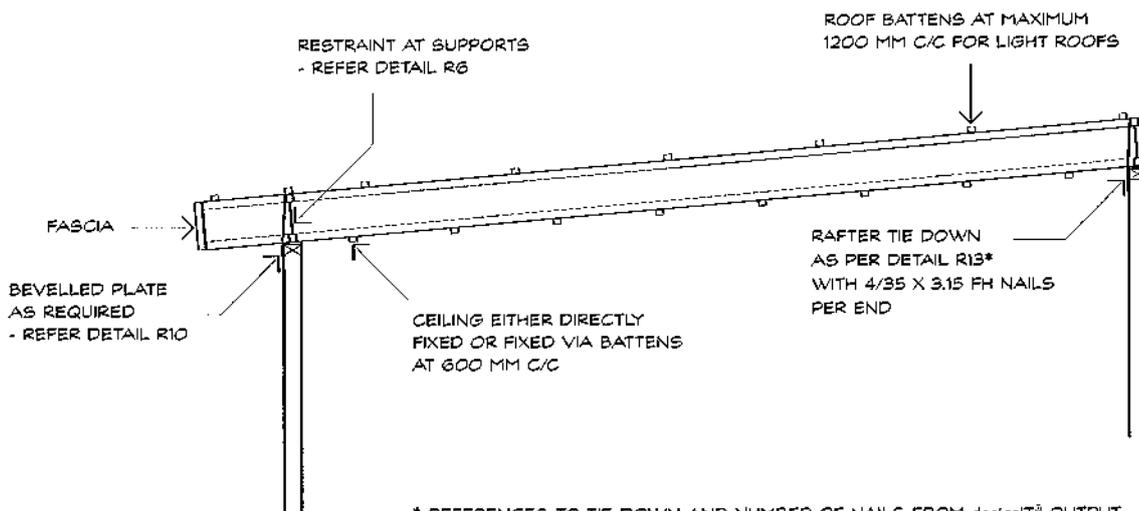
# hyJOIST® Rafters

hyJOIST® may also become part of a very effective and economical roof system, particularly where low pitch roofs with ceiling directly attached to the underside are being designed. hyJOIST rafters allow the flexibility of having provision for the installation of ducting and electrical services through the web, whilst offering ample room to include insulation.

hyJOIST may also be used for pitched roofs up to 35 degrees where special attention is paid to connection and tie-down. It is important that the connection of rafters includes for the effects of wind loading as well as dead, live and snow loads where applicable.

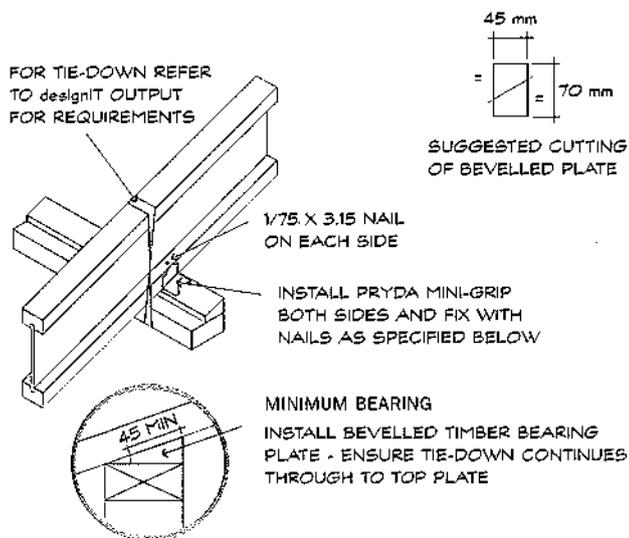
Rafter tie-down using looped over strap is recommended whilst bracing requirements do not differ with the use of a hyJOIST roof system.

## Typical installation for low pitched roofs

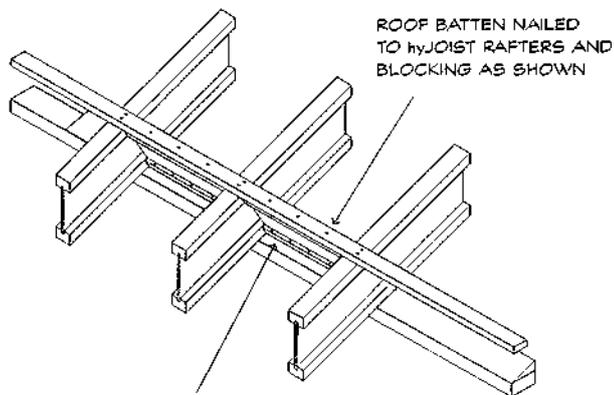


\* REFERENCES TO TIE-DOWN AND NUMBER OF NAILS FROM designIT<sup>®</sup> OUTPUT HAVE BEEN INCLUDED IN THIS SPECIFICATION RELATIVE TO SPAN TABLES ON PAGE 26

## Fixing and support using bevelled plate



## Restraint at supports - using blocking



hyJOIST BLOCKING NAILED DOWN TO SUPPORTS  
INDIVIDUAL BLOCKING PIECES MAY BE SPACED UP TO 1.8M CENTRES OR 3 RAFTER SPACINGS, WHICHEVER IS GREATER

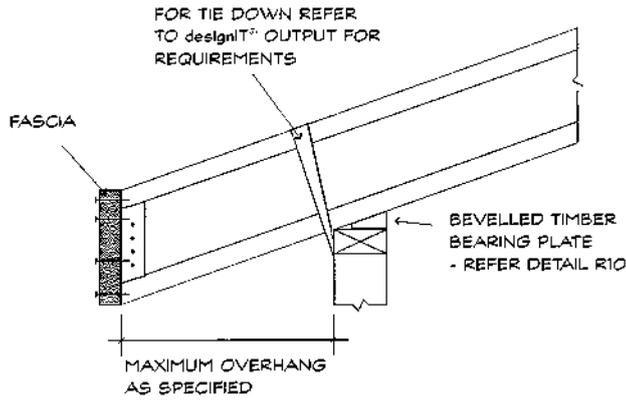
ROOF PITCH	RAFTER SPACING	INSTALLATION OF MINI-GRIPS OR SIMILAR
≤ 10°	≤ 1200	NOT REQUIRED
	> 1200	FIX WITH 2/35 X 3.15 FH NAILS PER TAB
10° TO 35°	≤ 1200	FIX WITH 4/35 X 3.15 FH NAILS PER TAB
	> 1200	FIX WITH 5/35 X 3.15 FH NAILS PER TAB

For roof pitches greater than 35° seek engineering advice

DETAIL R10

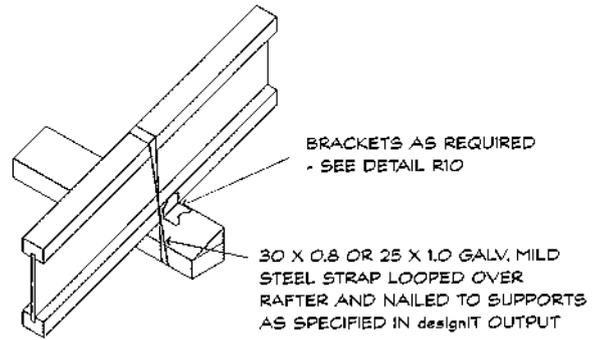
DETAIL R6

**Rafter overhang**  
- sloping soffit with bevelled plate supports



DETAIL R7

**Rafter tie-down**  
- using looped steel strap



DETAIL R13

**Rafter Span Tables**

The following span tables have been prepared in accordance with AS 1684.1: 1999 and are based on the following design criteria:

- Rafters are for a house.
- The bottom flange is restrained by ceiling or ceiling battens at maximum 600c/c.
- Roof mass does not exceed 40 kg/m<sup>2</sup>, ie light roof and ceiling.
- Wind Zones up to Very High.
- Snow loads up to 0.5 kPa (Snow loads for 1.0 kPa may be designed using modification factors from Section 15 of NZS 3604:1999).
- Permanent load serviceability design limit: span/300 or 20 mm.

hyJOIST <sup>®</sup> SECTION CODE	SINGLE SPAN							
	RAFTER SPACING (mm)							
	450		600		900		1200	
	SPAN (m)	O/H (m) <sup>2</sup>	SPAN (m)	O/H (m) <sup>2</sup>	SPAN (m)	O/H (m) <sup>2</sup>	SPAN (m)	O/H (m) <sup>2</sup>
HJ200 45	5.5	1.4	5.0	1.4	4.4	1.3	4.0	1.3
HJ240 63	6.8	1.9	6.3	1.8	5.6	1.7	5.1	1.7
HJ240 90	7.3	2.3	6.9	2.1	6.3	2.0	5.8	1.9
HJ300 63	7.7	2.4	7.3	2.2	6.5	2.1	5.7	2.1
HJ300 90	8.3	2.8	7.9	2.6	7.1	2.4	6.7	2.3
HJ360 63	8.5	2.8	7.8	2.6	6.4	2.6	5.6	2.4
HJ360 90	9.2	3.3	8.6	3.1	8.0	2.8	7.4	2.8
HJ400 90	9.8	3.6	9.2	3.4	8.5	3.1	7.8	3.0

**Note:**

1. Limited by strength
2. Overhang should not exceed half the length of the backspan

designIT allows for the design and specification of hyJOIST rafters for other applications including:

- Roof mass from 10kg/m<sup>2</sup> to 90 kg/m<sup>2</sup>.
- Low, medium and high wind zones.
- Rafters where continuous restraint is not provided to the bottom flange.
- Overhangs with horizontal soffits.
- Face fixing to ridge beams and details for birdsmouthing over supports.
- Alternate fixing details.

# Compliance with the New Zealand Building Code (NZBC)

This guide provides technical information for the design and installation of hyJOIST<sup>®</sup> engineered I-joists as floor joists and rafters in domestic and residential buildings. Further design guidance can also be obtained from the designIT NZ software available from futurebuild. This guide is intended to be used by designers or builders to select appropriate sizes of hyJOIST members and their connections in the framing of houses and similar buildings.

## Manufacture

hyJOIST is an engineered I-joist. The flanges are Laminated Veneer Lumber (LVL) intended for structural use and conforming with the requirements of AS/NZS 4357:2005 Structural Laminated Veneer Lumber. The webs are structural plywood conforming to AS/NZS 2269:2004 Plywood - Structural.

hyJOIST is Product Certified by the Plywood Association of Australasia (PAA) as being manufactured in accordance with AS/NZS 4357 and AS/NZS 2269. The PAA is accredited for product certification by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

## Design

The design methodology used in the preparation of this guide complies with the requirements of the following design standards:

- AS/NZS 1170:2002/3 Structural Design Actions
- AS 1720.1:1997 Timber Structures, Part 1: Design methods.

The design properties and methodologies of hyJOIST used to calculate the span tables in this brochure were determined in agreement with NZS 3603:1993 Timber Structures Standard, an Acceptable Solution to NZBC Clause 1 Structure.

Guidance has been taken from AS 1684.1:1999, Residential timber-framed construction, Part 1: Design criteria, and reviewed to ensure agreement with NZS 3604:1999 Timber Framed Buildings, an Acceptable Solution to NZBC Clause 1 Structure.

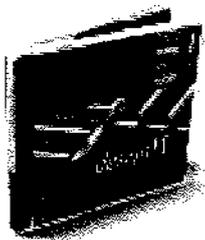
When selected and installed in accordance with the specifications, details and limitations in this guide, hyJOIST floor joists and rafters will comply with the requirements of the New Zealand Building Code.

## Durability

The expected service life of hyJOIST members is in excess of 50 years in dry protected areas, where moisture content is maintained below levels specified in NZS 3602:2003. Designers and building owners must ensure that a building remains weather-tight and hyJOIST remains protected from both external and internal moisture. Exposure to weather during normal construction periods is not a cause for concern. hyJOIST is not recommended for fully weather exposed applications.

## Treatment

For weather-protected applications noted in NZS 3602:2003 hyJOIST can be LOSP (solvent) treated to H3 in accordance with AS/NZS 1604.4:2004. This treatment provides the efficacy intended by both H1.2 and H3.1 in NZBC B2/AS1 and NZS 3640:2003.



## For more efficient floor design use

### Free designIT® software

Simple to use yet deceptively powerful, designIT® brings efficient and appropriate engineering design solutions within everyone's grasp. Contact Carter Holt Harvey for your free copy.

### designIT®

New designIT uses the same simple system for specifying hySPAN®, hyJOIST® and other selected materials using the data input you're used to. But it now incorporates options for calculating designs with stress graded timber and more complex designs including a range of floor live loads needed for the design of decks, balconies and residential apartment buildings.

### designIT® updates

Keeping your designIT up-to-date is easy using the 'Check for Updates' feature contained in the Help Menu. To ensure you always have the latest version regularly select this feature and designIT will automatically check the web. If updates are available simply select 'YES' in the prompt and they will be automatically installed.

designIT updated version includes the following additional features:

- New hyJOIST Options Range for more economical floor designs
- Floor joist and bearer calculators, allowing for specification of structural members with point loads, cantilevers and variable spans
- hy90° included as an option for lintels
- hyCHORD® included as an option for floor joists, lintels and rafters
- hyONE for bearers and lintels



FUTURE-PROOF BUILDING



 **CarterHoltHarvey**  
Woodproducts New Zealand

Private Bag 92-106  
Auckland  
New Zealand  
Freephone: 0800 808 131  
Freefax: 0800 808 132  
E-mail: designIT@chh.co.nz

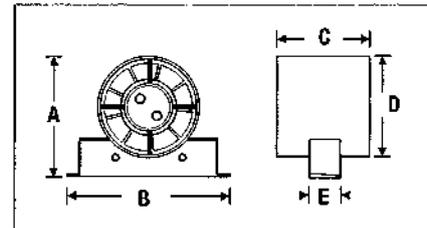
[www.chhfuturebuild.com](http://www.chhfuturebuild.com)  
[www.chhwoodproducts.co.nz](http://www.chhwoodproducts.co.nz)

# TECHNICAL DATA

## DIMENSION SPECIFICATION

Models	A	B	C	D	E
ID100	130	155	90	100	27
ID125	150	155	99	118	27
ECO150 (white)	187	153	109	150	27
ID150	187	153	109	150	27
ID230 (square model)	286	286	155	230	-

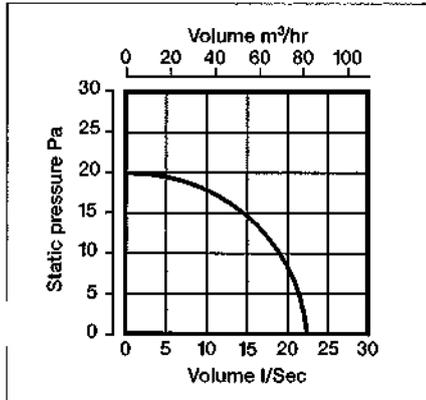
Dimensions - ID Fans



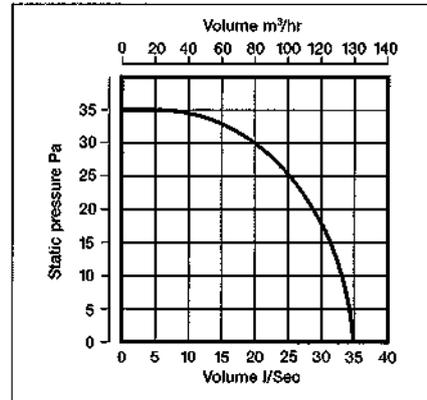
## TECHNICAL SPECIFICATION

Models	ID100	ID125	ECO150	ID150	ID230
Power	220 - 240V	220 - 240V	220 - 240V	220 - 240V	220 - 240V
Fan Performance	23 l/s, 85m³/hr	36 l/s, 130m³/hr	64 l/s, 230m³/hr	87 l/s, 313m³/hr	152 l/s, 550m³/hr
Fan Wattage	20W	20W	25W	25W	80W
Maximum Pressure	20 Pa	35 Pa	50 Pa	60 Pa	50 Pa
Fan Speed	2400 rpm	2000 rpm	2400 rpm	2400 rpm	1250 rpm
Sound Level	41 dB(A)	41 dB(A)	40 dB(A)	40 dB(A)	50 dB(A)
Max. Operating Temp	50°C	50°C	50°C	50°C	50°C
IP Rating	IPX4	IPX4	IPX4	IPX4	IPX4

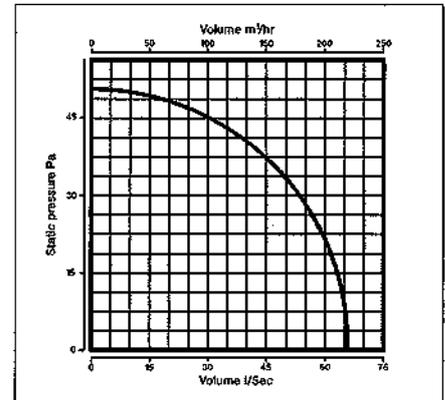
Performance - ID100



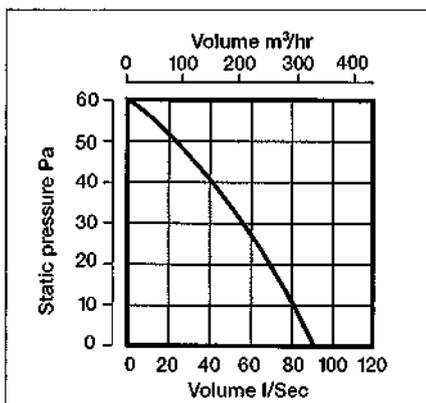
Performance - ID125



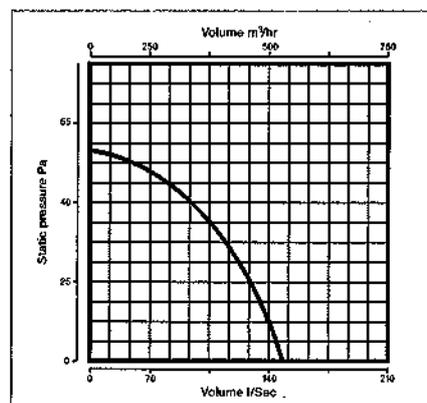
Performance - ECO150



Performance - ID150



Performance - ID230



Note: PERFORMANCE - ID Fans maximum fan performance stated, this can vary depending on the length of ducting used.

## PRODUCTS CATEGORY:

## 50mm Vented Cavity Closer

**Vented Cavity Closers**

19mm Vented Cavity Closer  
 21mm Vented Cavity Closer  
 40mm Vented Cavity Closer  
 50mm Vented Cavity Closer

**Weatherboard Closers & Starters**

uPVC Cant Strip/ WB Starter  
 30mm WB Starter/Cavity Closer  
 35mm WB Starter/Cavity Closer  
 Closer Stop End (Multi-Fil)

**Internal Soakers**

40mm Flat Back Soaker  
 135mm Flat Back Soaker  
 160mm Flat Back Soaker  
 55 x 55mm Corner Soaker  
 75 x 85mm Corner Soaker  
 75 x 105mm Corner Soaker  
 Cavity to Non Cavity Soaker  
 100x42mm  
 Cavity To Non Cavity Soaker  
 100mm  
 Cavity To Non Cavity Soaker  
 150mm

**Window Surround Flashings**

30mm Hinged Sill / Jamb Flashing  
 30mm Sill Flashing (not hinged)  
 Brick Kick-Out Flashing

**Special Extrusions**

35mm Crack Inducer  
 47mm Crack Inducer  
 47mm Crack Inducer Jointer  
 18mm Cavity Battler  
 Carter Holt Harvey Eco Ply Horizontal Jointer / Z Flashing

**Plaster Accessories**

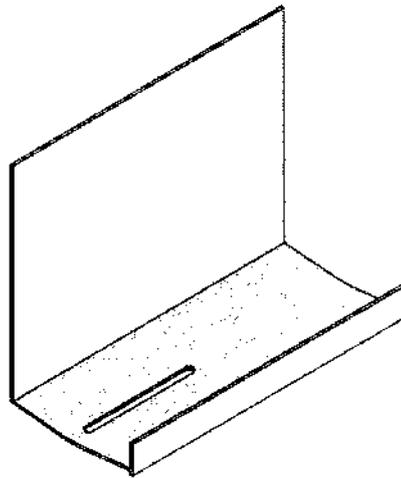
18mm Plaster Corner  
 20mm Plaster Offset Jamb  
 20mm Plaster Tee Jamb  
 Loxo Jamb

**Sill Tray System**

Silltray  
 Silltray Stop End  
 Support Wedge  
 Silltray Jointer  
 25mm Window Support Bracket  
 50mm Door Support Bracket  
 Silltray Corner 90 °  
 Silltray Corner 45 °

**Sill Pan System**

Stop End Pairs  
 Sill Pan  
 Sill Pan Mullion



## PRODUCTS CATEGORY:

**Vented Cavity Closers**

19mm Vented Cavity Closer  
 21mm Vented Cavity Closer  
 40mm Vented Cavity Closer  
 50mm Vented Cavity Closer

**Weatherboard Closers & Starters**

uPVC Cant Strip/ W/B Starter  
 30mm W/B Starter/Cavity Closer  
 35mm W/B Starter/Cavity Closer  
 Closer Stop End (Multi-Fit)

**Internal Soakers**

40mm Flat Back Soaker  
 135mm Flat Back Soaker  
 180mm Flat Back Soaker  
 55 x 55mm Corner Soaker  
 75 x 85mm Corner Soaker  
 75 x 105mm Corner Soaker  
 Cavity to Non Cavity Soaker  
 100x42mm  
 Cavity To Non Cavity Soaker  
 100mm  
 Cavity To Non Cavity Soaker  
 150mm

**Window Surround Flashings**

30mm Hinged Sill / Jamb Flashing  
 30mm Sill Flashing (not hinged)  
 Brick Kick-Out Flashing

**Special Extrusions**

35mm Crack Inducer  
 47mm Crack Inducer  
 47mm Crack Inducer Jointer  
 18mm Cavity Batten  
 Carter Holt Harvey Eco Ply  
 Horizontal Jointer / Z Flashing

**Plaster Accessories**

20mm Plaster Corner  
 20mm Plaster Offset Jamb  
 20mm Plaster Tee Jamb  
 Loxo Jamb

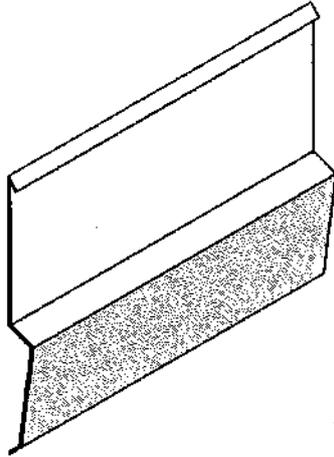
**Sill Tray System**

Silltray  
 Silltray Stop End  
 Support Wedge  
 Silltray Jointer  
 25mm Window Support Bracket  
 50mm Door Support Bracket  
 Silltray Corner 90 °  
 Silltray Corner 45 °

**Sill Pan System**

Stop End Pairs  
 Sill Pan  
 Sill Pan Mullion

## Eco Ply Jointer / Z Flashing



# Resene Woodsman Wood Oil Stain

Resene Woodsman Wood Oil Stain for exterior timber is a penetrating solventborne oil stain matching the needs of timber with your desire to achieve the most natural appearance possible.

## exterior

### Typical uses

- Beams
- Fences
- Garden furniture
- Plywood and profiled sheets
- Timber - dressed and rough sawn
- Weatherboards

<b>Vehicle type</b>	Solventborne
<b>Pigmentation</b>	Natural coloured oxides
<b>Solvent</b>	Hydrocarbon/ester
<b>Finish</b>	Fully penetrating
<b>Colour</b>	Selection of standard colours from the Resene Exterior timber stains colour chart
<b>Dry time (minimum)</b>	24 hours
<b>Recoat time (minimum)</b>	24 hours
<b>Primer required</b>	No
<b>Theoretical coverage</b>	Dependent on surface
<b>Usual no. of coats</b>	2 (new work); 1-2 (old work)
<b>Thinning and clean up</b>	Do not thin; clean up with mineral turps
<b>VOC</b>	Greater than 557 grams per litre (see Resene VOC Summary)

### Physical properties

### Performance

1. Provides a genuine rustic look.
2. Very easy application.
3. Requires minimum surface preparation.
4. Contains powerful fungicides for mould resistance. Avoid contact with plants.

### Limitations

1. Will not kill existing mould. Use Resene Moss & Mould Killer (see Data Sheet D80).
2. Will not penetrate through existing coatings. Such areas will need excess wiping off.
3. Will not prevent checking of plywood.
4. Will require maintenance after two summers.
5. Areas coated with this product unmodified may not comply with New Zealand Building Code D1 3.3(d). Refer also to New Zealand Building Code D1 2.0 table 2.

# Woodsman Wood Oil Stain

## Surface preparation

### Existing stains

Remove all the weakly adhering coating by sanding. Treat with Resene Moss & Mould Killer (see Data Sheet D80).

### Exposed timber (greater than one week)

Remove any gross contamination and semi-detached cellulose fibres. Treat with Resene Moss & Mould Killer (see Data Sheet D80).

### New timber

Ensure surface is dry and free from dirt, dust and loose material.

### Caution

Sanding dusts from some hardwoods are considered carcinogenic and all old timber sanding dusts should be considered potentially harmful. Always wear an efficient dust mask.

*Sanding dust from old lead or chromate based paints or old building materials containing asbestos may be injurious to the health if inhaled or ingested. Seek expert advice if the presence of these materials is suspected.*

## Application

Apply by brush, roller or spray. Saturate surface with Resene Woodsman Wood Oil Stain. During application stir the contents of the container frequently to ensure even distribution of colour. Aim to achieve the targeted coverage for the substrate as outlined below.

### Typical coverage

#### Badly weathered timber

First coat 3-4 square metres per litre.  
Second coat 5-7 square metres per litre.

#### Dressed timber

First coat 10-12 square metres per litre.  
Second coat 12-14 square metres per litre.  
Apply a third coat 12-14 square metres per litre after about three to six months.

#### Rough sawn timber

First coat 4-6 square metres per litre.  
Second coat 9-11 square metres per litre.

## Precautions

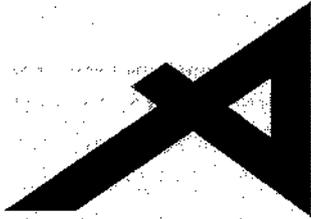
1. Will not penetrate through existing coatings or very hard latewood bands. For best results wipe excess Resene Woodsman Wood Oil Stain off with a dry, absorbent, lint-free cloth rubbing along the grain.
2. Contains powerful fungicides. Avoid skin contact. If any skin contact occurs, wash skin thoroughly with soap and water immediately. Do not scrub the skin.
3. **FLAMMABLE** - Keep away from heat and open flame. Keep closed when not in use.
4. Avoid breathing vapour - use with adequate ventilation.

*Please ensure the current Data Sheet is consulted prior to specification or application of Resene products. If the surface you propose to coat is not referred to by this Data Sheet, please contact Resene for clarification.*

In Australia  
PO Box 785, Ashmore City, Queensland 4214  
Call 1800 738 383, visit [www.resene.com.au](http://www.resene.com.au)  
or email [advice@resene.com.au](mailto:advice@resene.com.au)

**Resene**  
the paint the professionals use

In New Zealand  
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Call 0800 RESENE (737 363), visit [www.resene.co.nz](http://www.resene.co.nz)  
or email [advice@resene.co.nz](mailto:advice@resene.co.nz)



## BRANZ Appraised

Appraisal No.404 [2008]

BRANZ Appraisals

Technical Assessments of products  
for building and construction

## BRANZ APPRAISAL No. 404 (2008)

This Appraisal replaces BRANZ  
Appraisal No. 404 (2005) issued  
9 August 2005.

Amended 20 June 2013

## bituFLAME® ROOF MEMBRANE SYSTEMS

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Christchurch

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Fax: 03 366 9496

Email: [info@waterproofing.co.nz](mailto:info@waterproofing.co.nz)

[www.waterproofing.co.nz](http://www.waterproofing.co.nz)

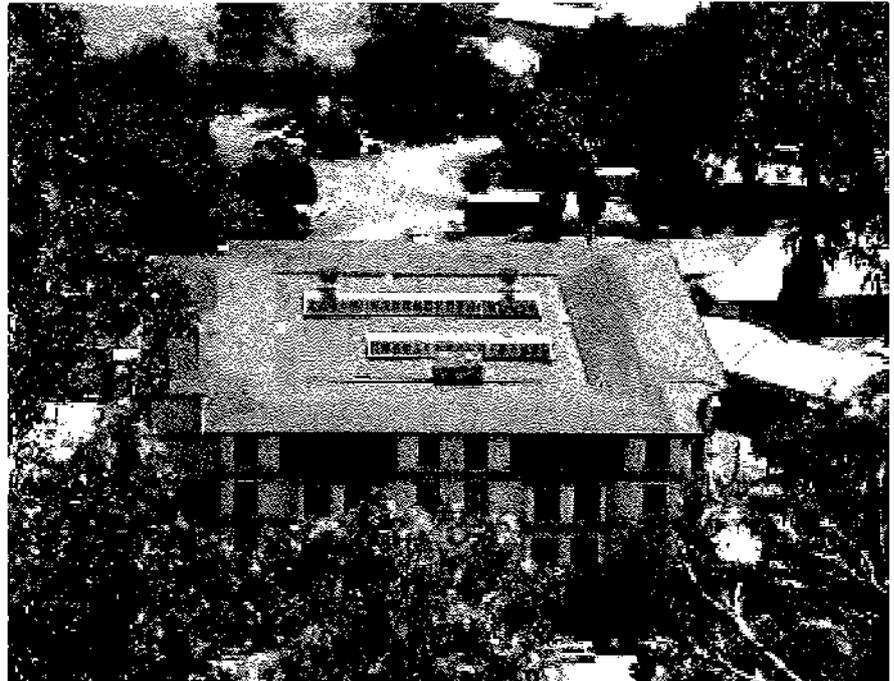


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New Zealand  
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Fax: +64 4 237 1171  
[www.branz.co.nz](http://www.branz.co.nz)



1.1 bituFLAME® Roof Membranes are waterproofing membranes for nominally flat, pitched and curved roofs, gutters and parapets. They are installed as a multi layer system with either a mineral chip finished product (bituFLAME® CS Granule) or a fleece finished layer (bituFLAME® CS Mat) with UV protective paint as the top layer, or as a single layer system (bituFLAME® BS) onto a concrete substrate under heavy protection such as paving slabs or a topping screed.

1.2 Both the products are supplied as torch-on, reinforced, polymer-modified bitumen sheets in roll form. The membranes can be fully torched, mechanically or adhesive fixed.



2.1 bituFLAME® Roof Membranes have been appraised as roof waterproofing membranes on buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with respect to building height and maximum floor plan areas; and,
- with building structures designed and constructed to meet the requirements of the NZBC; and,
- with roof supporting structures of timber framing with substrates of plywood; and,
- with substrates of suspended concrete slabs; and,
- situated in NZS 3604 Wind Zones, up to, and including 'Very High'.

2.2 bituFLAME® Roof Membranes have also been appraised for use as roof waterproofing membranes on specifically designed buildings within the following scope:

- with building structures designed and constructed to comply with the NZBC; and,
- with roof supporting structures of timber framing with substrates of plywood; and,
- with substrates of suspended concrete slab; and,
- subjected to maximum wind pressures (Refer Paragraph 8.2); and,
- with the weathertightness design of all junctions being the subject of specific design by the designer.

*Note: The design of these junctions has not been appraised by BRANZ and is outside the scope of this Appraisal.*

2.3 Roofs waterproofed with bituFLAME® Roof Membranes must be designed and constructed in accordance with the following limitations:

- nominally flat, curved or pitched roofs constructed to drain water to gutters and drainage outlets complying with the NZBC; and,
- constructed to suitable falls (Refer Paragraph 14.3 and 14.4); and,
- with no integral roof gardens.

2.4 The design and construction of the substrate and movement and control joints is specific to each building, and therefore is the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.

2.5 The membranes must be installed by Waterproofing System Ltd approved installers in accordance with the Waterproofing System Ltd Technical Literature referenced in Paragraph 6.1.

## 1.2.2.2.3.1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16.17.18.19.20.21.22.23.24.25.26.27.28.29.30.31.32.33.34.35.36.37.38.39.40.41.42.43.44.45.46.47.48.49.50.51.52.53.54.55.56.57.58.59.60.61.62.63.64.65.66.67.68.69.70.71.72.73.74.75.76.77.78.79.80.81.82.83.84.85.86.87.88.89.90.91.92.93.94.95.96.97.98.99.100.101.102.103.104.105.106.107.108.109.110.111.112.113.114.115.116.117.118.119.120.121.122.123.124.125.126.127.128.129.130.131.132.133.134.135.136.137.138.139.140.141.142.143.144.145.146.147.148.149.150.151.152.153.154.155.156.157.158.159.160.161.162.163.164.165.166.167.168.169.170.171.172.173.174.175.176.177.178.179.180.181.182.183.184.185.186.187.188.189.190.191.192.193.194.195.196.197.198.199.200.201.202.203.204.205.206.207.208.209.210.211.212.213.214.215.216.217.218.219.220.221.222.223.224.225.226.227.228.229.230.231.232.233.234.235.236.237.238.239.240.241.242.243.244.245.246.247.248.249.250.251.252.253.254.255.256.257.258.259.260.261.262.263.264.265.266.267.268.269.270.271.272.273.274.275.276.277.278.279.280.281.282.283.284.285.286.287.288.289.290.291.292.293.294.295.296.297.298.299.300.301.302.303.304.305.306.307.308.309.310.311.312.313.314.315.316.317.318.319.320.321.322.323.324.325.326.327.328.329.330.331.332.333.334.335.336.337.338.339.340.341.342.343.344.345.346.347.348.349.350.351.352.353.354.355.356.357.358.359.360.361.362.363.364.365.366.367.368.369.370.371.372.373.374.375.376.377.378.379.380.381.382.383.384.385.386.387.388.389.390.391.392.393.394.395.396.397.398.399.400.401.402.403.404.405.406.407.408.409.410.411.412.413.414.415.416.417.418.419.420.421.422.423.424.425.426.427.428.429.430.431.432.433.434.435.436.437.438.439.440.441.442.443.444.445.446.447.448.449.450.451.452.453.454.455.456.457.458.459.460.461.462.463.464.465.466.467.468.469.470.471.472.473.474.475.476.477.478.479.480.481.482.483.484.485.486.487.488.489.490.491.492.493.494.495.496.497.498.499.500.501.502.503.504.505.506.507.508.509.510.511.512.513.514.515.516.517.518.519.520.521.522.523.524.525.526.527.528.529.530.531.532.533.534.535.536.537.538.539.540.541.542.543.544.545.546.547.548.549.550.551.552.553.554.555.556.557.558.559.560.561.562.563.564.565.566.567.568.569.570.571.572.573.574.575.576.577.578.579.580.581.582.583.584.585.586.587.588.589.590.591.592.593.594.595.596.597.598.599.600.601.602.603.604.605.606.607.608.609.610.611.612.613.614.615.616.617.618.619.620.621.622.623.624.625.626.627.628.629.630.631.632.633.634.635.636.637.638.639.640.641.642.643.644.645.646.647.648.649.650.651.652.653.654.655.656.657.658.659.660.661.662.663.664.665.666.667.668.669.670.671.672.673.674.675.676.677.678.679.680.681.682.683.684.685.686.687.688.689.690.691.692.693.694.695.696.697.698.699.700.701.702.703.704.705.706.707.708.709.710.711.712.713.714.715.716.717.718.719.720.721.722.723.724.725.726.727.728.729.730.731.732.733.734.735.736.737.738.739.740.741.742.743.744.745.746.747.748.749.750.751.752.753.754.755.756.757.758.759.760.761.762.763.764.765.766.767.768.769.770.771.772.773.774.775.776.777.778.779.780.781.782.783.784.785.786.787.788.789.790.791.792.793.794.795.796.797.798.799.800.801.802.803.804.805.806.807.808.809.810.811.812.813.814.815.816.817.818.819.820.821.822.823.824.825.826.827.828.829.830.831.832.833.834.835.836.837.838.839.840.841.842.843.844.845.846.847.848.849.850.851.852.853.854.855.856.857.858.859.860.861.862.863.864.865.866.867.868.869.870.871.872.873.874.875.876.877.878.879.880.881.882.883.884.885.886.887.888.889.890.891.892.893.894.895.896.897.898.899.900.901.902.903.904.905.906.907.908.909.910.911.912.913.914.915.916.917.918.919.920.921.922.923.924.925.926.927.928.929.930.931.932.933.934.935.936.937.938.939.940.941.942.943.944.945.946.947.948.949.950.951.952.953.954.955.956.957.958.959.960.961.962.963.964.965.966.967.968.969.970.971.972.973.974.975.976.977.978.979.980.981.982.983.984.985.986.987.988.989.990.991.992.993.994.995.996.997.998.999.1000.

## New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, bituFLAME® Roof Membrane Systems, if designed, used, 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 (b), 15 years. bituFLAME® Roof Membrane Systems meet this requirement. See Paragraph 10.1. Performance B2.3.1 (c), 5 years. Alugard, Sungard and Synroof Hi Build meet this requirement. See Paragraph 10.2.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.1 and E2.3.2. bituFLAME® Roof Membrane Systems meet these requirements. See Paragraphs 14.1 – 14.9.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. bituFLAME® Roof Membrane Systems meet this requirement and will not present a health hazard to people.

3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance. The membranes are an alternative to the membranes specified in NZBC Acceptable Solution E2/AS1, and an Alternative Solution subject to specific design for other buildings not covered within E2/AS1.

## 1.2.2.2.3.1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16.17.18.19.20.21.22.23.24.25.26.27.28.29.30.31.32.33.34.35.36.37.38.39.40.41.42.43.44.45.46.47.48.49.50.51.52.53.54.55.56.57.58.59.60.61.62.63.64.65.66.67.68.69.70.71.72.73.74.75.76.77.78.79.80.81.82.83.84.85.86.87.88.89.90.91.92.93.94.95.96.97.98.99.100.101.102.103.104.105.106.107.108.109.110.111.112.113.114.115.116.117.118.119.120.121.122.123.124.125.126.127.128.129.130.131.132.133.134.135.136.137.138.139.140.141.142.143.144.145.146.147.148.149.150.151.152.153.154.155.156.157.158.159.160.161.162.163.164.165.166.167.168.169.170.171.172.173.174.175.176.177.178.179.180.181.182.183.184.185.186.187.188.189.190.191.192.193.194.195.196.197.198.199.200.201.202.203.204.205.206.207.208.209.210.211.212.213.214.215.216.217.218.219.220.221.222.223.224.225.226.227.228.229.230.231.232.233.234.235.236.237.238.239.240.241.242.243.244.245.246.247.248.249.250.251.252.253.254.255.256.257.258.259.260.261.262.263.264.265.266.267.268.269.270.271.272.273.274.275.276.277.278.279.280.281.282.283.284.285.286.287.288.289.290.291.292.293.294.295.296.297.298.299.300.301.302.303.304.305.306.307.308.309.310.311.312.313.314.315.316.317.318.319.320.321.322.323.324.325.326.327.328.329.330.331.332.333.334.335.336.337.338.339.340.341.342.343.344.345.346.347.348.349.350.351.352.353.354.355.356.357.358.359.360.361.362.363.364.365.366.367.368.369.370.371.372.373.374.375.376.377.378.379.380.381.382.383.384.385.386.387.388.389.390.391.392.393.394.395.396.397.398.399.400.401.402.403.404.405.406.407.408.409.410.411.412.413.414.415.416.417.418.419.420.421.422.423.424.425.426.427.428.429.430.431.432.433.434.435.436.437.438.439.440.441.442.443.444.445.446.447.448.449.450.451.452.453.454.455.456.457.458.459.460.461.462.463.464.465.466.467.468.469.470.471.472.473.474.475.476.477.478.479.480.481.482.483.484.485.486.487.488.489.490.491.492.493.494.495.496.497.498.499.500.501.502.503.504.505.506.507.508.509.510.511.512.513.514.515.516.517.518.519.520.521.522.523.524.525.526.527.528.529.530.531.532.533.534.535.536.537.538.539.540.541.542.543.544.545.546.547.548.549.550.551.552.553.554.555.556.557.558.559.560.561.562.563.564.565.566.567.568.569.570.571.572.573.574.575.576.577.578.579.580.581.582.583.584.585.586.587.588.589.590.591.592.593.594.595.596.597.598.599.600.601.602.603.604.605.606.607.608.609.610.611.612.613.614.615.616.617.618.619.620.621.622.623.624.625.626.627.628.629.630.631.632.633.634.635.636.637.638.639.640.641.642.643.644.645.646.647.648.649.650.651.652.653.654.655.656.657.658.659.660.661.662.663.664.665.666.667.668.669.670.671.672.673.674.675.676.677.678.679.680.681.682.683.684.685.686.687.688.689.690.691.692.693.694.695.696.697.698.699.700.701.702.703.704.705.706.707.708.709.710.711.712.713.714.715.716.717.718.719.720.721.722.723.724.725.726.727.728.729.730.731.732.733.734.735.736.737.738.739.740.741.742.743.744.745.746.747.748.749.750.751.752.753.754.755.756.757.758.759.760.761.762.763.764.765.766.767.768.769.770.771.772.773.774.775.776.777.778.779.780.781.782.783.784.785.786.787.788.789.790.791.792.793.794.795.796.797.798.799.800.801.802.803.804.805.806.807.808.809.810.811.812.813.814.815.816.817.818.819.820.821.822.823.824.825.826.827.828.829.830.831.832.833.834.835.836.837.838.839.840.841.842.843.844.845.846.847.848.849.850.851.852.853.854.855.856.857.858.859.860.861.862.863.864.865.866.867.868.869.870.871.872.873.874.875.876.877.878.879.880.881.882.883.884.885.886.887.888.889.890.891.892.893.894.895.896.897.898.899.900.901.902.903.904.905.906.907.908.909.910.911.912.913.914.915.916.917.918.919.920.921.922.923.924.925.926.927.928.929.930.931.932.933.934.935.936.937.938.939.940.941.942.943.944.945.946.947.948.949.950.951.952.953.954.955.956.957.958.959.960.961.962.963.964.965.966.967.968.969.970.971.972.973.974.975.976.977.978.979.980.981.982.983.984.985.986.987.988.989.990.991.992.993.994.995.996.997.998.999.1000.

4.1 Materials supplied by Waterproofing Systems Ltd are as follows:

### bituFLAME® CS Mat

- These are torch-on membranes either 3.0 or 4.0 mm thick with a fleece upper layer and 180 - 200 g/m<sup>2</sup> spun-bonded polyester fabric reinforcement. They are designed to be used as a single or double layer system with UV protection. They are available in 10 m x 1 m rolls.

### bituFLAME® CS Granule Membrane

- A 4.0 mm thick torch-on membrane with a mineral chip finished top surface and a thermofusible polyethylene foil film backing. Designed to be used as a single or a cap layer for double layer systems. It is available in white, green, terracotta or black mineral chip finish.

### bituFLAME® BS Membrane

- A 2.0 or 3.0 mm thick membrane with a polythene top surface and 60 g/m<sup>2</sup> glassfibre mat reinforcement. It is available in 20 m x 1 m rolls and 10 m x 1 m rolls. It is designed to be used as a base sheet for double layer systems or as an underflashing.

### bituPRIME Primer

- A solvent-based, fast drying bituminous primer designed to penetrate concrete or plywood surfaces and provide a bondable surface. It is available in 20 litre cans.

### Alugard UV Coating

- A fortified liquid membrane containing polished aluminum flakes. It is applied to sand-finished membranes as a UV protection.

### duroTUFF® UV Coating

- An acrylic high build membrane used for UV protection where a specific colour finish is required

### DPC Tapes

- A tape used on all plywood joints under a single layer system. The tapes are 50 mm wide.

### bituBOND® Adhesive

- A water-based bitumen adhesive used for glue fixing torch-on membranes to gutters, parapets and other difficult detailing areas.

Table 1: Membrane Systems

System	Single Layer	Double Layer	Protection Required
bituFLAME® CS Mat Membranes	4.0 mm		Paving slabs or cement screeds
bituFLAME® BS Membranes		2.0 or 3.0 mm bituFLAME® BS with 4.0 mm top layer	Alugard, Sungard, duroTUFF®, paving slabs or cement screeds
bituFLAME® CS Granule Membrane		2.0 or 3.0 mm bituFLAME® BS with 4.0 mm top layer	Standard finish of material

## Handling and Storage

5.1 Handling and storage of all materials whether on or off site is under the control of the Waterproofing Systems Ltd trained installers. Dry storage must be provided for all products and the rolls of membrane must be stored in an upright position.

## 1.2.2.2.3.1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16.17.18.19.20.21.22.23.24.25.26.27.28.29.30.31.32.33.34.35.36.37.38.39.40.41.42.43.44.45.46.47.48.49.50.51.52.53.54.55.56.57.58.59.60.61.62.63.64.65.66.67.68.69.70.71.72.73.74.75.76.77.78.79.80.81.82.83.84.85.86.87.88.89.90.91.92.93.94.95.96.97.98.99.100.101.102.103.104.105.106.107.108.109.110.111.112.113.114.115.116.117.118.119.120.121.122.123.124.125.126.127.128.129.130.131.132.133.134.135.136.137.138.139.140.141.142.143.144.145.146.147.148.149.150.151.152.153.154.155.156.157.158.159.160.161.162.163.164.165.166.167.168.169.170.171.172.173.174.175.176.177.178.179.180.181.182.183.184.185.186.187.188.189.190.191.192.193.194.195.196.197.198.199.200.201.202.203.204.205.206.207.208.209.210.211.212.213.214.215.216.217.218.219.220.221.222.223.224.225.226.227.228.229.230.231.232.233.234.235.236.237.238.239.240.241.242.243.244.245.246.247.248.249.250.251.252.253.254.255.256.257.258.259.260.261.262.263.264.265.266.267.268.269.270.271.272.273.274.275.276.277.278.279.280.281.282.283.284.285.286.287.288.289.290.291.292.293.294.295.296.297.298.299.300.301.302.303.304.305.306.307.308.309.310.311.312.313.314.315.316.317.318.319.320.321.322.323.324.325.326.327.328.329.330.331.332.333.334.335.336.337.338.339.340.341.342.343.344.345.346.347.348.349.350.351.352.353.354.355.356.357.358.359.360.361.362.363.364.365.366.367.368.369.370.371.372.373.374.375.376.377.378.379.380.381.382.383.384.385.386.387.388.389.390.391.392.393.394.395.396.397.398.399.400.401.402.403.404.405.406.407.408.409.410.411.412.413.414.415.416.417.418.419.420.421.422.423.424.425.426.427.428.429.430.431.432.433.434.435.436.437.438.439.440.441.442.443.444.445.446.447.448.449.450.451.452.453.454.455.456.457.458.459.460.461.462.463.464.465.466.467.468.469.470.471.472.473.474.475.476.477.478.479.480.481.482.483.484.485.486.487.488.489.490.491.492.493.494.495.496.497.498.499.500.501.502.503.504.505.506.507.508.509.510.511.512.513.514.515.516.517.518.519.520.521.522.523.524.525.526.527.528.529.530.531.532.533.534.535.536.537.538.539.540.541.542.543.544.545.546.547.548.549.550.551.552.553.554.555.556.557.558.559.560.561.562.563.564.565.566.567.568.569.570.571.572.573.574.575.576.577

7.2 The effective control of internal moisture must be considered at the design stage due to the impermeability of the membranes. Refer to BRANZ publication "Good Practice Guide - Membrane Roofing".

7.3 The 2.0 mm or 3.0 mm thick bituFLAME® BS membrane is designed for use on roofs and gutters as the first layer of a double layer system and all areas requiring detailing such as upstands, protrusions, rainwater heads and outlets. The bituFLAME® CS membrane can be used as the top layer of a double layer system, or as a single layer system, see Table 1.

## Structure

8.1 Where mechanical fasteners or adhesive fixing is used within the higher wind uplift roof areas. The higher wind uplift roof areas are all roof areas adjacent to roof edges, ridges and hips, and generally for a distance of 1.5 metres away from the roof edge, ridge or hip. On buildings in the 'High' and 'Very High' Wind Zones, the fasteners or adhesive fixings must be at maximum 200 mm centres. All other roof areas or the whole roof on buildings in the 'Low' or 'Medium' Wind Zones may have mechanical fasteners or adhesive fixings at maximum 300 mm centres. It should be noted that all membranes in all Wind Zones, including the base layer in two layer systems, must be fully bonded for a distance of 200 mm from the roof perimeter.

8.2 bituFLAME® Roof Membranes as fully bonded single or double layer systems are suitable for use in areas subject to maximum wind pressures of 6 kPa Ultimate Limit State.

## Substrates

### Plywood

9.1 Plywood must be treated to H3 (CCA treated). LOSP treated plywood must not be used. Plywood must comply with NZBC Acceptable Solution E2/AS1 Paragraph 8.5.3 and 8.5.5. Where specific design is used (i.e. outside the scope of E2/AS1) the plywood thickness and fixing size may increase and centres may decrease to meet specific wind loadings. Timber framing must comply with NZS 3604, or where specific engineering design is used, the framing shall be of at least equivalent stiffness to the framing provisions of NZS 3604, or comply with the serviceability criteria of AS/NZS 1170. In all cases, framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and all sheet edges are fully supported.

### Concrete

9.2 Concrete substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101.

### Existing Construction

9.3 A thorough inspection of the substrate must be made to ensure it is in fit condition and does not contain any materials that will adversely affect the performance of the membrane.

9.4 Repairs must be undertaken, where applicable, to ensure the substrate is sound, the joints are sealed, and the flashings are sound. Plywood substrates must be checked for screw fixings, and if necessary refixed as for new plywood.

## Durability

### Serviceable Life

10.1 bituFLAME® Roof Membranes are expected to have a serviceable life of at least 15 years, provided they are designed, used, installed and maintained in accordance with this Appraisal and the Technical Literature.

10.2 Alugard and duroTUFF® are expected to have a serviceable life of at least 5 years provided they are used, installed and maintained in accordance with this Appraisal and the Technical Literature.

### Chemical Resistance

10.3 Industrial air pollutants and windborne salt deposits should not significantly affect the durability of the membranes. However, the long term properties of the material may be affected by contact with petroleum-based products such as oils, greases and solvents.

## Maintenance

11.1 The membrane roof system, including any areas with a UV coating applied, must be regularly (at least annually) checked for damage, rubbish, debris or coating breakdown. Damage, such as small punctures and tears must be repaired and coatings reapplied as recommended by Waterproofing Systems Ltd.

11.2 Special care must be taken when inspecting the membrane roof systems to ensure the continuing prevention of moisture ingress, and repairs must be undertaken where required.

11.3 Drainage outlets must be maintained to operate effectively.

## Prevention of Fire Occuring

12.1 Separation or protection must be provided to bituFLAME® Roof Membranes 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

13.1 Roofs must be designed and constructed to shed precipitated moisture. They must also take account of snowfalls in snow prone areas.

A means of meeting code compliance with NZBC Clause E2.3.1 is given by the Technical Literature which aligns with details in NZBC Acceptable Solution E2/AS1.

13.2 When installed in accordance with this Appraisal and the Technical Literature, bituFLAME® Roof Membranes will prevent the penetration of water and will therefore meet code compliance with Clause E2.3.2. The membranes are impervious to water and will give a weathertight roof.

13.3 Roof falls must be built into the substrate and not created with mortar screeds applied over the membrane.

13.4 The minimum fall to roofs is 1 in 30 and gutters are 1 in 60. All falls must slope to an outlet. Inadequate falls will allow moisture to collect and increase the risk of deterioration of the membrane.

13.5 Allowance for deflection and settlement of the substrate must be made in the design of the roof to ensure falls are maintained and no ponding of water can occur.

13.6 bituFLAME® Roof Membranes are impermeable; therefore a means of dissipating construction moisture must be provided in the building design and construction to meet code compliance with Clause E2.3.6.

13.7 Drainage flanges must be used for any outlet and must be fitted with a grate or cage to reduce potential sources of blockages. An overflow must be provided where the roof does not drain to an external gutter or spouting.

13.8 Penetrations and upstands of the membranes must be raised above the level of any possible flooding caused by the blockage of roof drainage.

13.9 The design of details not covered by the Technical Literature is subject to specific weathertightness design and is outside the scope of this Appraisal.

## Water Supplies

14.1 Water is not contaminated by bituFLAME® Roof Membrane Systems.

14.2 The first 25 mm of rainfall from a newly installed bituFLAME® Roof Membrane Systems roof must be discarded before drinking water collection starts. This is to remove residues which may have developed in the processes involved in the production of a bituFLAME® Roof Membrane Systems roof.

14.3 Though bituFLAME® Roof Membrane Systems won't contaminate water, it must be noted that all water collected off roof surfaces made from any material is considered to be non-potable due to possible contamination from other sources. Water collection in this way can only be considered potable if it has been passed through a suitable sterilization system. Sterilization systems such as this have not been assessed and are outside the scope of this Appraisal.

## Installation Skill Level Requirement

15.1 Installation of the membranes must be completed by trained installers, approved by Waterproofing Systems Ltd.

15.2 Installation of substrates must be completed by tradespersons with an understanding of roof construction, in accordance with instructions given within the Waterproofing Systems Ltd Technical Literature and this Appraisal.

## Preparation of Substrates

16.1 Substrates must be dry, clean and stable before installation commences. Surfaces must be smooth and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents. All surface defects must be filled to achieve an even and uniform surface.

16.2 The relative humidity of concrete substrates must be 75% or less before membrane application. The concrete can be checked for dryness by using a hygrometer, as set out in BRANZ Bulletin No. 424.

16.3 The moisture content of the plywood and timber substructure must be a maximum of 20% and the plywood sheets must be dry at time of membrane application. This will generally require plywood sheets to be covered until just before the membrane is laid, to prevent rain wetting.

16.4 Substrates must be primed with bituPRIME Primer and left to dry (4-5 hours) before the membrane is installed.

## Membrane Installation

17.1 The membrane must be installed in accordance with the Technical Literature.

17.2 Plywood joints under a single layer must be taped with 50 mm wide DPC tape. All roof and wall junctions must have a 20 mm x 20 mm wooden fillet installed at the junction. Concrete substrate junctions must have a 20 mm x 20 mm cement mortar fillet installed. All external edges must be chamfered to a 5 mm radius to remove sharp edges.

17.3 The membrane must be unrolled without tension onto the prepared substrate and allowed to 'relax' for at least 30 minutes prior to installation.

17.4 The membrane is installed from the lowest point and each layer is installed across the roof fall allowing a 100 mm side overlap and a 150 mm end overlap. The cap sheet layer of a double layer system must be offset against the base sheet layer.

## Inspections

18.1 Critical areas of inspection for waterproofing systems are:

- Construction of substrates, including crack control and installation of bond breakers and movement control joints.
- Moisture content of the substrate prior to the application of the membrane.
- Acceptance of the substrate by the membrane installer prior to application of the membrane.
- Installation of the membrane to the manufacturer's instructions.

## Health and Safety

19.1 Safe use and handling procedures for bituFLAME® Roof Membrane Systems are provided in the Technical Literature. The products must be used in conjunction with the relevant Material Safety Data Sheets for each membrane.

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

## Tests

20.1 The following is a summary of the testing of bituFLAME® Membranes undertaken by BRANZ, and testing by other organizations as listed that has been reviewed by BRANZ and found to be satisfactory:

- BRANZ – Cyclic joint movement to ASTM D5849-95, and nail pull-through and spot bonding peel to ascertain load resistances and tensile adhesion.
- Bitumat Company – Q.U.V. to ASTM G-53; and softening point, penetration, low temperature flexibility, heat resistance of product after artificial ageing, and lap joints after artificial ageing for joint integrity and tensile strength of joint, all to UEAtc methods.
- Materials Science and Engineering Consultants, USA – breaking strength, ultimate elongation, load strain, water resistance, low temperature flexibility, water vapour transmission, dynamic impact, lap joint strength, strength after accelerated weathering and crack bridging capability to CGSB 37-GP-56M and various ASTM standards.
- Al Hoty-Stanger Ltd, Kingdom of Saudi Arabia - thickness, width, cold flexibility, low temperature, softening point, penetration, tear resistance, tensile strength, elongation, load strain, lap joint strength, heat resistance, static indentation, dynamic punching test, all to UEAtc methods; water absorption to ASTM D 570; compressibility; and resistance to hydrostatic pressure to DIN 1048.
- Bureau Veritas International – thickness, weight, flexibility, water absorption, permeability, elongation and shore hardness.
- Saudi Socotec – width, length, weight, thickness, resistance to heat, tensile strength, elongation, tear resistance, softening point, penetration, lap joint strength, cold pliability and puncture resistance all to UEAtc methods.
- Saudi Veritas Ltd – tensile strength, softening point, penetration, cold flexibility, thickness, width, weight, flow, elongation, tear resistance and puncture resistance.

## Other Investigations

- 21.1 A durability opinion has been provided by BRANZ technical experts.
- 21.2 Installation of the membranes has been assessed by BRANZ for practicability of installation and found to be satisfactory.
- 21.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

## Quality

- 22.1 The manufacture of the membranes 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.
- 22.2 The quality of the supply of products to the New Zealand market is the responsibility of Waterproofing Systems Ltd.
- 22.3 Quality on site is the responsibility of the Waterproofing Systems Ltd approved installers.
- 22.4 Designers are responsible for the building design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of Waterproofing Systems Ltd and this Appraisal.
- 22.5 Building owners are responsible for the maintenance of the membrane systems in accordance with the instructions of Waterproofing Systems Ltd and this Appraisal.

## Sources of Information

- AS/NZS 1170: 2002 Structural design action - General principles
- AS/NZS 2269: 2008 Plywood – Structural.
- BRANZ Good Practice Guide – Membrane Roofing, reprint October 2003.
- NZS 3101: 2006 The design of concrete structures.
- 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.

### Amendment No. 1, dated 12 November 2009.

This Appraisal has been amended to update multi-layer versus single-layer references.

### Amendment No. 2, dated 31 January 2012.

This Appraisal has been amended to update clause changes as required by the introduction of NZS 3604: 2011 and NZBC Acceptable Solution E2/AS1 Third Edition, Amendment 5.

### Amendment No. 3, dated 10 June 2013.

This Appraisal has been amended to update clause changes as required by the introduction of NZBC Fire Clauses C1 – C6 Protection from Fire and A3 Building Importance Levels.

### Amendment No. 4, dated 20 June 2013.

This Appraisal has been amended to remove Sunguard and addition of Water Supplies.



In the opinion of BRANZ, bituFLAME® Roof Membrane Systems are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Waterproofing Systems Ltd, 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. Waterproofing Systems Ltd:
  - 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.
3. 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.
4. 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 Waterproofing Systems Ltd.
5. 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.
6. BRANZ provides no certification, guarantee, indemnity or warranty, to Waterproofing Systems Ltd or any third party.

For BRANZ

P Burghout  
Chief Executive

Date of issue: 19 December 2008

# Sika®-1<sup>+</sup>

## Waterproofing admixture for concrete and mortar

### Positioning Description

Sika®-1<sup>+</sup> is a liquid admixture that reduces the rate at which water can penetrate into or through concrete and mortar. When added to the mix it reacts with the constituents to block the pores and capillaries that form as the concrete or mortar hardens and dries. Whilst the passage of water is significantly reduced or stopped Sika®-1<sup>+</sup> still allows the substrate to breathe.

### Uses

Sika®-1<sup>+</sup> can be used for waterproofing concrete and mortars in the following applications:

- Tunnels, basements
- Culverts, canals
- Water tanks, reservoirs
- Swimming pools
- Plaster rendering

### Advantages

- Sika®-1<sup>+</sup> is part of an international range of proven waterproofing admixtures.
- Sika®-1<sup>+</sup> is not a vapour barrier - the substrate is still able to breathe.
- Sika®-1<sup>+</sup> is an economical aid for improving the water-tightness of concrete and mortar.

### Test:

Sika®-1<sup>+</sup> meets the requirements of BS EN 934-2.

### Approvals / Standards

### Product Data

#### Form:

Viscous water-based liquid

#### Colour:

Pink

#### Packaging:

5 litre, 20 litre.

#### Storage & Shelf Life:

One (1) year in unopened original containers stored free from frost and below +25°C.

### Technical Data

#### Specific gravity:

1.05kg/litre

#### Air entrainment:

Nil

#### Chloride content:

Nil

#### TEA content:

At the recommended dose rates the triethanolamine (TEA) content is less than 0.025% by mass of binder.

#### Effect on setting:

None

#### Freezing point:

-5°C

#### Suitability:

Can be used in most types of concrete and mortar containing ordinary Portland cement

#### Compatibility with other Sika Admixtures:

Yes

#### Dosage:

Concrete - Standard dosage = 5.5 litres/m<sup>3</sup>  
Minimum cement content = 350 kg/m<sup>3</sup>  
Maximum w/c ratio = 0.45

Mortar - Add to gauging water at a rate of 1 part Sika®-1<sup>+</sup> to 12 parts water.  
For wet sand increase dosage ratio to 1 to 9.

### Application Conditions

#### Instructions for use

- For ready mixed concrete Sika®-1<sup>+</sup> is added at the batching plant by dispensing directly into mixing water.
- For on site batching of concrete and mortar dilute Sika®-1<sup>+</sup> with the mixing water in accordance with the stated dosage rate. This dilution is best carried out by firstly mixing an equal volume of Sika®-1<sup>+</sup> and water and then adding the remaining water. Ensure that the mix has been thoroughly stirred.
- For maximum water proofing benefits, Sika®-1<sup>+</sup> should be used in conjunction with one of the ViscoCrete superplasticiser range.



## Important Notes

- As with all concrete and mortars, it is essential to protect mixes containing Sika®-1<sup>+</sup> from water evaporation during the crucial early age curing period. We recommend the use of Antisol curing membrane for this purpose. Refer to Antisol Data Sheet for further information.
- Sika®-1<sup>+</sup> is an economical pore and capillary filler for improving the watertightness of concrete and mortars. In difficult and demanding situations it may be necessary for Sika-1<sup>+</sup> to be used in conjunction with other Sika admixtures.
- If completely waterproof or water-tight concrete is a requirement, we recommend that the Sika Technical Department be contacted for the most suitable recommendations.
- Careful attention must be paid to the waterproofing details of joints in concrete and mortar.
- If you are in any doubt about the use of this product, or further information is required, contact the Sika Technical Department.
- Residues of material must be removed according to local regulations. Fully cured material can be disposed of as household waste under agreement with the responsible local authorities.
- Detailed health and safety information as well as detailed precautionary measures e.g. physical, toxicological and ecological data can be obtained from the safety data sheet.

## Notes

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

## Local Restrictions

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

## Safety Instructions

### Protective Measures

- To avoid rare allergic reactions, we recommend the use of protective gloves. Change soiled work clothes and wash hands before breaks and after finishing work.
- Local regulations as well as health and safety advice on packaging labels must be observed.
- For further information refer to the Sika Material Safety Data Sheet which is available on request.
- If in doubt always follow the directions given on the pack or label.

## Legal Notes

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.



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Innovation & Consistency | since 1910

THE WORLD'S

smoke detector



## User Guide

(model no.: Cavius DY smoke detector 2001-031)

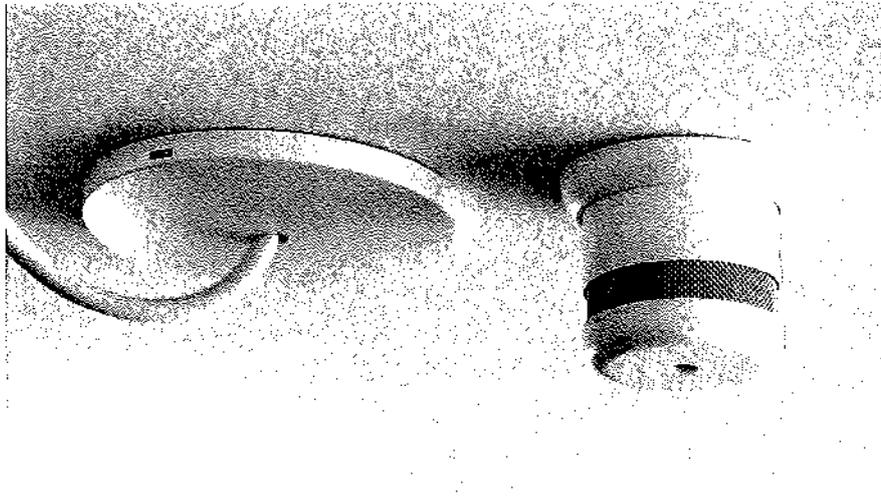


Manufacturer: Cavius Aps  
DK-8600 Silkeborg  
Version no. 126044

ENG - User Manual

FR - Guide

DE - Gebrauchsanweisung



CAVIUS Aps - [info@cavius.com](mailto:info@cavius.com) - Julsøvej 16 - DK8600 Silkeborg



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# User Guide

(model no.: Cavius DY smoke detector 21831-001)

ENG user Manual



Manufacturer: Cavius Aps  
DK-8600 Silkeborg  
Version no. 126044

## PHOTOELECTRIC SMOKE ALARM

### PLEASE READ INSTRUCTIONS CAREFULLY

Smoke Alarm for Private Residence.

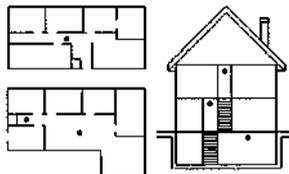
Alarm Signal: Loud repeating sound, (85db(A)/3m) and a red control LED flashes

**Battery life and replacement:** When the battery is almost depleted, the smoke alarm emits an audible alert every 48 seconds for at least 30 days. Replace the battery and then test the smoke alarm. Battery type is size CR2 a 3 volt battery. If your smoke detector has suffered physical or mechanical damage replace immediately. Recommended replacement; after 10 years.

### PLACEMENT:

CAVIUS is to be mounted on the ceiling. Avoid placing smoke alarms in dusty or humid areas. Also avoid placing in kitchens and garages where fumes and gases are situated. It is not recommended to place smoke alarms at the top of pointed roofs or in dead angles where smoke is not likely to gather. As a minimum, a smoke alarm should be placed between a bedroom and possible fire sources like kitchen, garages, fireplaces, etc. If there are several bedrooms, a smoke alarm should be mounted in front of each room. Ideally there should be a smoke detector outside all bedrooms and common areas. The smoke alarm should be mounted at least 50 cm from the walls, in a place where it can be heard from bedrooms and common rooms. Additional smoke alarms offer increased security.

### • Minimum installation



Max. 10 metres between each alarm, at least 1 detector per floor

### INSTALLATION:

1. Remove the mounting bracket from the alarm, mark the screw holes on the ceiling and fasten the bracket to the ceiling, connect the battery and mount the smoke alarm in the bracket.
2. Test the smoke alarm with the test button on the side of the alarm, it will give off a sharp sound.

**Note:** Do not remove the label from the product, as this label contains important product information

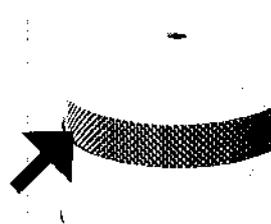
### SIGNAL TYPES:

Your new smoke alarm has a control lamp as well as an audible warning signal. In normal mode the control lamp flashes once every 48 seconds without any audible indication. If the smoke alarm activates the lamp flashes constantly and a loud alarm is sounded. The alarm function can be de-activated by pushing the button on the side of the alarm. The smoke alarm will then be disabled for 10 minutes then the alarm will automatically resume its normal function. If you wish to re-connect the alarm before the 10 minutes has passed, simply push the test button again.

If it continues to sound remove from smoke filled area or remove batteries  
When battery is about to wear out, the smoke alarm emits an audible warning signal every 48 seconds for at least 30 days.

### TROUBLE SHOOTING:

Alarm is going off for no apparent reason.  
**Cause:** Typically excessive dust particles have entered the detector chamber  
**Solution:** By blowing into the wire netting or vacuuming the alarm, the dust can be removed.



Test button does not work.  
Possible cause: The battery is worn out.

**Solution:** Change the battery

### DAY-TO-DAY USE:

Vacuum clean once a month. You can also wipe off dust using a moist cloth.

Test the smoke alarm by pressing the test button once a week. The alarm should emit a sound.

### OTHER ITEMS OF INFORMATION:

Must not be repainted.

**Disposal:** When the product is to be disposed of, it is to be delivered at the local recycling station as electronic waste.

EN 14604:2005  
359-CPD-0059



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## PRODUCER'S STATEMENT On FORMSEAL 3000X & TEFOND PROCESS

**HITCHINS NEW ZEALAND LIMITED** is the marketer of a range of products including Formseal 3000X Tanking Membrane and Tefond protection sheet.

All products are produced to a high standard and subject to strict Quality Control procedures. The Formseal 3000X Tanking Membrane and Tefond are installed by an approved licensed Gunac applicator in keeping with Product Technical Dataspecs and comprehensive written Application Procedure instructions.

### **Formseal 3000X**

Isoltema of Italy confirms a durability of **50 years** for its Elotene 3000X product. This product is supplied to Hitchins New Zealand Limited and marketed in New Zealand and the Pacific Islands under their brand name Formseal 3000X.

This product's durability period of **50 years** is that it will perform as required when applied over a prepared surface that has been sealed with Formseal Primer, protected when back-filling and remain buried or protected from UV Rays.

### **Tefond**

The Tefond range of products is manufactured by TEMA S.R.L. of Italy under strict quality control to high production standards and carries a Durability Statement for a **30 year** period. Buried it will not deteriorate and will perform as required.

Tefond is a high density extruded polyethylene membrane with raised 8mm stud profiles with side interlocking nodules at roll edges. It is supplied in rolls at 20 metres long by 2.4 wide. Overlapping and engaging the interlocking nodules of subsequent sheets produces a continuous membrane.

### **Warranty**

Hitchins New Zealand Limited will provide a Product Performance Warranty for these products for a **15 Year** period as required under the New Zealand Building Code.

*For and on behalf of:-*

**HITCHINS NEW ZEALAND LIMITED**

**Jim Gerbes**  
**MANAGING DIRECTOR**  
Dated: 24 September 2008

# Tefond

**STRUCTURE:** Tefond is a high density extruded polyethylene (HDPE) membrane with a single mechanical joint. It is the ideal solution for mechanical protection of waterproofing offering great resistance to chemicals, hydrostatics compression and physical damage to membrane.

## PROPERTIES

Raw material (+ UV stabilizer)	Polypropylene			
Type of reinforcing				
Reinforcing's raw material				
Weight	EN 965	g/m <sup>2</sup>	600	±5%
Void ratio		%	7,5	±0,1

## PHYSICAL/ MECHANICAL CHARACTERISTICS

Thickness	-	mm	7,5	±1
Compression resistance	-	kN/m <sup>2</sup>	>250	-10%
Tensile strenght MD	EN ISO 10319	kN/m	>300	±10%
Extension at max load MD	EN ISO 10319	%	>20	±15%
Tensile strenght CMD	EN ISO 10319	kN/m	>250	±10%
Extension at max load CMD	EN ISO 10319	%	>25	±15%

## DIMENSIONAL CHARACTERISTICS

### STANDARD DIMENSIONS

Roll width	m	2,4/4,8	±10
Roll length	m	20	±0,01
Roll area	m <sup>2</sup>	48/96	
Roll diameter	m	28,8-57,6	±5%
Roll weight	kg	60	

*Information given in this data sheet is to the best of our knowledge true and correct, however new research results and practical experience can lead up to revisions performed without notice.*

*No guarantee or liability can be drawn from the information mentioned herein. Furthermore, it is not our intention to violate any patents or licences.*



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**TTT** *MultiPole*  
HOLLOW POLES FOR FOUNDATIONS

## Foundations

Introducing the TTT MultiPole – an incredibly versatile pole due to its unique hollow core.

TTT Products Ltd are leading manufacturers of Radiata Pine Poles. Our pole range encompasses SED Poles, Uglies, Utility Poles, UniLog Poles and now the MultiPole.

The TTT MultiPole was developed in conjunction with Structural Engineer Mark Batchelar of mlb Consulting Engineers. As a response to the geotechnical and structural problems encountered after the Christchurch earthquakes the MultiPole System was further developed.

The TTT MultiPole is a multifunctional pole suitable for structural applications above and below ground.

Wood has a high strength-to-weight ratio, is flexible, and has many advantages as an earthquake resistant construction material. Radiata Pine is New Zealand's most sustainable resource and is readily available.

The NZS 3603:1993 Timber Structures Standard (characteristic stresses (MPa) of poles) can be used when designing TTT MultiPole foundations. See TTT Technical Guideline MP001.



### Use TTT MultiPoles specifically for:

- Piled foundations
- Retaining walls
- Ground stability

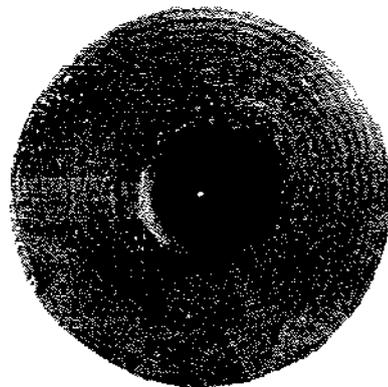
### TTT MultiPoles are:

- Lightweight
- Can be easily transported and handled on site
- Are able to be driven or vibrated
- Can be drilled and concrete encased
- Large numbers of TTT MultiPoles can be installed per day

## The TTT MultiPole advantage

### Unique hollow core

The TTT Multipole is an incredibly versatile pole due to its unique hollow core. TTT MultiPoles can be manufactured from TTT SED, Uglie, or UniLog Poles. High density (52MPa) logs are sourced from sustainable forests. Most of the heartwood core is removed via a special drilling process developed by TTT Products Ltd – a first for NZ and possibly the world! This leaves leaving a centre hole that runs the full length of the pole. Removing only the heartwood does not weaken the strength of the MultiPole as the strength is retained in the outer sapwood layers. The heartwood removal results in greatly reduced pole checking and splitting as the pole dries out. Further processing or preservative treatment is then carried out. Full penetration of the preservative can be achieved as the preservative is able to be impregnated from both the internal and external faces.



### Versatile

The unique hollow core of the TTT MultiPole allows for:

- Separate MultiPole sections to be joined with the MultiPole Connector.
- The MultiPole Hose to be inserted with quick release from the MultiPole Base Plate for hydro jetting so the MultiPole can be easily vibrated or driven into the ground.
- Grouting a bulb at the base of the MultiPole using the MultiPole Hose with quick release from the MultiPole Base Plate which can increase pole bearing capacity.
- The insertion of reinforcing bars or cables (either pre-tensioned or grouted) or electrical cabling/ducting after the MultiPole Hose has been removed.
- A MultiPole Base Plate to be affixed at the bottom end of the MultiPole when driven or vibrated to protect the end from crushing, (depending on ground conditions).

## The TTT MultiPole system



### TTT SED MultiPole

Peeled, naturally tapered (minimum 6mm/m) construction poles used for piled foundations and retaining walls.



### UniLog MultiPole

Uniform diameter, machined poles used for piled foundations and retaining walls and above ground.



### TTT Uglie MultiPole

A pole that has been de-barked only. Used for piled foundations and ground stabilisation where the pole is not visible. TTT Uglie MultiPoles have an increased skin friction capacity due to their rough surface (depends on ground conditions).

### MultiPole Type

TTT SED, Uglie or UniLog

### Length

The minimum MultiPole length is 1.8m

The maximum MultiPole length is 18.0m

### Hollow core diameter

Generally the diameter of the drilled hollow core is 1/3 of the pole diameter.

### MultiPole Hollow Core Chart

MultiPole Diameter (mm)	Hollow core size (mm)				
	63	76	93	118	146
175-275	○	○	○		
275-350	○	○	○		
350-400	○	○	○	○	
450-500	○	○	○	○	○

### The MultiPole Base Plate

with quick release MultiPole Hose connection is fixed to the base of a MultiPole with nails. There are holes within the quick release circumference through which water and grouting can be jetted. Available in 25mm increments as per pole diameters on the volume chart.

### The MultiPole Hose

is quickly connected and attached to the base plate. We can advise on the correct MultiPole hydro jetting system to be used.

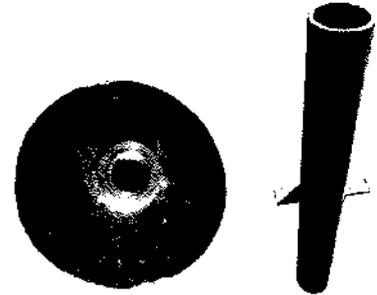
### The MultiPole Connector

allows separate sections of MultiPole to be connected. There are five sizes, thin or thick walled, to suit hollow core diameters. Available black steel or HDG. MultiPole Hose ducting, and/or reinforcing bar can be inserted through the hollow connector.

### MultiPole Connector Chart

Code	Tube OD ø mm	Length mm L/H
MPC63L/H	60	600/650
MPC76L/H	73	700/850
MPC93L/H	89	800/950
MPC118L/H	114	1,000/1,150
MPC146L/H	141	1,100/1,350

L = Thin wall MultiPole Connector  
H = Thick wall MultiPole Connector  
Also refer TTT Technical Guideline MP001



MultiPole Base Plate with quick release

MultiPole Connector

## Timber preservation

TTT SED, Uglies, or UniLog MultiPoles are graded as per NZS 3605:2001 Timber Piles and Poles for use in Building and treated as per NZS 3640:2003 Chemical Preservation of Round and Sawn Timber. TTT Products Limited is a registered CCA Oxide Preservation Plant. TTT MultiPoles can be CCA treated to Hazard Classes H4, H5 or H6 or ACQ treated to Hazard Classes H5 and H6. Also refer Osmose Lifewood CCA 50 Year Limited Guarantee H1-H5 NZ.

## Plastic coating

### TTTProtect

A plastic Polyurea coating can be applied over the external surface of TTT MultiPoles to extend the life of the product.

## Pole proof testing

### TTTTested

TTT MultiPoles can be individually proof tested (for stiffness and bending stress) on our Certified Pole Tester for 38MPa normal density poles or 52MPa high density poles. Poles are proof tested as per NZS 3605:2001 and/or ISO 15206:2010 using The Four-Point Proof Test Method, The Three-Point Proof Test Method or The Three-Point Ground Line Proof Test Method with Ultimate Top Load. Each TTT MultiPole that passes testing is individually tagged and numbered. A Certificate of Proof Testing can be supplied for each pole or a Proof Test Summary for a batch of poles tested. Also refer TTTtested Brochure.

## Installation

Installation of TTT MultiPoles is no more difficult than regular TTT SED, Ugliers, or UniLog MultiPoles. They can be driven or vibrated into the ground, or bored and concrete encased. They are lightweight, compared to steel or concrete products, which means they are easily transported and handled on site. Large numbers of TTT MultiPoles can be installed per day.

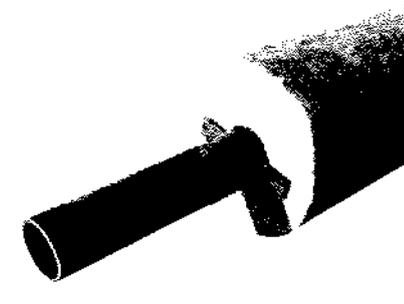


MultiPole Base Plate with MultiPole Hose and hydro jetting nozzle inserted

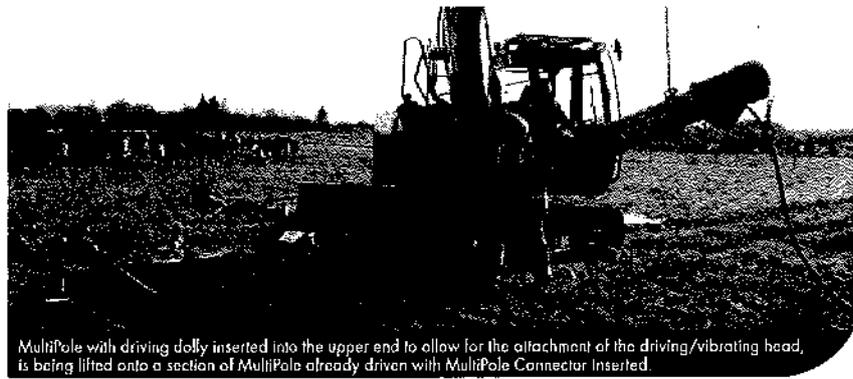


MultiPole being vibrated into the ground with hydro jetting

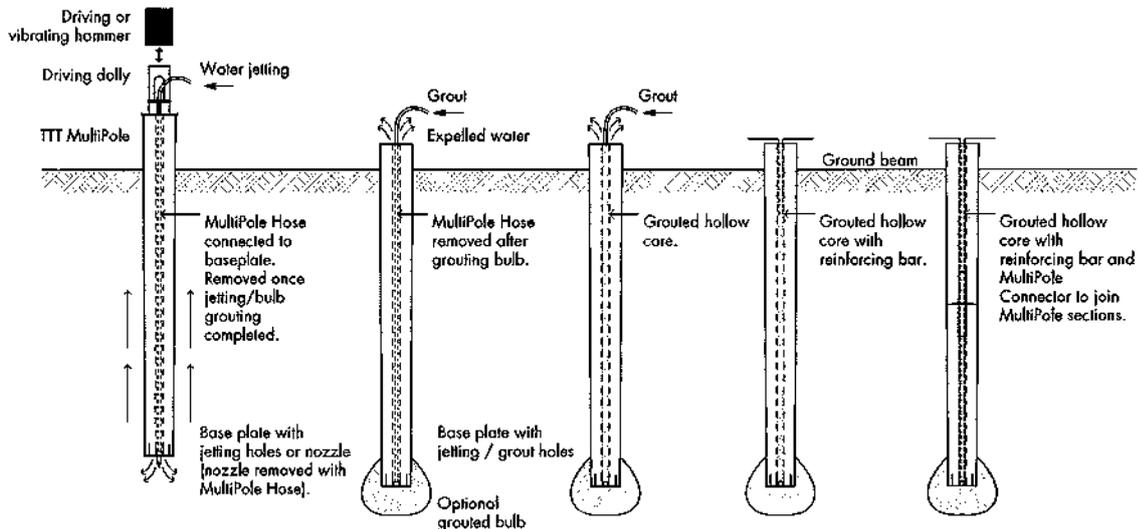
Markovina PILE DRIVING



MultiPole with Connector



MultiPole with driving dolly inserted into the upper end to allow for the attachment of the driving/vibrating head, is being lifted onto a section of MultiPole already driven with MultiPole Connector inserted.



## SED / Uglics MultiPole volume chart m<sup>3</sup> per pole

		Diameter (mm)															
		175-199	200-224	225-249	250-274	275-299	300-324	325-349	350-374	375-399	400-424	425-449	450-474	475-499	500-524	525-549	530-574
Length (m)	1.8	0.054	0.069	0.085	0.103	0.123	0.145	0.168	0.194	0.221	0.250	0.280	0.313	0.347	0.383	0.420	0.460
	2.4	0.074	0.093	0.116	0.140	0.167	0.196	0.228	0.262	0.298	0.337	0.378	0.421	0.467	0.515	0.565	0.618
	2.7	0.084	0.106	0.131	0.159	0.189	0.222	0.258	0.296	0.337	0.381	0.427	0.476	0.528	0.582	0.639	0.698
	3.0	0.094	0.119	0.147	0.178	0.212	0.249	0.289	0.331	0.377	0.426	0.477	0.532	0.589	0.649	0.713	0.779
	3.6	0.116	0.146	0.180	0.218	0.259	0.303	0.351	0.403	0.458	0.516	0.579	0.644	0.714	0.786	0.863	0.943
	4.2	0.138	0.174	0.214	0.258	0.306	0.359	0.415	0.476	0.541	0.609	0.682	0.759	0.841	0.926	1.015	1.109
	4.8	0.162	0.203	0.249	0.300	0.356	0.416	0.481	0.551	0.625	0.704	0.788	0.877	0.970	1.068	1.170	1.278
	5.4	0.186	0.233	0.286	0.344	0.407	0.475	0.548	0.627	0.712	0.801	0.896	0.996	1.101	1.212	1.328	1.449
	6.0	0.212	0.265	0.323	0.388	0.459	0.535	0.618	0.706	0.800	0.900	1.006	1.118	1.235	1.359	1.488	1.624
	7.0	0.257	0.319	0.389	0.466	0.549	0.639	0.736	0.841	0.951	1.069	1.194	1.325	1.464	1.609	1.761	1.920
	8.0	0.304	0.377	0.458	0.547	0.643	0.748	0.860	0.980	1.108	1.244	1.388	1.540	1.699	1.866	2.041	2.224
	9.0	0.355	0.438	0.531	0.632	0.742	0.861	0.989	1.125	1.271	1.425	1.588	1.760	1.941	2.130	2.329	2.536
	10.0	0.408	0.503	0.607	0.721	0.845	0.979	1.122	1.276	1.439	1.612	1.795	1.987	2.190	2.402	2.624	2.856
	11.0	0.465	0.571	0.687	0.814	0.952	1.101	1.261	1.431	1.612	1.804	2.007	2.221	2.445	2.680	2.926	3.183
	12.0	0.525	0.642	0.771	0.912	1.064	1.228	1.404	1.592	1.792	2.003	2.226	2.461	2.708	2.966	3.236	3.518
	13.0	0.588	0.717	0.859	1.013	1.180	1.360	1.553	1.758	1.977	2.208	2.451	2.708	2.977	3.259	3.554	3.862
	14.0	0.655	0.796	0.950	1.119	1.301	1.497	1.707	1.930	2.168	2.419	2.683	2.962	3.254	3.560	3.880	4.213
	15.0	0.725	0.878	1.046	1.229	1.427	1.639	1.866	2.108	2.364	2.636	2.922	3.222	3.538	3.868	4.213	4.573
16.0	0.798	0.964	1.146	1.344	1.557	1.786	2.031	2.291	2.567	2.859	3.167	3.490	3.829	4.184	4.554	4.940	
17.0	0.875	1.054	1.250	1.463	1.692	1.938	2.201	2.480	2.776	3.089	3.419	3.765	4.128	4.507	4.903	5.316	
18.0	0.956	1.148	1.359	1.587	1.832	2.095	2.376	2.675	2.991	3.325	3.677	4.046	4.433	4.838	5.260	5.700	

## SED / Uglics MultiPole weight chart kg per pole

		Diameter (mm)															
		175-199	200-224	225-249	250-274	275-299	300-324	325-349	350-374	375-399	400-424	425-449	450-474	475-499	500-524	525-549	550-574
Length (m)	1.8	37.7	48.0	59.5	72.2	86.2	101.5	117.9	135.6	154.6	174.7	196.1	218.8	242.7	267.8	294.2	321.7
	2.4	51.5	65.4	80.9	98.1	116.9	137.3	159.4	183.2	208.6	235.6	264.3	294.7	326.7	360.4	395.7	432.6
	2.7	58.7	74.3	91.9	111.3	132.5	155.6	180.6	207.4	236.1	266.6	299.0	333.2	369.3	407.3	447.1	488.7
	3.0	66.0	83.5	103.1	124.7	148.4	174.2	202.0	231.9	263.9	297.9	334.0	372.1	412.3	454.6	498.9	545.3
	3.6	81.1	102.3	126.1	152.3	181.0	212.2	245.8	281.9	320.5	361.5	405.1	451.1	499.6	550.5	603.9	659.8
	4.2	96.8	121.9	149.9	180.8	214.5	251.2	290.7	333.1	378.4	426.6	477.6	531.6	588.4	648.1	710.7	776.2
	4.8	113.3	142.3	174.6	210.2	249.0	291.2	336.7	385.5	437.6	492.9	551.6	613.6	678.9	747.4	819.3	894.5
	5.4	130.4	163.4	200.1	240.5	284.6	332.4	383.9	439.1	498.1	560.7	627.1	697.2	771.0	848.5	929.7	1014.6
	6.0	148.3	185.3	226.4	271.7	321.1	374.6	432.3	494.0	559.9	629.9	704.1	782.3	864.7	951.2	1041.9	1136.6
	7.0	179.6	223.5	272.3	325.9	384.3	447.5	515.5	588.4	666.0	748.5	835.7	927.8	1024.7	1126.4	1232.9	1344.2
	8.0	212.9	264.0	320.6	382.8	450.4	523.5	602.1	686.2	775.8	871.0	971.6	1077.7	1189.3	1306.4	1429.0	1557.1
	9.0	248.3	306.8	371.5	442.4	519.4	602.7	692.1	787.7	889.5	997.5	1111.7	1232.1	1358.6	1491.3	1630.2	1775.4
	10.0	285.8	351.9	424.9	504.7	591.5	685.1	785.5	892.9	1007.1	1128.2	1256.2	1391.0	1532.7	1681.3	1836.7	1999.0
	11.0	325.5	399.4	480.9	570.0	666.6	770.8	882.5	1001.8	1128.6	1263.0	1405.0	1554.5	1711.6	1876.3	2048.5	2228.2
	12.0	367.4	449.4	539.6	638.1	744.8	859.8	983.0	1114.4	1254.1	1402.1	1558.3	1722.7	1895.4	2076.3	2265.5	2462.9
	13.0	411.7	501.9	601.1	709.2	826.2	952.2	1087.1	1230.9	1383.7	1545.4	1716.0	1895.6	2084.1	2281.5	2487.9	2703.2
	14.0	458.2	557.0	665.3	783.2	910.8	1048.0	1194.8	1351.3	1517.3	1693.0	1878.3	2073.2	2277.8	2492.0	2715.7	2949.2
	15.0	507.2	614.6	732.3	860.4	998.7	1147.4	1306.3	1475.6	1655.1	1845.0	2045.2	2255.7	2476.5	2707.6	2949.0	3200.8
16.0	558.6	674.9	802.3	940.6	1089.9	1250.2	1421.5	1603.8	1797.2	2001.4	2216.7	2443.0	2680.3	2928.6	3187.9	3458.1	
17.0	612.5	738.0	875.1	1024.0	1184.5	1356.7	1540.6	1736.2	1943.4	2162.4	2393.0	2635.3	2889.3	3154.9	3432.3	3721.3	
18.0	669.0	803.8	951.0	1110.6	1282.5	1466.8	1663.5	1872.6	2094.0	2327.8	2574.0	2832.5	3103.4	3386.7	3682.3	3990.3	

Weight (kg) is approximate.

## UniLog MultiPole volume chart m<sup>3</sup> per pole

Length (m)	Diameter (mm)											
	180	200	225	250	275	300	325	350	375	400	425	450
1.8	0.046	0.057	0.072	0.088	0.107	0.127	0.149	0.173	0.199	0.226	0.255	0.286
2.4	0.061	0.075	0.095	0.118	0.143	0.170	0.199	0.231	0.265	0.302	0.340	0.382
2.7	0.069	0.085	0.107	0.133	0.160	0.191	0.224	0.260	0.298	0.339	0.383	0.429
3.0	0.076	0.094	0.119	0.147	0.178	0.212	0.249	0.289	0.331	0.377	0.426	0.477
3.6	0.092	0.113	0.143	0.177	0.214	0.254	0.299	0.346	0.398	0.452	0.511	0.573
4.2	0.107	0.132	0.167	0.206	0.249	0.297	0.348	0.404	0.464	0.528	0.596	0.668
4.8	0.122	0.151	0.191	0.236	0.285	0.339	0.398	0.462	0.530	0.603	0.681	0.763
5.4	0.137	0.170	0.215	0.265	0.321	0.382	0.448	0.520	0.596	0.679	0.766	0.859
6.0	0.153	0.188	0.239	0.295	0.356	0.424	0.498	0.577	0.663	0.754	0.851	0.954
7.0	0.178	0.220	0.278	0.344	0.416	0.495	0.581	0.673	0.773	0.880	0.993	1.113
8.0	0.204	0.251	0.318	0.393	0.475	0.565	0.664	0.770	0.884	1.005	1.135	1.272
9.0	0.229	0.283	0.358	0.442	0.535	0.636	0.747	0.866	0.994	1.131	1.277	1.431
10.0	0.254	0.314	0.398	0.491	0.594	0.707	0.830	0.962	1.104	1.257	1.419	1.590
11.0	0.280	0.346	0.437	0.540	0.653	0.778	0.913	1.058	1.215	1.382	1.560	1.749
12.0	0.305	0.377	0.477	0.589	0.713	0.848	0.995	1.155	1.325	1.508	1.702	1.909
13.0	0.331	0.408	0.517	0.638	0.772	0.919	1.078	1.251	1.436	1.634	1.844	2.068
14.0	0.356	0.440	0.557	0.687	0.832	0.990	1.161	1.347	1.546	1.759	1.986	2.227
15.0	0.382	0.471	0.596	0.736	0.891	1.060	1.244	1.443	1.657	1.885	2.128	2.386
16.0	0.407	0.503	0.636	0.785	0.950	1.131	1.327	1.539	1.767	2.011	2.270	2.545

## UniLog MultiPole weight chart kg per pole

Length (m)	Diameter (mm)											
	180	200	225	250	275	300	325	350	375	400	425	450
1.8	32.1	39.6	50.1	61.9	74.8	89.1	104.5	121.2	139.2	158.3	178.7	200.4
2.4	42.8	52.8	66.8	82.5	99.8	118.8	139.4	161.6	185.6	211.1	238.3	267.2
2.7	48.1	59.4	75.1	92.8	112.3	133.6	156.8	181.8	208.7	237.5	268.1	300.6
3.0	53.4	66.0	83.5	103.1	124.7	148.4	174.2	202.0	231.9	263.9	297.9	334.0
3.6	64.1	79.2	100.2	123.7	149.7	178.1	209.1	242.5	278.3	316.7	357.5	400.8
4.2	74.8	92.4	116.9	144.3	174.6	207.8	243.9	282.9	324.7	369.5	417.1	467.6
4.8	85.5	105.6	133.6	164.9	199.6	237.5	278.7	323.3	371.1	422.2	476.7	534.4
5.4	96.2	118.8	150.3	185.6	224.5	267.2	313.6	363.7	417.5	475.0	536.2	601.2
6.0	106.9	131.9	167.0	206.2	249.5	296.9	348.4	404.1	463.9	527.8	595.8	668.0
7.0	124.7	153.9	194.8	240.5	291.0	346.4	406.5	471.4	541.2	615.8	695.1	779.3
8.0	142.5	175.9	222.7	274.9	332.6	395.8	464.6	538.8	618.5	703.7	794.4	890.6
9.0	160.3	197.9	250.5	309.3	374.2	445.3	522.6	606.1	695.8	791.7	893.7	1002.0
10.0	178.1	219.9	278.3	343.6	415.8	494.8	580.7	673.5	773.1	879.6	993.0	1113.3
11.0	195.9	241.9	306.2	378.0	457.3	544.3	638.8	740.8	850.4	967.6	1092.3	1224.6
12.0	213.8	263.9	334.0	412.3	498.9	593.8	696.8	808.2	927.8	1055.6	1191.6	1336.0
13.0	231.6	285.9	361.8	446.7	540.5	643.2	754.9	875.5	1005.1	1143.5	1290.9	1447.3
14.0	249.4	307.9	389.7	481.1	582.1	692.7	813.0	942.9	1082.4	1231.5	1390.3	1558.6
15.0	267.2	329.9	417.5	515.4	623.7	742.2	871.1	1010.2	1159.7	1319.5	1489.6	1670.0
16.0	285.0	351.9	445.3	549.8	665.2	791.7	929.1	1077.6	1237.0	1407.4	1588.9	1781.3

Weight (kg) is approximate.

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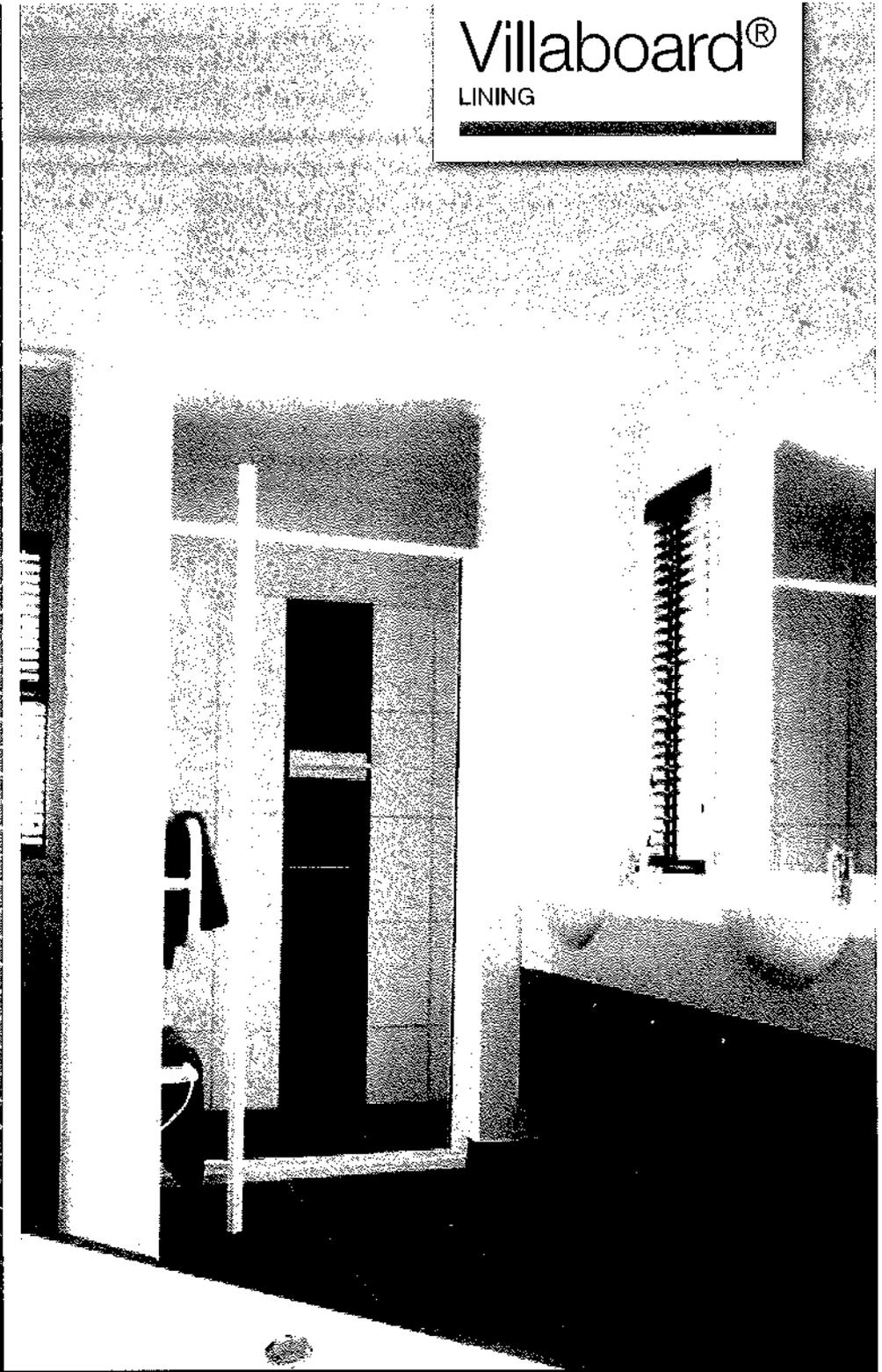
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SED Poles, Uglies, MultiPoles, Utility Poles,  
 Marine Poles, Custom Processing

Exclusive producers of UniLog machined,  
 uniform diameter Poles, Bollards, Florida Fencing

Villaboard®  
LINING



# Installation Manual

FEBRUARY 2013 / NEW ZEALAND



 **James Hardie**  
a smarter way™

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## WE VALUE YOUR FEEDBACK

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

**Ask James Hardie™**  
Fax 0800 808 988  
[literaturefeedback@jameshardie.co.nz](mailto:literaturefeedback@jameshardie.co.nz)

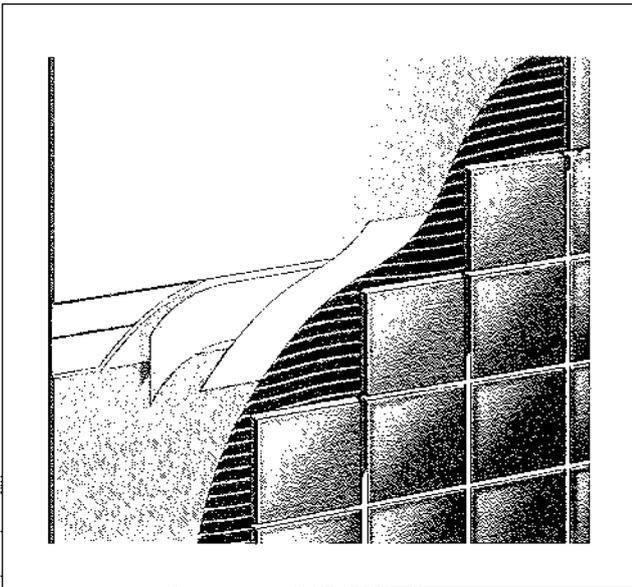
# 1 Introduction

James Hardie Villaboard® Lining is a premium sanded fibre cement sheet with recessed edges for flush jointing, or square edge sheet for butt jointing. Villaboard Lining is an ideal lining for bathrooms, laundries, kitchens and other high traffic areas.

The main features of Villaboard Lining are:

- Durable internal lining suitable for wet areas.
- Creates suitable surface for tiles, paint or wallpaper.
- Long edges recessed for easy flush-jointing.
- Reliable impact resistant lining. Ideal for wall lining in commercial applications where walls are prone to damage.
- Suitable for use in fire and acoustically rated systems.

This manual covers the use of Villaboard Lining in internal wall and ceiling applications. Further information relating to Villaboard Lining is also available in the following James Hardie manuals:



- Eaves and Soffit Linings Installation Manual.
- Fire and Acoustic Design Manual.
- Bracing Design Manual.

The specifier or other responsible party for the project must ensure the information and details in this guide are appropriate for the intended application and specific design and detailing is undertaken for areas which fall outside the scope of this documentation.

Note: James Hardie Villaboard Lining is not suitable for exterior wall applications.

## **Make sure your information is up to date**

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

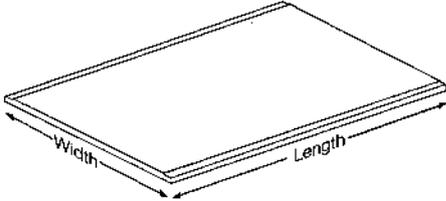
## **1.1 BRACING**

Villaboard Lining can be used to achieve structural bracing. For further information refer to Bracing Design Manual.

## **1.2 STRUCTURAL CEILING DIAPHRAGM**

Villaboard Lining can be used as structural ceiling diaphragms in accordance with NZS 3604. For further information refer to Bracing Design Manual.

Table 1

Villaboard Lining sheet sizes				
Product	Length	Width		
		1200mm		
Smooth fibre cement internal lining for tiled and untiled applications  		4 recessed edges	2 recessed edges (long)	Square edges
	6mm thickness			
	2400	✓	✓	✓
	2700		✓	
	3000		✓	✓
	9mm thickness			
	2400	✓	✓	✓
	2700		✓	
	3000		✓	✓

Villaboard Lining 6mm has no chamfer on square edge sheet.  
Villaboard Lining 9mm has small chamfer on square edge sheet.

Table 2

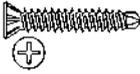
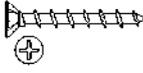
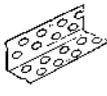
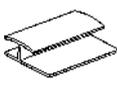
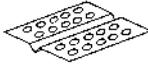
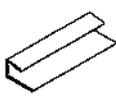
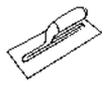
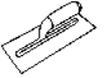
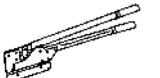
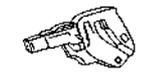
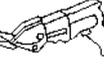
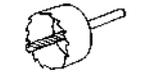
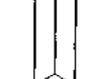
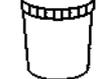
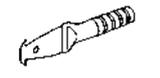
Product / accessories / tools					
Components supplied by James Hardie					
Accessories	Description	Product Code	Accessories	Description	Product Code
	<b>HardieBlade™ Saw Blade</b> Ø185mm poly crystalline diamond blade, for fast, clean cutting of James Hardie fibre cement.	300660		<b>James Hardie Base Coat</b> Base compound for flush finished jointing.	4kg - 304490 15kg - 304491
	<b>FibreZip® Screw</b> For fastening to 0.55mm -1.0mm BMT steel frames. <small>® denotes a registered mark of Bu#dex</small>	Box 1000 - 303840		<b>James Hardie Top Coat</b> Topping compound for flush finished jointing.	3kg - 304492 15kg - 304493
	<b>Villadrive Screw</b> 6g x 30mm For fastening to timber frames	5kg - 300993 100/jar - 300992 Collated/1000 - 300994		<b>uPVC Perforated Corner Mould</b> 30mm x 30mm. For finishing internal and external corners.	3000mm - 300669
	<b>HardieDrive™ Screw S/S 316</b> 30mm x 7g For fastening to timber frames	100/jar - 300928		<b>HardieJointer™ 6mm</b>	3000mm - 300734 2400mm - 300730
	<b>Control Joints 2700</b>	300978		<b>HardieJointer™ 9mm (2 piece)</b>	3000mm - 300736
	<b>HardieFlex™ Cap Mould 6mm</b> Capping edge of Villaboard Lining	2400mm - 300539 3000mm - 300540			

Table 3

Components not supplied by James Hardie

James Hardie recommends the following products for use in conjunction with Villaboard Lining. James Hardie does not supply these products and does not provide a warranty for their use. Please contact the component manufacturer for information on their warranties and further information on their products.

Accessories	Description	Accessories	Description
	<b>Galvanised/Stainless Steel HardieFlex™ nails</b> 40 x 2.8mm fibre cement nails		<b>Second Coat Trowel 200mm</b> For installing second coats on set joints.
	<b>Backing Rod</b> Backing to sealant in movement joints.		<b>Finishing Coat Trowel</b> For installing top coats on set joints.
	<b>Perforated Paper Tape</b> Joint reinforcing tape. e.g. GIB® paper tape, Strataflex tape or similar.		<b>Corner Tool</b> For setting of internal corners.
	<b>Level/Straight Edge</b> For checking straightness of frame.		<b>Hawk</b> To assist in the application of compounds especially with the use of trowels.
	<b>Hand Guillotine</b> Guillotine for cutting fibre cement.		<b>Hand Sander</b> For sanding set joints.
	<b>Broadknife 150mm</b> For setting of joints on Villaboard Lining.		<b>Notched Trowel</b> For applying tile adhesive to face of Villaboard Lining.
	<b>Collated Screw Gun</b> For speedy installation of Villaboard Lining.		<b>Electric Shear/Fibreshear</b> For cutting of James Hardie fibre Cement.
	<b>Hole Saw</b> For clean cut circular holes.		<b>Paper Faced Corner Mould</b> 'Goldline' mouldings
	<b>Bondbreaker Tape</b> Sellotape 5850 Super Mask 18mm		<b>Waterproofing Admixture</b> Multiplast Resin by Plaster Systems. Used in diluted form over sheet edges to control moisture suction.
	<b>Score and Snap Knife</b> Scoring tool for easy cutting.		

# 2 Safe working practices

## **WARNING – DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA**

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

**FAILURE TO ADHERE TO OUR WARNINGS, SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.**

### James Hardie recommended safe working practices

#### **CUTTING OUTDOORS**

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

#### **BEST**

- Score and snap
- Hand guillotine
- Fibreshear

#### **BETTER**

- Dust reducing circular saw equipped with HardieBlade™ Saw Blade and HEPA vacuum extraction.

#### **GOOD**

- Dust reducing circular saw with HardieBlade™ Saw Blade.

#### **CUTTING INDOORS**

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

#### **SANDING/REBATING/DRILLING/OTHER MACHINING**

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

#### **IMPORTANT NOTES**

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

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

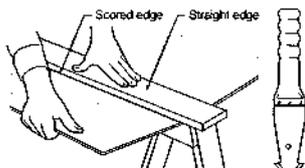
### Working instructions

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

### Score and snap

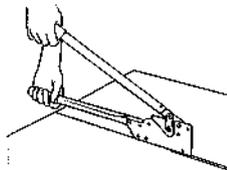
Score and snap is a fast and efficient method of cutting James Hardie building products using special tungsten tipped score and snap knife.

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



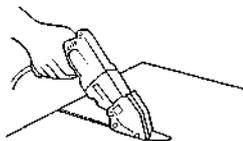
### Hand guillotine

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



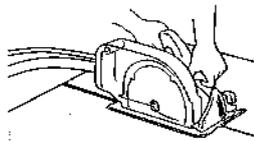
### Fibreshear heavy duty

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



### HardieBlade™ Saw Blade

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

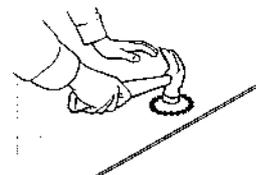


### Hole-forming

For smooth clean cut circular holes:

- Mark the centre of the hole on the sheet.
- Pre-drill a pilot hole.

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



### For irregular holes:

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

### Storage and handling

To avoid damage, all James Hardie building products should be stored with edges and corners of the sheets protected from chipping.

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

### Quality

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

# 3 Framing / substrate

## 3.1 GENERAL

Villaboard Lining can be fixed to either timber framing, light gauge domestic type steel framing and battens fixed over masonry. The framing and substrate used must comply with the relevant building regulations and standards and the requirements of this manual.

The studs must be provided at 600mm centres maximum and noggings at 1200 centres maximum.

For tiled wall applications it is recommended that stud spacing is closed to 400mm centres maximum and noggings at 800mm centres maximum.

At sheet joint the studs must be minimum 45mm wide.

### Notes

- Stud spacings restrict the thickness of tiles used to finish Villaboard Lining. For more information refer to the Finishes and Maintenance section on page 25.
- In internal and external corners use a PVC perforated corner mould or paper faced rigid moulding.
- Ensure a 6mm building tolerance gap is provided at the floor and ceiling junctions with the Villaboard Lining.

## 3.2 TIMBER

Timber framing must at a minimum comply with the requirements of NZS 3604 'Timber Framed Buildings'.

The timber framing treatment and moisture contents must comply with the requirements of NZS 3602.

## 3.3 STEEL

The minimum size for steel stud framing should be 64mm deep x 35mm wide and 0.55mm base metal thickness (BMT) minimum.

Steel framing shall comply with the minimum stiffness requirements of NZS 3604. Refer to NASH 3405 document for further guidance on steel framing or contact steel framing supplier for information.

Steel sections shall be suitably galvanised zinc coated to comply with the durability requirements of NZBC. Refer to framing manufacturer for further information. Studs must not be less than 35mm wide at joints.

For tiled applications it is recommended to use a 0.75mm thick steel framing to achieve the required rigidity/stiffness.

## 3.4 MASONRY SUBSTRATE

Always ensure the substrate is given adequate time to dry out before the installation of Villaboard Lining. The wall surface must be clean, dry and free of any material that will affect the straightness of the battens. Refer to page 13 for further information.

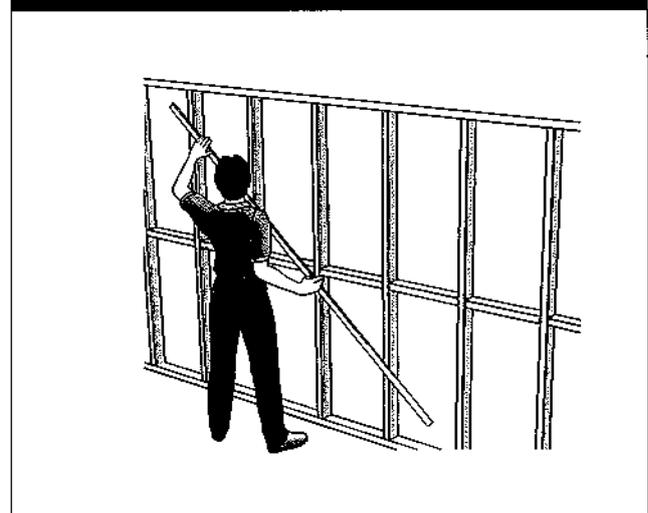
## 3.5 SKILLION ROOF DESIGN

When installing Villaboard Linings direct to skillion roof framing, refer to Eaves and Soffit Linings Installation Manual.

## 3.6 FRAME TOLERANCES

Ensure the frame is square and work from a central datum line. Frames must be straight and true to provide a flush face to receive the sheeting.

Figure 1: Frame straightness



A suggested maximum tolerance of between 3mm and 4mm in any 3000mm length of frame will give best results. Villaboard Lining will not straighten excessively warped or distorted frames and any warping may still be visible after the internal lining is installed.

## 3.7 MASONRY WALL

Cut Villaboard Lining approximately 12mm less than floor to ceiling height to allow for building tolerances. Ensure a 6mm building tolerance gap is provided at the floor and ceiling junctions with the Villaboard Lining. Refer to page 14 for specific substrate requirements.

# 4 Sheet layout

## 3.8 CURVED WALLS

Villaboard Lining may be bent to accommodate curved walls. The minimum bending radii are shown below.

Table 4

Curved wall minimum bending radii		
	Along Length (mm)	Across Width (mm)
Villaboard Lining 6mm	1800 (1200)	2400
Villaboard Lining 9mm	3000 (1800)	4000

### Notes

1. The bending radii given above require no special pre-wetting of the sheet and may be used on internal or external curves.
2. With extra care, the sheet can be bent to the radius shown in the brackets.

To maintain the smoothness of the curve, studs must be closed to spacings as shown below.

Table 5

Curved lining — stud spacing	
Range of Radii (mm)	Stud Spacing (mm)
1200 to 1800	200
Above 1800 to 3000	300
Above 3000	*400

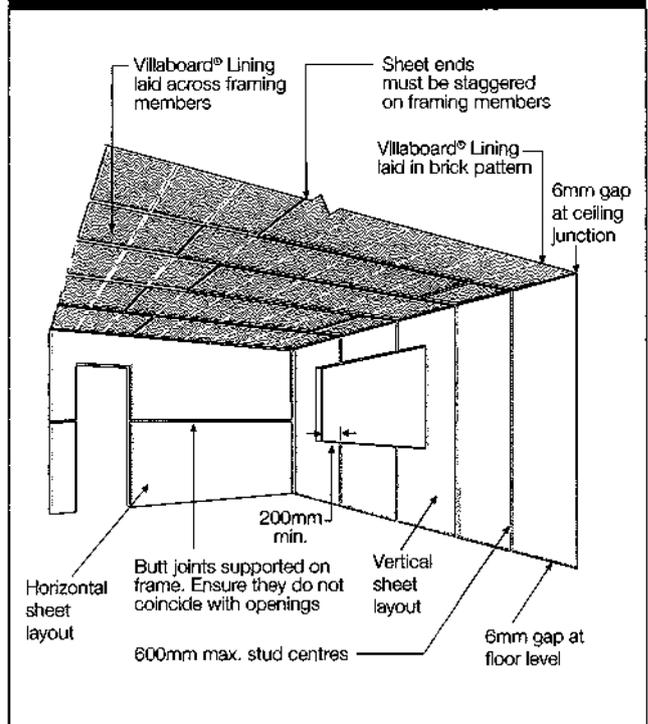
\*or at one third of the sheet width, whichever is the lesser.

Install Villaboard Lining across the framing either vertically or horizontally.

Sheet joints must coincide with the centre line of the framing member.

At door and window openings fix sheets around the opening in a way that the sheet joints do not coincide with the edges of openings. The sheet joint must be 200mm minimum away from the opening edge. See Figure 2.

Figure 2: Sheet layout



### Notes

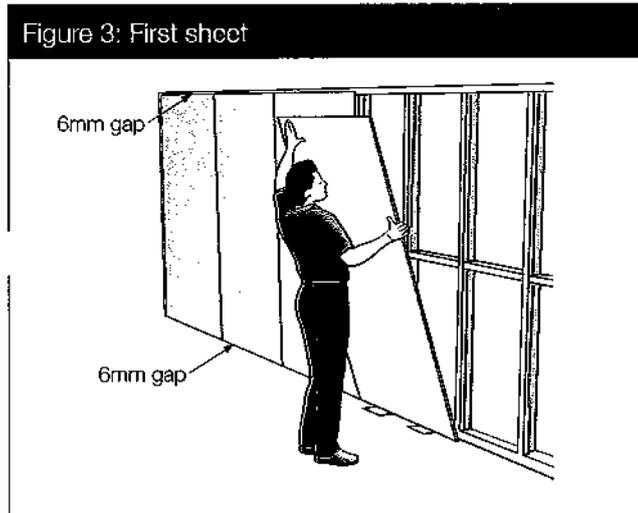
1. The sheets should be installed vertically on the inner face of external walls where the exterior cladding is installed on cavity battens. For cavity construction method the nogs are generally fixed at 800mm centres max.
2. Sheets with two long edges recessed are most suitable for vertical installation.
3. When the space above the window/door is less than 250mm then a control joint must be provided on either side of opening. Refer to Figure 18.
4. 3-4mm packers can be fixed on the framing where required to suit the window reveals or in wet areas.
5. All sheet edges must be supported by the framing.
6. Joints can be staggered.

# 5 Installation

## 5.1 GENERAL

Place 6mm packers along the floor as temporary support for sheets. This will allow for any frame movement/shrinkage. Put sheets in place as shown.

Ensuring the sheet is level, fix starting from the centre of sheet and working outwards to avoid any drumminess.

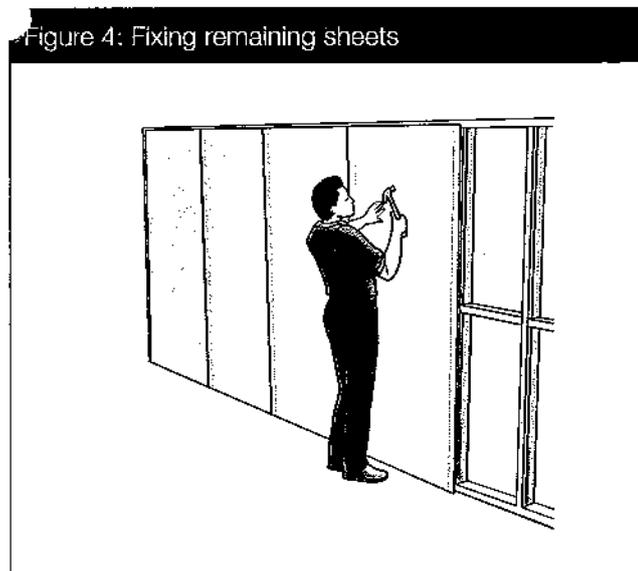


Provide 1-2mm gap between Villaboard Lining sheets at vertical, horizontal, internal or external corner joints.

Fix the remaining sheets in a similar sequence.

### Notes

1. For fastener selection and spacings see pages 10 -13.
2. Do not fix sheets to the bottom chord of roof trusses. Instead, fix to ceiling battens or furring channels.



## 5.2 FASTENERS

Fasteners must have the appropriate level of durability required for the intended project.

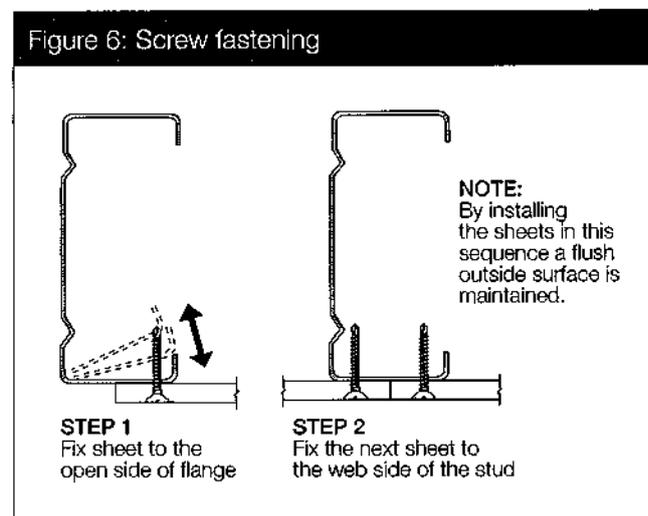
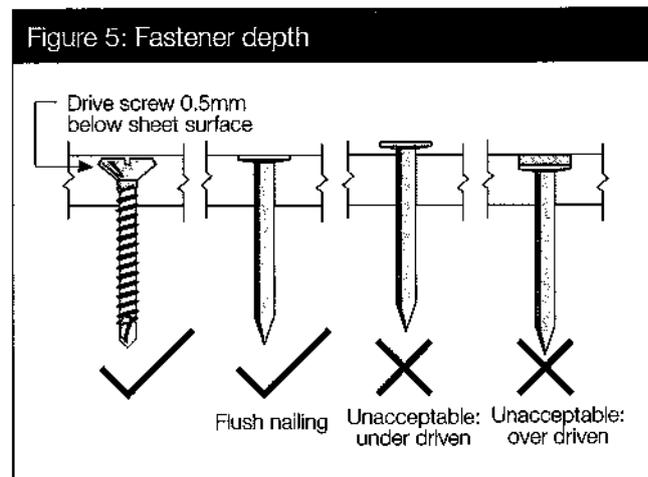
Fasteners must be fully compatible with all other material that they are in contact with to ensure the durability and integrity of the assembly.

On timber frame use Villadrive collated screws for quick installation of Villaboard Linings. Alternatively the Villaboard Lining can also be fixed with HardieDrive stainless steel screws or 40 x 2.8mm HardieFlex nails.

For fixing Villaboard Lining to 0.55 – 1.0mm BMT steel framing, use 30mm Buildex FibreZip Class 3 collated screws. These screws must not be used in sea spray zones.

Nails must be finished flush (Figure 5). Screws can be driven 0.5mm below the sheet surface to achieve the required finish level (Figure 5). In steel framing the fasteners should be driven as close as possible to the stud corners to avoid deflection of the stud flange, see Figure 6.

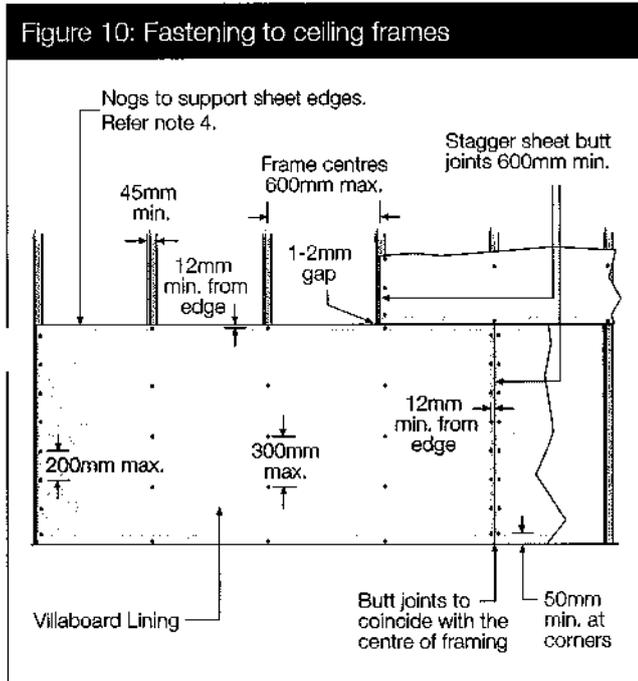
Refer to Section 6 – Step 7, for finishing of fasteners.





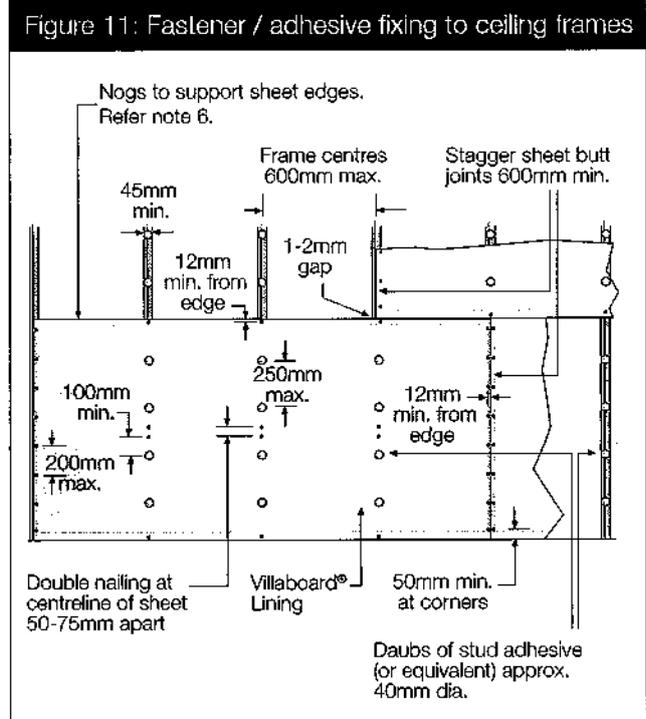
## 5.4 FIXING TO FRAMED CEILINGS

For ceiling applications either the fastener or fastener/adhesive method can be used. Refer to Figures 10 and 11 respectively.



### Notes

1. Do not install tiles in ceiling applications.
2. Do not fix sheets to the bottom chord of trusses. Batten these out first with timber battens or steel ceiling battens.
3. It is recommended that flush stopping of joints is suitable when using recessed edge Villaboard Lining.
4. When nogs not installed for perimeter support, unsupported sheet edges across the framing must be supported by back blocking using a 300-400mm wide Villaboard Lining strip adhered to rear face and centered between the framing.
5. For external soffit applications refer to James Hardie Eaves and Soffit Linings Installation Manual.



### Notes

1. Do not install tiles in ceiling applications.
2. Do not use adhesive only. Ensure sheet perimeter is fastened as shown.
3. All surfaces to receive adhesive must be clean, free of dust, oil, etc.
4. Ensure daubs of adhesive never coincide with permanent fastener points, as adhesive shrinkage may cause fastener head protrusion.
5. It is recommended that flush stopping of joints is suitable when using recessed edge Villaboard Lining.
6. When nogs not installed for perimeter support, unsupported sheet edges across the framing must be supported by back blocking using a 300-400mm wide Villaboard Lining strip adhered to rear face and centered between the framing.
7. For external soffit applications refer to James Hardie Eaves and Soffit Linings Installation Manual.

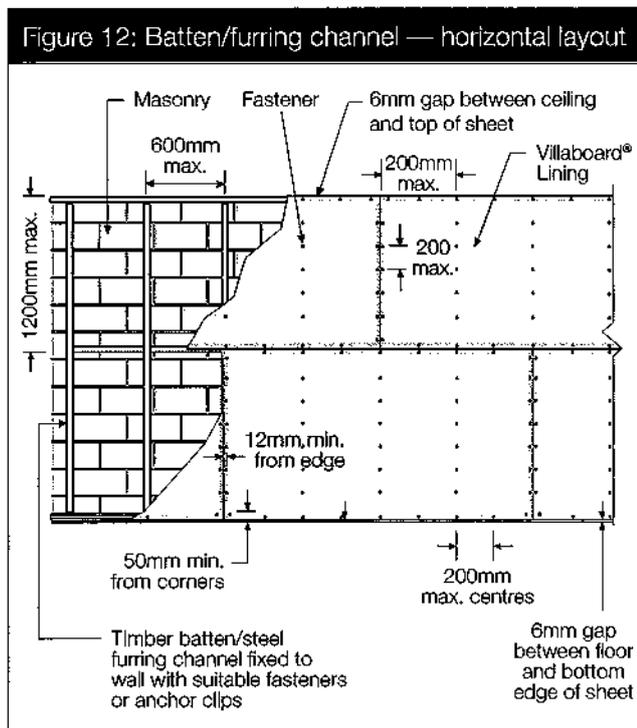
## 5.5 FIXING TO MASONRY/CONCRETE WALL

Villaboard Lining can be installed over masonry, concrete and Aerated Autoclaved Cement (AAC) substrates by following the requirements as explained below.

## 5.6 BATTEN/FURRING CHANNEL METHOD

Note: This method is suitable for tiled or untiled applications.

1. Where substrate may be uneven and misaligned – this method allows correction of irregular surfaces; allows packing out to accommodate large surface variations.
2. Timber battens are either fixed directly to the walls, or alternatively, metal furring channel anchor clips can be used. These are attached to the wall prior to fitting the metal furring channels.
3. Where services are run over walls, deeper furring channels may be used.
4. Use suitable masonry fasteners to structurally fix timber/steel battens or recessed furring channels as shown in Figure 12.
5. Pack behind battens as required to achieve a flat surface.
6. Villaboard Lining edges must be supported on the wall.



### Notes

1. Timber battens or proprietary steel battens or furring channel sections may be used. Where space is a major consideration, use recessed furring channels which have the least section depth.
2. The spacing and fixing of anchor clips must be in accordance with the manufacturer's recommendations.
3. The sheets can also be fixed vertically using this method.
4. The depth of timber battens must be suitable for the length of fasteners used.

# 6 Joints

## 6.1 GENERAL

Villaboard Lining joints are set with proprietary jointing compounds reinforced with perforated paper tape. Both recessed edge, square edge and butt joints are finished by using the jointing products outlined in this manual.

The performance of joints is the responsibility of the installer, as this is governed by the installation practices and the standard of workmanships applied. However, James Hardie considers that the recommendations provided in Table 6 describe best practice to reduce the risk of joint cracking or other problems.

There are various factors that can affect the performance of jointing compounds on edge recessed fibre cement substrates. These factors include the framing, movement, installation quality,

vibrations, moisture, humidity, temperature, etc. To achieve satisfactory joint performance these factors need to be carefully considered and understood by the installer and designer when positioning joints.

James Hardie Base Coat has been specifically developed for use with Villaboard Lining and offers superior joint strength when compared with the gypsum jointing compound alternatives.

All site cut and site recessed sheet edges must be sealed with Dulux Acraprime 501/1 or Dulux Primacryl or similar.

In addition, provision for movement needs to be made by the installation of control joints. See Figure 18.

Table 6

Jointing recommendations				
		Application	Base Compound	Topping Compound
Dry area walls	Recessed Edge	Untiled	James Hardie Base Coat with perforated paper tape	James Hardie Top Coat, Plaster Systems compound or Gypsum topping compound
		Tiled	James Hardie Base Coat with perforated paper tape	N/A
	Butt Edge	Untiled	Silicone Joint	N/A
		Tiled	Silicone Joint	N/A
Wet area walls	Recessed Edge	Untiled	James Hardie Base Coat with perforated paper tape	James Hardie Top Coat
		Tiled or Shower Lining	James Hardie Base Coat with perforated paper tape	N/A
	Butt Edge	Tiled or Shower Lining	James Hardie Base Coat with perforated paper tape Silicone Joint	N/A N/A

Figure 13: Vertical flush joint setout

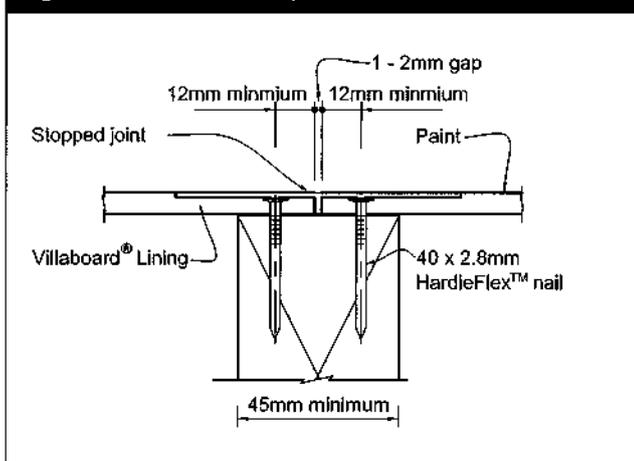
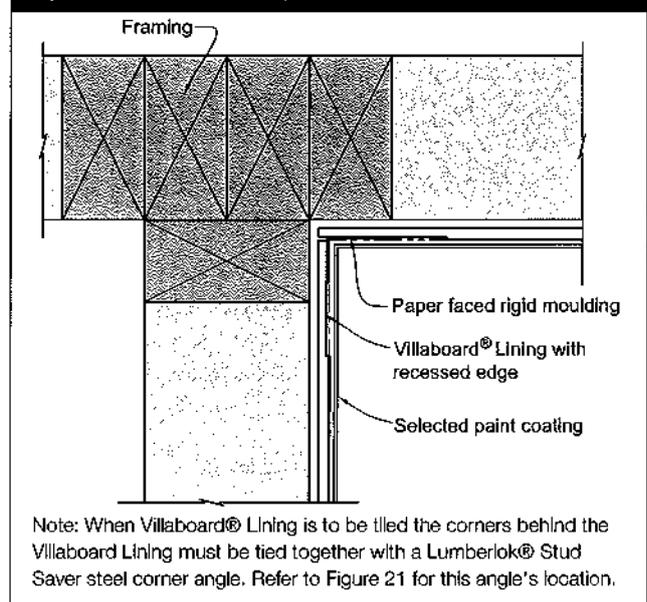
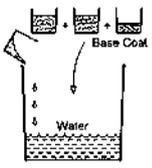


Figure 14: Wall to wall junction



## 6.2 JAMES HARDIE BASE COAT MIXING INSTRUCTIONS

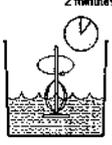


**Step 1**

First, add 1 part of clean water into bucket.

Then add 2½ parts James Hardie Base Coat powder

Allow to soak for 1 minute.

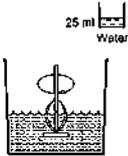


**Step 2**

Mix for 1½ – 2 minutes using paint mixer or equivalent (approximately 2500-3000rpm).

James Hardie Base Coat is NOT like the plaster based compounds. Initial mixing will indicate a dry mix and further mixing **WITHOUT** further addition of water will deliver the ideal workable paste.

Warning: Inadequate or over mixing can lead to poor workability and can cause performance issues. **Do Not Hand Mix.**



**Step 3**

The mix at this stage should be consistently smooth.

Based on the environmental conditions i.e. temperature, humidity and wind etc you may add maximum of 25ml of water per 1Kg of base coat powder in the mix at this stage to adjust workability. Mix it well.

(Note: Adding excess water than the recommendation may delay the drying of base coat and may cause joint cracking due to excessive shrinkage.)

The mix should be glossy and smooth. There should be no lumps in the mix.

### Important Notes:

1. Do not apply James Hardie Base Coat in temperatures above 40° C or below 5° C.
2. Allow the compounds to dry before applying the next coat. The drying time will vary between 12 to 24 hours depending upon the weather conditions.
3. Site cut and site recessed sheet edges must be sealed with an acrylic sealer e.g. Dulux Acraprime 501/1, Dulux Primercryl or similar product.
4. In corners, use James Hardie uPVC internal/external corner mould primed with Dulux Primerlock or similar. A 'GIB® Goldline™ Platinum' corner mould can also be used.
5. Use only perforated paper tapes in straight joints.
6. It is recommended that one (1) base coat bag is mixed in three (3) portions.
7. Before stopping the sheet edges, Multiplast Resin or a similar product in diluted form must be applied to the sheet edges. Mix the resin as per the manufacturer's recommendations.

### Product Life:

James Hardie Base Coat has a shelf life of 12 months in unopened bags when stored in a cool dry place.

James Hardie Base Coat has a bag life of 1 month if opened bags are resealed and stored in a cool dry place.

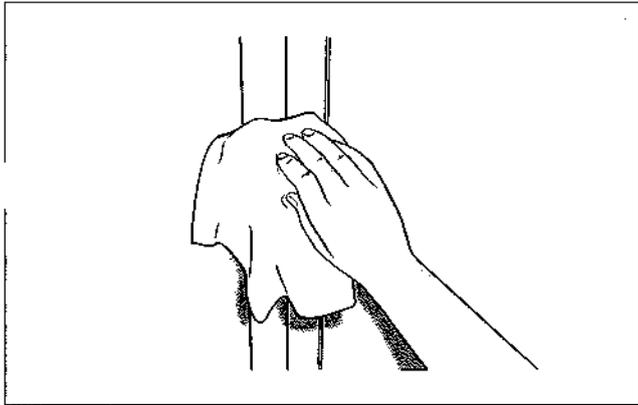
### 6.2.1 Compound coverage

1kg of Base Coat will provide approximately 5 lm of standard joints. 1kg of Top Coat will provide approximately 5.6 lm of standard joints.

## 6.3 SET RECESSED EDGE JOINTS

### Step 1 – Preparation

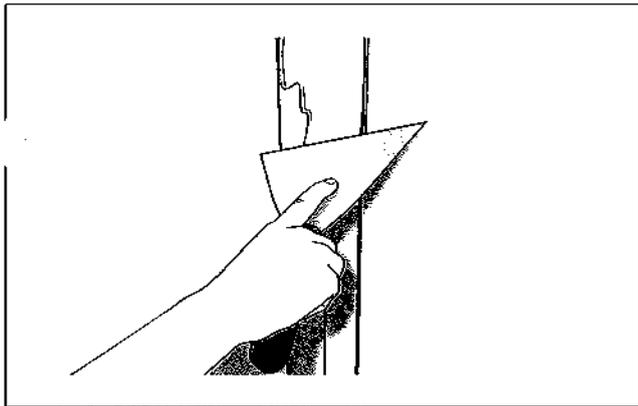
Ensure that the recesses are clean and free of dust and contaminants. Sheet edges must be sealed prior to stopping with Multiplast Resin water proofing admixture or other similar products. If working conditions are hot and dry, dampen the area around the joint prior to working.



Note: The jointing method shown on page 16 and 17 provides a level 4 finish. For more information about this and other finishes refer to Table 9.

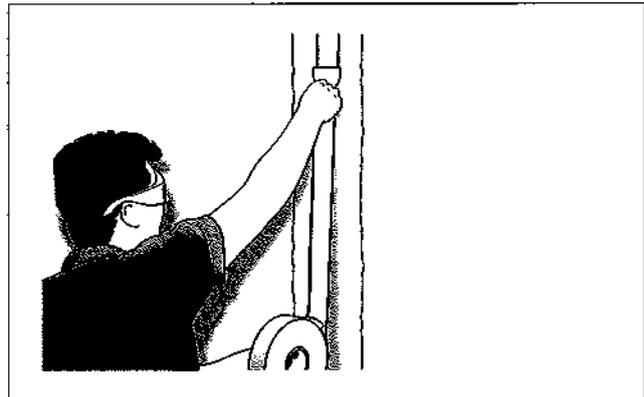
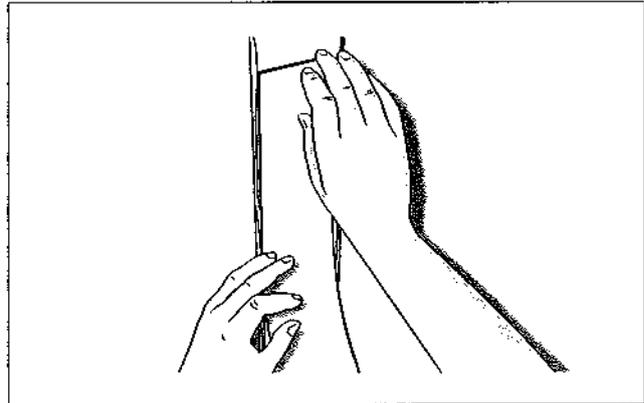
### Step 2 – First coat

Apply James Hardie Base Coat to fill the recess with a 150mm broad knife.



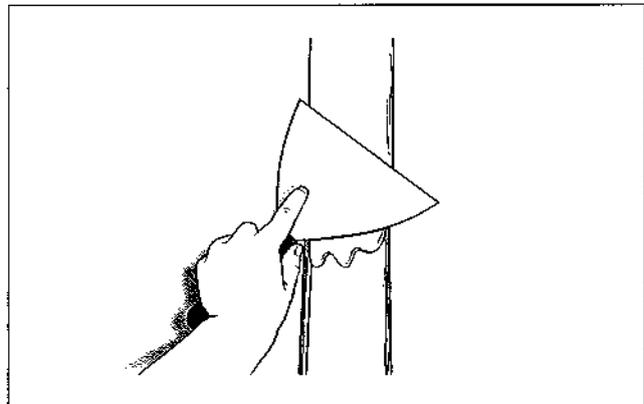
### Step 3 – Embed tape

Firmly embed the perforated paper tape centrally into the joint using a 50mm broad knife. Ensure that there are no voids under the tape and remove excess compound.



### Step 4 – Thin layer

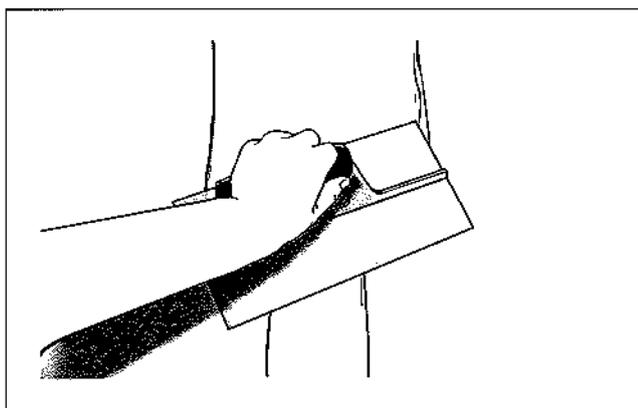
Immediately fill joint covering tape with a layer of James Hardie Base Coat applied with a 150mm broadknife.



Note: Steps 5, 6 and 7 are only required for paint and wall paper finishes up to a level 4 finish. Refer Table 9 for level 5 finish.

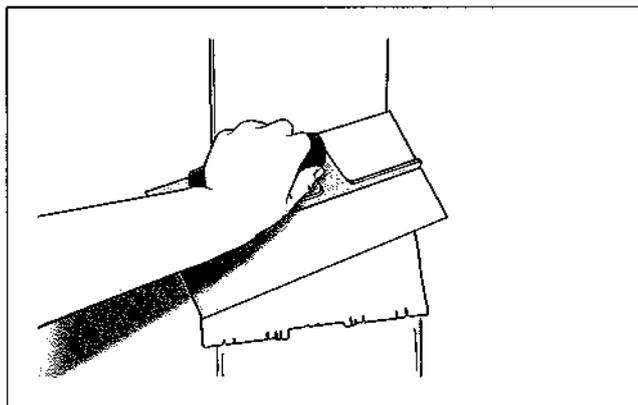
**Step 5 – Second coat (untiled walls only)**

When the first coat is fully dry, use a 200mm wide second coat trowel to apply the James Hardie Base Coat. Apply this coat approximately 180mm wide, laid down over the recess and feather the edges.



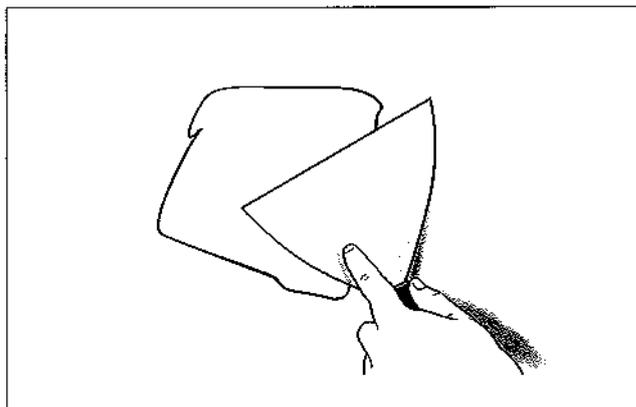
**Step 6 – Finishing coat (untiled walls only)**

Ensure the second coat is fully dry. Using a finishing trowel, apply a coat of James Hardie Top Coat 280mm wide centrally over the joint and feather out the edges. Allow to dry fully before sanding.



**Step 7 – Fastener heads (untiled walls only)**

Apply a finishing coat of James Hardie Base Coat to fastener heads, feathering out the edges. Allow to fully dry before sanding.

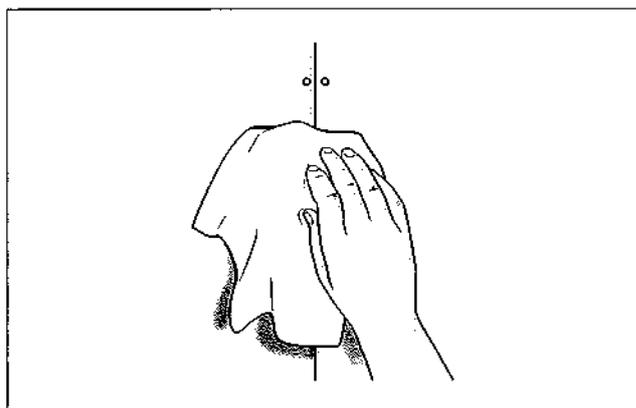


**6.4 SET SQUARE EDGE JOINTS**

As an alternative to setting the recessed edge joints, square edge Villaboard Lining can also be jointed and stopped on stud as shown below. This detail will achieve a level 3 finish.

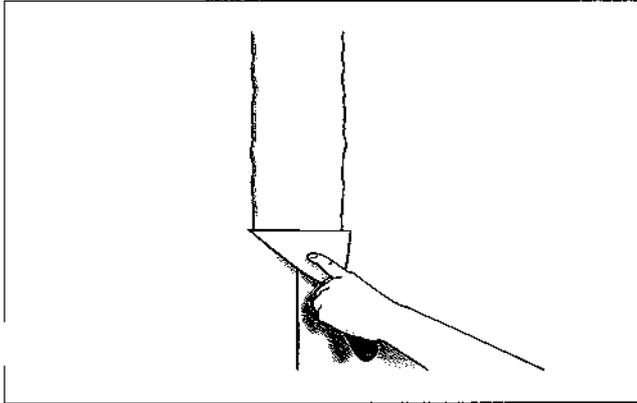
**Step 1 – Preparation**

When jointing un-recessed sheet joint, ensure that sheet edges are clean and free of dust and contaminants. Sheet edges must be sealed prior to stopping with Multiplast Resin water proofing admixture or other similar products. If working conditions are hot and dry, dampen the area around the joint prior to working.



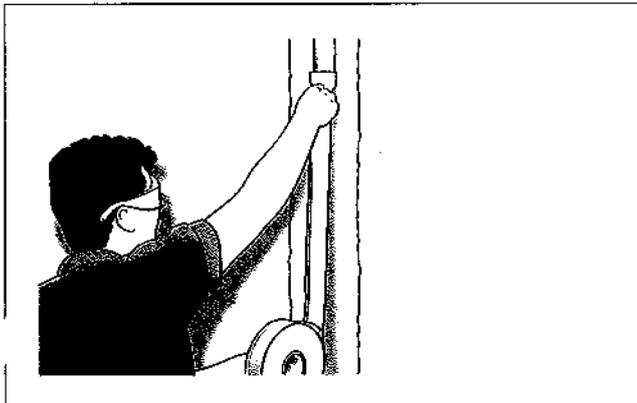
### Step 2 – First coat

Apply James Hardie Base Coat centrally over butt joint to 200mm wide with a 150mm broadknife.



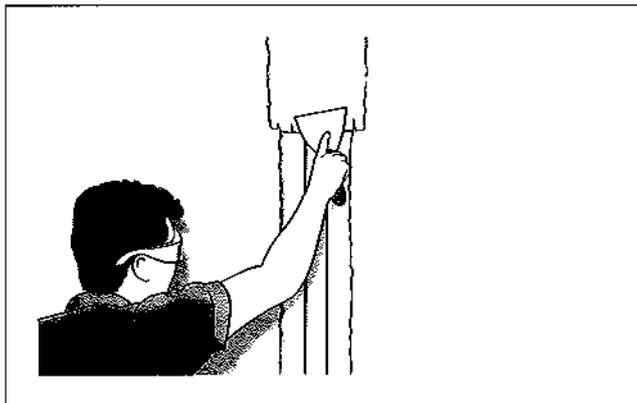
### Step 3 – Embed tape

Firmly embed the perforated paper tape centrally using a 50mm broadknife. Ensure that there are no voids under the tape and remove excess compound.



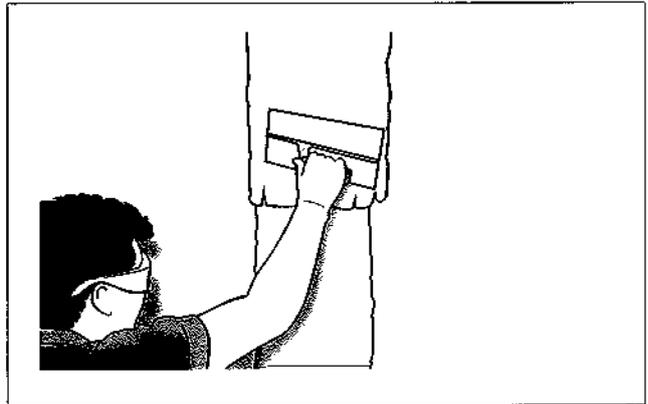
### Step 4 – Thin layer

Immediately cover tape with a thin layer of James Hardie Base Coat applied with a 150mm broadknife.



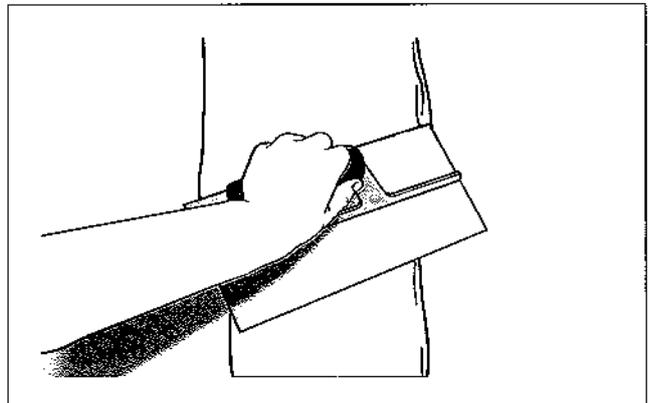
### Step 5 – Second coat (untiled walls only)

When the first coat is fully dry, use a 200mm wide second coat trowel to apply the James Hardie Base Coat. Apply this coat approximately 300mm wide.



### Step 6 – Finishing coat (untiled walls only)

Ensure the second coat is fully dry. Using a finishing trowel, apply a coat of James Hardie Top Coat 500mm wide centrally over the joint and feather out the edges. Allow to fully dry before sanding.



## 6.5 BUTT JOINT

Figure 15: Butt joint detail (dry area)

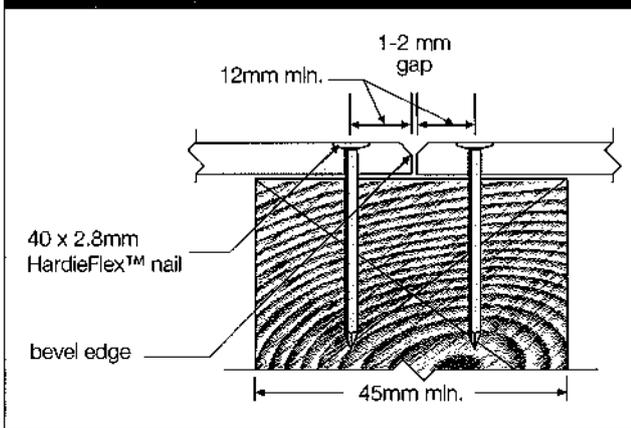
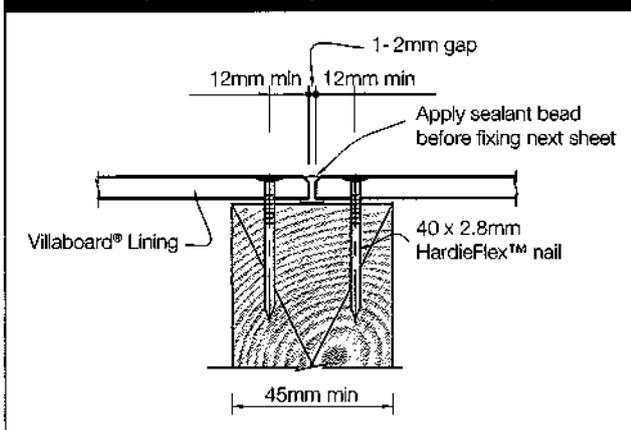
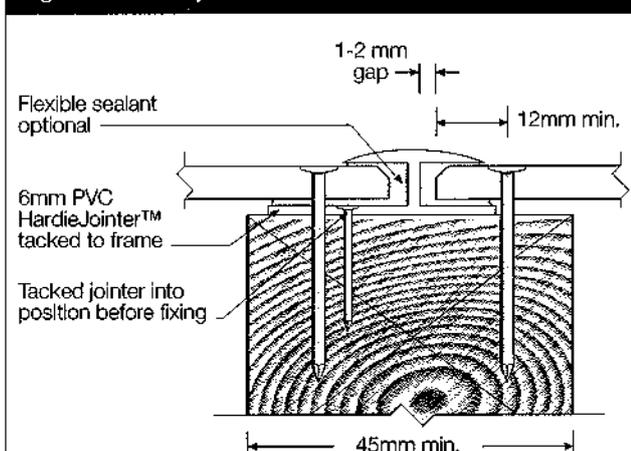


Figure 16: Butt joint detail (tiled over in dry and wet areas)



## 6.6 PVC JOINT

Figure 17: Butt joint detail



### NOTES:

1. Use of flexible silicone sealants as per their manufacturer's instructions
2. The 6mm HardieJointer™ is available from James Hardie stocklists.

## 6.7 INTERNAL CORNERS

The internal corners can be formed as per one of the following two methods:

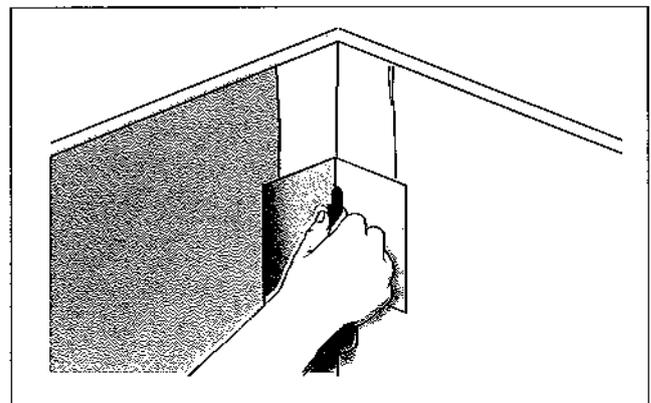
### Method A:

1. Apply James Hardie Base Coat to both sides of the corner using a 70mm broad knife. Fold the perforated paper tape to form a corner and embed it into the corner using 50mm wide corner trowel.
2. Cover the paper tape with James Hardie Base Coat using a 100mm corner trowel. Allow the base coat to dry. This will normally take up to 24 hours depending upon the temperatures and humidity conditions.
3. Once the base coat has dried then apply a thin finishing coat over it with a corner trowel and smooth it out. Allow the compounds to fully dry before sanding.

Note: Step 3 is only required for untiled walls.

### Method B:

Embed and fix a paper faced rigid spine corner mould (Goldline) in the corner and then stop over it using a James Hardie Base Coat. Follow steps 2 and 3 mentioned above to finish the corner joint.

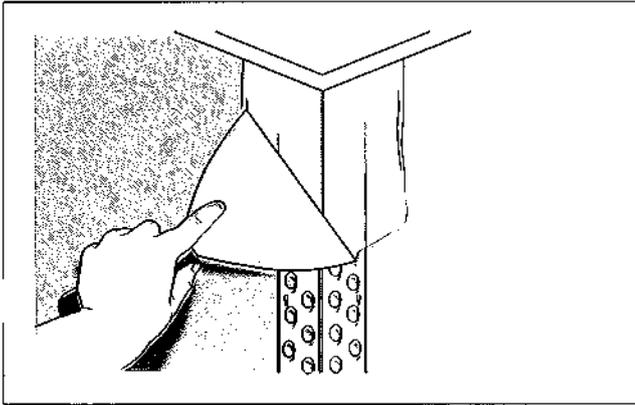


## 6.8 EXTERNAL CORNERS

Setting of external corners is required for untiled applications only as follows:

- Fit a perforated corner angle supplied by James Hardie or a paper faced rigid spine corner mould (Goldline) over the external corner and ensure straightness before fixing with HardieFlex nails at 300mm centres.
- Apply James Hardie Base Coat to both sides of the corner angle to a width of 150mm using a broad knife. Allow to dry before applying a second coat.
- Using a straight trowel, build up the edges to 250mm from the corner. Allow to dry.

- When dry, use the straight trowel to apply a thin finishing coat, 300mm wide, to both sides of the corner angle, feathering out the edges.
- Allow to fully dry before sanding.



## 6.9 CONTROL JOINTS

Control joints are required in long runs of Villaboard Lining walls or ceilings in either direction. These joints are designed to take up the structural movement between the sheets and the building frame. They may also be required in ceilings where they change direction or continue into passage ways. Control joints should also be provided at frame junctions / joints such as wall intersections.

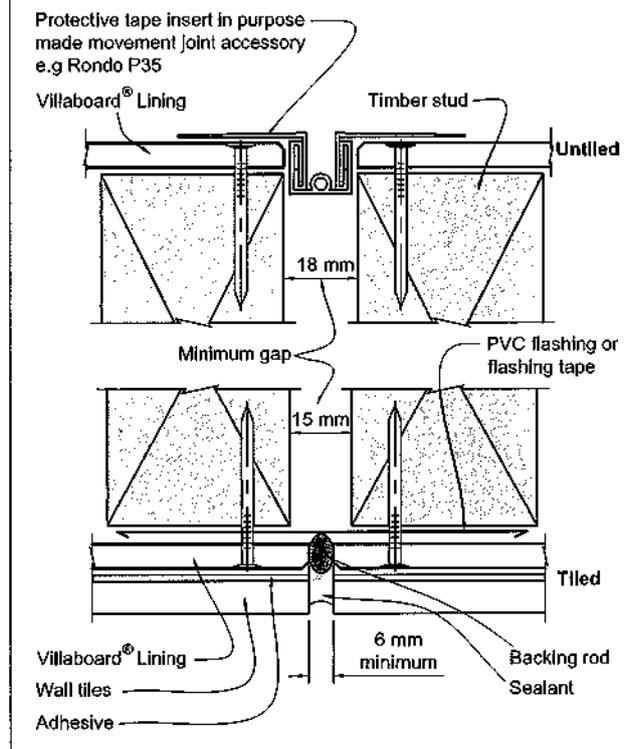
See Table 8 for maximum control joint spacings and Figure 18 for a typical detail.

Table 8

Maximum spacing for control joints (m)			
	Steel framing		Timber Framing
	0.55 – 0.75mm BMT	greater than 0.75 – 1.6mm BMT	
General	9.0	6.0	7.2
Tiles walls	4.8		4.2*

\*The maximum wall area should be restricted to 10m<sup>2</sup> between control joints

Figure 18: Control joint



Note: Alternatively a PVC control jointer supplied by James Hardie can also be used to form a control joint.

# 7 Wet area application

## 7.1 BATHROOM AREAS

Villaboard Lining is most suitable for use in wet area applications. Villaboard Lining must be covered with a water proofing membrane in a shower application before the installation of tiles.

Note: Paints are not suitable for wet area applications (splash zone) and must not be relied upon to achieve water tightness.

## 7.2 INTERNAL SWIMMING POOL APPLICATION

To fix Villaboard Lining in Internal swimming pool areas;

- The sheets must be back and edge sealed before installation.
- All sheet joints to be stopped.
- Only stainless steel fasteners must be used.
- Full perimeter fixing required.

In addition, it is recommended that H3.1 treated timber framing and ceiling battens are used to enhance the durability considering the high condensation levels.

Figure 19: Sealing around splash zones (showers)

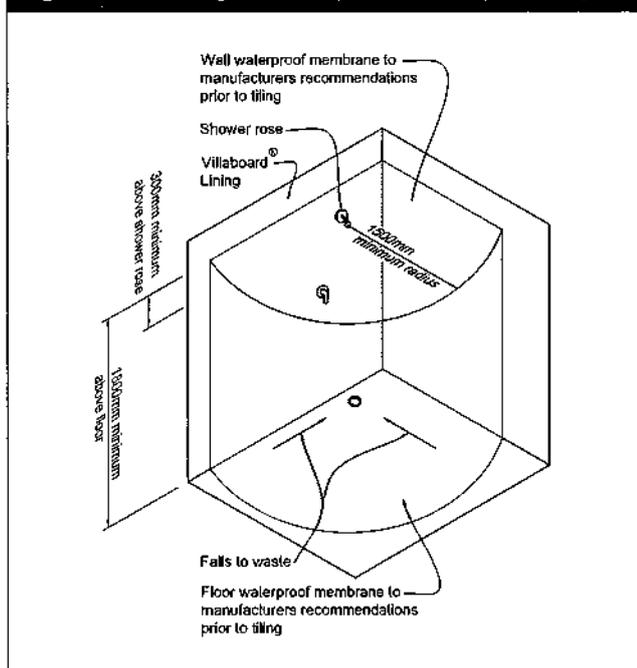
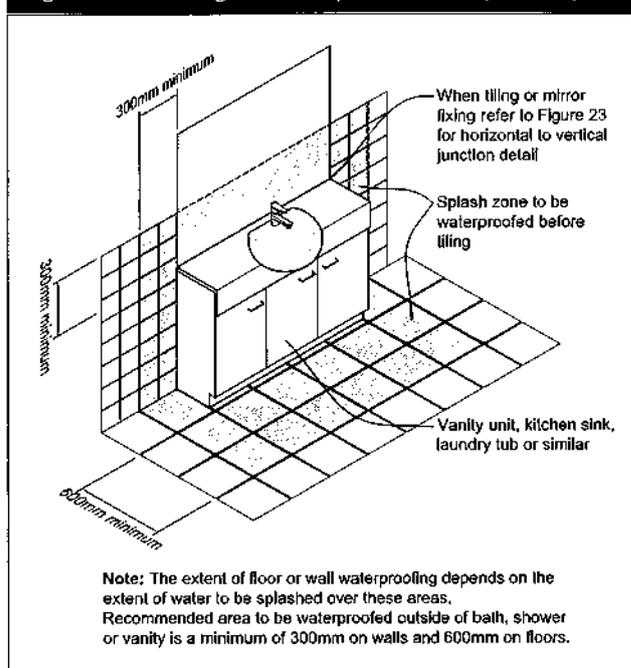


Figure 20: Sealing around splash zones (vanities)



Note: The extent of floor or wall waterproofing depends on the extent of water to be splashed over these areas. Recommended area to be waterproofed outside of bath, shower or vanity is a minimum of 300mm on walls and 600mm on floors.

Figure 21: Wall to wall junction

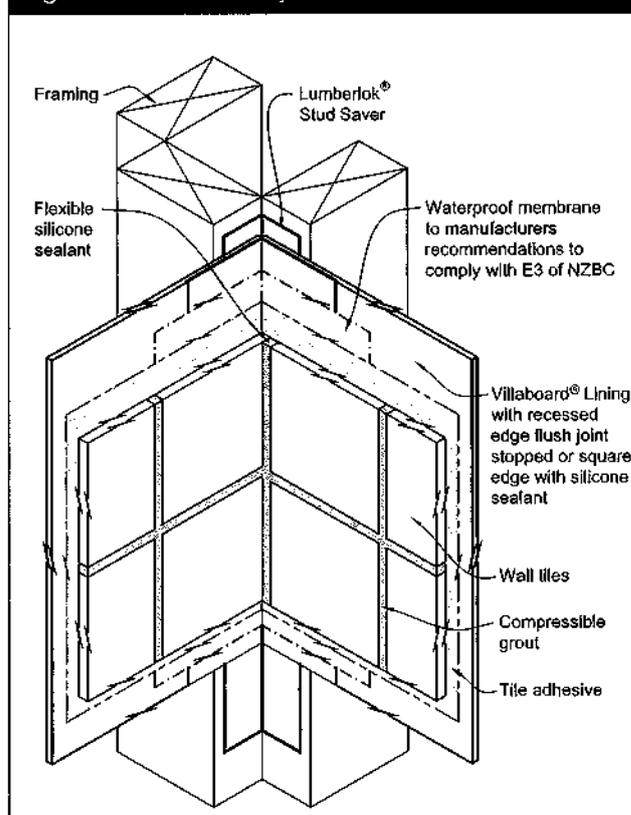
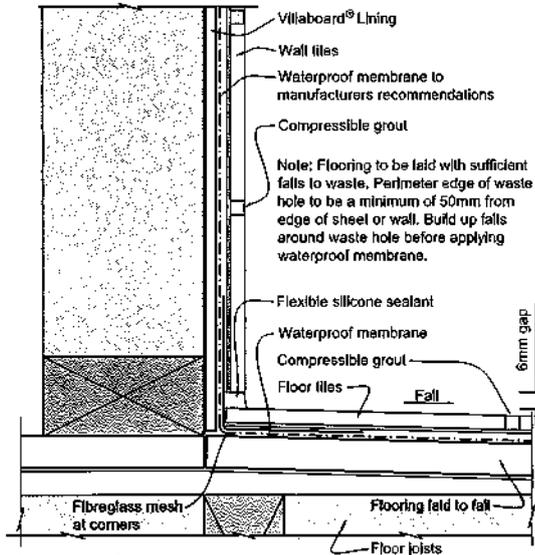


Figure 22: Wall to floor junction



**Note for screeds:**

1. The thickness of screeds should be applied to achieve the desired slope in accordance with the manufacturers recommendations.
2. Clean down the surface of the sheet flooring thoroughly. Apply a coat of bonding chemical to improve the bonding of the mortar bed to the floor.
3. To prevent cracking of the floor tiles, the mortar bed must be reinforced over all joints in floor sheets with 150mm wide galvanised mesh placed centrally over joints and in the centre of bedding.
4. Control joints in the flooring must be continued through the tiles.
5. Epoxy mortar screeds may also be used.

Figure 23: Wall to acrylic bath/shower

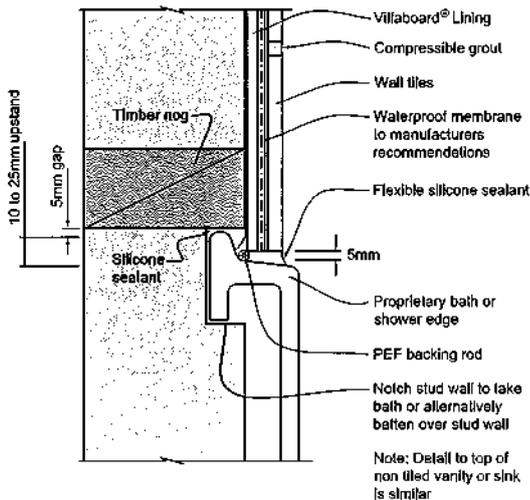
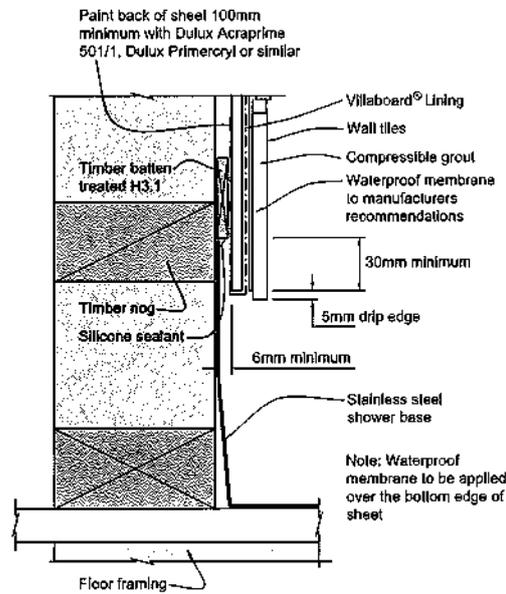


Figure 24: Wall to stainless steel shower

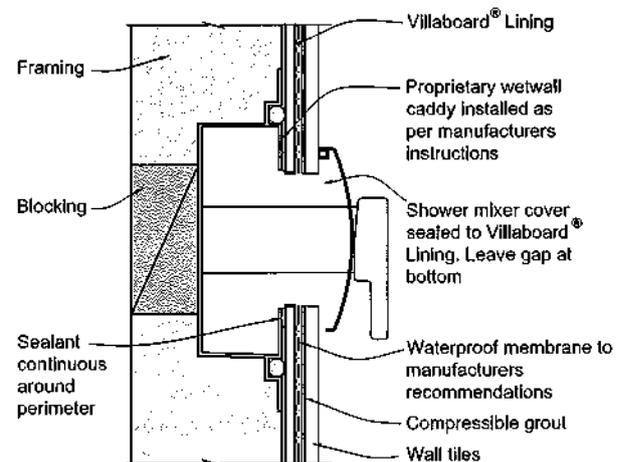


### 7.3 WATERPROOFING MEMBRANE

A waterproofing membrane must be applied to Villaboard Lining when used in wet area or water splash area applications. A reinforcing fibre glass/band must be used in corners and walls to floor junctions. Always follow the recommendations of waterproofing membrane manufacturers. BRANZ appraised water proofing membranes are recommended for use in this application.

### 7.4 WET AREA PENETRATION

Figure 25: Wet wall caddy



**Note:** Seal cut edges of Villaboard® Lining

# 8 Finishes and maintenance

## 8.1 GENERAL

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Villaboard Lining is finished with either paint, tiles or wallpaper as per application requirements. The application and maintenance of these finishes must be in accordance with the manufacturer's specifications.

### Notes

1. For wet areas, the waterproofing requirements of all relevant codes, standards and regulations must be met.
2. Refer to the manufacturers' specifications on application, compatibility and suitability of waterproofing membranes.

## 8.2 GLANCING LIGHT

---

In some instances, due to glancing light, set joints may be noticeable in Villaboard Lining walls, especially where paint finishes have a high gloss level. Work closely with your builder or designer to minimise this.

Artificial lighting needs to be considered in relation to walls and ceilings (e.g. down-lights in ceilings above set joints in walls). Ceilings and wall joints should run in the direction of the light source (at right angles to windows).

Where glancing light is an issue its effect can be lessened by:

- The use of curtains or blinds.
- Artificial light shading devices.
- The use of light coloured, matt finish paints.

## 8.3 LEVEL OF FINISHES

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Different levels of finishes are typically specified for different applications. Higher levels of finishes are used to address the glancing light issues with painted Villaboard Lining referred to above. A description of the various levels of finishes and the joining/coating requirements can be found in Table 9.

Table 9

Levels of finishes			
Level of Finish	Definition*	Typical Jointing/Setting	Finish
0	This level of finish may be useful in temporary construction.	No stopping, taping, finishing or accessories are required. The work is confined to gluing or screwing/nailing sheets in place.	For use in areas where finishing and stopping is not considered necessary.
1	For use in plenum areas above ceilings, in areas where the work would generally be concealed, or in building service corridors and other areas not normally open to public view.	Joints and corner joints will be set with James Hardie Base Coat reinforced with perforated paper tape.	Surface free from excess jointing compound. Tool marks and ridges are generally acceptable.
2	For use in warehouse, storage or other areas where surface appearance is not of primary concern.	Joints and corner joints will be set with James Hardie Base Coat reinforced with perforated paper tape and James Hardie Top Coat.	Minor tool marks and ridges are generally acceptable.
3	For use in areas which are to receive heavy or medium texture (spray or hand applied) finishes or where heavy wall paper coverings are to be applied as the final decoration. This level of finish is not generally suitable where smooth painted surfaces or light to medium wall coverings are specified.	Joints and corner joints will be set with James Hardie Base Coat reinforced with perforated paper tape and James Hardie Top Coat.	This level of finish must be sufficiently smooth to accept heavy vinyl, tiles or textured coatings without blemishes.
4	This is generally the accepted level of finish for domestic construction. It is used where light textures or wall coverings and smooth textured finishes and satin/flat/low sheen paints are illuminated by non-critical lighting.	Refer to flush jointing recommendations on page 16–17, steps 1–7 recessed edge joints.  All joints and corner joints will have tape embedded in James Hardie Base Coat applied over all joints, angles, fastener heads and accessories.  This application is applicable to recessed edge sheets only.  The use of square edge sheets will require a high build application and coating finish.	For use where light-texture coatings or wallpaper or other lightweight wall coverings are to be applied. For painted finishes in non-critical lighting areas flat and low-sheen textured paints are to be applied. Gloss and semi-gloss paints are not generally suitable over this level of finish as any minor blemish will show under critical light.  The weight, texture and sheen level of wall coverings applied over this level of finish must be carefully evaluated. Joints and fasteners must be adequately concealed if the wall-covering material is lightweight, contains limited pattern, has a gloss finish, or any combination of these features is present. Unbacked vinyl wall coverings are not suitable over this level of finish.
5	This level of finish is for use where gloss or semi-gloss paints are specified or where critical lighting conditions occur on satin, flat or low sheen paints.	Refer to page 16 steps 1–4 for jointing.  Final James Hardie Base Coat application should be feathered out to approximately 200mm + each side of the joint. Then a full skim coat of James Hardie Top Coat must be applied over entire sheet surface in order to achieve a uniform finish.  This application is applicable to recessed edge sheets only.  The use of square edge sheets will require a high build application and coating finish.	This level of finish is for use where gloss, semi-gloss, low-sheen or non-textured paints are specified or where critical lighting conditions occur.

\*Reference: AS/NZS 2589.1: 'Gypsum lining in residential and light commercial construction — Application and finishing. Part 1: Gypsum plasterboard'

## 8.4 PAINT FINISHES

Prior to the application of paint finishes, remove any residual sanding dust and ensure the surface is suitable for paint application.

Always follow the paint manufacturer's recommendations for paint suitability, mixing and application.

Note: Use of a 'sealer coat' or 'preparation undercoat' is recommended.

## 8.5 TILED APPLICATIONS

Before commencing tiling it is suggested that you refer to BRANZ 'Good Tiling Practice' guide to fully understand the substrate preparation/installation before tiling, also refer Table 10 for Villaboard Sheet thickness, stud spacing and tile thickness.

Control joints must be provided to accommodate thermal/framing movement and stresses which will generate during the life of the building. Control joints must be carried out through the tiles to the exterior face. Refer Figure 18.

James Hardie only recommends the use of flexible tile adhesive for tile applications. Refer to adhesive manufacturer for suitability and application information. The thickness of tiles used over Villaboard Lining are restricted based on stud centres and the thickness of sheet. Refer Table 10 below.

Square edge sheets can be used for tiled applications. The sheet joint can either be stopped as per Figure 13 or it can be filled with a sealant as per Figure 16.

Note

1. Do not tile ceilings.
2. Tiling must not exceed 3m in height.
3. Provide control joints as per Table 8.
4. The Villaboard Lining joints can be staggered.

Table 10

Maximum tile thicknesses	Sizes	
Villaboard Thickness (mm)	Maximum Tile Weight per m2 (Kg)	Tile Size
6	Up to 20	up to 300 x 300mm
9	21 - 60	300 x 600mm/ 400 x 400mm or bigger

Support angles are required to transfer the weight of tiles to the framing.

A support angle must be fixed at the base of the wall into the bottom plate. When tiling the full height of the wall, it is recommended that an intermediate support angle fixed into framing is also used to support the weight of tiles. The overall mass of tiles and the support required must be considered and the c/c distance between the support angles should be reduced for tiles thicker than 18mm. Refer Table 11 for recommended spacing of angle supports.

Table 11

Guidance for consideration	
Tile Weight per m2 (Kg)	Vertical Centres of Support Angles (Metres, Max.)
20 - 30	3.2
31 - 42	1.6
43 - 60	0.8

## 8.6 MAINTENANCE

James Hardie recommends that the cleaning and maintenance of all finishes be undertaken regularly as per the recommendations of the manufacturer. Joints must also be maintained and be free of dirt and grime. Special attention must be given to water proofing membranes and tile adhesives. These must be suitable for the intended application and compatible with other materials they are used in conjunction with.

# 9 Product information

## 9.1 GENERAL

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Villaboard Lining is a cellulose fibre reinforced cement building product. The basic composition is Portland cement, ground sand, cellulose fibre and water.

Villaboard Lining is manufactured to AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheets' (ISO 8336 'Fibre Cement Flat Sheets').

Villaboard Lining is classified Category 3, Type B in accordance with AS/NZS 2908.2.

For Safety Data Sheets (SDS) visit [www.jameshardie.co.nz](http://www.jameshardie.co.nz) or Ask James Hardie on 0800 808 868.

## 9.2 PRODUCT MASS

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Based on equilibrium moisture content the approximate mass of Villaboard Lining is:

- 6mm thick — 8.3kg/m<sup>2</sup>
- 9mm thick — 12.4kg/m<sup>2</sup>

## 9.3 DURABILITY

### Resistance to Moisture/Rotting

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Villaboard Lining has demonstrated resistance to permanent moisture induced deterioration (rotting) and has passed the following tests in accordance with AS/NZS 2908.2:

- Water permeability (Clause 8.2.2)
- Warm water (Clause 8.2.4)
- Heat rain (Clause 6.5)
- Soak dry (Clause 8.2.5)

### Resistance to Fire

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Villaboard Lining complies with the interior surface finish requirements of Table 6.2 of C/AS1 which depends on the specific purpose group and location. The smaller the index number the more stringent the requirement is.

Villaboard Lining is non-combustible and has the following early fire hazard indices (tested to AS 1530 Part 3).

Early fire hazard indices	
Flammability (FI)	0
Spread of Flame Index (SFI)	0
Heat evolved index	0
Smoke Developed Index (SDI)	0 - 1

# Product Warranty

## February 2013

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

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

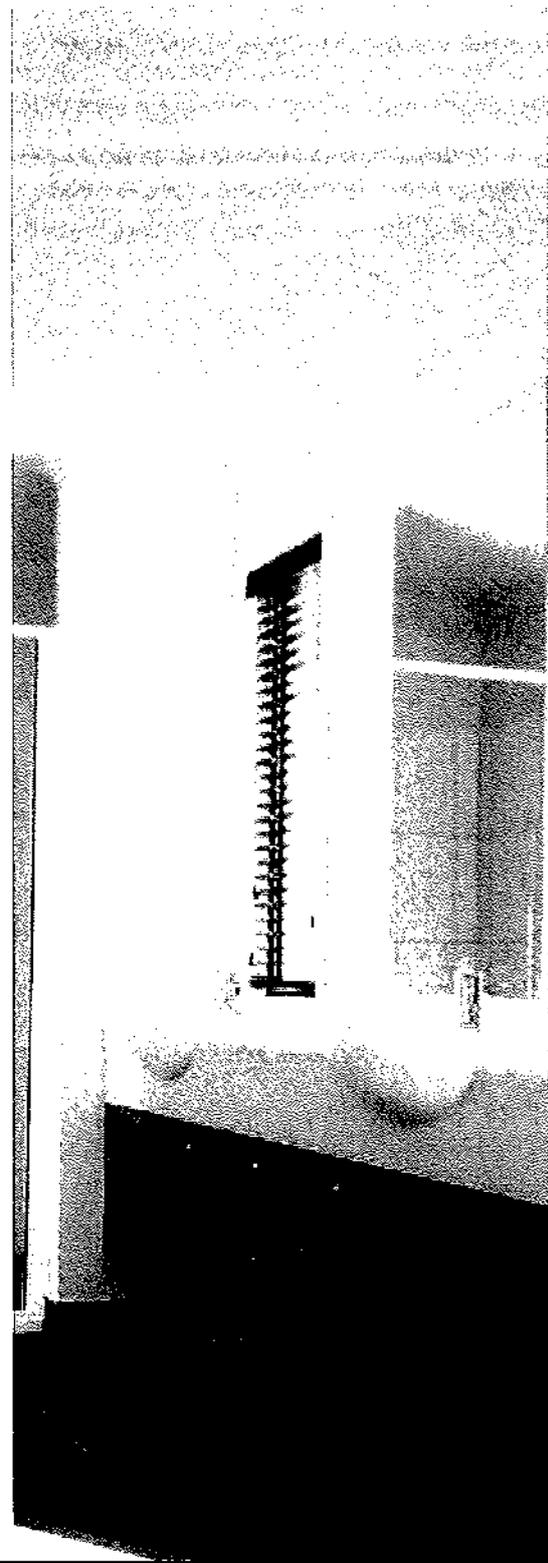
## CONDITIONS OF WARRANTY:

The warranty is strictly subject to the following conditions:

- a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation;
- b) this warranty is not transferable;
- c) the Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice;
- d) the project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code (NZBC), regulations and standards;
- e) the claimant's sole remedy for breach of warranty is (at James Hardie's option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product;
- f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces);
- g) all warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law;
- h) if meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

**Disclaimer:** The recommendations in James Hardie's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. James Hardie has tested the performance of the Villaboard® Lining when installed in accordance with the Villaboard® Lining installation manual, in accordance with the standards and verification methods required by the NZBC and those test results demonstrate the product complies with the performance criteria established by the NZBC. However, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (e.g. quality of workmanship and design) James Hardie shall not be liable for the recommendations made in its literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards, as it is the responsibility of the building designer to ensure that the details and recommendations provided in the relevant James Hardie installation manual are suitable for the intended project and that specific design is conducted where appropriate.

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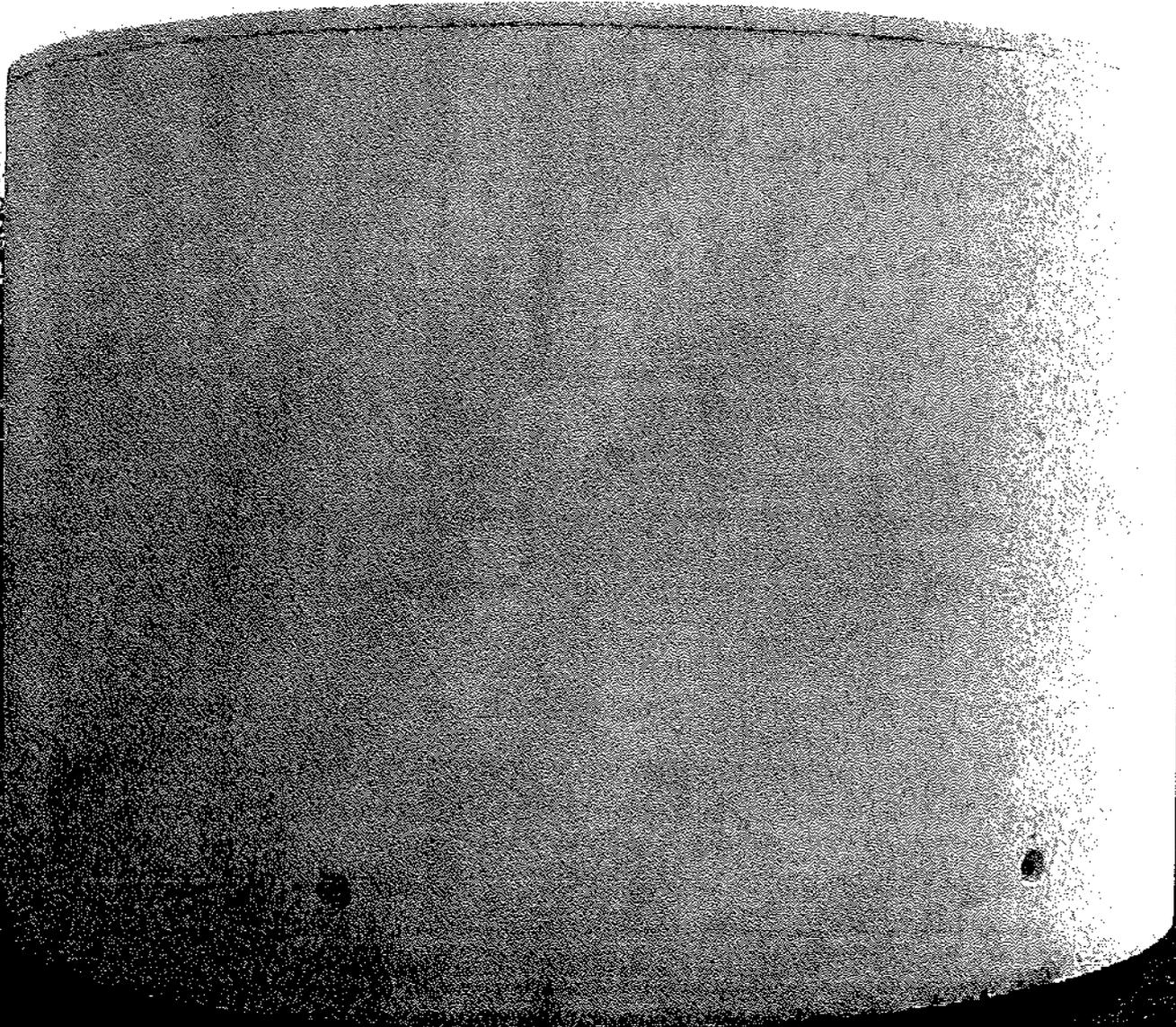
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**HYNDS**

Hynds concrete water tanks provide reliable storage of cool, clear and safe drinking water in rural areas.

Hynds tanks are strong and durable and will never burn or rust and are much less susceptible to damage caused by wind, vandalism, or vermin. Hynds tanks offer a long and virtually maintenance free service life.

**APPLICATIONS**

- Reliable storage of cool, clear and safe drinking water

**FEATURES**

Hynds concrete water tanks offer the following features:

- Low maintenance and long life
- High strength
- Cool water storage
- Reduces the chance of algae growth
- Stock and fire resistant
- Less susceptible to theft or vandalism
- Raised manhole installed into roof with secure lid

**Tank Capacities & Types**

The tank capacity is 22,700 litres (5,000 gallons).

Standard tanks are designed to be either free standing above the ground or partially buried to within 300mm of shoulder.

Fully buried (flat top) tanks are designed to be buried with a maximum of 300mm of earth cover.

**Connections**

Inlet connections (Top)

- 2 x 100mm (located at opposite ends)

Outlet connections (Bottom)

- 2 x 50mm (Located same end)
- 2 x 32mm (Capital region only)

One connection is capped, the second threaded male connection is bare, ready for fitting of the shut off valve.

Concrete Water Tank					
Code	Description	Capacity	A	B	Weight
WT5000ELT	Oval Water Tank	5000 Gallon/ 22700 Litres	2940mm	2790mm	8.5 Tonne
WT5000ELTFT	Flat Top Oval Water Tank	5000 Gallon/ 22700 Litres	—	2790mm	9.5 Tonne

Concrete Water Tank Accessories	
Code	Description
RHCONTV090	Marley Vacuum Kit for Concrete Tanks
RHCI	Marley Calmed Inlet
RHFO	Marley Floating Outtake
WATERLEVEL	Water Level Indicator
WATERLEVEL + EXT	Water Level Indicator Meter Extension
RHMG	Marley Mechanical Water Gauge

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RHFO	Marley Floating Outtake
WATERLEVEL	Water Level Indicator
WATERLEVEL + EXT	Water Level Indicator Meter Extension
RHMG	Marley Mechanical Water Gauge

Female Tank Fittings		Male Tank Fittings	
Code	Diameter	Code	Diameter
LDF-TFFB	15mm	LDF-TFMB15	15mm
LDF-TFFB	20mm	LDF-TFMB20	20mm
LDF-TFFB	25mm	LDF-TFMB25	25mm
LDF-TFFB	32mm	LDF-TFMB32	32mm
LDF-TFFB	40mm	LDF-TFMB40	40mm
LDF-TFFB	50mm	LDF-TFMB50	50mm

Brass Tank Fittings	
Code	Diameter
BTS20	20mm
BTS25	25mm
BTS32	32mm
BTS40	40mm
BTS50	50mm



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## Shane O'Brien

---

**From:** assemblyandrea@gmail.com on behalf of Andrea Lawrence  
<andrea@assembly.co.nz>  
**Sent:** Friday, 13 December 2013 3:51 p.m.  
**To:** Shane O'Brien  
**Subject:** Fwd: BC Application Quote  
**Attachments:** Assembly.pdf

----- Forwarded message -----

**From:** Sharleen Howe <sharleen.howe@kapiticoast.govt.nz>  
**Date:** 13 December 2013 13:21  
**Subject:** BC Application Quote  
**To:** "andrea@assembly.co.nz" <andrea@assembly.co.nz>

Hello Andrea

As per our phone conversation, please find attached the BC Application Estimate for the work described.

Multi-storey new dwelling with weatherboard + vehicle crossing damage deposit.

Kind regards

**Sharleen Howe**

Technical Officer Building Consents  
Āpiha Hangarau

Kāpiti Coast District  
Council  
Tel 04 296 4766  
[www.kapiticoast.govt.nz](http://www.kapiticoast.govt.nz)



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0000883

REGISTERED  
13 JAN 2016  
S.H.



**COMPUTER FREEHOLD REGISTER  
UNDER LAND TRANSFER ACT 1952**



Search Copy

R.W. Muir  
Registrar-General  
of Land

**Identifier** WN496/132  
**Land Registration District** Wellington  
**Date Issued** 20 May 1943

**Prior References**  
WN472/32

---

**Estate** Fee Simple  
**Area** 696 square metres more or less  
**Legal Description** Lot 85 Deposited Plan 7462

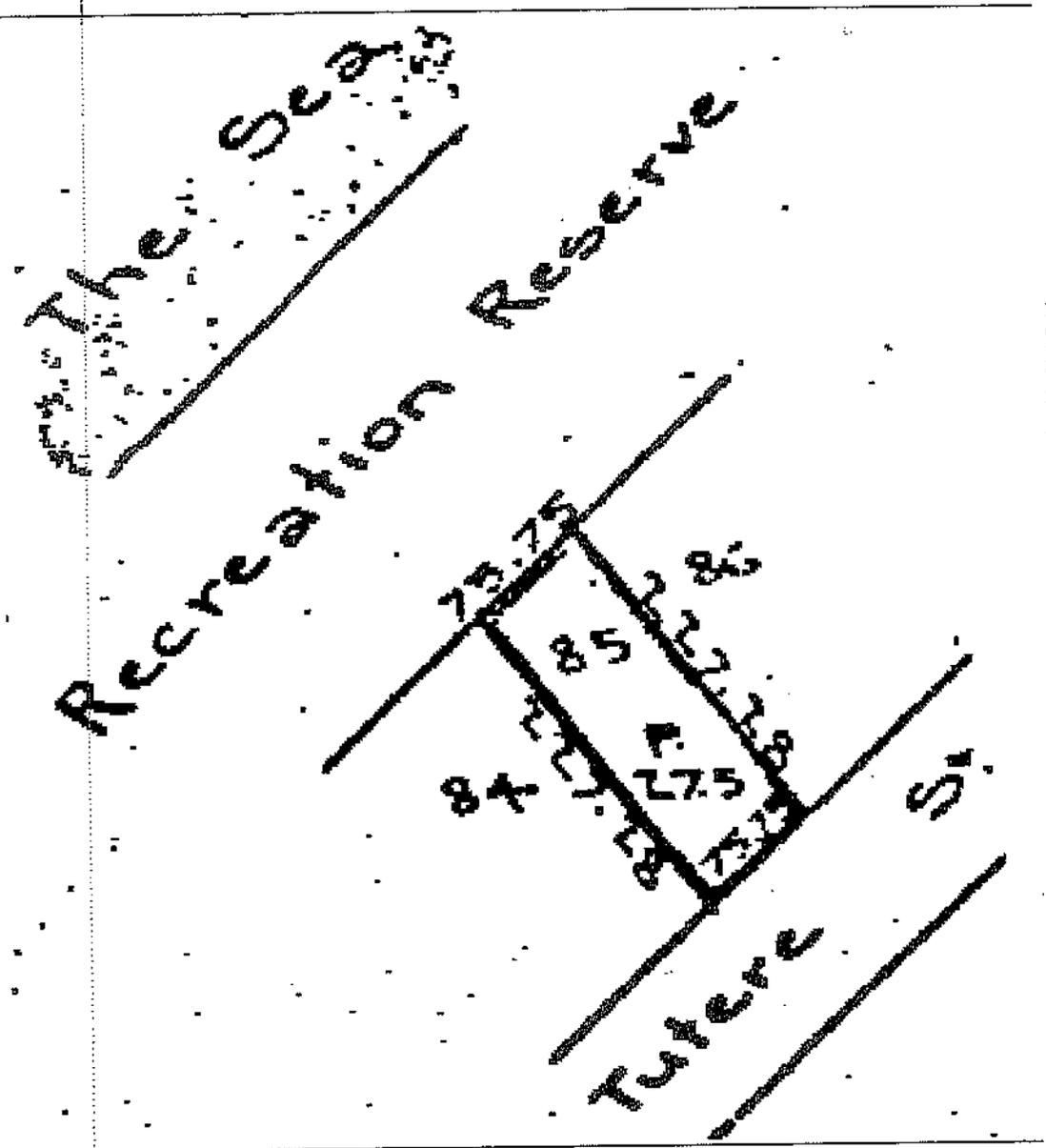
**Proprietors**  
Shane Michael O'Brien, Jillian Mary O'Brien and David Alan Lea

---

**Interests**  
Fencing Agreement in Transfer 270815 - 20.5.1943  
9233669.2 Mortgage to ASB Bank Limited - 17.12.2012 at 2:19 pm

Identifier

WN496/132





13 JAN 2016  
SH 000037

Form 2A

**Memorandum from licensed building practitioner: Certificate of design work  
Section 45 and Section 30C, Building Act 2004**

Please fill in the form as fully and correctly as possible.

If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

**THE BUILDING**

Street address: 7 Tutere Street

Suburb: Waikanae Beach

Town/City: Waikanae

Postcode: 5036

**THE OWNER**

Name(s): Shane and Jill O'Brien

Mailing address:

Suburb:

PO Box/Private Bag: 205

Town/City: Fielding

Postcode: 4740

Phone number: 0274850316

Email address: [shane@colspec.co.nz](mailto:shane@colspec.co.nz)

**BASIS FOR PROVIDING THIS MEMORANDUM**

I am providing this memorandum in my role as the: Please tick the option that applies (✓)	
<input type="checkbox"/>	<b>sole</b> designer of all of the RBW design outlined in this memorandum – I carried out all of the RBW design myself – no other person will be providing any additional memoranda for the project
<input type="checkbox"/>	<b>lead</b> designer who carried out some of the RBW design myself but also supervised other designers – this memorandum covers their RBW design work as well as mine, and no other person will be providing any additional memoranda for the project
<input type="checkbox"/>	<b>lead</b> designer for all but specific elements of RBW – this memorandum only covers the RBW design work that I carried out or supervised and the other designers will provide their own memoranda relating to their specific RBW design
<input checked="" type="checkbox"/>	<b>specialist</b> designer who carried out specific elements of RBW design work as outlined in this memorandum – other designers will be providing a memorandum covering the remaining RBW design work

**IDENTIFICATION OF DESIGN WORK THAT IS RESTRICTED BUILDING WORK (RBW)**

I Justin Wright carried out / supervised the following design work that is restricted building work

**PRIMARY STRUCTURE: B1**

<b>Design work that is restricted building work</b>	<b>Description</b>	<b>Carried out/ supervised</b>	<b>Reference to plans and specifications</b>
<i>Tick (✓) if included</i>	<i>[If appropriate, provide details of the restricted building work]</i>	<i>[Specify whether you carried out this design work or supervised someone else carrying out this design work]</i>	<i>[If appropriate, specify references]</i>
<i>Cross (X) if excluded</i>			

**Primary structure**

<b>All RBW Design work</b> ( x ) relating to B1		( ) Carried out ( ) Supervised	
<b>Foundations and subfloor framing</b> ( x )		( ) Carried out ( ) Supervised	
<b>Walls</b> ( x )		( ) Carried out ( ) Supervised	
<b>Roof</b> ( x )		( ) Carried out ( ) Supervised	
<b>Columns and beams</b> ( x )		( ) Carried out ( ) Supervised	
<b>Bracing</b> ( x )		( ) Carried out ( ) Supervised	
<b>Other</b> ( x )		( ) Carried out ( ) Supervised	

**EXTERNAL MOISTURE MANAGEMENT SYSTEMS: E2**

<b>All RBW design work</b> ( ✓ ) relating to E2	<i>To NZBC E2/AS1 &amp; Cladding manufacturer</i>	(✓) Carried out ( ) Supervised	Details 50.xx
<b>Damp proofing</b> ( ✓ )	<i>To NZBC E2/AS1.</i>	(✓) Carried out ( ) Supervised	Details: 50.xx
<b>Roof cladding or roof cladding system</b> ( ✓ )	<i>To NZBC E2/AS1 &amp; Roofing COP</i>	(✓) Carried out ( ) Supervised	Details 50.xx
<b>Ventilation system</b> ( ✓ ) (for example, subfloor or cavity)	<i>Cladding System as per Manufacturer req.</i>	( ) Carried out ( ) Supervised	Sections 31.xx Subfloor.
<b>Wall cladding or wall cladding system</b> ( ✓ )	<i>Cladding system as per manufacturer reqs.</i>	(✓) Carried out ( ) Supervised	Details: 51.xx
<b>Waterproofing</b> ( ✓ )	<i>Shower linings</i>	( ) Carried out ( ) Supervised	53.00
<b>Other</b> ( x )		( ) Carried out ( ) Supervised	

**FIRE SAFETY SYSTEMS: C1 – C6**

<b>Emergency warning systems, evacuation and fire service operation systems, suppression or control systems, or other</b> ( x )	( ) Carried out ( ) Supervised
---	-----------------------------------

**Note:** The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.  
**Note:** continue on another page if necessary.

**WAIVERS AND MODIFICATIONS**

Waivers or modifications of the building code are required ( ) Yes (√) No

If Yes, provide details of the waivers or modifications below:	
Clause	Waiver/modification required
<i>[List relevant clause numbers of building code]</i>	<i>[Specify nature of waiver or modification of building code]</i>

**Note:** continue on another page if necessary.

**ISSUED BY**

Name: Justin Wright	LBP or Registration number: 3287
The practitioner is a: ( ) Design LBP (√) Registered architect	( ) Chartered professional engineer
Design Entity or Company (optional): Assembly Architects Limited	
Mailing address (if different from below):	
Street address / Registered office: 24 Essex Ave	
Suburb: Butel Park	Town/City: Arrowtown
PO Box/Private Bag:	Postcode: 9302
Phone number: (03) 442 0356	Mobile:
After Hours:	Fax:
Email address: <a href="mailto:justin@assembly.co.nz">justin@assembly.co.nz</a>	Website: <a href="http://www.assembly.co.nz">www.assembly.co.nz</a>

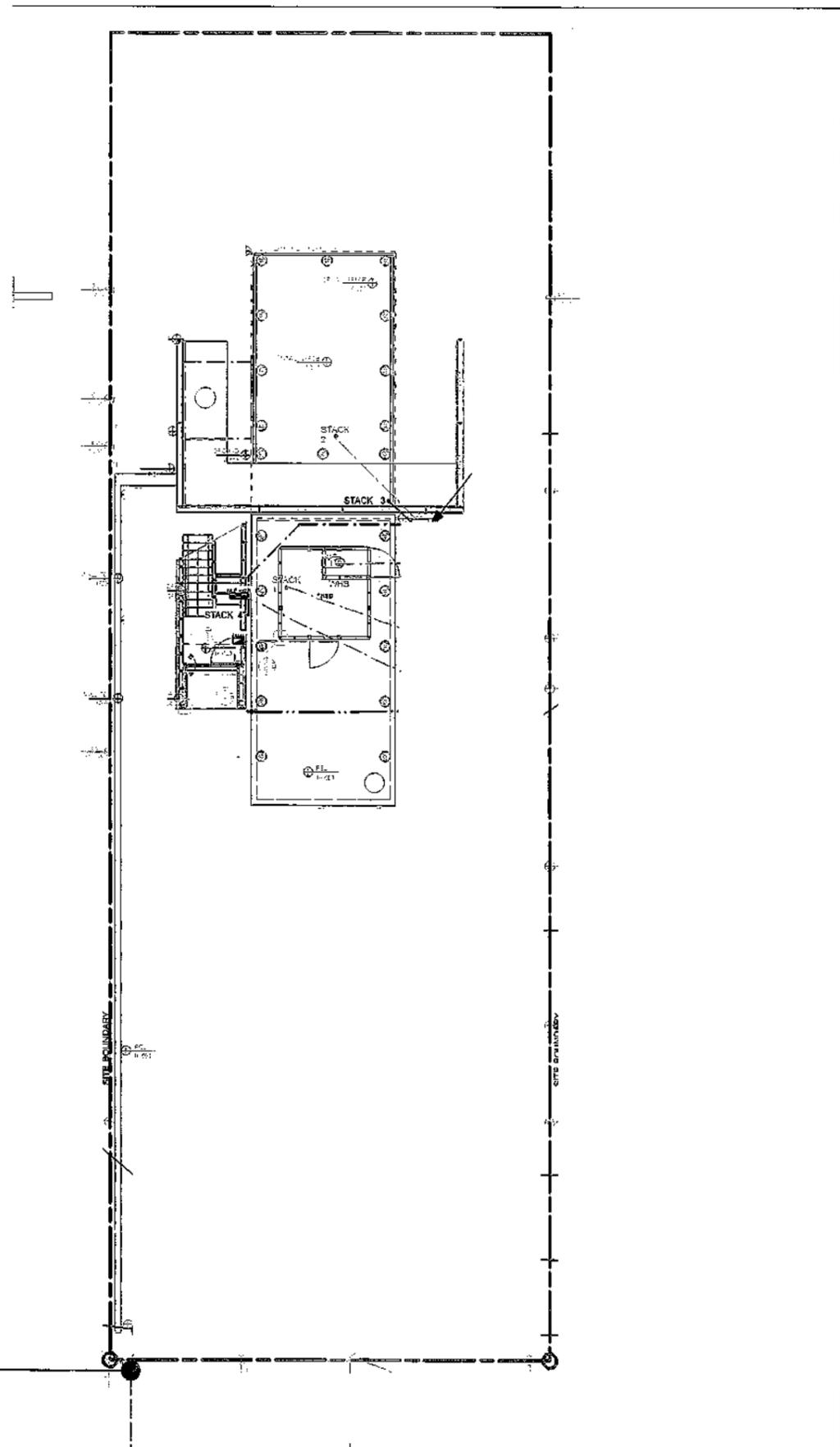
**DECLARATION**

I Justin Wright *[name of practitioner]*, LBP,  
state that I have applied the skill and care reasonably required of a competent design professional in carrying out or supervising the Restricted Building Work (RBW) described in this form, and that based on this, I also state that the RBW:

- Complies with the building code; or
- Complies with the building code subject to any waiver or modification of the building code recorded on this form.

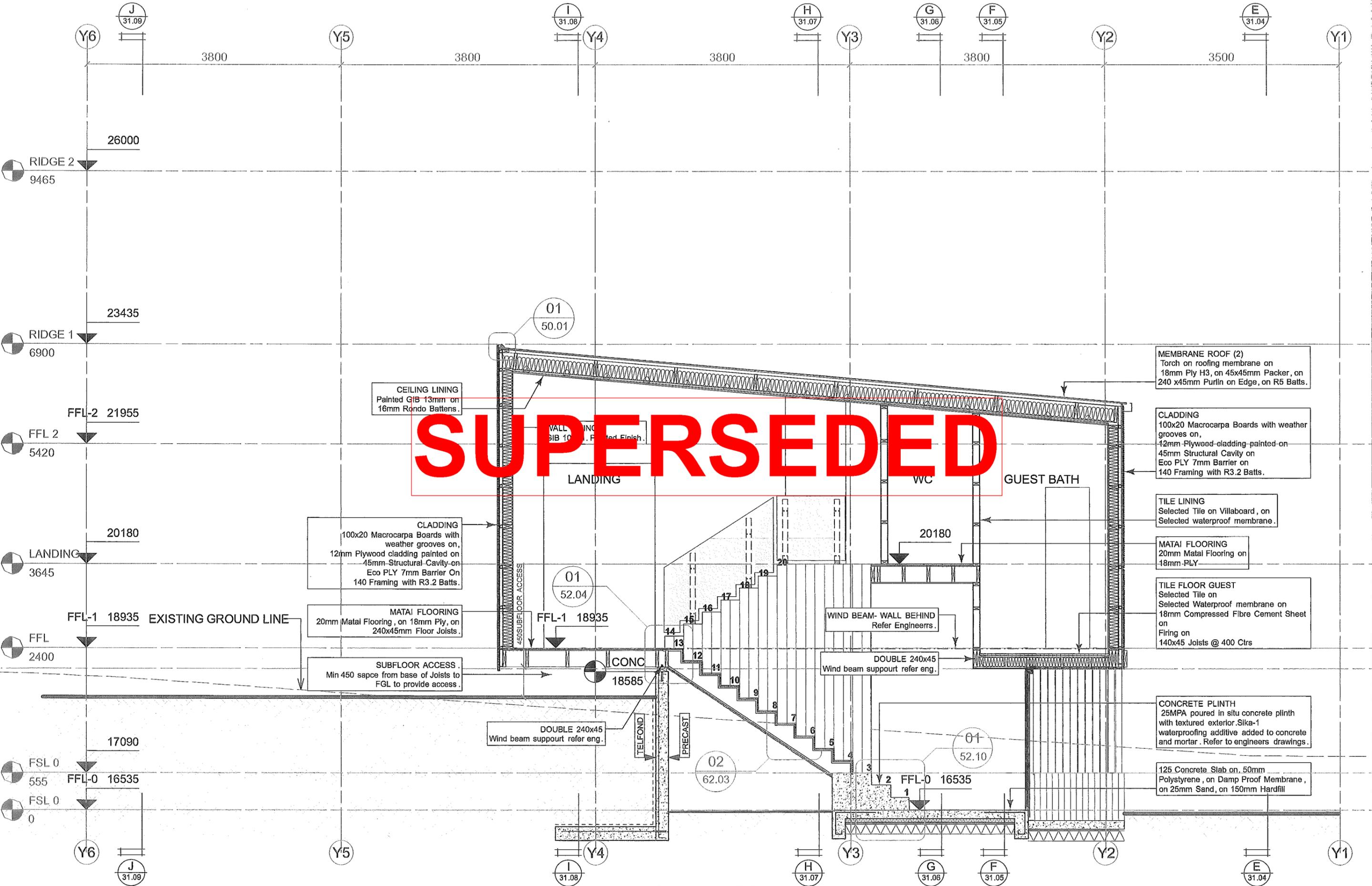
Signature:   
Date: 11.12.2013

000004  
 13 JAN 2016



CONNECT TO EXISTING SEWER AT BOUNDARY

1	SITE SERVICE PLAN 1:200 @A3
---	--------------------------------



**SUPERSEDED**

1307  
 O'Brien House  
 7 Tutere St Waikanae  
 Jill & Shane O'Brien

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 ASSEMBLY ARCHITECTS LIMITED  
 233 WILUS STREET, WELLINGTON  
 24 ESSEX AVE, ARROWTOWN  
 Justin Wright 021 555 333

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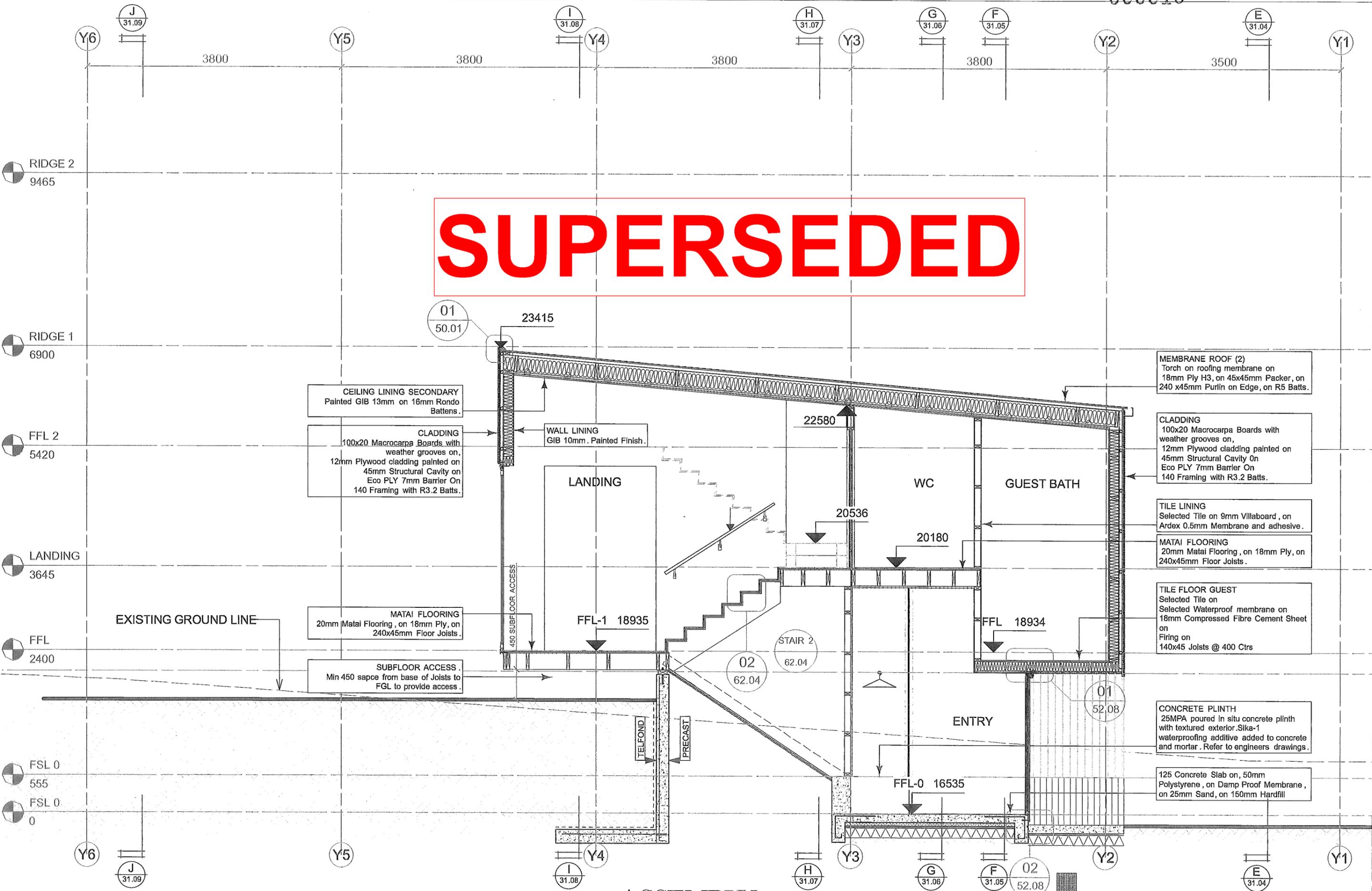
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Long Section A 31.00 A

DRAWING NUMBER REV

1307-0215.vzw

**SUPERSEDED**



CEILING LINING SECONDARY  
Painted GIB 13mm on 16mm Rondo  
Battens.

CLADDING  
100x20 Macrocarpa Boards with  
weather grooves on,  
12mm Plywood cladding painted on  
45mm Structural Cavity on  
Eco PLY 7mm Barrier On  
140 Framing with R3.2 Batt.

WALL LINING  
GIB 10mm . Painted Finish.

MEMBRANE ROOF (2)  
Torch on roofing membrane on  
18mm Ply H3, on 45x45mm Packer, on  
240 x45mm Purlin on Edge, on R5 Batt.

CLADDING  
100x20 Macrocarpa Boards with  
weather grooves on,  
12mm Plywood cladding painted on  
45mm Structural Cavity On  
Eco PLY 7mm Barrier On  
140 Framing with R3.2 Batt.

TILE LINING  
Selected Tile on 9mm Villaboard , on  
Ardex 0.5mm Membrane and adhesive.

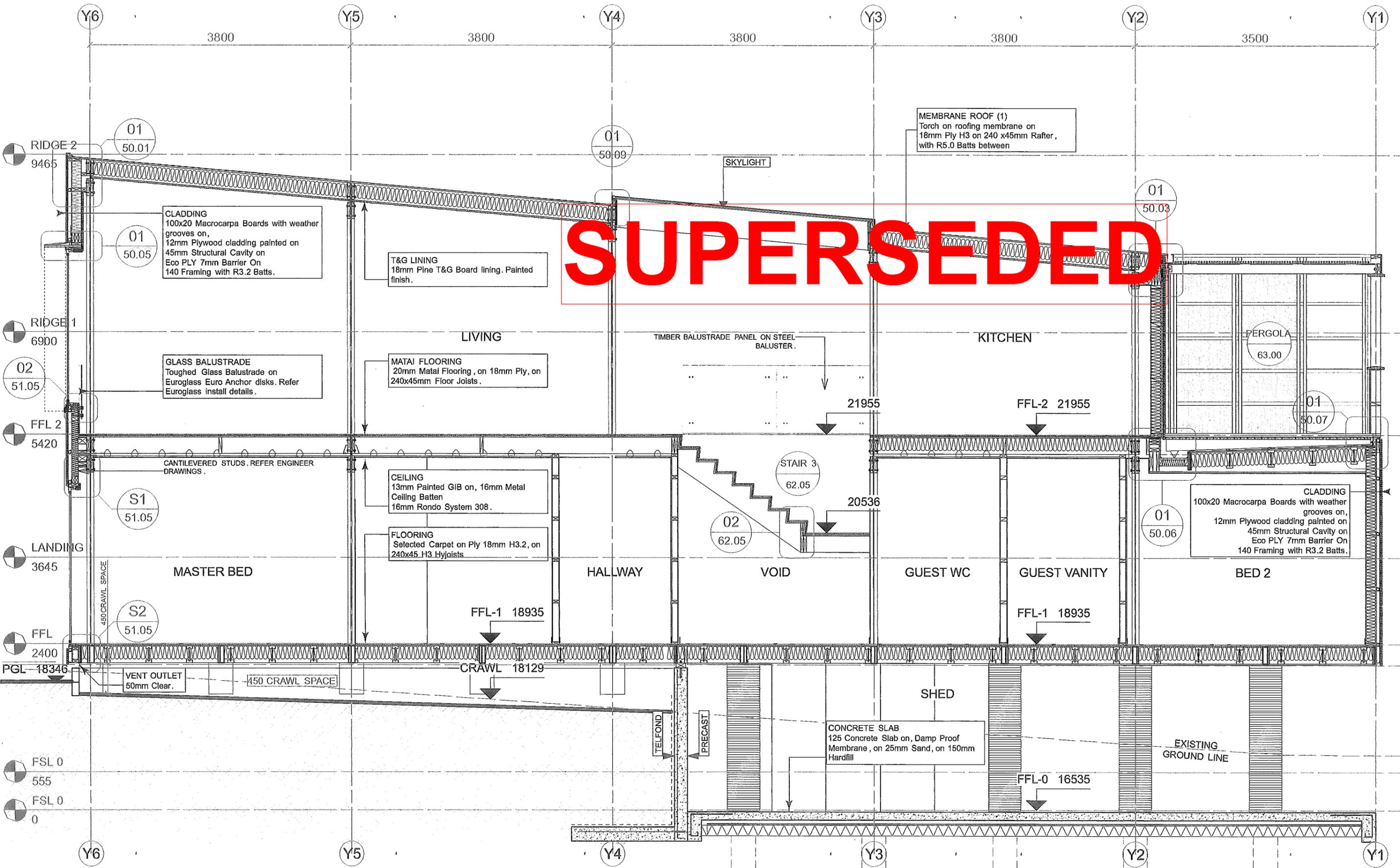
MATAI FLOORING  
20mm Matai Flooring , on 18mm Ply, on  
240x45mm Floor Joists.

TILE FLOOR GUEST  
Selected Tile on  
Selected Waterproof membrane on  
18mm Compressed Fibre Cement Sheet  
on  
Firing on  
140x45 Joists @ 400 Ctrs

CONCRETE PLINTH  
25MPa poured in situ concrete plinth  
with textured exterior. Sika-1  
waterproofing additive added to concrete  
and mortar . Refer to engineers drawings.

125 Concrete Slab on, 50mm  
Polystyrene , on Damp Proof Membrane ,  
on 25mm Sand, on 150mm Hardfill

**SUPERSEDED**



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 O'Brien House  
 7 Tutere St Waikanae  
 Jill & Shane O'Brien

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 Justin Wright 021 565 363

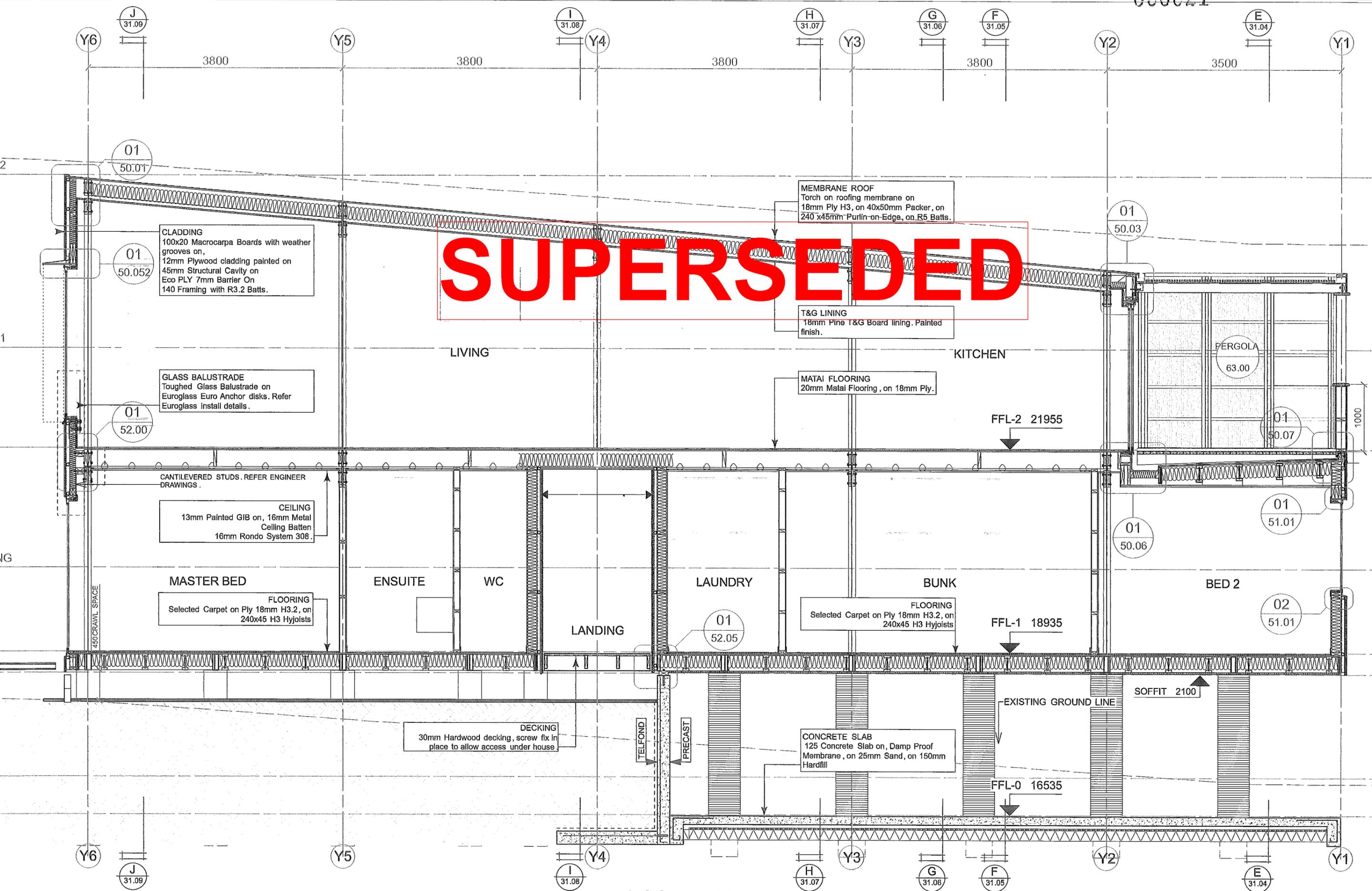
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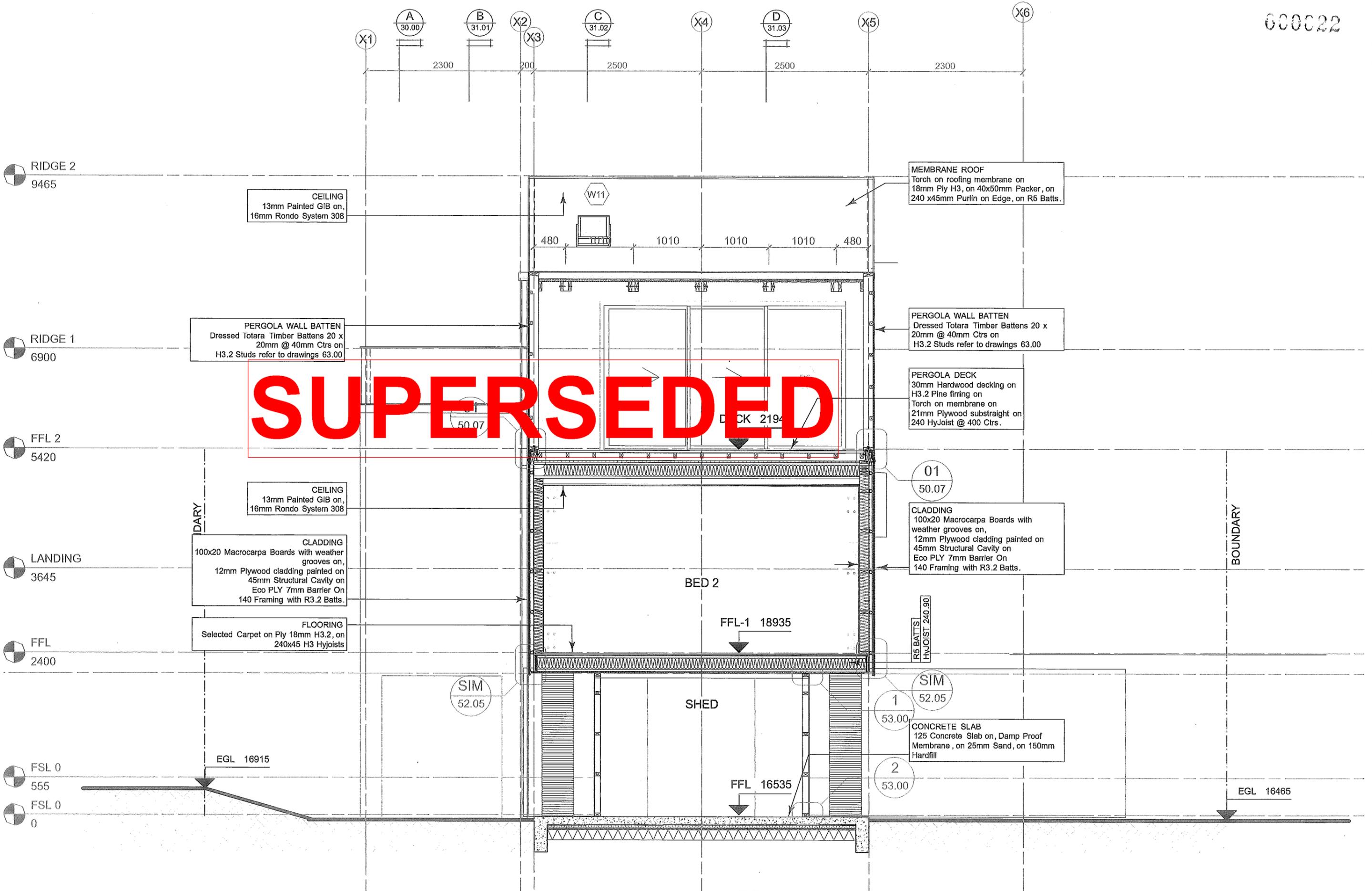
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Long Section C 31.02 A  
 DRAWING NUMBER REV  
 1307- 0015.v02

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RIDGE 2  
9465

RIDGE 1  
6900

FFL 2  
5420

LANDING  
3645

FFL  
2400

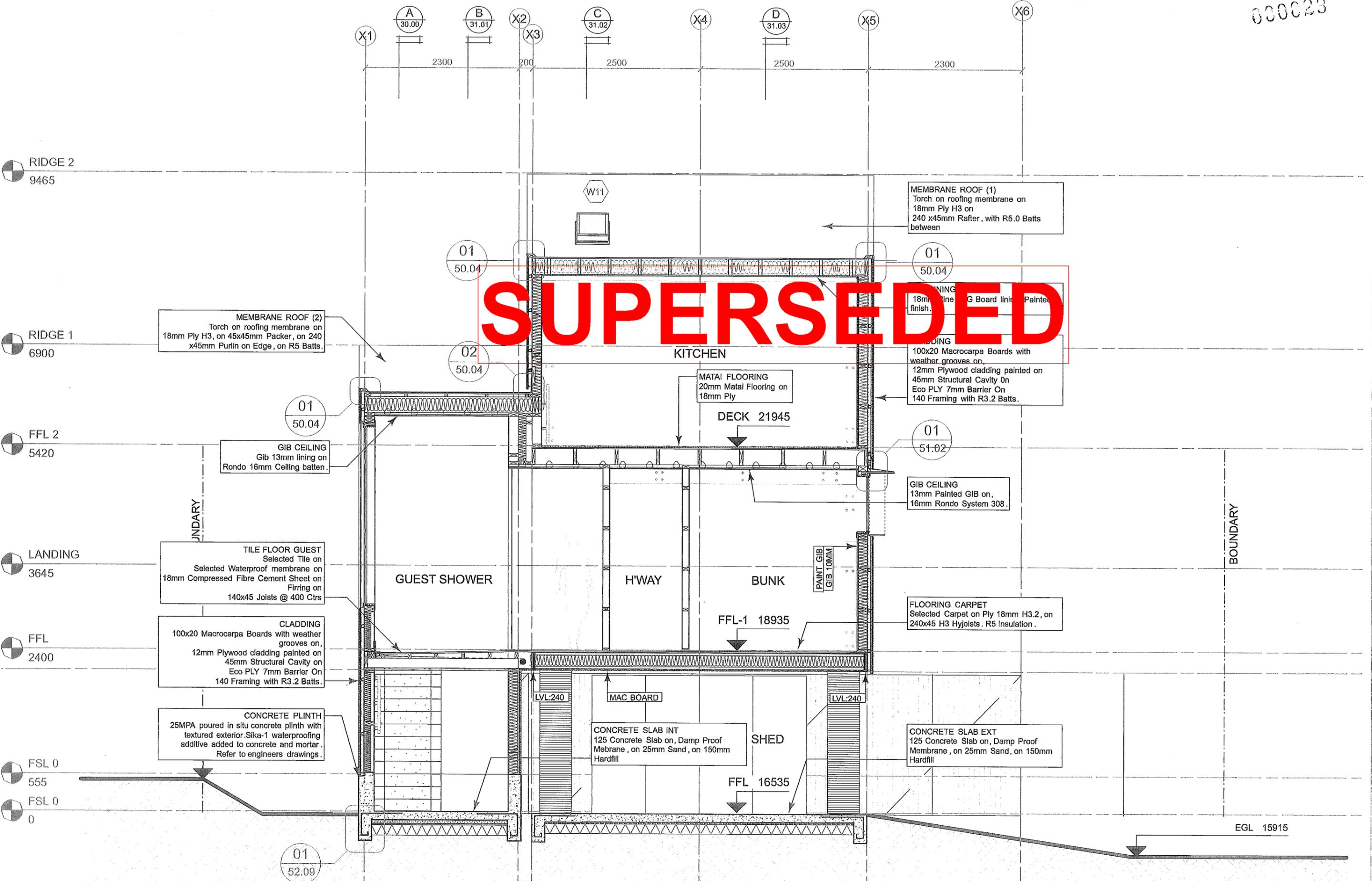
FSL 0  
555

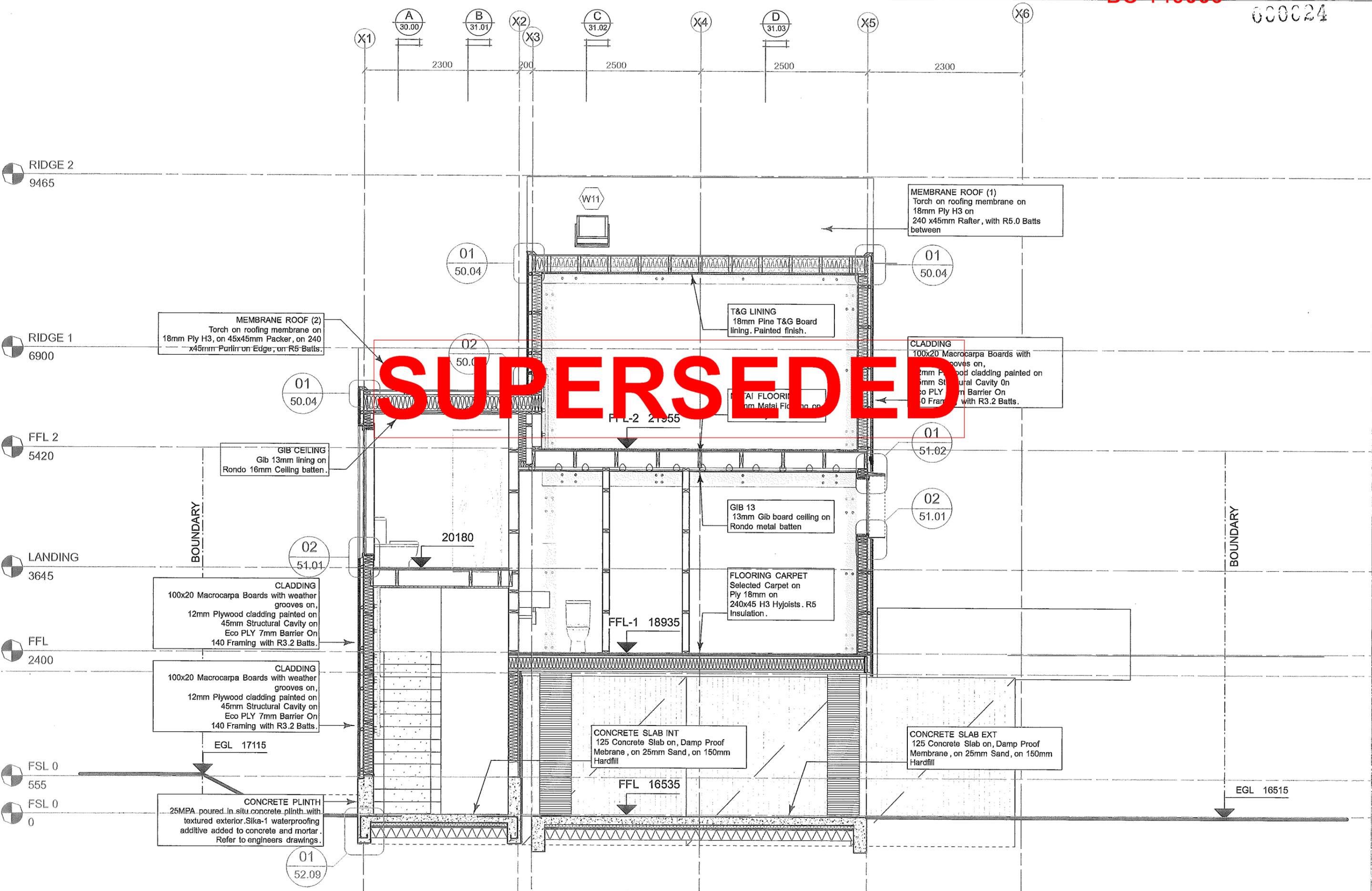
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DARY

BOUNDARY

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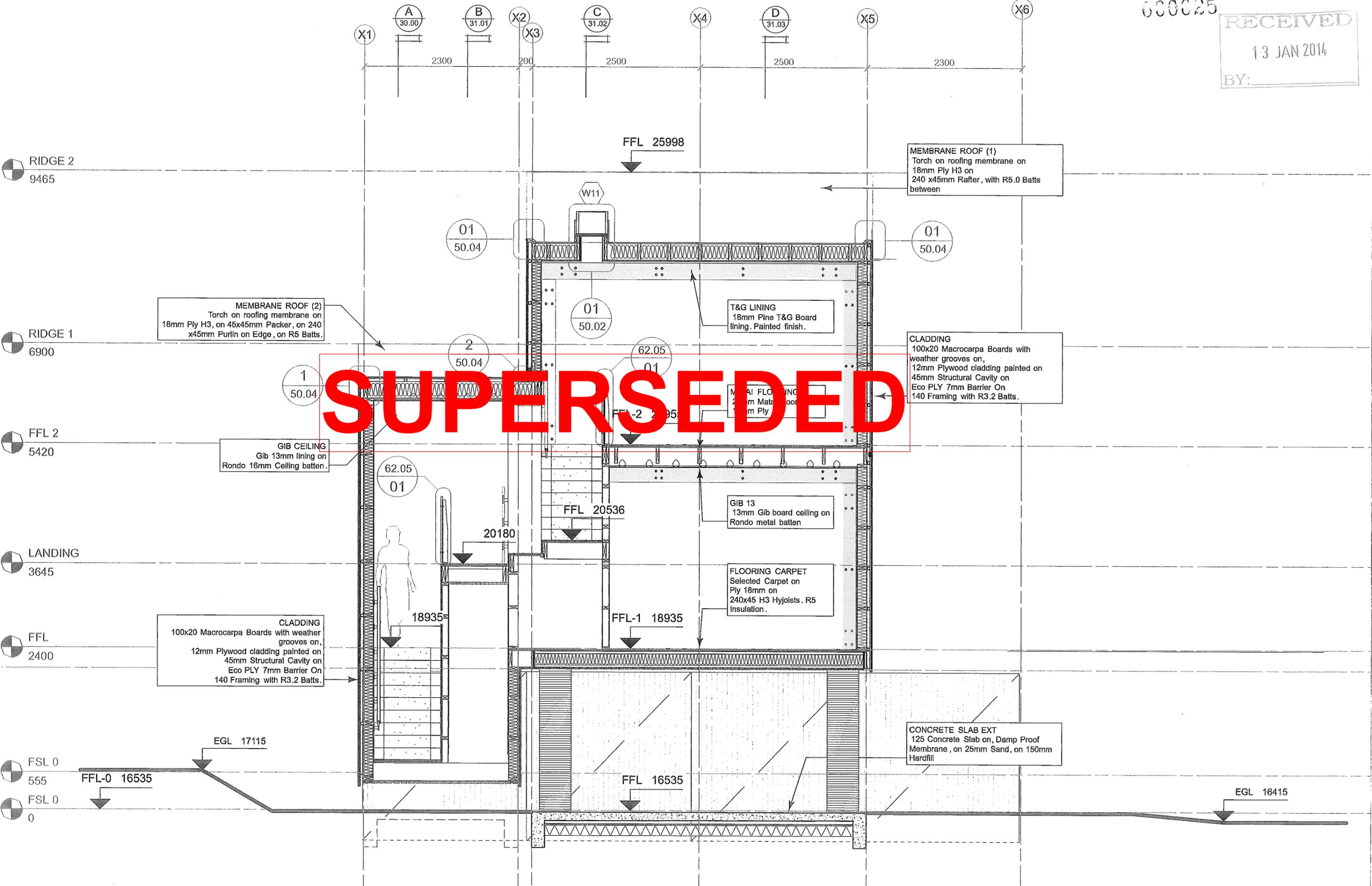
1307	O'Brien House 7 Tutere St Waikanae Jill & Shane O'Brien	© COPYRIGHT ASSEMBLY ARCHITECTS LIMITED 233 WILLIS STREET, WELLINGTON 24 ESSEX AVE, ARROWTOWN Justin Wright 021 555 363	A	10/12/13	BUILDING CONSENT
	PROJECT	NOT FOR CONSTRUCTION	ISS	DATE	NOTE

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Short Section G		31.06	A
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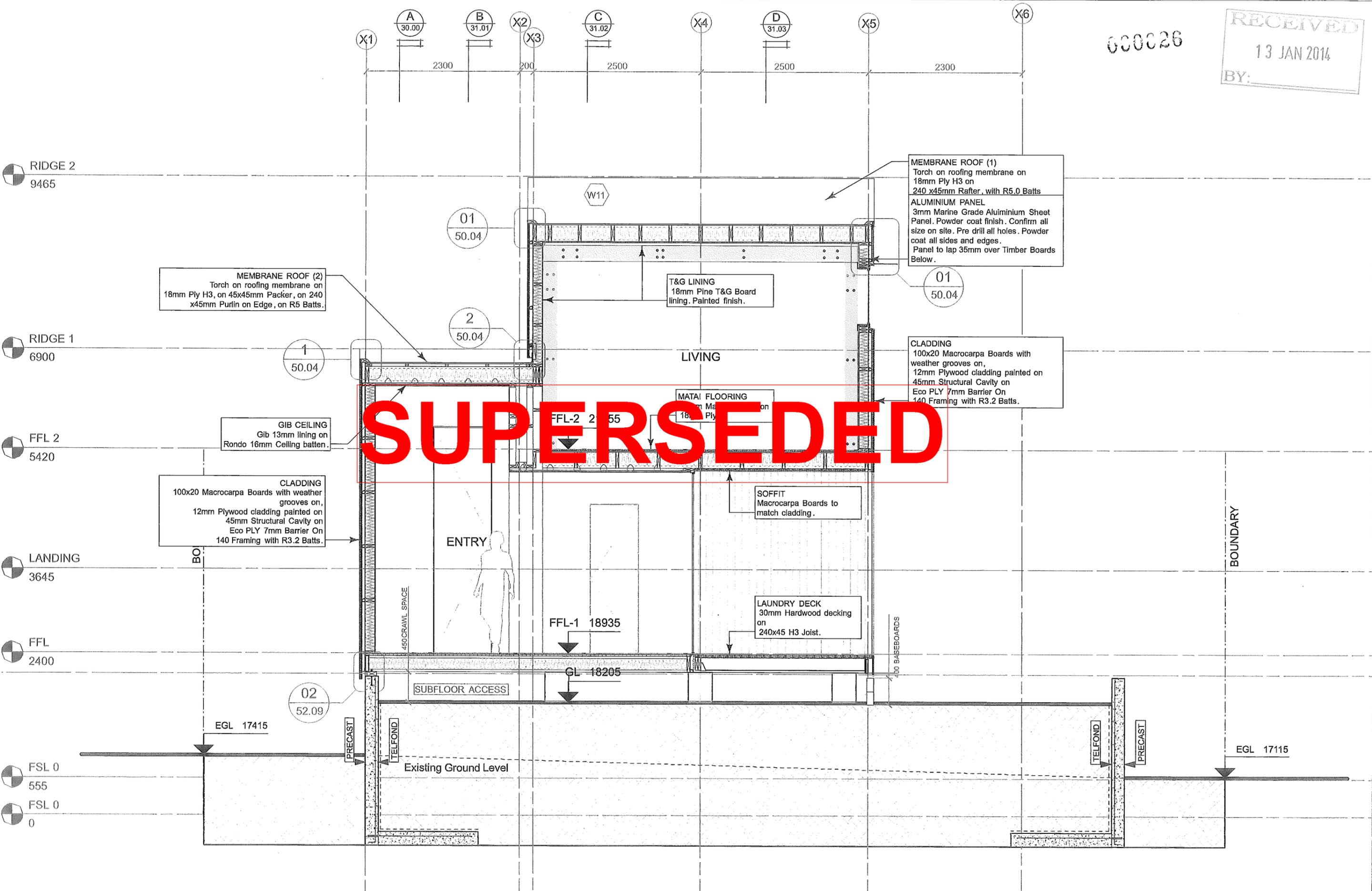
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	PROJECT	NOT FOR CONSTRUCTION	ISS DATE NOTE

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Short Section H		31.07	A
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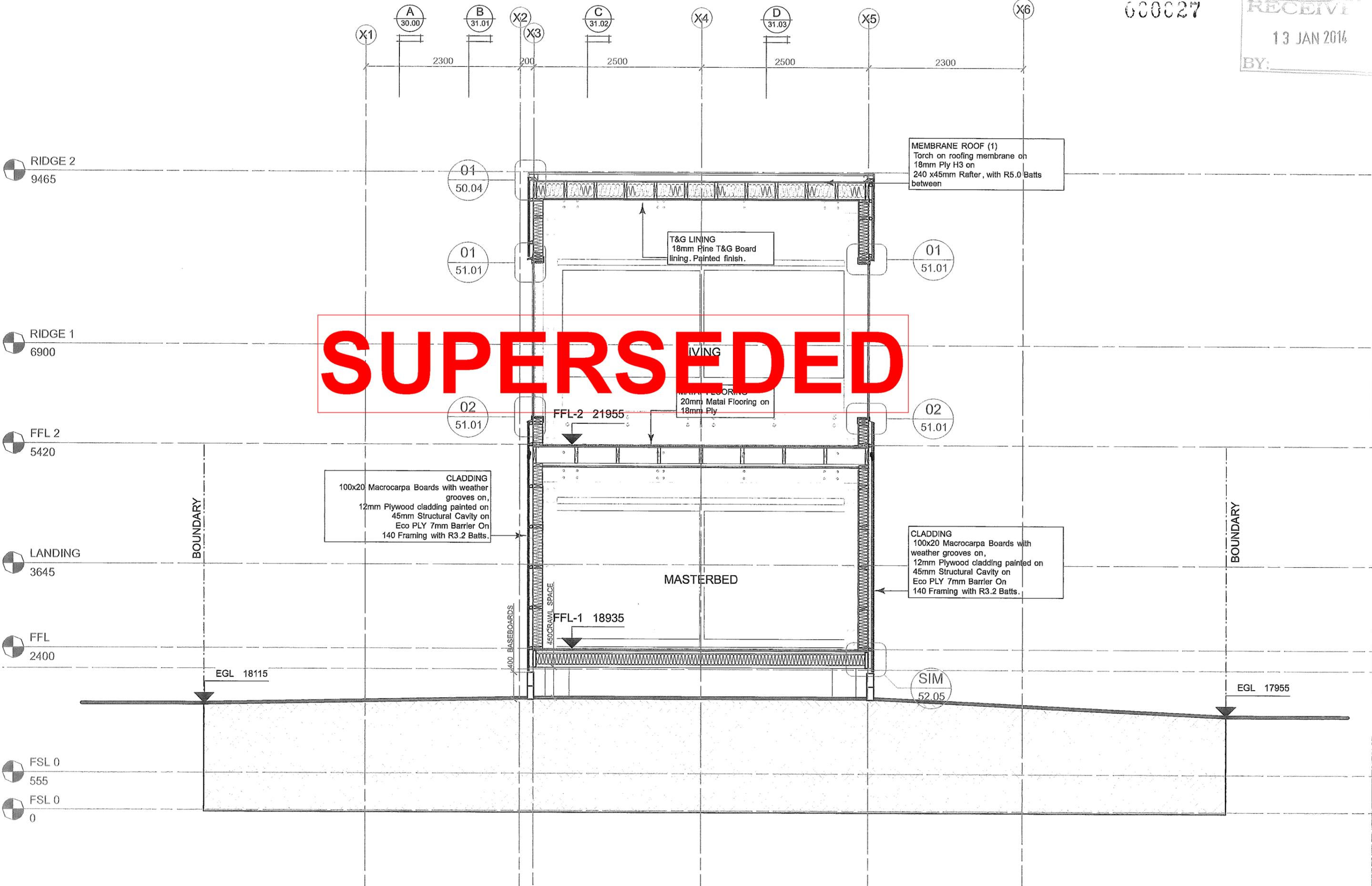


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	PROJECT	NOT FOR CONSTRUCTION	ISS	DATE	NOTE

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Short Section I		31.08	A
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ASSEMBLY ARCHITECTS LIMITED

DETAIL	DRAWING NAME	CURRENT REVISION	THIS ISSUE
	Year	13	
	Month	12	
	Day	10	
	ISSUE	1	
0	Document Transmittal	A	
00.00	Legend	A	
00.01	Legend	A	
00.02	Legend	A	
00.03	Legend	A	
10.00	Proposed Site Plan	A	
10.01	Existing Site Plan	A	
19.00	Slab Plan	A	
20.00	Level 0 General Plans	A	
20.01	Level 1 General Plans	A	
20.02	Level 2 General Plans	A	
22.00	Floor Frame	A	
26.00	Roof Plan	A	
30.01	Elevation NORTHEAST	A	
30.02	Elevation SOUTHEAST	A	
30.03	Elevation SOUTHWEST	A	
30.04	Elevation NORTHWEST	A	
31.00	Long Section A	A	
31.01	Long Section B	A	
31.02	Long Section C	A	
31.03	Long Section D	A	
31.04	Short Section E	A	
31.05	Short Section F	A	
31.06	Short Section G	A	
31.07	Short Section H	A	
31.08	Short Section I	A	
31.09	Short Section J	A	
50.01	Ridge Detail	A	
50.02	Roof/Skylight Detail	A	
50.03	Gutter/ Enclosed Deck Head Connection Detail	A	
50.04	Typical Barge/Apron Detail	A	
50.05	Aluminium Panel Barge Detail	A	
50.06	Stacker Sill/Deck Gutter Detail	A	
50.07	Enclosed Deck Parapet Detail	A	
50.08	Rain Water Head Detail	A	
50.09	Skylight Detail	A	
51.01	Typical Awning Window Detail	A	
51.02	Rebated Steel Window Details	A	
51.04	Internal Corner/Window Jamb Detail	A	
51.05	Level 2 Slider Detail	A	
51.06	Level 2 Sliding Door Jamb/Steel Facade Detail	A	
51.07	Internal Corner Flashing	A	
51.08	Typical Corner Detail	A	
51.09	Entry Board Set Out	A	
52.00	Cantilever Stud Detail	A	
52.05	Soffit/Bottom Cladding/Deck Detail	A	
52.08	Entry Door	A	
52.09	Footing Detail	A	
53.00	Internal Waterproofing Detail	A	
62.00	Internal Stair Plans	A	
62.01	Stair 1 Setout	A	
62.02	Stair 2/3 Setout	A	
62.03	OVERALL Stair Section	A	
62.04	Handrail Detail	A	
62.05	Steel Balustrade Detail	A	
63.00	Percola	A	
63.01	Percola	A	
64.00	Shed Wall Junctions	A	
64.01	Shed Corner Detail	A	
65.00	Entry Concrete	A	
66.00	Glass Balustrade	A	
70.00	Door Schedule	A	
70.01	Window Schedule	A	
80.00	Site Services Plan	A	
80.01	Plumbing Plan	A	
80.02	Plumbing Diagram	A	
80.03	SOAK PIT	A	
80.04	GREY WATER	A	
80.07	Roof Calc	A	
80.07C	Plumbing Water Tank	A	
80.07P	Plumbing Water Tank PLASTIC OPTION	A	
80.S	Plumbing Spec	A	
83.00	FIRE & VENTILATION PLAN	A	
86.00	Fitch Geometr	A	
86.01	Fitch Geometr	A	
SPEC	H1 Calc	A	

**SUPERSEDED**

THIS ISSUE	
ISSUE DATE	10/12/13
ISSUE NUMBER	1
ISSUE FOR	BUILDING CONSENT

Ensure that the lid of the tank/float valve is above the finished ground level

The plumber is to contact Aldrin Abad with the attached water connection form (159)when the toby is to be changed/modified 042964731 .the cost of this toby modification and any reinstatement work will be paid by the owner/agent when the invoice is sent out

RBW

the water storage tank is to be topped up by a 600lt per day restricted supply from the second connection on the modified toby.No additional connections permitted.Two water mains required! one for house one for the tank.

Council's Manifold/meter box and base and lid are to be protected/reinstated if disturbed to original specification.The cost to reinstate any damage to Council's assets will be paid for by the contractor/property owner.

No Hose Taps on the town water supply permitted

water pipes running to w.c's and all hose taps are to be marked non potable for the entire lenght

BUILDING CONSENT  
10/12/13

ensure the tank used has water storage capacity of no less than 10,000lt.a producer statement from the tank manufacturer confirming this will need to be provided before a CCC can be issued

1307  
O'Brien House  
7 Tutere St Waikanae  
Jill & Shane O'Brien

1  
Document Transmittal

**DECORATIVE FINISHES**

**ALUMINIUM PANEL**

40 Carpentry 408 Decorative  
ALUMINIUM PANEL  
3mm Marine Grade Aluminium Sheet Panel.  
Powder coat finish: Dulux Duratec

**PANEL FIXING**

Stainless Steel Square Drive Screw.  
Confirm Fixing Row Setouts with architect.

Check and Confirm all sizes on site.  
Pre drill all holes.  
Powdercoat all sides and edges.  
Panels to lap 35mm over Timber Boards at bases.

**MACROCARPA RAINSCREEN**

40 Carpentry 408 Decorative  
WEATHERGROOVED TIMBER BOARDS  
Heart Macrocarpa 20 x 100mm Boards with MIN  
6x6mm weathergrooves in accordance ES2.A1 Figure  
119.  
Fixed to cadding as decorative rainscreen.

FIXING: Countersunk sqr drive Stainless Steel Screws  
2/60 x 3 @ 600 ctrs

**LINING**

**GIB 10**

40 Carpentry 511 Lining  
GIB PLASTERBOARD WALL LININGS  
10mm Standard Gib Board  
Install to manufacturers recommendation.

Installed and plastered to Level 4 finish ready for  
application of selected paint finish. Refer 6 FINISHES.

**GIB: AQUA**

40 Carpentry 511 Lining  
GIB AQUA WET AREAS PLASTERBOARD LININGS  
Install to manufacturers recommendations to Wet area  
Walls & Ceilings

Installed and plastered to Level 4 finish ready for  
application of selected paint finish. Refer 6 FINISHES.

**T&G LINING**

40 Carpentry 511 Lining  
T&G LINING  
18mm Pine T&G Board lining.  
Painted finish.

**VILLABOARD**

40 Carpentry 511 Lining  
VILLABOARD LINING AS WET AREA WALL TILING  
SUBSTRATE  
Manufacturer: James Hardie  
Type: Fibre reinforced cementitious sheet lining  
Thickness: 9mm  
Install to manufacturers requirements and to meet  
selected waterproof membrane requirements. as a  
substrate for wet area wall tiling.

Wall framing requirements for tiled walls: Studs at max  
400 ctrs, noggs 600 ctrs.  
Note: maximum tile thickness on 600mm ctr studs =  
13mm.

**FLOORING SUBSTRATE**

**FIBERCEMENT 18**

40 Carpentry 520 SUBSTRATE  
18MM COMPRESSED FIBERCEMENT SHEETING  
Installed in accordance with Manufacturer Requirements to  
Wet Area Floors Under tiling.

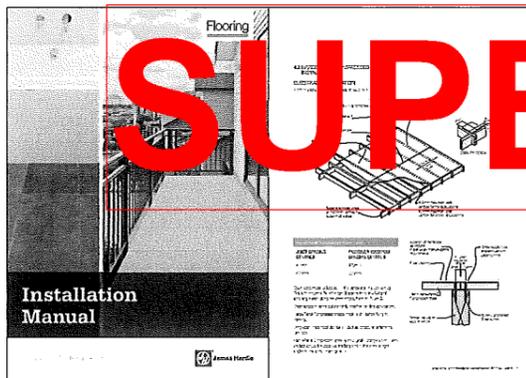
Installation to meet requirements of NZBC E3, 3.1.1.

Install ON Joists at 400mm ctrs max, with Nogs at 1200mm  
max supporting all sheet edges.

Fixings: All Holes Pre-drilled to manufacturer requirements.  
50 x 10g Cornsheet Stainless Steel Screws.

In Wet Areas:  
Fixings Countersunk 2-3mm below surface and flushed over  
with 2 part epoxy resin.  
All Joints must be tied with 200mm strip of fiberglass mesh  
reinforcement embedded into the waterproofing membrane.

Refer Waterproofing note for Waterproofing Membrane to wet  
areas. Ardex Superflex Primer Waterproofing Membrane  
System.



**CEILING LINING**

**GIB 13**

40 Carpentry 531 Ceiling  
GIB PLASTERBOARD CEILING LINING / DIAPHRAGM  
13mm Gib Ultralite. Install to BRANZ appraisal 97  
(2008) and current manufacturer instructions. Fixed to  
Gib Rondo battens.

Installed and plastered to Level 4 finish ready for  
application of selected paint finish.

Refer to Structural Engineers Bracing Plan for bracing  
requirements

**RONDO**

40 Carpentry 531 Lining  
GIB RONDO Metal Batten System  
Install in accordance with Manufacturers installation  
instructions.

**43 Metal Window Door**

**ALUMINIUM WINDOW DOOR**

**SKYLIGHTS**

43 Metal Windows & Doors 432  
BESPOKE SKYLIGHTS: Install Skylights as per Details  
FRAME MATERIAL: Aluminium. refer drawings for Ullrich  
Sections.  
Finish: Dulux Duratec Powdercoat for environment Zone D.

SKYLIGHT GLAZING: Double Glazing 6mm / 12mm / 6.38  
Laminated Inner pane. Both Layers Toughened. All silicone  
joints to be structural silicone suitable for exposure to UV

STRUCTURAL SEALANT: Dow Corning® 795 Silicone Structural  
Sealant between aluminium and glass. Install accordance with  
Manufacturers installation requirements.

**WINDOW ALUM**

43 Metal Windows & Doors 432  
ALUMINIUM WINDOWS AND DOORS  
SELECTED PROFILES.  
MATERIAL: Aluminium  
Finish: Dulux Duratec Powdercoat to suit Zone D.

Install Windows to manufacturer recommendations and  
W&D Details. Window manufacturer to supply BRANZ  
support as required.

**POWDERCOAT: DURATEC**

43 Metal Windows & Doors 432  
DURATEC POWDERCOATING TO ALL EXTERNAL  
ALUMINIUM WINDOWS AND ASSOCIATED FLASHINGS  
IN SEA SPRAY CORROSION ZONE.  
15 Year Warranty.

**Dulux Duratec®**  
Worth doing, worth Dulux.  
POWDER & INDUSTRIAL COATINGS

Super Durable Powder Coating	Product Code:	W40 Line																								
Specification met:	Meets and exceeds requirements of AS3715, BS6490, AAMA2604.																									
Description:	Dulux Duratec is a thermally stable, long lasting, durable powder coating system for aluminium. It is a high performance, self-priming, self-leveling, and highly performance powder coating system with the performance requirements of AAMA2604 (equivalent to ANSIPAN 5070). It is a high quality, self-priming, self-leveling, and highly performance powder coating system.																									
Features:	Benefits:																									
15 year life span	Guaranteed performance in corrosive environments																									
15 year colour retention	Excellent colour retention																									
High level adhesion	Colour is stable in any pH range																									
Good flow rate	Smooth film appearance																									
No solvents or vapours	Low weight and pollution in the environment																									
100% dry	Reduced risk to health																									
Tough powder	Highly resistant to abuse																									
Uses:	Dulux Duratec is a powder coating system for aluminium. It is used for a wide range of applications including window frames, door frames, and structural steelwork in corrosive environments.																									
Performance Guide:	<table border="1"> <thead> <tr> <th>Weather</th> <th>Exposure</th> <th>Substrate</th> <th>Exposure</th> </tr> </thead> <tbody> <tr> <td>Wet</td> <td>Exposure to weather and pollution in an urban environment</td> <td>Aluminium</td> <td>Exposure to weather and pollution in an urban environment</td> </tr> <tr> <td>Blue</td> <td>Exposure to weather and pollution in a coastal environment</td> <td>Aluminium</td> <td>Exposure to weather and pollution in a coastal environment</td> </tr> <tr> <td>Salt</td> <td>Exposure to weather and pollution in a salt water environment</td> <td>Aluminium</td> <td>Exposure to weather and pollution in a salt water environment</td> </tr> <tr> <td>Marine</td> <td>Exposure to weather and pollution in a marine environment</td> <td>Aluminium</td> <td>Exposure to weather and pollution in a marine environment</td> </tr> <tr> <td>Flexibility</td> <td>Exposure to weather and pollution in a flexural environment</td> <td>Aluminium</td> <td>Exposure to weather and pollution in a flexural environment</td> </tr> </tbody> </table>		Weather	Exposure	Substrate	Exposure	Wet	Exposure to weather and pollution in an urban environment	Aluminium	Exposure to weather and pollution in an urban environment	Blue	Exposure to weather and pollution in a coastal environment	Aluminium	Exposure to weather and pollution in a coastal environment	Salt	Exposure to weather and pollution in a salt water environment	Aluminium	Exposure to weather and pollution in a salt water environment	Marine	Exposure to weather and pollution in a marine environment	Aluminium	Exposure to weather and pollution in a marine environment	Flexibility	Exposure to weather and pollution in a flexural environment	Aluminium	Exposure to weather and pollution in a flexural environment
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Chemical Resistance:	<table border="1"> <thead> <tr> <th>Alcohol</th> <th>Acid</th> <th>Alkali</th> <th>Hydrochloric Acid</th> </tr> </thead> <tbody> <tr> <td>Good</td> <td>Good</td> <td>Good</td> <td>Good</td> </tr> <tr> <td>Good</td> <td>Good</td> <td>Good</td> <td>Good</td> </tr> <tr> <td>Good</td> <td>Good</td> <td>Good</td> <td>Good</td> </tr> </tbody> </table>		Alcohol	Acid	Alkali	Hydrochloric Acid	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good								
Alcohol	Acid	Alkali	Hydrochloric Acid																							
Good	Good	Good	Good																							
Good	Good	Good	Good																							
Good	Good	Good	Good																							

DULUX Powder & Industrial Coatings Rev 6 Feb 2010 Page 1 of 3  
Uncontrolled document unless stamped

**ALUMINIUM FLASH**

43 Metal Windows & Doors 432  
WINDOW FLASHINGS: Corrosion Zone D.  
MATERIAL: in accordance with E2/AS1, 4.3  
Aluminium: min 1mm thick, 5000 series  
POWDER COATED to match windows.

**44 Glazing**

**GLAZING**

**SKYLIGHT GLAZING**

44 Glazing 432  
SKYLIGHT GLAZING:  
Structural Double Glazing 6mm / 12mm / 6.38 Laminated  
Inner pane. Both Layers Toughened.  
All silicone selected to be structural silicone suitable for  
exposure to UV

Glazing Contractor Designed & Selected Appropriate glazing  
to comply with safety requirements of NZS:4223 and H1  
Energy Efficiency Requirements.  
Refer details for coordination required.

**DBLE GLAZE**

44 Glazing 441 Glazing  
INSULATING GLAZING UNITS  
Metro Glasstech Double Glazing.  
Manufacturer Designed & Selected appropriate glazing.

To comply with safety requirements of NZS:4223. Refer  
details for coordination required.

GlassTech Low E to surface 3 (inside of inside pane).  
12mm spacer, Argon filled.

GlassTech Setting blocks as per manufacturer  
recommendation

**GLAZED BALUSTRADES**

44 Glazing 442 BALUSTRADES  
EUROGLASS Euroanchor Residential Balustrade System.  
Install to Manufacturers Requirements.  
System meets requirements of NZBC B1, F2 and F4.

WINDZONE: Very High  
GLAZING: 12mm Viridian Balustrade 100 Toughened Safety  
Glass.  
MAX HEIGHT: 1100mm Above Top Anchor Fixing Point.  
MIN GLAZED PANEL WIDTH: 1000mm

FIXING: SS316 M10 Lagscrew into Timber.  
FIXING SETOUT: as per Drawings.

**45 Roofing**

000004

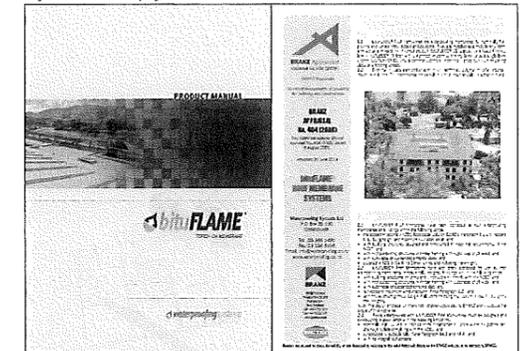
**MEMBRANE ROOFING**

**MEMBRANE**

45 Roofing 451 MEMBRANES  
BITUFLAME MEMBRANE ROOFING  
Install to meet requirements of E2/AS1 for Membrane  
Roofs and Decks, and BRANZ Appraisal 404 [2008] for  
bituflame touch-on membrane roofing.

Installation by trained and qualified applicator.  
refer to drawings for further details.

Substrate: 18mm H3.2 CCA Treated Plywood.  
WPS Recommendation of 2 layer bituFlame touch-on  
System over plywood substrates.



**RAINWATER DISPOSAL**

**DP 100**

45 Roofing 455  
80mm ROUND DOWN PIPE  
Material to Match Roofing.  
Provide warranty.

refer to roofing plan for rainwater calculations  
Install to manufacturers requirements

**GUTTER: 125 BOX**

45 Roofing 455  
RAIN WATER SPOUTING  
125 Box.  
Material to Match Roofing  
Provide warranty.

Refer to Roofing Plan for Rainwater Calculations.  
Install to manufacturers requirements

**RAINWATER HEAD**

45 Roofing 455  
CUSTOM FORMED RAINWATER HEAD.  
Install to meet Requirements of NZBC E2/AS1, 8.5.6 and  
Figure 63.

Refer Details.

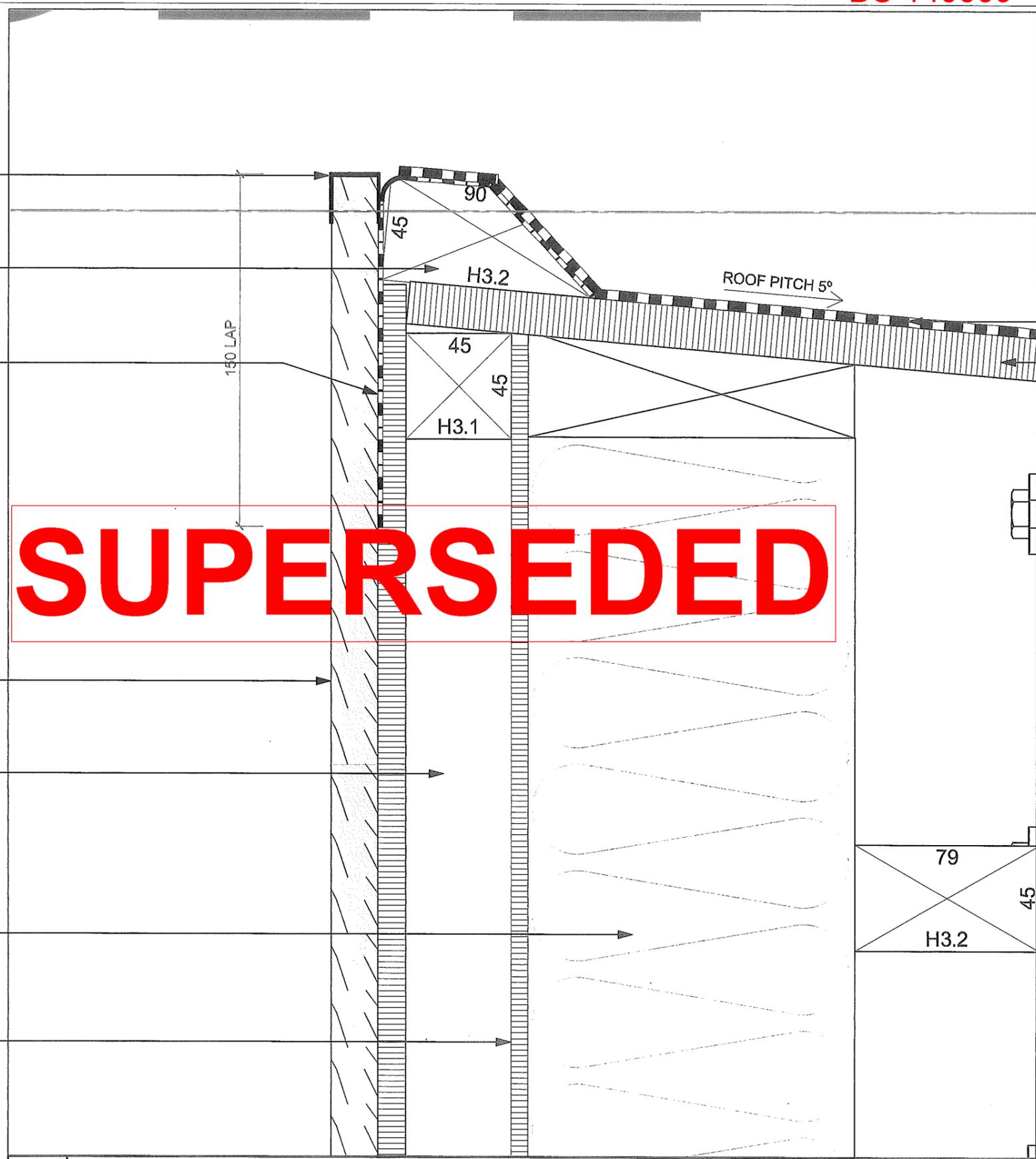
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 BY:

- CAPPING TO BOARDS**  
Ulrich UA 1573 25 x 25 x 1.4mm Aluminium Capping.  
Powder coat to match window joinery.
- ROOF EDGE FILLET**  
Ex90x45mm H3 timber. Installed in accordance with E2/AS1 Figure 61 and BituFlame Detail Page 25.
- LAP MEMBRANE DOWN WALL**  
Lap roofing membrane down wall 150mm.  
Rebate out of ply cladding. Metalex exposed face.

**SUPERSEDED**



- MEMBRANE ROOF**  
Selected BRANZ appraised torch on roofing membrane. Installed in accordance with Manufacturers instructions and E2/AS1 Section 8.5.
- MEMBRANE SUBSTRATE**  
18MM H3.2 Treated ply. Install in accordance with E2.AS.1 Section 8.5.5.1 Plywood manufacturer, and selected Membrane roofing requirements.

- WEATHERGROOVED TIMBER BOARDS**  
Heart Macrocarpa 20 x 100mm Boards with MIN 6x6mm weathergrooves in accordance ES2.A1 Figure 119.
- CAVITY 45MM STRUCTURAL**  
45mm ventilated cavity. Rosen Feld Kidson RKV45-BATT 45 mm structural cavity batten.  
Horizontal battens to be Treated Pine H3.2, Castilled with min 1000mm2 opening per metre to allow ventilation equivalent to vermin proof closer, E2/AS1 Section 9.18.  
Battens to be fixed to each studs at 600mm ctrs. Refer engineers calc for fixing.
- WALL INSULATION**  
R3.2 Fibre Glass. Install to manufacturers instructions.
- RIGID AIR BARRIER**  
Ecoply 'Barrier' 7MM Plywood. Install to manufacturers instructions.

1 Ridge Detail  
 50.01 1:2 @ A3

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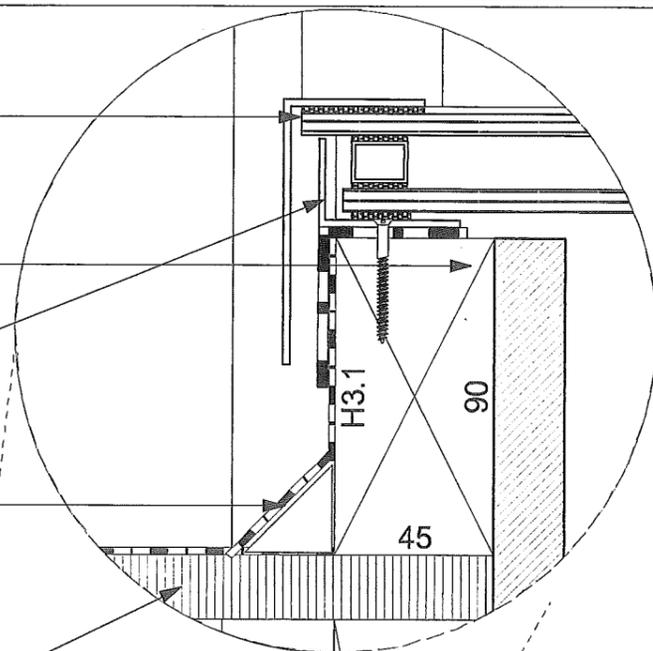
SKYLIGHT EDGE FLASH  
1.6 x 70 x 40mm Eq Aluminium angle ULLIRCH:  
UA5938 . (or sim).  
Powder coated

STRUCTURAL SEALANT .  
Dow Corning® 795 Silicone Structural Sealant  
between aluminium and glass. Install  
accordance with Manufacturers installation  
requirements .

Ex 1.6 x 40 x 25mm Eq Aluminium angle  
UA1068 (Ripped on site).Powder coated.

MEMBRANE ROOF  
Selected BRANZ appraised torch on roofing  
membrane . Installed in accordance with  
Manufacturers instructions and E2/AS1 Section  
8.5.

MEMBRANE SUBSTRATE  
18MM H3.2 Treated ply.Install in accordance  
with E2.AS.1 Section 8.5.5.1 Plywood  
manufacturer , and selected Membrane roofing  
requirements .



**SUPERSEDED**

SKYLIGHT GLAZING  
Double Glazing 6mm / 12mm / 6.38  
Laminated Inner pane.  
Both Layers Toughened . All silicone joints to be  
structural silicone suitable for exposure to UV

25mm H3 Fillet

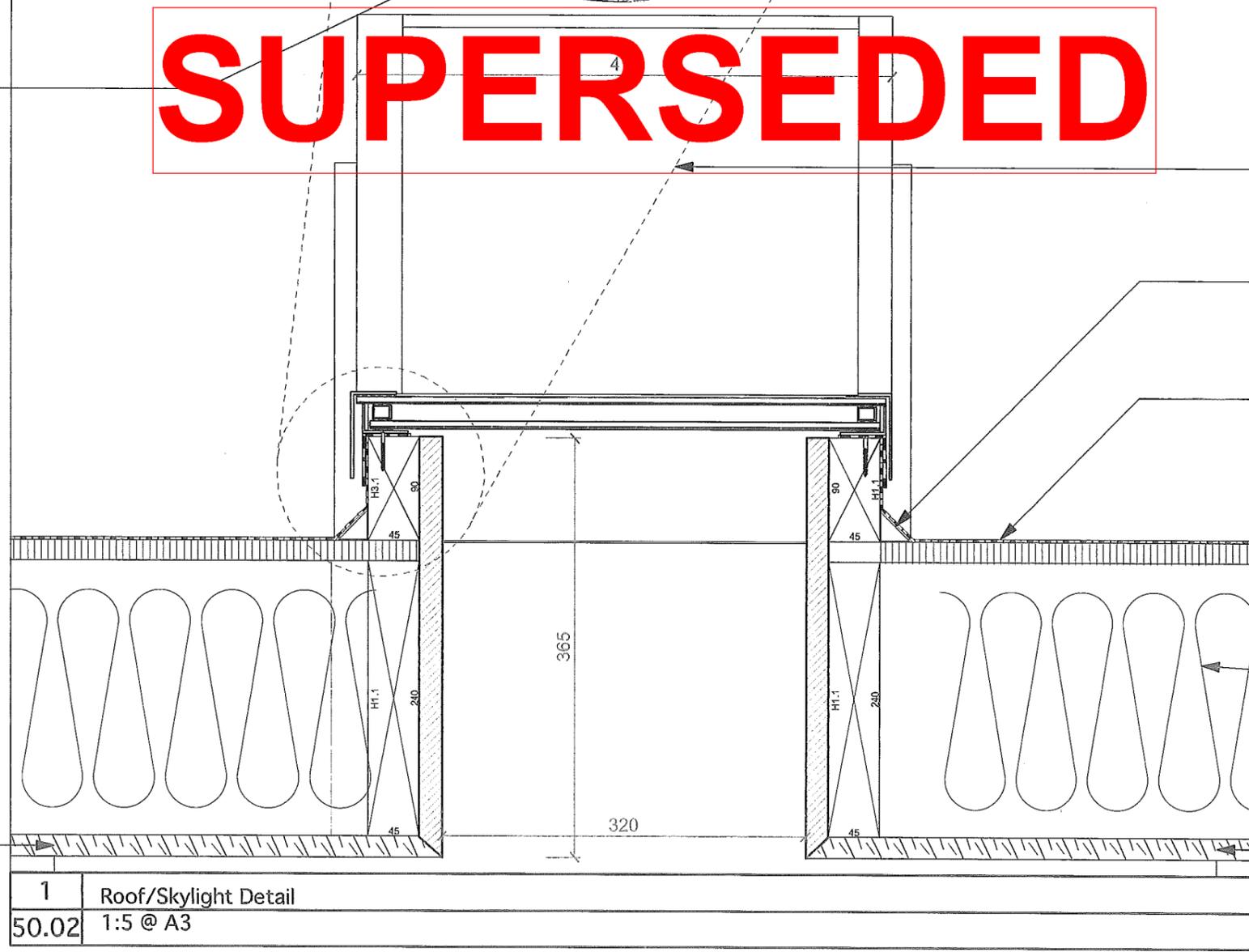
MEMBRANE ROOF  
Selected BRANZ appraised torch on roofing  
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Manufacturers instructions and E2/AS1 Section  
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MEMBRANE SUBSTRATE  
18MM H3.2 Treated ply.Install in accordance  
with E2.AS.1 Section 8.5.5.1 Plywood  
manufacturer , and selected Membrane roofing  
requirements .

ROOF INSULATION  
R5 Fibre Glass . Install to manufacturers  
instructions .

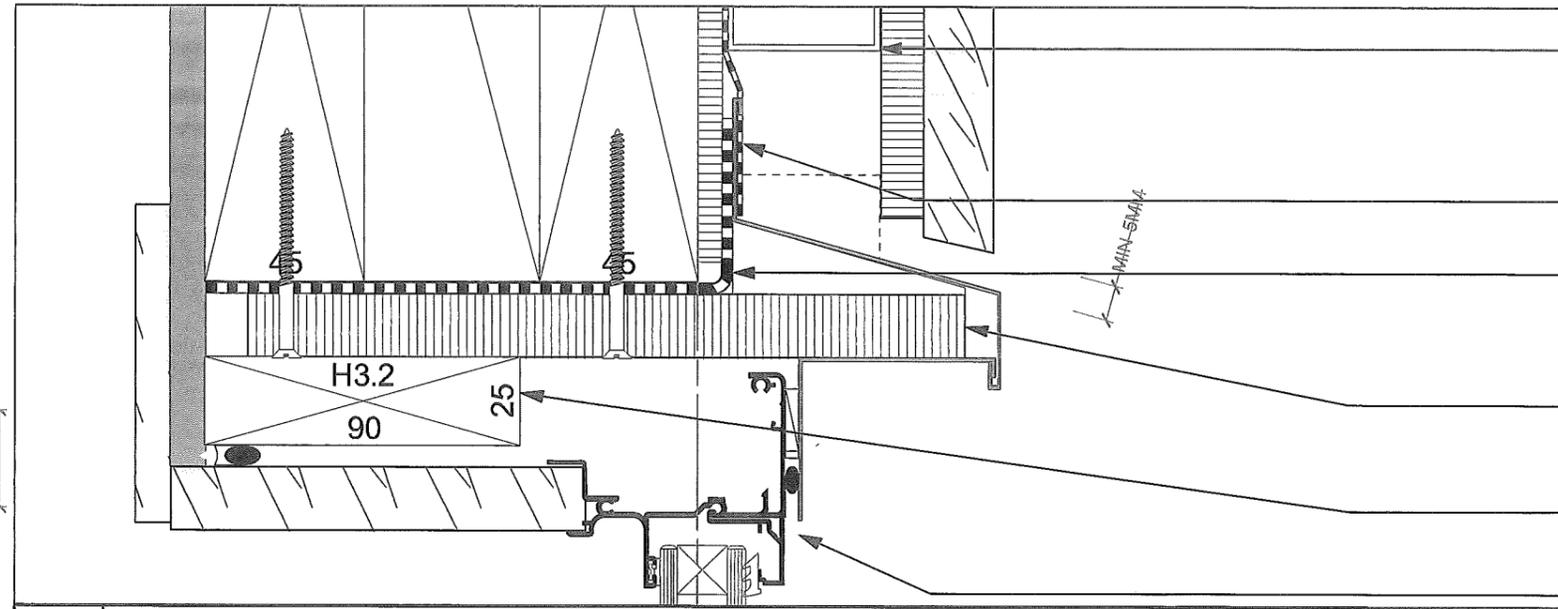
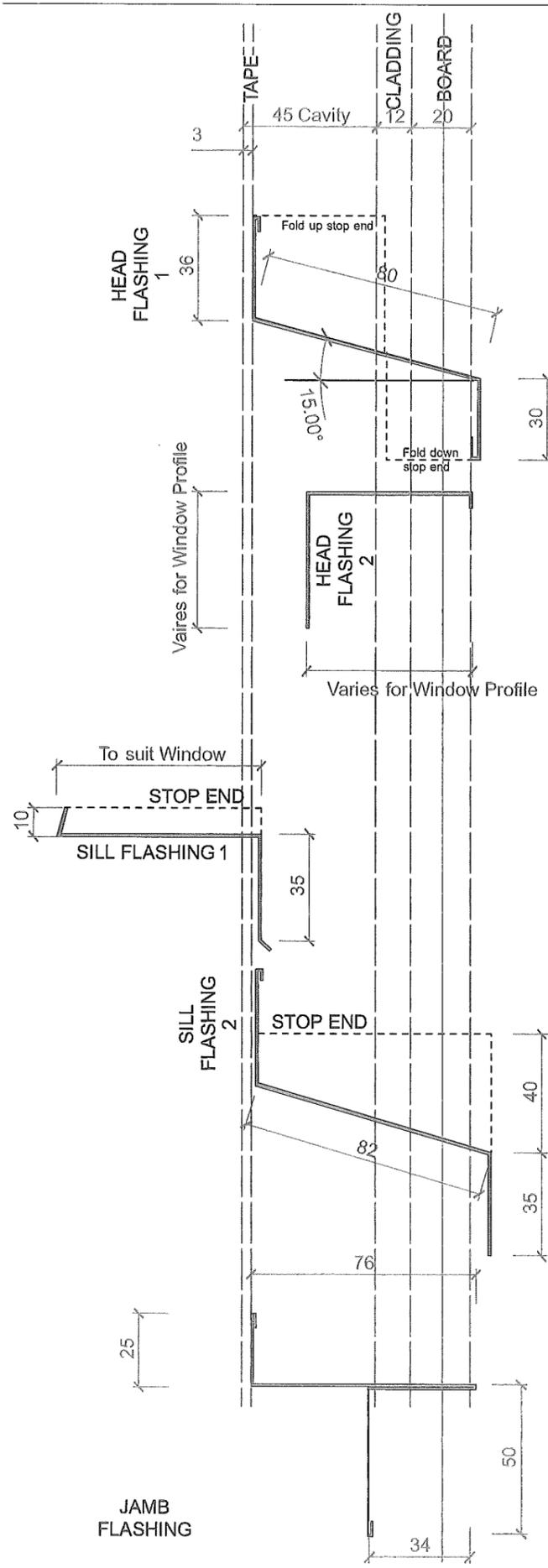
T&G LINING  
18mm Pine T&G Board lining. Painted finish.

T&G LINING  
18mm Pine T&G Board lining. Painted finish.

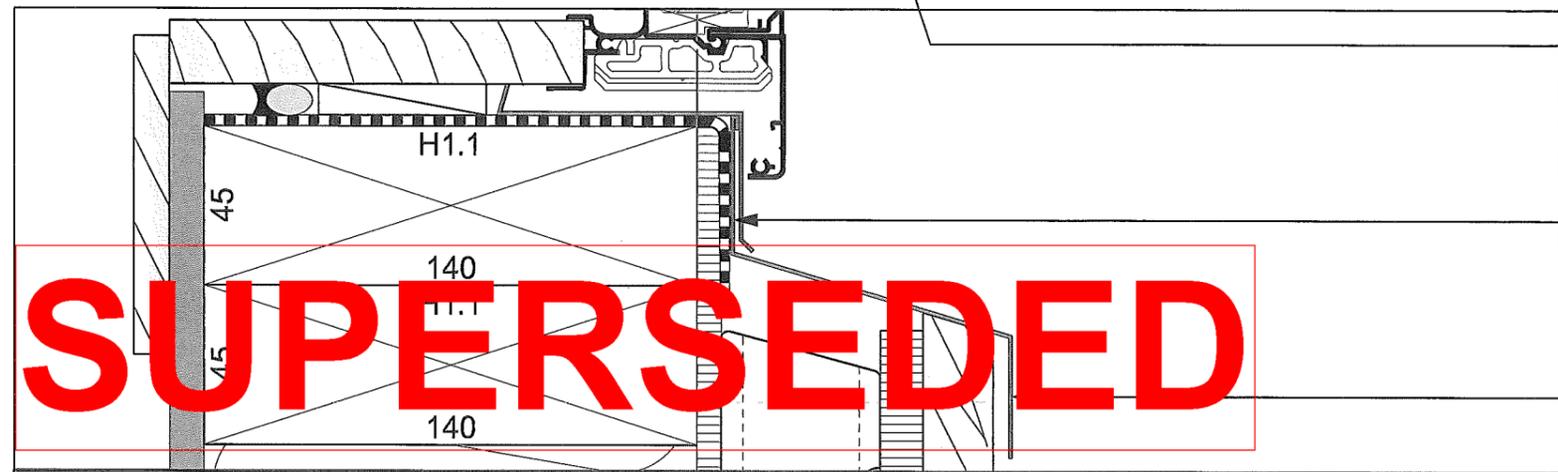


1 Roof/Skylight Detail  
50.02 1:5 @ A3

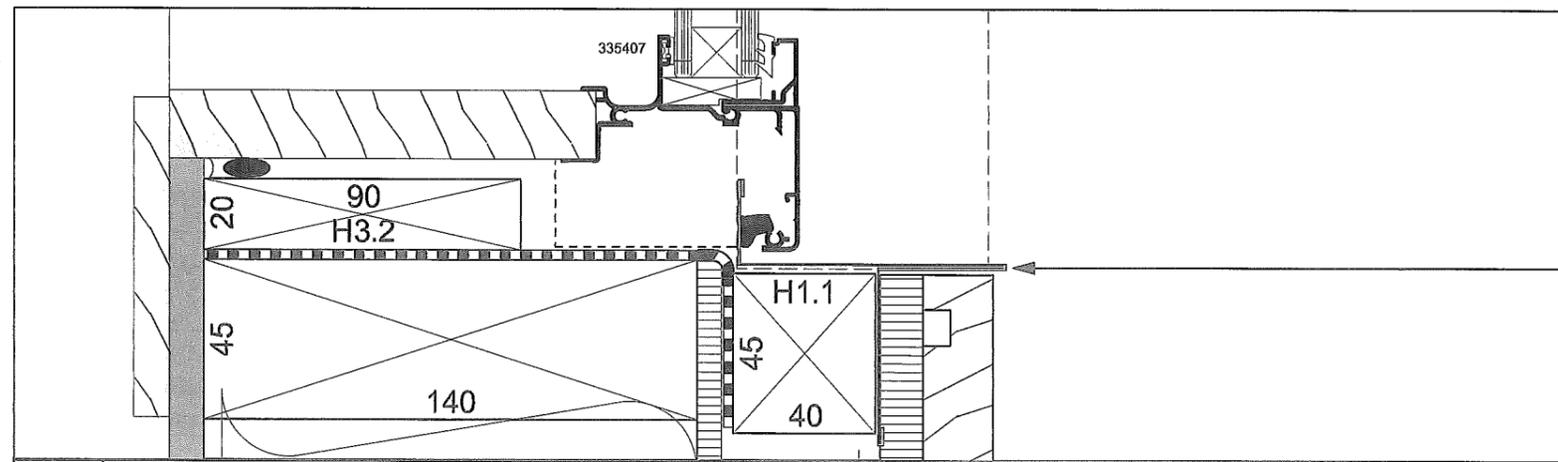




1 Awning Head Detail  
51.01 1:5 @ A3



2 Awning Sill Detail  
51.01 1:5 @ A3



3 Awning Jamb Detail  
51.01 1:5 @ A3

VERMIN PROOF  
Cavity base closure. PVC 45mm Cavity Closer by Weathertight Solutions.

TAPE WINDOW HEAD TO RAB  
Tape window head to Ecoply RAB Board in accordance with Ecoply install instruction.

FLEXIBLE FLASHING TAPE  
Tescano Brand 'EXTORA', flashing tape from Proclima.

PLY FIN  
H3.1 Treated Ply 18mm Ply Fin screw fix into lintel with Stainless steel 14g screws @ 600ctrs.

WINDOW PACKER  
H3.2 Treated internal packer.

ALUMINIUM JOINERY  
Aluminium window joinery manufactured to best trade practice suitable for wind zone and corrosion zone. Highest quality Powdercoat system.

FOLDED HEAD FLASH PART 2  
1.5mm Aluminium Soffit Flashing. Seal to head of frame for min 30mm frame cover

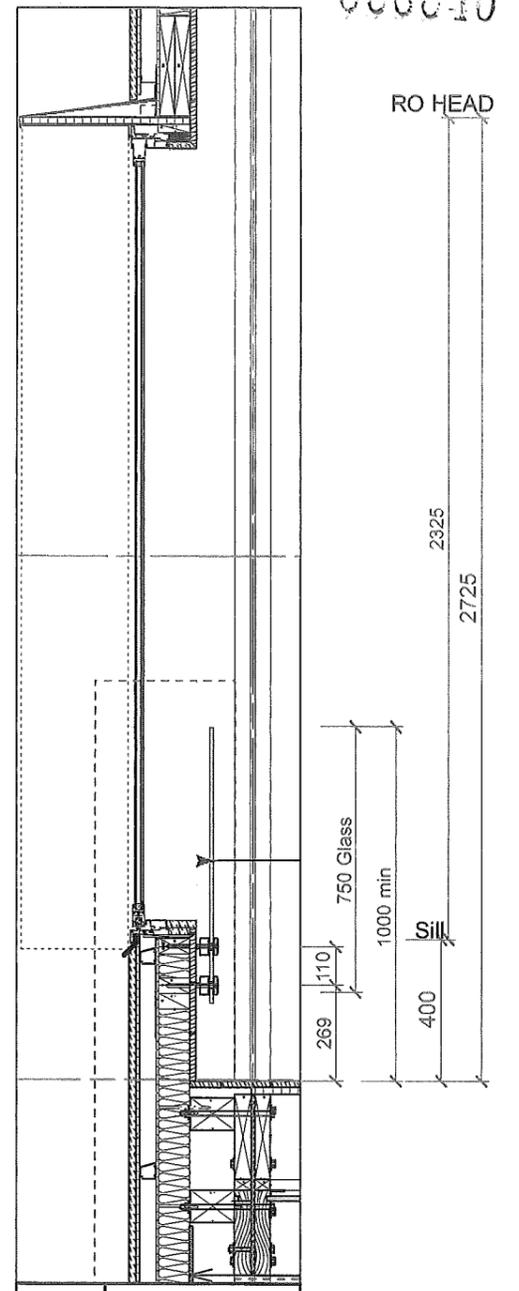
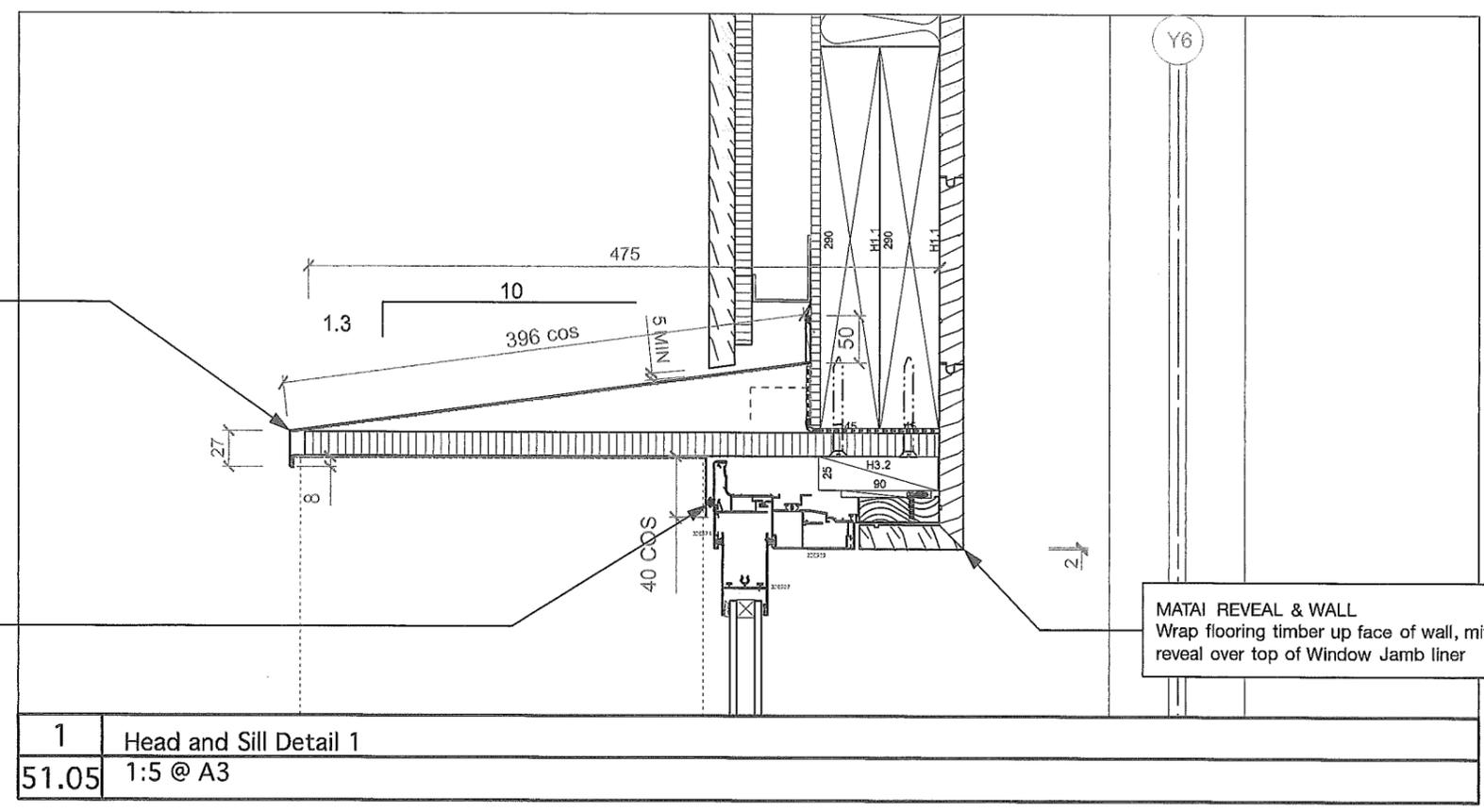
SILL TRAY FLASHING- PART 1.  
1.5mm Aluminium sill tray flashing. Min 8mm Step at back, stop ends extends behind jamb packer.

SILL TRAY FLASHING- PART 2.  
1.5mm Aluminium sill tray flashing. Stop ends

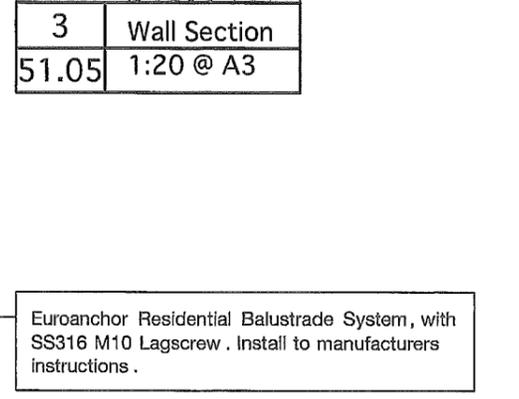
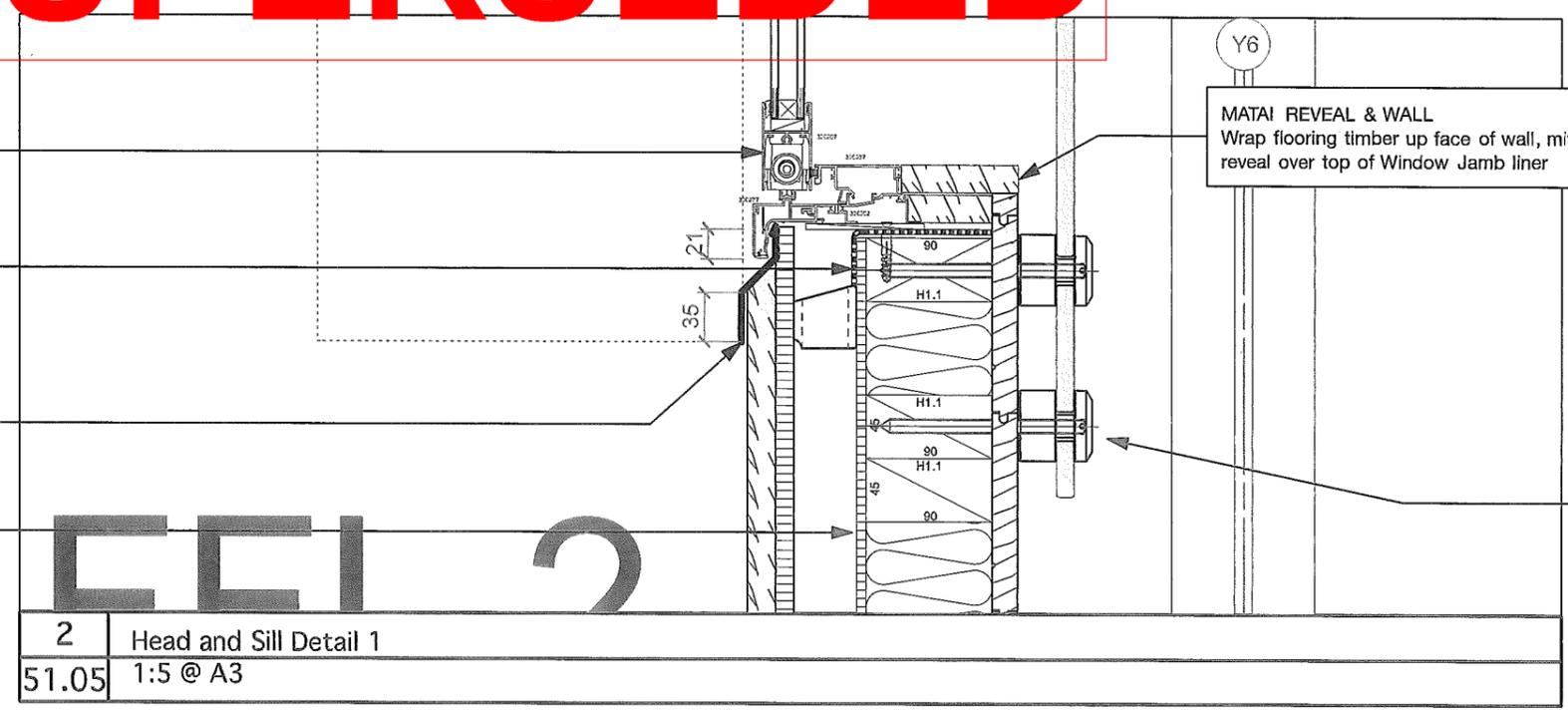
JAMB T FLASHING  
Folded 1mm Aluminium Jamb flashing.

**SUPERSEDED**

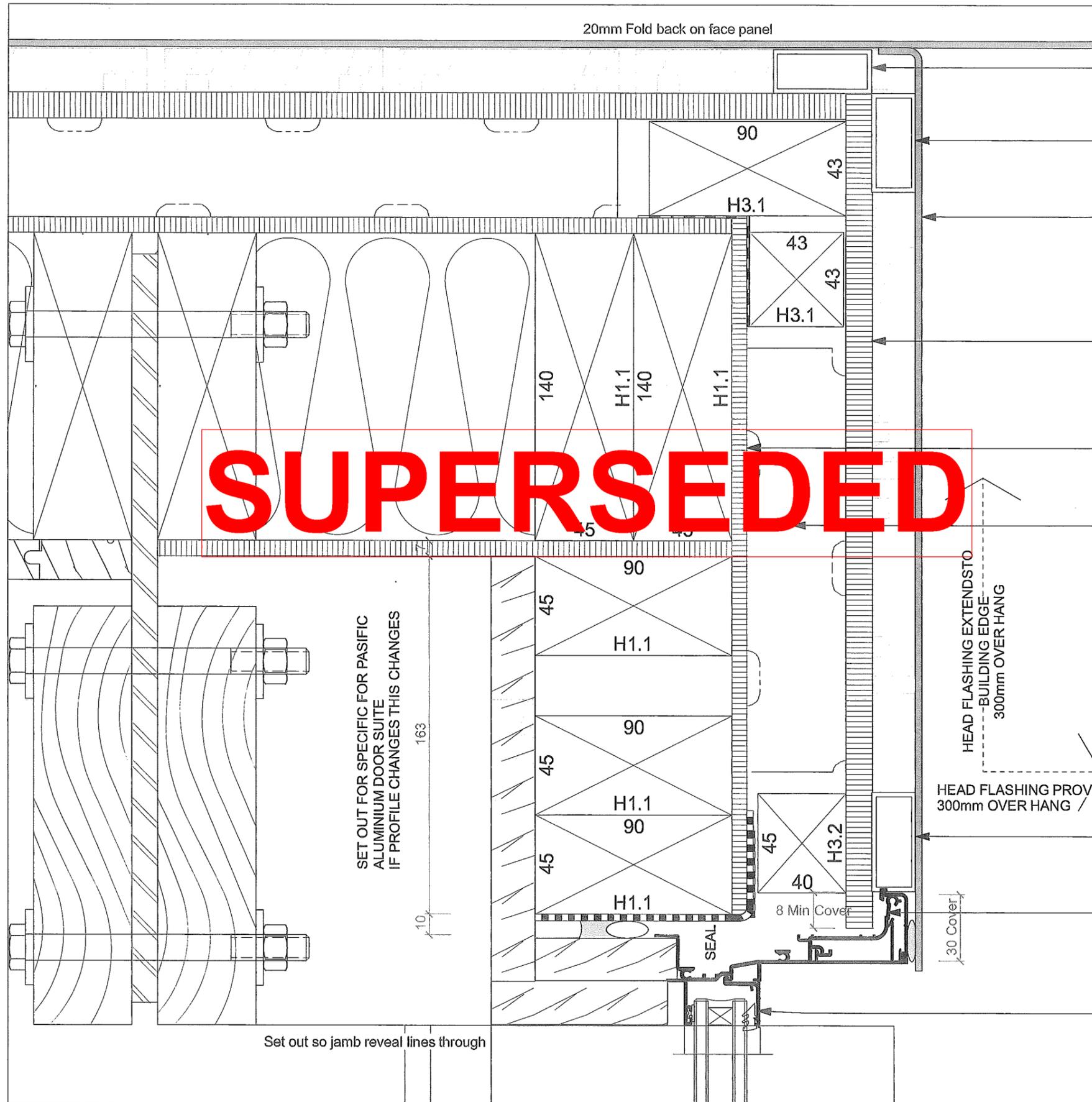
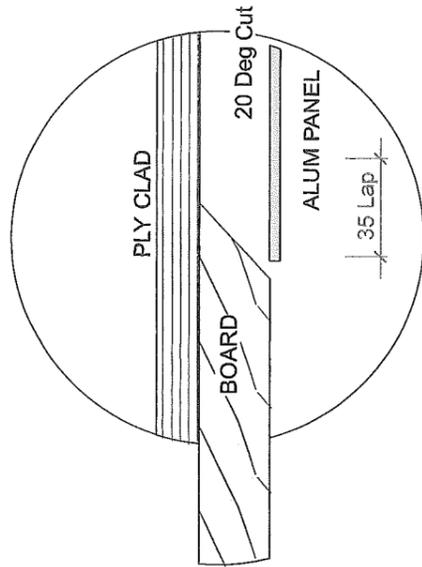
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**SUPERSEDED**



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**SUPERSEDED**

SET OUT FOR SPECIFIC FOR PASIFIC ALUMINIUM DOOR SUITE IF PROFILE CHANGES THIS CHANGES

Set out so jamb reveal lines through

- 20mm PVC CAVIBAT castillated batten
- 20mm PVC CAVIBAT castillated batten
- ALUMINIUM PANEL  
3mm Marine Grade Aluminium Sheet Panel. Powder coat finish. Confirm all size on site. Pre drill all holes. Poder coat all sides and edges. Panel to lap 35mm over Timber Boards Below.
- PLYWOOD SHEET CLADDING: 12mm Ply H3.2. Installed in accordance with E2/AS1 . Section 8
- RIGID AIR BARRIER  
Ecoply 'Barrier' 7MM Plywood. Install to manufacturers instructions .
- CAVITY 45MM STRUCTURAL  
45mm ventilated cavity. Rosen Feld Kidson RKV45-BATT 45 mm structural cavity batten. Horizontal battens to be Treated Pine H3.2, Castillated with min 1000mm2 opening per metre to allow ventilation equavent to vermin proof closer, E2/AS1 Section 9.18. Battens to be fixed to each studs at 600mm ctrs. Refer engineers calc for fixing.
- 20mm PVC CAVIBAT castillated batten
- TYPICAL E2/AS1 Vented cavity ply sheet cladding installation .
- Fletcher Pacific Aluminium 40mm Suite Awning Window Head Profile. Installed to manufacturers instructions .

HEAD FLASHING EXTENDS TO BUILDING EDGE 300mm OVER HANG

HEAD FLASHING PROVIDES 300mm OVER HANG

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**INTERNAL CORNER FLASHING**  
1m Copper Flashing. Install Flashing over top of ply wood behind macrocarpa board for servcability.

**FLEXIBLE FLASHING TAPE**  
Tescano Brand 'EXTORA', flashing tape from Proclima.

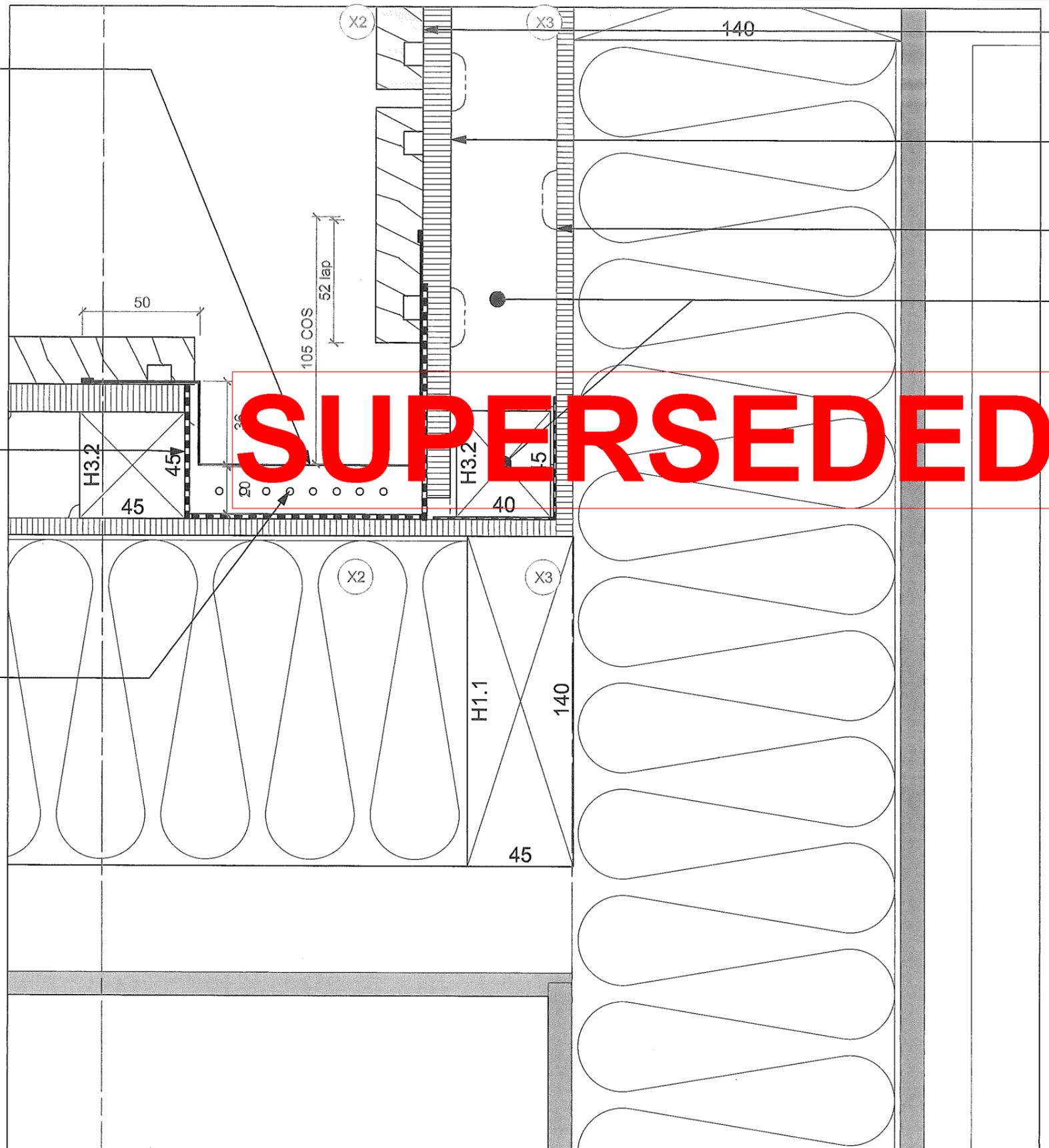
**20mm CAVITY CLOSER**  
At base of flashing.

**WEATHERGROOVED TIMBER BOARDS**  
Heart Macrocarpa 20 x 100mm Boards with MIN 6x6mm weathergrooves in accordance ES2.A1 Figure 119.

**PLYWOOD SHEET CLADDING:** 12mm Ply H3.2. Installed in accordance with E2/AS1. Section 8

**RIGID AIR BARRIER**  
Ecoply 'Barrier' 7MM Plywood. Install to manufacturers instructions.

**CAVITY 45MM STRUCTURAL**  
45mm ventilated cavity. Rosen Feld Kidson RKV45-BATT 45 mm structural cavity batten. Horizontal battens to be Treated Pine H3.2, Castillated with min 1000mm<sup>2</sup> opening per metre to allow ventilation equavient to vermin proof closer, E2/AS1 Section 9.18. Battens to be fixed to each studs at 600mm ctrs. Refer engineers calc for fixing.

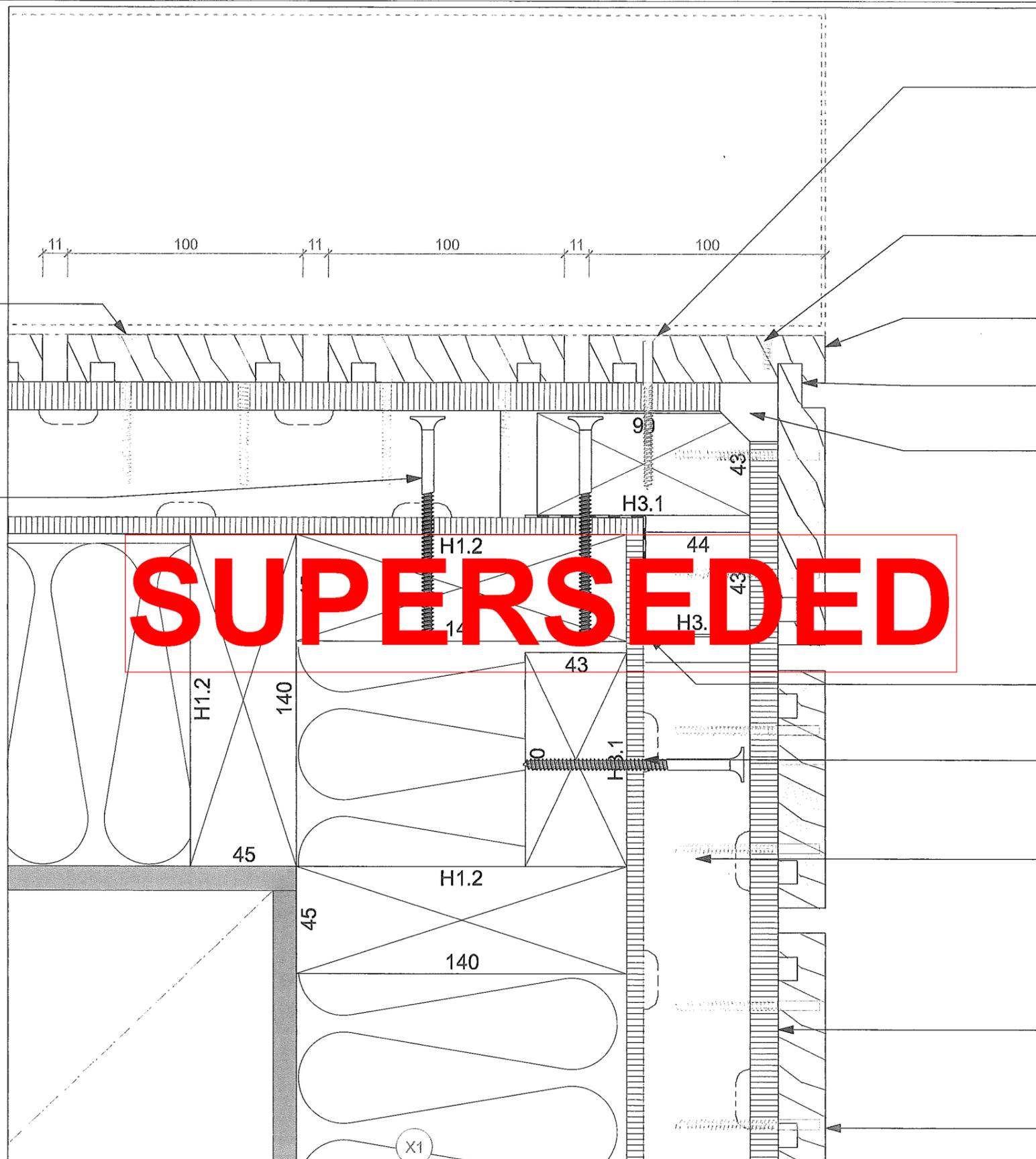


**SUPERSEDED**

2 External Wall Junction Detail  
51.07 1:5 @ A3

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FIXING MACROCARPA  
3 x 65mm Square head stainless Steel screw  
fixing 2 per board. Note screw fixing allows  
removal to service ply cladding behind.

FIXING CAVITY BATTEN  
Engineer design cavity batten fixing.

FIXING MACROCARPA  
3 x 65mm Square head stainless Steel screw  
fixing @ 600mm ctrs. Screw fixing allows  
removal to service ply cladding behind.

FALSE SCREW

PROFILE END BOARD TO INTERLOCK

STRUCTURAL SEALANT

CHAMFER END CORNER BOARD TO  
CREATE FREE DRAIN BEHIND JOINT

RAB BOARD TAPE  
Tape all EcoPLY Barrier joints in accordance with  
Eco Ply Barrier install instruction

RIGID AIR BARRIER  
EcoPLY 'Barrier' 7MM Plywood. Install to  
manufacturers instructions.

CAVITY 45MM STRUCTURAL  
45mm ventilated cavity. Rosen Feld Kidson  
RKV45-BATT 45 mm structural cavity batten.  
Horizontal battens to be Treated Pine H3.2,  
Castilled with min 1000mm<sup>2</sup> opening per  
metre to allow ventilation equivalent to vermin  
proof closer, E2/AS1 Section 9.18.  
Battens to be fixed to each studs at 600mm  
ctrs. Refer engineers calc for fixing.

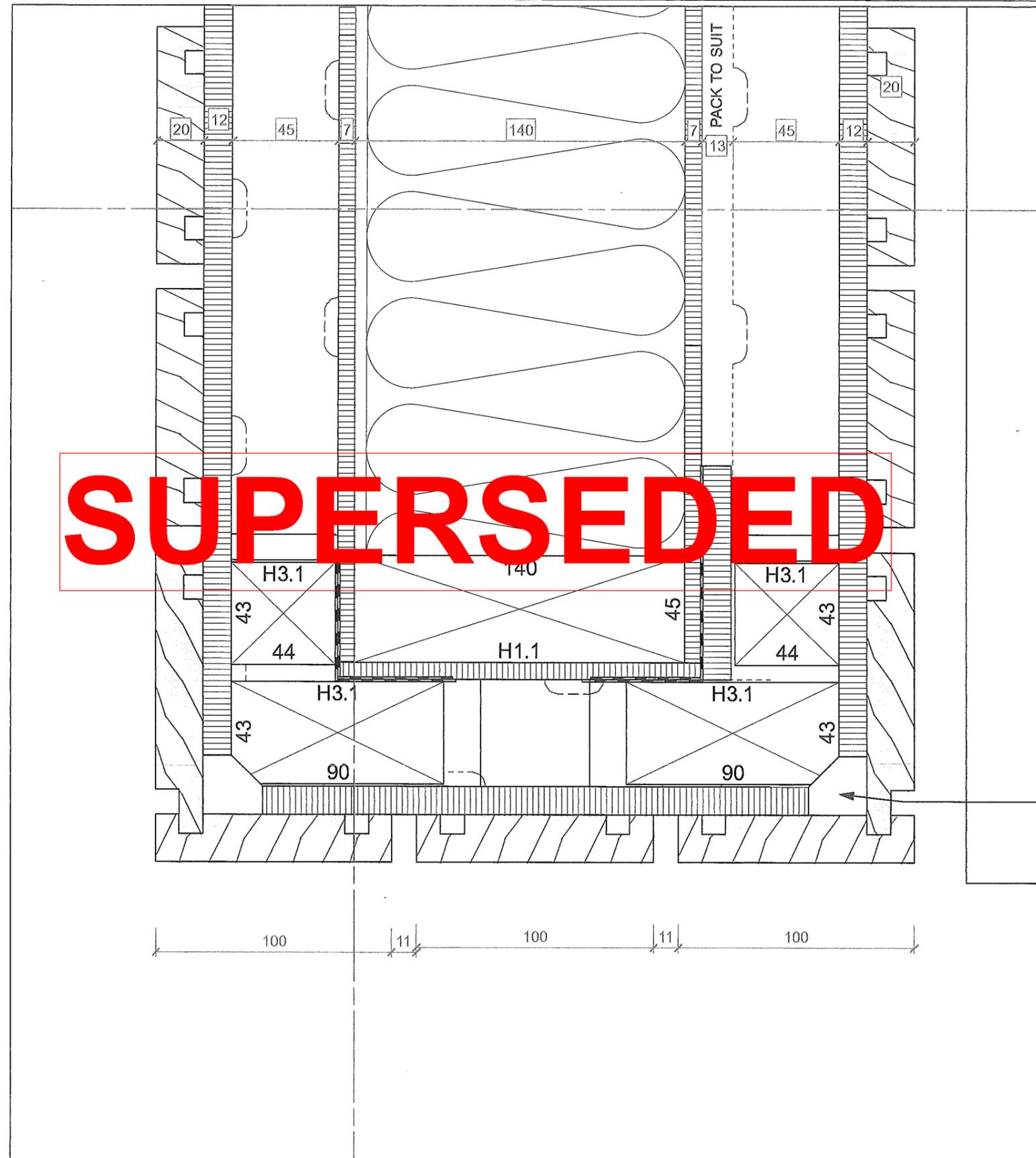
PLYWOOD SHEET CLADDING: 12mm Ply H3.2.  
Stain both sides black prior to installation.  
Metalex all exposed cut edges. Installed in  
accordance with E2/AS1. Section 8

WEATHERGROOVED TIMBER BOARDS  
Heart Macrocarpa 20 x 100mm Boards with  
MIN 6x6mm weathergrooves in accordance  
ES2.A1 Figure 119.

1 Typical Corner Detail  
51.08 1:5 @ A3

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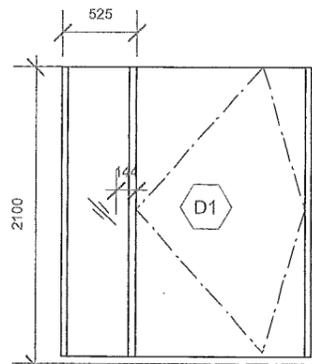


1	Typical Interstory Detail
51.09	1:5 @ A3

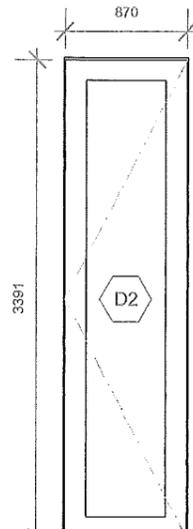
REFER 50.08 FOR TYPICAL CORNER DETAIL

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BY:

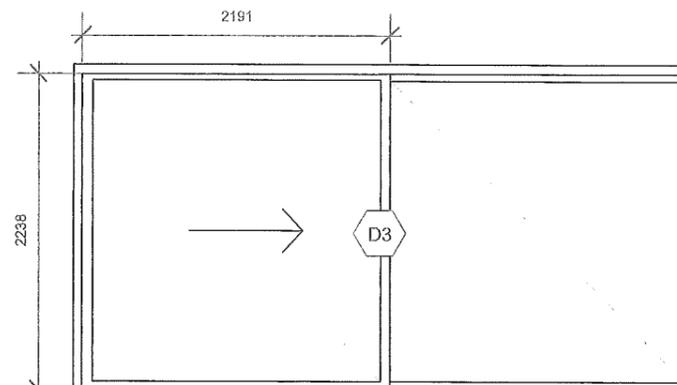




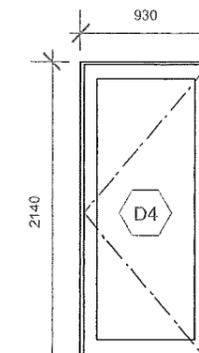
D1  
Exterior Aluminium  
Frame  
Hinge Door



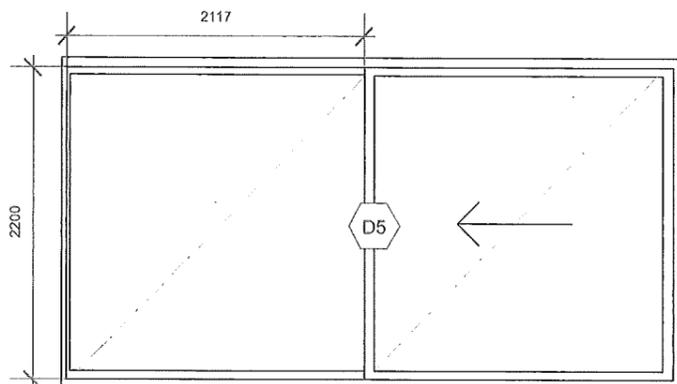
D2  
Exterior Aluminium  
Frame  
Hinge Door



D3  
Exterior Aluminium Frame  
Sliding Door

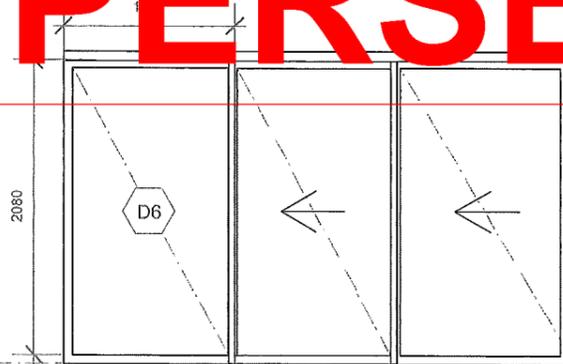


D4  
Exterior Aluminium  
Frame  
Hinge Door



D5  
Exterior Aluminium Frame  
Sliding Door

**SUPERSEDED**

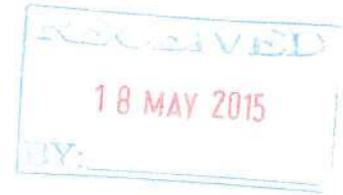


D6  
Exterior Aluminium Frame  
Stacker Door

1307	O'Brien House 7 Tutere St Walkanae Jill & Shane O'Brien	© COPYRIGHT ASSEMBLY ARCHITECTS LIMITED 233 WILLIS STREET, WELLINGTON 24 ESSEX AVE, ARROWTOWN Justin Wright 021 565 353	A	10/12/13	BUILDING CONSENT
	PROJECT	NOT FOR CONSTRUCTION	ISS	DATE	NOTE

ASSEMBLY  
ARCHITECTS  
LIMITED

Door Schedule		70.00	A
DRAWING	NUMBER	REV	



Kapiti Coast District Council  
Private Bag 60 601  
Paraparaumu 5254

Attn: Mr R Brook

Dear Russell

**RE: PENDING LAPSE OF BUILDING CONSENT 140009**

We have recently obtained consent for a new garage on the property at 7 Tutere Street, Waikanae Beach.

This now means we can confidently move ahead with the above consented works.

Respectfully, we request an extension to the above consent and attach a cheque for \$90.00 with the hard copy of this letter.

Thank you in anticipation.

Yours faithfully

Shane O'Brien

Shane Michael & Jillian Mary O'Brien  
320 Kimbolton Road  
FEILDING 4702

26 May 2021

Dear Building Consent Applicant / Building Owner

**Code Compliance Certificate for Building Consent 140009**

**Site Address:**

**Legal Description:** LOT 85 DP 7462

**Project Description:** Proposed dwelling at 7 Tutere Street, Waikanae

This letter is a reminder that the Code Compliance Certificate for Building Consent 140009 has not been issued.

To progress the issuing of your Code Compliance Certificate you will need to supply the following items below:

1. Application for CCC.
2. As-built drainage plan.
3. Drainage (Form126) for stormwater & private sewer installation.
4. Drainage (form127) for private sewer installation.
5. Plumbing (Form125) for pressure test and installation piped services.
6. Water tank warrant.

Please book a final inspection by phoning 0800 486 486. For your convenience we have enclosed an Application for Code Compliance Certificate form.

If you have any questions please contact the Duty Building Officer on 0800 486 486 or via email: [building.approvals@kapiticoast.govt.nz](mailto:building.approvals@kapiticoast.govt.nz) referencing the Building Consent Number noted.

Yours sincerely



**Michelle Salmon**  
**Building Inspections Team Leader**

Encl: CCC application form

## GoGet Inspection Audit Report

---

Consent No: **140009**

Applicant: **Colspec Construction Ltd**

Site Address: **7 Tutere Street, Waikanae Beach**

Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Cavity System**

Inspection Outcome: **Pass**

Inspected By: **Craig Watson**

Inspection Date: **22 March 2018 10:35 a.m.**

Duration: **30 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Pass
Inspection notes	Pass
Drawings	Pass
Additional information/plan	N/A
Additional strapping to wrap	N/A
Batten timber treatment	Pass
<b>H3.2</b>	
Cavity closers	Pass
<b>PVC</b>	
Battens in place	Pass
Battens structural fixing	Pass
Cavity spacers	N/A
Cavity spacers size and slope	N/A
Reinforcing fixed in place (stucco)	N/A
Proprietary self spacing mesh	N/A
Mesh spacers (stucco)	N/A
Proprietary control joints (stucco)	N/A
Rigid backing type (stucco)	N/A
Fixings (galvanised or stainless) (stucco)	N/A
Waterproofing to slab-edge	N/A
LBP number	Pass
<b>BEN KUSABS</b>	
Other	N/A



Taken at 10:22 AM on Thursday 22/03/2018



Taken at 10:23 AM on Thursday 22/03/2018



Taken at 10:23 AM on Thursday 22/03/2018

## GoGet Inspection Audit Report

---

Consent No: **140009**

Applicant: **Colspec Construction Ltd**

Site Address: **7 Tutere Street, Waikanae Beach**

Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Cavity System**

Inspection Outcome: **Pass**

Inspected By: **Tyler Smith**

Inspection Date: **22 March 2018 2:15 p.m.**

Duration: **45 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Pass
Inspection notes	N/A
Drawings	Pass
Additional information/plan	N/A
Additional strapping to wrap	N/A
Batten timber treatment	Pass
<b>h3.1</b>	
<b>horizontal with notches for drainage and ventilation.</b>	
Cavity closers	Pass
Battens in place	N/A
Battens structural fixing	N/A
Cavity spacers	N/A
Cavity spacers size and slope	N/A
Reinforcing fixed in place (stucco)	N/A
Proprietary self spacing mesh	N/A
Mesh spacers (stucco)	N/A
Proprietary control joints (stucco)	N/A
Rigid backing type (stucco)	N/A
Fixings (galvanised or stainless) (stucco)	N/A
Waterproofing to slab-edge	N/A
LBP number	Pass
<b>130832</b>	
Other	Pass
<b>All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.</b>	



Taken at 2:10 PM on Thursday 22/03/2018



Taken at 2:13 PM on Thursday 22/03/2018



Taken at 2:13 PM on Thursday 22/03/2018

## SITE NOTICE

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
Building Category: **R3**

---

Inspection Type: **Cavity System**  
Inspection Outcome: **Pass**  
Inspected By: **Craig Watson**  
Inspection Date: **22 March 2018**

### Passed Items

#### General

Inspection notes	
Drawings	
Batten timber treatment	<b>H3.2</b>
Cavity closers	<b>PVC</b>
Battens in place	
Battens structural fixing	
LBP number	<b>BEN KUSABS</b>

## SITE NOTICE

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
Building Category: **R3**

---

Inspection Type: **Cavity System**  
Inspection Outcome: **Pass**  
Inspected By: **Tyler Smith**  
Inspection Date: **22 March 2018**

### Passed Items

#### General

Drawings

Batten timber treatment

Cavity closers

LBP number

Other

**h3.1**

**horizontal with notches for drainage and ventilation.**

**130832**

**All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.**

## GoGet Inspection Audit Report

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Drainage**  
Inspection Outcome: **Fail**  
Inspected By: **Gareth McCullagh**  
Inspection Date: **6 June 2018 11:11 a.m.**  
Duration: **30 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Fail
<b>rest of drainage</b>	
Pipe diameter	Pass
<b>100mm sewer and stormwater 100mm</b>	
Bedding material	Pass
<b>natural sand</b>	
Gully trap	Pass
<b>In place behind carport</b>	
Connections/angles	Pass
<b>swept junctions and inspection points in place</b>	
Branch length	Pass
Direction/fall	Pass
<b>good natural fall to existing lateral</b>	
Holding water	Pass
<b>sewer tested</b>	
Terminal vent	Fail
<b>two on main house garage needs vented</b>	
Registration number	Pass
<b>12156</b>	
Other	Pass
<b>stormwater to tank and overflow connected to soakpit</b>	
<b>All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.</b>	

## SITE NOTICE

Consent No: **140009**  
 Applicant: **Colspec Construction Ltd**  
 Site Address: **7 Tutere Street, Waikanae Beach**  
 Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
 Building Category: **R3**

Inspection Type: **Drainage**  
 Inspection Outcome: **Fail**  
 Inspected By: **Gareth McCullagh**  
 Inspection Date: **6 June 2018**

### Passed Items

#### General

Pipe diameter	<b>rest of drainage</b>
Bedding material	<b>100mm sewer and stormwater 100mm</b>
Gully trap	<b>natural sand</b>
Connections/angles	<b>In place behind carport</b>
Branch length	<b>swept junctions and inspection points in place</b>
Direction/fall	<b>good natural fall to existing lateral</b>
Holding water	<b>sewer tested</b>
Registration number	<b>12156</b>
Other	<b>stormwater to tank and overflow connected to soakpit</b> <b>All aspects relating to this inspection have been</b> <b>assessed and checked against the consented</b> <b>documentation and deemed to comply.</b>

### Failed Items

#### General

Terminal vent	<b>rest of drainage</b>
	<b>two on main house garage needs vented</b>

## GoGet Inspection Audit Report

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Drainage**  
Inspection Outcome: **Pass**  
Inspected By: **Maurice Powell**  
Inspection Date: **21 November 2017 11:04 a.m.**  
Duration: **15 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Pass
<b>Rain water soak pit only inspected and passed. All other drainage still to be carried out and inspected</b>	
Pipe diameter	N/A
Bedding material	N/A
Gully trap	N/A
Connections/angles	N/A
Branch length	N/A
Direction/fall	N/A
Holding water	N/A
Terminal vent	N/A
Registration number	N/A
Other	Pass
<b>soak pit inspected.</b>	



Taken at 10:51 AM on Tuesday 21/11/2017



Taken at 10:52 AM on Tuesday 21/11/2017



Taken at 10:53 AM on Tuesday 21/11/2017



Taken at 10:53 AM on Tuesday 21/11/2017



Taken at 10:54 AM on Tuesday 21/11/2017



Taken at 10:56 AM on Tuesday 21/11/2017



Taken at 10:56 AM on Tuesday 21/11/2017



Taken at 10:57 AM on Tuesday 21/11/2017



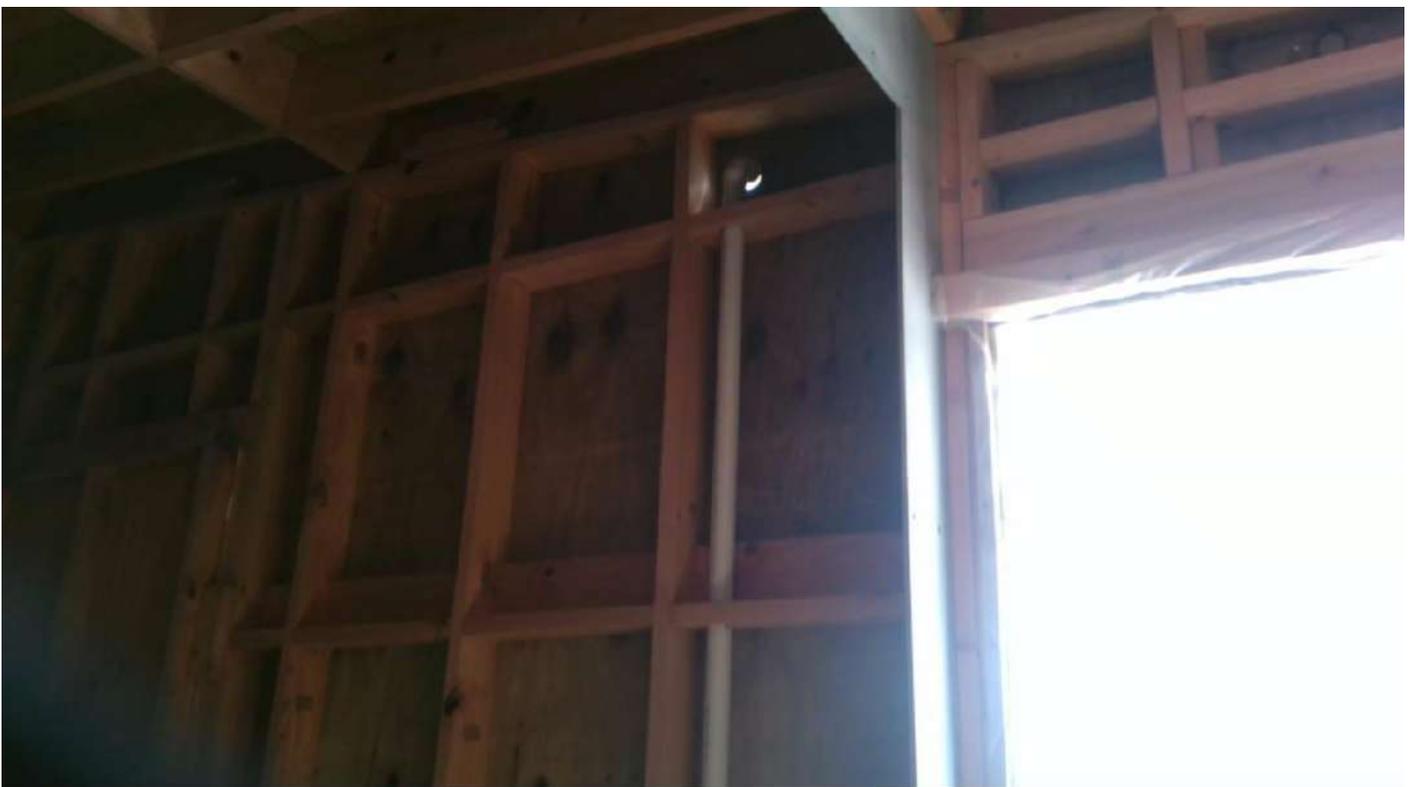
Taken at 10:58 AM on Tuesday 21/11/2017



Taken at 10:58 AM on Tuesday 21/11/2017



Taken at 10:58 AM on Tuesday 21/11/2017



Taken at 10:59 AM on Tuesday 21/11/2017



Taken at 11:00 AM on Tuesday 21/11/2017



Taken at 11:02 AM on Tuesday 21/11/2017



Taken at 11:02 AM on Tuesday 21/11/2017

## GoGet Inspection Audit Report

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Drainage**  
Inspection Outcome: **Pass**  
Inspected By: **Jeremy Lincoln**  
Inspection Date: **16 March 2020 11:06 a.m.**  
Duration: **15 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Pass
<b>rest of drainage</b>	
Pipe diameter	Pass
<b>100mm sewer and stormwater 100mm</b>	
<b>Garage on separate consent</b>	
Terminal vent	Pass
<b>two on main house garage needs vented</b>	
<b>Garage on separate consent</b>	
Stormwater sumps	N/A
Agent/owner written approval	N/A

---

### **Documentation**

Application for CCC	Required
Electrical safety certificate	Received
<b>Inspection to be confirmed</b>	
As-built drainage plan	Required
Drainage (Form 126) for stormwater installation	Required
Drainage (Form 127) for private sewer installation	Required
Plumbing (Form 125) for pressure test and installation piped services	Required
Construction review PS4 statement for structural engineering	Received
Membrane applicator certificates - internal wet area	Received
Membrane applicator certificates - deck	Received
<b>bituflame under slatted decking to balcony</b>	
Roof product manufacturers warranty	Received
<b>Bituflame</b>	
Record of Work	Received
Roof installers warranty	Received
<b>spouting only</b>	
Solid Fuel Heater Installer's Checksheet	Received
Window manufacturers producer statement	Received
<b>Vistalite, burne</b>	
Water tank warranty	Required

---

### **Building Practitioners**

Carpentry 1	Received
Foundations 1	Received
Roofing 1	Received
<b>Membrane</b>	

---

**GoGet Inspection Audit Report**

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Final Inspection**  
Inspection Outcome: **Fail**  
Inspected By: **Jeremy Lincoln**  
Inspection Date: **16 March 2020 12:36 p.m.**  
Duration: **60 minutes**

<b>Inspection Element</b>	<b>Status</b>
Exterior	Fail
All previous inspections/notes passed <b>All passed items on this inspection have been assessed against the consented documentation.</b>	Pass
Drawings	Pass
Additional information/plan	N/A
Sub-floor ventilation <b>Open sides to under deck</b>	Pass
Roof fixings	N/A
Spouting and down-pipes	Pass
Deck structure <b>not part of consent</b>	N/A
Flashings - roof	Pass
Penetrations - flashings <b>no penetrations to roof</b>	N/A
Barriers <b>Deck and barrier not part of consented documentation</b>	N/A
Gully dishes <b>X1 ORG Charged with tpr lines</b>	Pass
Stormwater and site drainage <b>Please confirm with photos of tank</b>	Fail
Handrails	N/A
Wastes to gully	N/A
Fixings - durability	Pass
Steps/stairs	N/A
Terminal vents/AAVs <b>x2 50mm through wall</b>	Pass
Cladding painted/sealed	Pass
Flashings - windows/doors	Pass
Cladding ground clearance	Pass
Final check complete	N/A
Other	N/A
Interior	Fail
All previous inspections/notes passed	Pass
Drawings	Pass
Additional information/plan	N/A
Service areas-floors/walls	Pass

Stair design	Pass
Handrails	Pass
Balustrades	Pass
<b>frameless laminated glass</b>	
Lightings	Pass
Laundering	Pass
Cooking facilities	Pass
Smoke detectors	Fail
<b>not fitted</b>	
Food storage/preparation	Pass
Ventilation	Pass
Insulation and clearance	Pass
HWC flues	N/A
HWC restraint	Pass
Tempering valve	Pass
Glazing - human impact	Pass
Hot water temp	Pass
Solid fuel heater	Pass
<b>Yunca oscar</b>	
<b>Clearances checked</b>	
Water supply tank	Pass
Trap seals and AAVS	Pass
Cistern flushing	Pass
<b>connected to non potable</b>	
WC pan connection	Pass
Septic tank	N/A
Window labels	Pass
Final check complete	N/A
Other	Fail
<b>non return valve to main to be fitted.</b>	
<b>recommend checking fitted water filter is suitable for mains pressure</b>	
Intertenancy/commercial	N/A
Other	N/A

---

#### Documentation

Application for CCC	Required
Electrical safety certificate	Received
<b>Inspection to be confirmed</b>	
As-built drainage plan	Required
Drainage (Form 126) for stormwater installation	Required
Drainage (Form 127) for private sewer installation	Required
Plumbing (Form 125) for pressure test and installation piped services	Required
Construction review PS4 statement for structural engineering	Received
Membrane applicator certificates - internal wet area	Received
Membrane applicator certificates - deck	Received
<b>bituflame under slatted decking to balcony</b>	
Roof product manufacturers warranty	Received
<b>Bituflame</b>	
Record of Work	Received
Roof installers warranty	Received
<b>spouting only</b>	

Solid Fuel Heater Installer's Checksheet	Received
Window manufacturers producer statement <b>Vistalite, burne</b>	Received
Water tank warranty	Required

---

**Building Practitioners**

Carpentry 1	Received
Foundations 1	Received
Roofing 1 <b>Membrane</b>	Received



Taken at 11:06 AM on Monday 16/03/2020



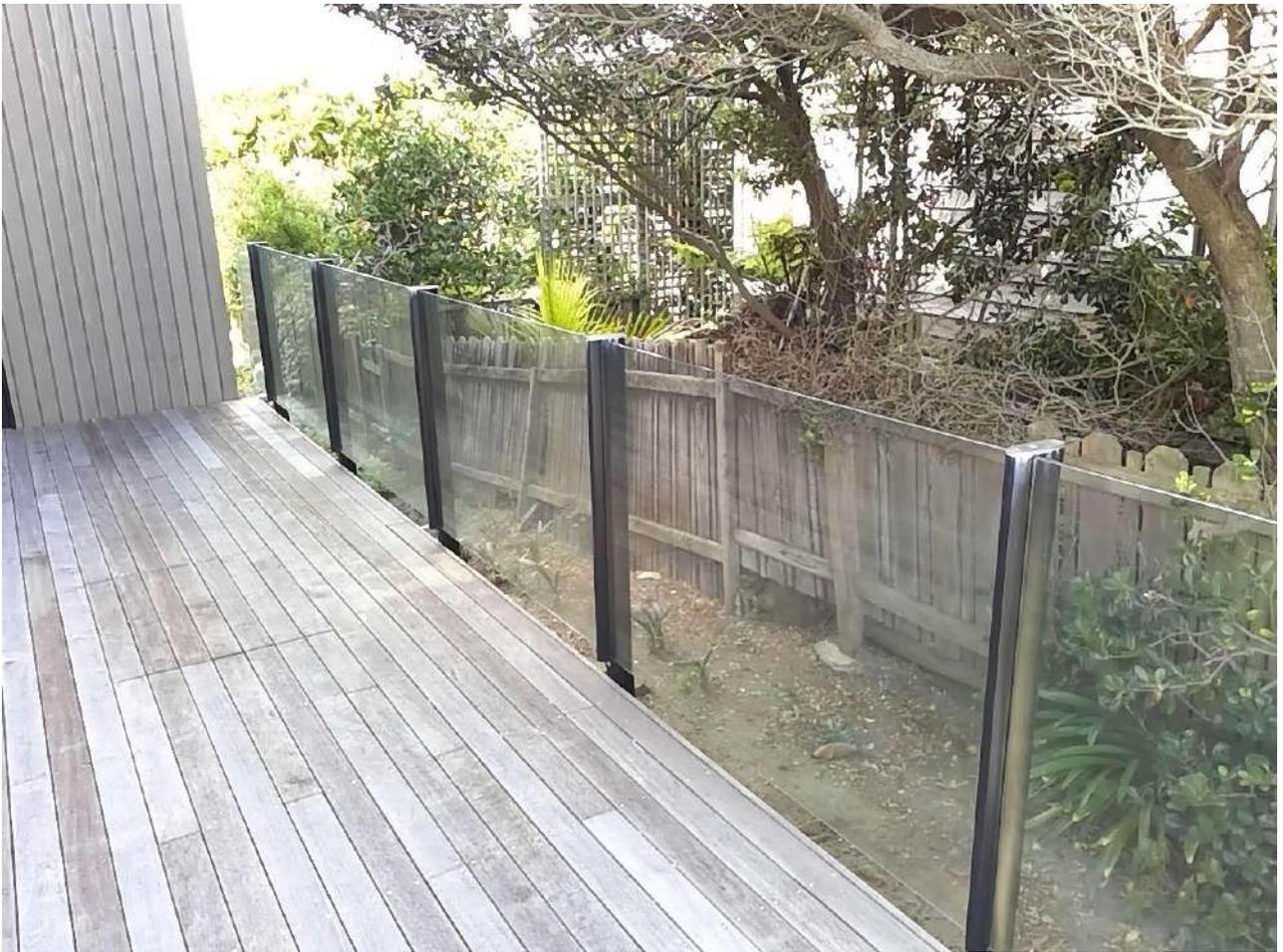
Taken at 11:08 AM on Monday 16/03/2020



Taken at 11:08 AM on Monday 16/03/2020



Taken at 11:11 AM on Monday 16/03/2020



Taken at 11:12 AM on Monday 16/03/2020



Taken at 11:12 AM on Monday 16/03/2020



Taken at 11:13 AM on Monday 16/03/2020



Taken at 11:13 AM on Monday 16/03/2020



Taken at 11:14 AM on Monday 16/03/2020



Taken at 11:17 AM on Monday 16/03/2020



Taken at 11:22 AM on Monday 16/03/2020



Taken at 11:24 AM on Monday 16/03/2020



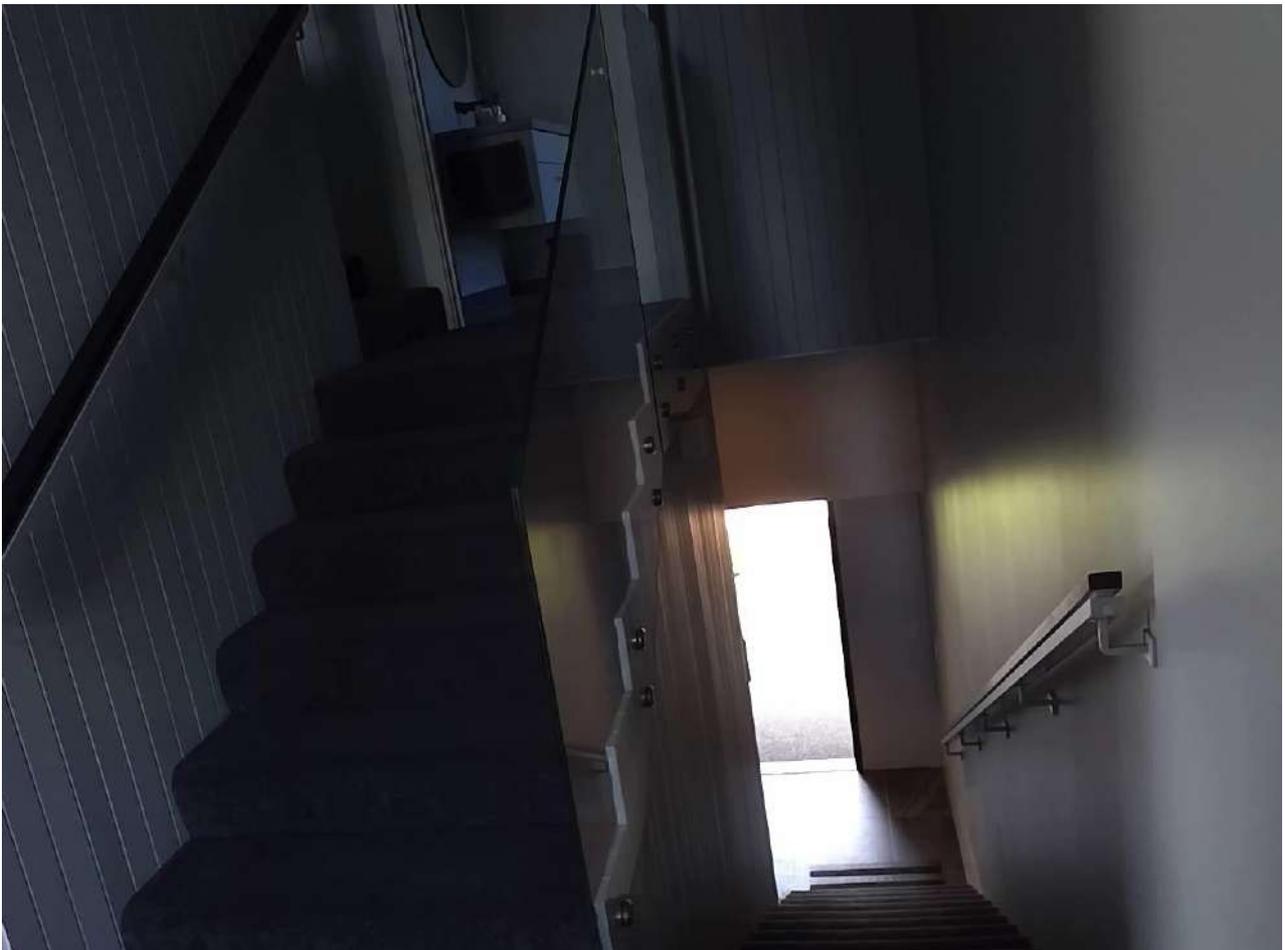
Taken at 11:24 AM on Monday 16/03/2020



Taken at 11:43 AM on Monday 16/03/2020



Taken at 11:51 AM on Monday 16/03/2020



Taken at 11:56 AM on Monday 16/03/2020



Taken at 11:56 AM on Monday 16/03/2020



Taken at 11:57 AM on Monday 16/03/2020



Taken at 12:03 PM on Monday 16/03/2020



Taken at 12:04 PM on Monday 16/03/2020



Taken at 12:08 PM on Monday 16/03/2020



Taken at 12:08 PM on Monday 16/03/2020



Taken at 12:10 PM on Monday 16/03/2020

**GoGet Inspection Audit Report**

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Final Inspection**  
Inspection Outcome: **Fail**  
Inspected By: **Jeremy Lincoln**  
Inspection Date: **30 June 2020 8:44 a.m.**  
Duration: **0 minutes**

<b>Inspection Element</b>	<b>Status</b>
Exterior	Fail
Barriers	Fail
<b>deck barrier mostly less than 1M fall, however deck structure not as per plan &amp; needs rectifying</b>	

## SITE NOTICE

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
Building Category: **R3**

---

Inspection Type: **Final Inspection**  
Inspection Outcome: **Fail**  
Inspected By: **Jeremy Lincoln**  
Inspection Date: **30 June 2020**

### Failed Items

#### Exterior

Barriers

**deck barrier mostly less than 1M fall, however deck structure not as per plan & needs rectifying**

Stormwater and site drainage

**Please confirm with photos of tank**

#### Interior

Smoke detectors

**not fitted**

Other

**non return valve to main to be fitted.  
recommend checking fitted water filter is suitable for mains pressure**

## GoGet Inspection Audit Report

---

Consent No: **140009**

Applicant: **Colspec Construction Ltd**

Site Address: **7 Tutere Street, Waikanae Beach**

Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Foundations**

Inspection Outcome: **Pass**

Inspected By: **Alan Tinney**

Inspection Date: **2 November 2016 2:49 p.m.**

Duration: **30 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Pass
Footing depth <b>1500x250</b>	Pass
Engineers details required <b>Dunning</b>	Pass
Good bearing	Pass
Reinforcing <b>HD12mm</b>	Pass
Siting	Pass
Sub-floor vents	N/A
Other <b>ok to pour after engineer has passed/ site notes and ps4</b>	Pass



Taken at 2:56 PM on Wednesday 2/11/2016



Taken at 2:56 PM on Wednesday 2/11/2016



Taken at 2:57 PM on Wednesday 2/11/2016



Taken at 2:57 PM on Wednesday 2/11/2016

## GoGet Inspection Audit Report

---

Consent No: **140009**

Applicant: **Colspec Construction Ltd**

Site Address: **7 Tutere Street, Waikanae Beach**

Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Foundations**

Inspection Outcome: **Pass**

Inspected By: **Alan Tinney**

Inspection Date: **30 June 2017 11:56 a.m.**

Duration: **15 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Pass
Footing depth	N/A
Engineers details required	Pass
<b>Thorton</b>	
Good bearing	Pass
Reinforcing	Pass
<b>as per engineer design</b>	
Siting	Pass
<b>Boundary pegs sighted. Proposed work sited as per consented documentation</b>	
Sub-floor vents	N/A
Other	N/A



Taken at 11:54 AM on Friday 30/06/2017



Taken at 11:54 AM on Friday 30/06/2017



Taken at 11:54 AM on Friday 30/06/2017



Taken at 11:55 AM on Friday 30/06/2017

## SITE NOTICE

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
Building Category: **R3**

---

Inspection Type: **Foundations**  
Inspection Outcome: **Pass**  
Inspected By: **Alan Tinney**  
Inspection Date: **2 November 2016**

### Passed Items

#### General

Footing depth	<b>1500x250</b>
Engineers details required	<b>Dunning</b>
Good bearing	
Reinforcing	<b>HD12mm</b>
Siting	
Other	<b>ok to pour after engineer has passed/ site notes and ps4</b>

## SITE NOTICE

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
Building Category: **R3**

---

Inspection Type: **Foundations**  
Inspection Outcome: **Pass**  
Inspected By: **Alan Tinney**  
Inspection Date: **30 June 2017**

### Passed Items

#### General

Engineers details required	<b>Thorton</b>
Good bearing	
Reinforcing	<b>as per engineer design</b>
Siting	<b>Boundary pegs sighted. Proposed work sited as per consented documentation</b>

## GoGet Inspection Audit Report

---

Consent No: **140009**

Applicant: **Colspec Construction Ltd**

Site Address: **7 Tutere Street, Waikanae Beach**

Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Postline / Wet area Pre Application**

Inspection Outcome: **Pass**

Inspected By: **Alan Tinney**

Inspection Date: **21 May 2018 10:05 a.m.**

Duration: **30 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Pass
Sighted previous inspection notes	Pass
Conforms with approved drawings	Pass
Confirm additional information/amended plan	Pass
Sheet bracing <b>EP1/BL1</b>	Pass
Sheet fixings <b>as required</b>	Pass
Fire/acoustic separation	N/A
Other	N/A
Wet area substrate system <b>villa board fixed @ 150mm</b>	Pass
LBP number	N/A

## GoGet Inspection Audit Report

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Pre Clad**  
Inspection Outcome: **Fail**  
Inspected By: **Tyler Smith**  
Inspection Date: **23 March 2018 8:59 a.m.**  
Duration: **45 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Fail
<b>Head flashings only</b>	
Inspection notes	Fail
Drawings	Pass
<b>On site</b>	
Additional information/plan	N/A
Building wrap type	N/A
Flexible seling tape	Pass
<b>Flashings taped to eco ply barrier with eco ply barrier tape</b>	
Deck membrane fixed in accordance with specification	N/A
Head flashings	Pass
<b>As per consented documents, ends folded up</b>	
Sill flashings	Pass
<b>In place as per consented documents</b>	
Back flashings	N/A
Saddle flashings	N/A
Internal/external corner flashings	N/A
Jamb flashings	N/A
Capillary clearances	N/A
Flashing penetrations	N/A
Ground/Deck Cladding Clearance	N/A
Additional strapping to wrap	N/A
Batten timber treatment	N/A
Cavity closers	Pass
<b>Cavity closers in place above head flashings</b>	
Battens in place	N/A
Battens structural fixing	N/A
Cavity spacers	N/A
Cavity spacers size and slope	N/A
LBP number	Pass
<b>130832</b>	
Other	Fail

## SITE NOTICE

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
Building Category: **R3**

---

Inspection Type: **Pre Clad**  
Inspection Outcome: **Fail**  
Inspected By: **Tyler Smith**  
Inspection Date: **23 March 2018**

### Passed Items

#### General

Drawings  
Flexible seling tape

Head flashings  
Sill flashings  
Cavity closers  
LBP number

**Head flashings only**

**On site**

**Flashings taped to eco ply barrier with eco ply barrier tape**

**As per consented documents, ends folded up**

**In place as per consented documents**

**Cavity closers in place above head flashings**

**130832**

### Failed Items

#### General

Inspection notes  
Other

**Head flashings only**

## GoGet Inspection Audit Report

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Pre Clad**  
Inspection Outcome: **Pass**  
Inspected By: **John Peterson**  
Inspection Date: **6 October 2017 1:48 p.m.**  
Duration: **45 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Pass
Inspection notes	Pass
Drawings	Pass
Additional information/plan	N/A
Building wrap type	Pass
<b>Site note completed in KCDC offices</b>	
<b>On site with Stuart Lind</b>	
<b>Discriptive photos are saved to file of the aspects confirmed today</b>	
<b>Ecoply RAB in place joints taped. Note: where galv nails were used the heads have been taped, SS fixings have also been used</b>	
<b>Next inspection is a post clad to confirm 12mm ply fixings and window flashings</b>	
<b>Discussed with builder Stuart having some of the cedar rain screen on to sight in progress</b>	
Flexible seling tape	Pass
<b>Ecoply tapes to joints &amp; openings</b>	
Deck membrane fixed in accordance with specification	Pass
<b>Torch on</b>	
Head flashings	N/A
Sill flashings	N/A
Back flashings	N/A
Saddle flashings	N/A
Internal/external corner flashings	N/A
Jamb flashings	N/A
Capillary clearances	Pass
Flashing penetrations	N/A
Ground/Deck Cladding Clearance	Pass
Additional strapping to wrap	N/A
Batten timber treatment	Pass
<b>H3.2 castilated 45mm</b>	
Cavity closers	Pass
Battens in place	Pass
Battens structural fixing	Pass
<b>12 gauge 75mm SS screw</b>	
Cavity spacers	N/A
Cavity spacers size and slope	N/A
Other	N/A



**North**

Taken at 11:06 AM on Friday 6/10/2017



**West lower - typical window/door sill**

Taken at 11:07 AM on Friday 6/10/2017



**South - Typical internal corner detailing**  
Taken at 11:07 AM on Friday 6/10/2017

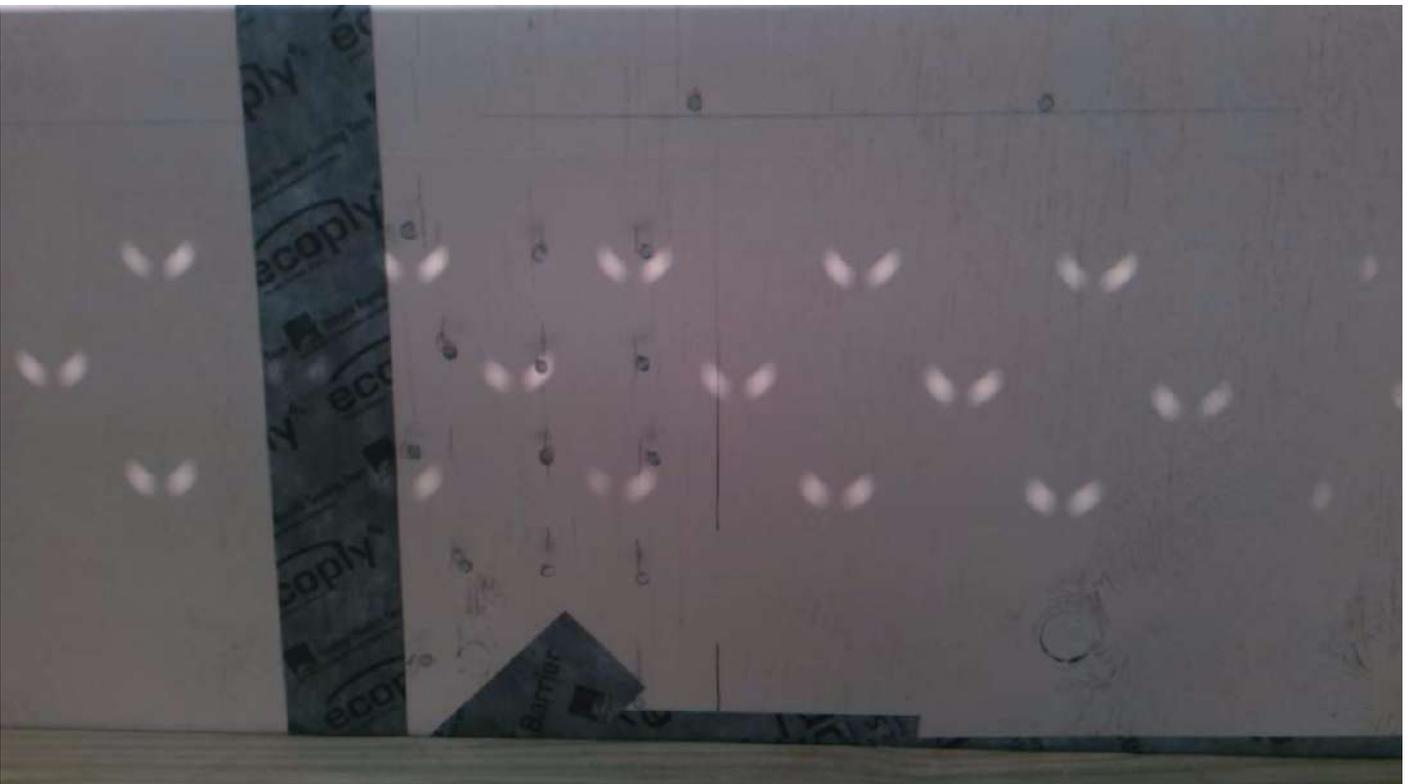


**West lower - typical window/door sill**  
Taken at 11:08 AM on Friday 6/10/2017



**North**

Taken at 11:09 AM on Friday 6/10/2017



**North - typical fix pattern to lintels - SS nails**

Taken at 11:09 AM on Friday 6/10/2017



**South deck**  
Taken at 11:10 AM on Friday 6/10/2017



**East - typical 12 gauge 75mm SS screw batten fixing**  
Taken at 11:12 AM on Friday 6/10/2017



**South - typical roof/wall junction**  
Taken at 11:12 AM on Friday 6/10/2017



**East deck**  
Taken at 11:12 AM on Friday 6/10/2017



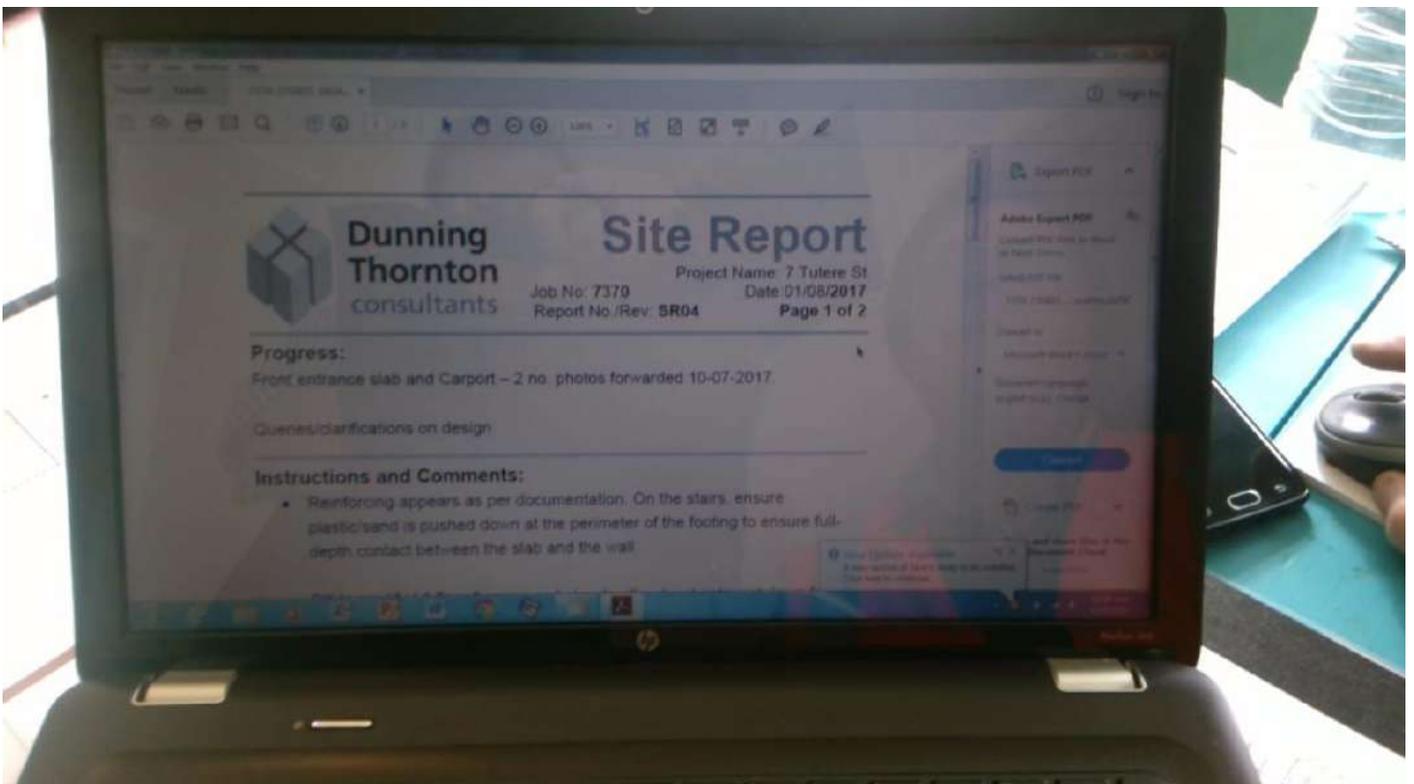
**upper South**  
Taken at 11:12 AM on Friday 6/10/2017



**N/W corner - typical PVC flashing to slot the 12mm H3.2 ply in to**  
Taken at 11:14 AM on Friday 6/10/2017



**East - was able to sight SS fixings and taped galv fixings**  
Taken at 11:16 AM on Friday 6/10/2017



**engineers monitoring notes sent to builder Stuart**  
Taken at 11:16 AM on Friday 6/10/2017

## GoGet Inspection Audit Report

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Pre Clad**  
Inspection Outcome: **Pass**  
Inspected By: **Jeremy Lincoln**  
Inspection Date: **16 March 2020 11:02 a.m.**  
Duration: **15 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Pass
<b>Head flashings only</b>	
Inspection notes	Pass
Fire Separations	N/A
Agent/owner written approval	N/A
Other	N/A

---

### **Documentation**

Application for CCC	Required
Electrical safety certificate	Received
<b>Inspection to be confirmed</b>	
As-built drainage plan	Required
Drainage (Form 126) for stormwater installation	Required
Drainage (Form 127) for private sewer installation	Required
Plumbing (Form 125) for pressure test and installation piped services	Required
Construction review PS4 statement for structural engineering	Received
Membrane applicator certificates - internal wet area	Received
Membrane applicator certificates - deck	Received
<b>bituflame under slatted decking to balcony</b>	
Roof product manufacturers warranty	Received
<b>Bituflame</b>	
Record of Work	Received
Roof installers warranty	Received
<b>spouting only</b>	
Solid Fuel Heater Installer's Checksheet	Received
Window manufacturers producer statement	Received
<b>Vistalite, burne</b>	
Water tank warranty	Required

---

### **Building Practitioners**

Carpentry 1	Received
Foundations 1	Received
Roofing 1	Received
<b>Membrane</b>	

## GoGet Inspection Audit Report

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Pre Wrap**  
Inspection Outcome: **Fail**  
Inspected By: **Gareth McCullagh**  
Inspection Date: **12 September 2017 11:07 a.m.**  
Duration: **30 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Fail
Inspection notes	Pass
Drawings	Pass
Additional information/plan	N/A
Cladding type identified	Pass
Framing moisture meets cladding requirements	N/A
Stud spacing appropriate for cladding <b>all 600 mm centres fitches at 3.8 metre centres</b>	Pass
Exterior sheet bracing and angle brace fixing <b>due to seaspray zoneD requires stainless steel nails as per ecoply specs builder has used galv and its exposed cavity using tape to joins either confirm ok from ecoply or recheck required</b>	Fail
Bottom plate connections <b>not all bottom plates completed still to check on next inspection</b> <b>All bottom plate connections fixed in compliance with the building consent documentation</b>	Fail
Building wrap type	N/A
Bracing requirements	N/A
Purlin fixing <b>rafters in place</b> <b>Purlins fixed and screw in accordance with the building consent documentation</b>	Pass
Decking substrate <b>roofs are 19mm for lower areas and 21mm to top roof used stainless steel screws and fixed as required still to install angle fillets</b>	Pass
Top Plate Connection	Pass
Lintel Connections <b>strapped as required</b>	Pass
Truss connections	Pass
Column posts	N/A
Other <b>ok to continue but still to check outstanding items</b>	Pass

## GoGet Inspection Audit Report

---

Consent No: **140009**

Applicant: **Colspec Construction Ltd**

Site Address: **7 Tutere Street, Waikanae Beach**

Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Pre Wrap**

Inspection Outcome: **Fail**

Inspected By: **John Peterson**

Inspection Date: **6 October 2017 1:54 p.m.**

Duration: **15 minutes**

### Inspection Element

### Status

General

Fail

Exterior sheet bracing and angle brace fixing

Pass

**due to seaspray zoneD requires stainless steel nails as per ecoply specs builder has used galv and its exposed cavity using tape to joins either confirm ok from ecoply or recheck required**

**06/10/17 confirmed at pre clad**

## GoGet Inspection Audit Report

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Pre Wrap**  
Inspection Outcome: **Pass**  
Inspected By: **Jeremy Lincoln**  
Inspection Date: **16 March 2020 11:02 a.m.**  
Duration: **15 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Pass
Fire Separations	N/A
Bottom plate connections <b>not all bottom plates completed still to check on next inspection</b> <b>All bottom plate connections fixed in compliance with the building consent documentation</b>	Pass
LBP number	Pass
Agent/owner written approval	N/A

---

### **Documentation**

Application for CCC	Required
Electrical safety certificate <b>Inspection to be confirmed</b>	Received
As-built drainage plan	Required
Drainage (Form 126) for stormwater installation	Required
Drainage (Form 127) for private sewer installation	Required
Plumbing (Form 125) for pressure test and installation piped services	Required
Construction review PS4 statement for structural engineering	Received
Membrane applicator certificates - internal wet area	Received
Membrane applicator certificates - deck <b>bituflame under slatted decking to balcony</b>	Received
Roof product manufacturers warranty <b>Bituflame</b>	Received
Record of Work	Received
Roof installers warranty <b>spouting only</b>	Received
Solid Fuel Heater Installer's Checksheet	Received
Window manufacturers producer statement <b>Vistalite, burne</b>	Received
Water tank warranty	Required

---

### **Building Practitioners**

Carpentry 1	Received
Foundations 1	Received
Roofing 1 <b>Membrane</b>	Received

---

## SITE NOTICE

Consent No: **140009**  
 Applicant: **Colspec Construction Ltd**  
 Site Address: **7 Tutere Street, Waikanae Beach**  
 Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
 Building Category: **R3**

Inspection Type: **Drainage**  
 Inspection Outcome: **Pass**  
 Inspected By: **Jeremy Lincoln**  
 Inspection Date: **16 March 2020**

### Passed Items

General	<b>rest of drainage</b>
Pipe diameter	<b>100mm sewer and stormwater 100mm</b>
Terminal vent	<b>Garage on separate consent two on main house garage needs vented</b>
	<b>Garage on separate consent</b>

Inspection Type: **Pre Wrap**  
 Inspection Outcome: **Pass**  
 Inspected By: **Jeremy Lincoln**  
 Inspection Date: **16 March 2020**

### Passed Items

General	<b>not all bottom plates completed still to check on next inspection</b>
Bottom plate connections	<b>All bottom plate connections fixed in compliance with the building consent documentation</b>
LBP number	

Inspection Type: **Pre Clad**  
 Inspection Outcome: **Pass**  
 Inspected By: **Jeremy Lincoln**  
 Inspection Date: **16 March 2020**

### Passed Items

General	<b>Head flashings only</b>
Inspection notes	

Inspection Type: **Preline Plumbing**  
 Inspection Outcome: **Fail**  
 Inspected By: **Jeremy Lincoln**

16 March 2020

**KEEP ON SITE FOR RECHECK**  
*Form 625 Site Inspection Notice Issued June 2019*

Page 1 of 3

Inspection Date: **16 March 2020**

## Failed Items

### General

Shut off valves

**Under main stair  
Non return valve to be fitted**

Other

**Brackets required on joists where drilled in the  
bottom cord of the joists**

## Passed Items

### General

TPR line

**x2 to gully**

---

Inspection Type: **Final Inspection**

Inspection Outcome: **Fail**

Inspected By: **Jeremy Lincoln**

Inspection Date: **16 March 2020**

## Failed Items

### Exterior

Stormwater and site drainage

**Please confirm with photos of tank**

### Interior

Smoke detectors

**not fitted**

Other

**non return valve to main to be fitted.  
recommend checking fitted water filter is suitable for  
mains pressure**

## Passed Items

### Exterior

All previous inspections/notes passed

**All passed items on this inspection have been  
assessed against the consented documentation.**

Drawings

Sub-floor ventilation

**Open sides to under deck**

Spouting and down-pipes

Flashings - roof

Gully dishes

**X1 ORG  
Charged with tpr lines**

Fixings - durability

Terminal vents/AAVs

**x2 50mm through wall**

Cladding painted/sealed

Flashings - windows/doors

Cladding ground clearance

### Interior

All previous inspections/notes passed

Drawings

Service areas-floors/walls

Stair design

Handrails

Balustrades

**frameless laminated glass**

Lightings

Laundrying

Cooking facilities

Food storage/preparation  
Ventilation  
Insulation and clearance  
HWC restraint  
Tempering valve  
Glazing - human impact  
Hot water temp  
Solid fuel heater

**Yunca oscar**  
**Clearances checked**

Water supply tank  
Trap seals and AAVS  
Cistern flushing  
WC pan connection  
Window labels

**connected to non potable**

---

## Documentation

## Status

Electrical safety certificate <b>Inspection to be confirmed</b>	Received
Construction review PS4 statement for structural engineering	Received
Membrane applicator certificates - internal wet area	Received
Membrane applicator certificates - deck <b>bituflame under slatted decking to balcony</b>	Received
Roof product manufacturers warranty <b>Bituflame</b>	Received
Record of Work	Received
Roof installers warranty <b>spouting only</b>	Received
Solid Fuel Heater Installer's Checksheet	Received
Window manufacturers producer statement <b>Vistalite, burne</b>	Received
Application for CCC	Required
As-built drainage plan	Required
Drainage (Form 126) for stormwater installation	Required
Drainage (Form 127) for private sewer installation	Required
Plumbing (Form 125) for pressure test and installation piped services	Required
Water tank warranty	Required

---

## Building Practitioners

## Status

Carpentry 1	Received
Foundations 1	Received
Roofing 1 <b>Membrane</b>	Received

## SITE NOTICE

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
Building Category: **R3**

---

Inspection Type: **Subfloor**  
Inspection Outcome: **Pass**  
Inspected By: **John Peterson**  
Inspection Date: **6 October 2017**

### Passed Items

General  
Other

**engineered Subfloor by dunning thornton  
. need engineers site report**

**06/10/17 confirmed at pre clad**

**Hard copies to be provided with the PS4 and or sent  
in via this e-mail address**

---

Inspection Type: **Pre Wrap**  
Inspection Outcome: **Fail**  
Inspected By: **John Peterson**  
Inspection Date: **6 October 2017**

### Passed Items

General

Exterior sheet bracing and angle brace fixing

**due to seaspray zoneD requires stainless steel nails  
as per ecoply specs builder has used galv and its  
exposed cavity using tape to joins either confirm ok  
from ecoply or recheck required**

**06/10/17 confirmed at pre clad**

### Failed Items

General

---

Inspection Type: **Pre Clad**  
Inspection Outcome: **Pass**  
Inspected By: **John Peterson**  
Inspection Date: **6 October 2017**

### Passed Items

General

Inspection notes

Drawings

Building wrap type

**Site note completed in KCDC offices**

---

**On site with Stuart Lind**

**Discriptive photos are saved to file of the aspects confirmed today**

**Ecoply RAB in place joints taped. Note: where galv nails were used the heads have been taped, SS fixings have also been used**

**Next inspection is a post clad to confirm 12mm ply fixings and window flashings**

**Discussed with builder Stuart having some of the cedar rain screen on to sight in progress**

**Ecoply tapes to joints & openings**

Flexible seling tape

Deck membrane fixed in accordance with specification **Torch on**

Capillary clearances

Ground/Deck Cladding Clearance

Batten timber treatment

**H3.2 castilated 45mm**

Cavity closers

Battens in place

Battens structural fixing

**12 gauge 75mm SS screw**

## SITE NOTICE

Consent No: **140009**  
 Applicant: **Colspec Construction Ltd**  
 Site Address: **7 Tutere Street, Waikanae Beach**  
 Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
 Building Category: **R3**

Inspection Type: **Subfloor**  
 Inspection Outcome: **Fail**  
 Inspected By: **Gareth McCullagh**  
 Inspection Date: **12 September 2017**

### Passed Items

<p>General</p> <ul style="list-style-type: none"> <li>Pile/bearer/joist fixings</li> <li>Notching/holes</li> <li>Solid blocking</li> <li>Joists</li> <li>Beams/bearers</li> </ul>	<p><b>engineered Subfloor by dunning thornton sighted drawings fixings</b></p> <p><b>Joists fixed as required H1.2 SG8</b></p>
---	---

### Failed Items

<p>General</p> <ul style="list-style-type: none"> <li>Other</li> </ul>	<p><b>engineered Subfloor by dunning thornton . need engineers site report</b></p>
--	--

Inspection Type: **Pre Wrap**  
 Inspection Outcome: **Fail**  
 Inspected By: **Gareth McCullagh**  
 Inspection Date: **12 September 2017**

### Passed Items

<p>General</p> <ul style="list-style-type: none"> <li>Inspection notes</li> <li>Drawings</li> <li>Cladding type identified</li> <li>Stud spacing appropriate for cladding</li> <li>Purlin fixing</li>   <li>Decking substrate</li>   <li>Top Plate Connection</li> <li>Lintel Connections</li> <li>Truss connections</li> <li>Other</li> </ul>	<p><b>all 600 mm centres flitches at 3.8 metre centres rafters in place</b></p> <p><b>Purlins fixed and screw in accordance with the building consent documentation</b></p> <p><b>roofs are 19mm for lower areas and 21mm to top roof used stainless steel screws and fixed as required still to install angle fillets</b></p> <p><b>strapped as required</b></p> <p><b>ok to continue but still to check outstanding items</b></p>
--	---

## Failed Items

### General

Exterior sheet bracing and angle brace fixing

**due to seaspray zoneD requires stainless steel nails as per ecoply specs builder has used galv and its exposed cavity using tape to joins either confirm ok from ecoply or recheck required**

Bottom plate connections

**not all bottom plates completed still to check on next inspection  
All bottom plate connections fixed in compliance with the building consent documentation**

## GoGet Inspection Audit Report

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Preline Building**  
Inspection Outcome: **Fail**  
Inspected By: **Alan Tinney**  
Inspection Date: **12 April 2018 12:06 p.m.**  
Duration: **30 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Fail
Sighted previous inspection notes	Pass
Conforms with approved drawings	Pass
Confirm additional information/amended plan	Pass
Max moisture content <b>17%</b>	Pass
Ventilation to rooms <b>Window sizes and openings as per consented documentation</b>	Pass
Timber treatment <b>H1.2</b>	Pass
Lintel/beam size and fixing	Pass
Insulation <b>walls 3.2/ceilings 5.2</b>	Pass
Top plate connection	Pass
Ceiling batten spacing	N/A
Stud spacing <b>600mm</b>	Pass
Bracing connections <b>engineer</b>	Pass
Air seals	Pass
Bottom plate fixings	Pass
Is the building weathertight	Pass
Grade of timber framing	Pass
Framing cut outs	Pass
wet area substrate <b>no metal corners</b>	Fail
insert or inbuilt fireplace	N/A
LBP number	N/A
Other	N/A
Other	N/A

## SITE NOTICE

Consent No: **140009**  
 Applicant: **Colspec Construction Ltd**  
 Site Address: **7 Tutere Street, Waikanae Beach**  
 Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
 Building Category: **R3**

Inspection Type: **Preline Building**  
 Inspection Outcome: **Fail**  
 Inspected By: **Alan Tinney**  
 Inspection Date: **12 April 2018**

### Passed Items

#### General

Sighted previous inspection notes	
Conforms with approved drawings	
Confirm additional information/amended plan	
Max moisture content	<b>17%</b>
Ventilation to rooms	<b>Window sizes and openings as per consented documentation</b>
Timber treatment	<b>H1.2</b>
Lintel/beam size and fixing	
Insulation	<b>walls 3.2/ceilings 5.2</b>
Top plate connection	
Stud spacing	<b>600mm</b>
Bracing connections	<b>engineer</b>
Air seals	
Bottom plate fixings	
Is the building weathertight	
Grade of timber framing	
Framing cut outs	

### Failed Items

#### General

wet area substrate	<b>no metal corners</b>
--------------------	-------------------------

## GoGet Inspection Audit Report

---

Consent No: **140009**

Applicant: **Colspec Construction Ltd**

Site Address: **7 Tutere Street, Waikanae Beach**

Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Preline Building**

Inspection Outcome: **Pass**

Inspected By: **Alan Tinney**

Inspection Date: **21 May 2018 10:00 a.m.**

Duration: **15 minutes**

### Inspection Element

### Status

General

Pass

wet area substrate  
**now completed**

Pass

## SITE NOTICE

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
Building Category: **R3**

---

Inspection Type: **Preline Building**  
Inspection Outcome: **Pass**  
Inspected By: **Alan Tinney**  
Inspection Date: **21 May 2018**

### Passed Items

#### General

wet area substrate **now completed**

---

Inspection Type: **Postline / Wet area Pre Application**  
Inspection Outcome: **Pass**  
Inspected By: **Alan Tinney**  
Inspection Date: **21 May 2018**

### Passed Items

#### General

Sighted previous inspection notes  
Conforms with approved drawings  
Confirm additional information/amended plan  
Sheet bracing **EP1/BL1**  
Sheet fixings **as required**  
Wet area substrate system **villa board fixed @ 150mm**

## GoGet Inspection Audit Report

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Preline Plumbing**  
Inspection Outcome: **Fail**  
Inspected By: **Maurice Powell**  
Inspection Date: **21 November 2017 11:11 a.m.**  
Duration: **30 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Fail
Sighted previous inspection notes	Pass
Conforms with approved drawings	Pass
Confirm additional information/amended plan	N/A
Soil pipe size and test	Pass
Pipes fixed/supported	Pass
System used <b>AS3500</b>	Pass
TPR line	Fail
Inbuilt S/W pipes tested <b>To be done later</b>	Pass
Vents terminated	Pass
Pressure test	Pass
Waste pipe size and test	Pass
Floor wastes	N/A
Shut off valves <b>To be done later.</b>	Fail
Fire wraps and collars	N/A
Other <b>Brackets required on joists where drilled in the bottom cord of the joists</b>	Fail



Taken at 11:08 AM on Tuesday 21/11/2017

## GoGet Inspection Audit Report

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Preline Plumbing**  
Inspection Outcome: **Fail**  
Inspected By: **Jeremy Lincoln**  
Inspection Date: **16 March 2020 12:40 p.m.**  
Duration: **15 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Fail
TPR line	Pass
<b>x2 to gully</b>	
Shut off valves	Fail
<b>Under main stair</b>	
<b>Non return valve to be fitted</b>	

---

### **Documentation**

Application for CCC	Required
Electrical safety certificate	Received
<b>Inspection to be confirmed</b>	
As-built drainage plan	Required
Drainage (Form 126) for stormwater installation	Required
Drainage (Form 127) for private sewer installation	Required
Plumbing (Form 125) for pressure test and installation piped services	Required
Construction review PS4 statement for structural engineering	Received
Membrane applicator certificates - internal wet area	Received
Membrane applicator certificates - deck	Received
<b>bituflame under slatted decking to balcony</b>	
Roof product manufacturers warranty	Received
<b>Bituflame</b>	
Record of Work	Received
Roof installers warranty	Received
<b>spouting only</b>	
Solid Fuel Heater Installer's Checksheet	Received
Window manufacturers producer statement	Received
<b>Vistalite, burne</b>	
Water tank warranty	Required

---

### **Building Practitioners**

Carpentry 1	Received
Foundations 1	Received
Roofing 1	Received
<b>Membrane</b>	



Taken at 12:37 PM on Monday 16/03/2020

## SITE NOTICE

Consent No: **140009**  
 Applicant: **Colspec Construction Ltd**  
 Site Address: **7 Tutere Street, Waikanae Beach**  
 Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
 Building Category: **R3**

Inspection Type: **Drainage**  
 Inspection Outcome: **Pass**  
 Inspected By: **Maurice Powell**  
 Inspection Date: **21 November 2017**

### Passed Items

General

**Rain water soak pit only inspected and passed. All other drainage still to be carried out and inspected soak pit inspected.**

Other

Inspection Type: **Preline Plumbing**  
 Inspection Outcome: **Fail**  
 Inspected By: **Maurice Powell**  
 Inspection Date: **21 November 2017**

### Passed Items

General

Sighted previous inspection notes  
 Conforms with approved drawings  
 Soil pipe size and test  
 Pipes fixed/supported  
 System used  
 Inbuilt S/W pipes tested  
 Vents terminated  
 Pressure test  
 Waste pipe size and test

**AS3500**

**To be done later**

### Failed Items

General

TPR line  
 Shut off valves  
 Other

**To be done later.**

**Brackets required on joists where drilled in the bottom cord of the joists**

## GoGet Inspection Audit Report

---

Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

---

Inspection Type: **Pre-Slab Building**  
Inspection Outcome: **Pass**  
Inspected By: **Craig Watson**  
Inspection Date: **7 July 2017 2:39 p.m.**  
Duration: **30 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Pass
Engineers details required <b>Thornton</b>	Pass
Rebate for brick veneer	N/A
Ground clearance	Pass
Concrete cover <b>125 mm 25 mpa</b>	Pass
Driveway S/W control	N/A
Sand blinding	Pass
Slab thickenings	N/A
Vapour barrier <b>Poly barrier</b>	Pass
Bottom plate fixings	N/A
Steel reinforcing <b>All covered by engineer</b> <b>All steel work placed and tied as per consented documentation</b>	Pass
Bar chairs <b>Bar chairs placed as required</b>	Pass
DPC penetrations taped <b>All penetrations taped as required</b>	Pass
Minimum floor level	Pass
Siting	N/A
Other <b>All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.</b>	Pass



Taken at 2:39 PM on Friday 7/07/2017



Taken at 2:39 PM on Friday 7/07/2017



Taken at 2:39 PM on Friday 7/07/2017

## SITE NOTICE

Consent No: **140009**  
 Applicant: **Colspec Construction Ltd**  
 Site Address: **7 Tutere Street, Waikanae Beach**  
 Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
 Building Category: **R3**

Inspection Type: **Pre-Slab Building**  
 Inspection Outcome: **Pass**  
 Inspected By: **Craig Watson**  
 Inspection Date: **7 July 2017**

### Passed Items

#### General

Engineers details required	<b>Thornton</b>
Ground clearance	
Concrete cover	<b>125 mm 25 mpa</b>
Sand blinding	
Vapour barrier	<b>Poly barrier</b>
Steel reinforcing	<b>All covered by engineer All steel work placed and tied as per consented documentation</b>
Bar chairs	<b>Bar chairs placed as required</b>
DPC penetrations taped	<b>All penetrations taped as required</b>
Minimum floor level	
Other	<b>All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.</b>

Colspec Construction Ltd  
P O Box 205  
FEILDING 4440

11 October 2019

Dear Building Consent Applicant / Building Owner

**Notification of Code Compliance Certificate Decision**  
**Building Consent: 140009**

**Site Address:** 7 Tutere Street, Waikanae Beach  
**Legal Description:** LOT 85 DP 7462  
**Project Description:** Proposed dwelling at 7 Tutere Street, Waikanae

Kapiti Coast District Council wrote to you previously explaining the requirements related to applying for a Code Compliance Certificate when building work is completed, and the obligation on the Building Consent Authority (BCA) to decide to issue or to refuse to issue a Code Compliance Certificate. No response to this letter has been received, and the deadline for the BCA to make a decision has been reached.

The BCA has insufficient information to determine that work is completed in accordance with the approved building consent documentation and therefore has decided to refuse to issue a Code Compliance Certificate.

If you have any questions or you would like to discuss this matter, please contact me on (04) 296 4700 or 0800 486 486 referencing Building Consent: 140009.

Yours sincerely



Michelle Salmon  
**Building Inspections Team Leader**

## GoGet Inspection Audit Report

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Consent No: **140009**

Applicant: **Colspec Construction Ltd**

Site Address: **7 Tutere Street, Waikanae Beach**

Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

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Inspection Type: **Subfloor**

Inspection Outcome: **Fail**

Inspected By: **Gareth McCullagh**

Inspection Date: **12 September 2017 11:00 a.m.**

Duration: **30 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Fail
<b>engineered Subfloor by dunning thornton</b>	
Pile/bearer/joist fixings	Pass
<b>sighted drawings fixings</b>	
Notching/holes	Pass
Solid blocking	Pass
Joists	Pass
<b>Joists fixed as required H1.2 SG8</b>	
Beams/bearers	Pass
Other	Fail
<b>. need engineers site report</b>	

## GoGet Inspection Audit Report

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Consent No: **140009**

Applicant: **Colspec Construction Ltd**

Site Address: **7 Tutere Street, Waikanae Beach**

Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

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Inspection Type: **Subfloor**

Inspection Outcome: **Pass**

Inspected By: **John Peterson**

Inspection Date: **6 October 2017 1:51 p.m.**

Duration: **15 minutes**

### Inspection Element

### Status

General

Pass

**engineered Subfloor by dunning thornton**

Other

Pass

**. need engineers site report**

**06/10/17 confirmed at pre clad**

**Hard copies to be provided with the PS4 and or sent in via this e-mail address**

## GoGet Inspection Audit Report

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Consent No: **140009**

Applicant: **Colspec Construction Ltd**

Site Address: **7 Tutere Street, Waikanae Beach**

Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**

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Inspection Type: **Wet Area Post-application**

Inspection Outcome: **Pass**

Inspected By: **John Peterson**

Inspection Date: **1 June 2018 1:38 p.m.**

Duration: **45 minutes**

<b>Inspection Element</b>	<b>Status</b>
General	Pass
Sighted previous inspection notes	Pass
Conforms with approved drawings	Pass
<b>Ensuite and main bathroom.</b>	
<b>Dampfix Gold applied over compressed sheet floor and wall substrates in the wet areas and Aqualine to water splash areas</b>	
Confirm additional information/amended plan	N/A
Penetrations sleeved	Pass
LBP number	N/A
Other	N/A



**ensuite**

Taken at 1:30 PM on Friday 1/06/2018



**ensuite**

Taken at 1:30 PM on Friday 1/06/2018



**main bathroom**  
Taken at 1:30 PM on Friday 1/06/2018



**main bathroom**  
Taken at 1:30 PM on Friday 1/06/2018

## SITE NOTICE

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Consent No: **140009**  
Applicant: **Colspec Construction Ltd**  
Site Address: **7 Tutere Street, Waikanae Beach**  
Work Type: **Proposed dwelling at 7 Tutere Street, Waikanae**  
Building Category: **R3**

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Inspection Type: **Wet Area Post-application**  
Inspection Outcome: **Pass**  
Inspected By: **John Peterson**  
Inspection Date: **1 June 2018**

### Passed Items

#### General

Sighted previous inspection notes  
Conforms with approved drawings

**Ensuite and main bathroom.  
Dampfix Gold applied over compressed sheet floor  
and wall substrates in the wet areas and Aqualine to  
water splash areas**

Penetrations sleeved

# CODE COMPLIANCE CERTIFICATE

Section 95 Building Act 2004 [Form 7 – Building (forms) Regulations 2004]



Consent No(s): 150134

The Building			
<b>Street address of building:</b>	7 Tutere Street, Waikanae Beach	<b>Building name:</b>	N/A
<b>Current, Lawfully established, use:</b>	Outbuilding	<b>Location of building within site/block number:</b>	Front of site
<b>Level/unit number:</b>	N/A	<b>Intended life of the building if 50 years or less:</b>	-
<b>Legal description of land where building is located:</b>	LOT 85 DP 7462	<b>Year first constructed:</b>	2017
The Owner			
<b>Name of owner:</b>	O'Brien Shane Michael & O'Brien Jillian Mary	<b>Street address /registered office:</b>	N/A
<b>Contact person:</b>	Jillian M O'Brien, Shane M O'Brien, David A Lea	<b>Phone numbers:</b>	
<b>Mailing address:</b>	320 Kimbolton Road Feilding 4702	<b>Landline:</b>	06 357 9837
<b>Email address:</b>	shane@colspec.co.nz	<b>Mobile:</b>	027 485 0316
<b>Website:</b>	www.colspec.co.nz	<b>Daytime:</b>	06 323 0557
		<b>After hours:</b>	-
		<b>Facsimile number:</b>	-
First point of contact for communications with the Kapiti Coast District Council:			
As above			
Building Work			
<b>Building Consent No(s):</b>	150134	<b>Issued by:</b>	Kapiti Coast District Council

## Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that:

- (a) the building work complies with the building consent

A handwritten signature in blue ink, appearing to read 'Michelle Salmon', is written over a horizontal line.

Michelle Salmon –  
Building Inspections Team Leader  
On behalf of **Kapiti Coast District Council**

Date: 23 May 2022



**THE BUILDING**

Street address: 7 Tutere Street  
 Suburb:  
 Town/City: Waikanae Beach Postcode: 5036

**THE PROJECT**

Building consent number: 140009 / 15034

**THE OWNER(S)**

Name(s): Shane & Jill O'Brien  
 Mailing address: 7 Tutere Street  
 Suburb: PO Box/Private Bag:  
 Town/City: Waikanae Beach Postcode: 5036  
 Phone number: 0274850316 Email address: Shane@colspec.co.nz

**RECORD OF WORK THAT IS RESTRICTED BUILDING WORK**

**PRIMARY STRUCTURE**

Work that is restricted building work Tick	Description of restricted building work If necessary, describe the restricted building work	Carried out or supervised Tick <input checked="" type="checkbox"/> whether you carried out the RBW or supervised someone else.
<input checked="" type="checkbox"/>	Sub floor framing on ground floor	<input checked="" type="checkbox"/> Carried out <input type="checkbox"/> Supervised
<input checked="" type="checkbox"/>	Helped stand pre made frames on bottom floor. Made top floor frames, and stool.	<input checked="" type="checkbox"/> Carried out <input type="checkbox"/> Supervised
<input checked="" type="checkbox"/>	Rafters on mono pitch flat roof	<input checked="" type="checkbox"/> Carried out <input type="checkbox"/> Supervised
<input type="checkbox"/>		<input type="checkbox"/> Carried out <input type="checkbox"/> Supervised
<input checked="" type="checkbox"/>	Eco ply on exterior. Internal. G/b elements.	<input checked="" type="checkbox"/> Carried out <input type="checkbox"/> Supervised
<input type="checkbox"/>		<input type="checkbox"/> Carried out <input type="checkbox"/> Supervised

BC150134  
 Received by  
 Kapiti Coast District Council  
 10/05/22  
 via Front counter

**RECORD OF WORK THAT IS RESTRICTED BUILDING WORK**

**EXTERNAL MOISTURE MANAGEMENT SYSTEMS**

Damp proofing <input type="radio"/>	<del>_____</del>	<input type="radio"/> Carried out <input type="radio"/> Supervised
Roof cladding or roof cladding system <input checked="" type="radio"/>	Ply on roof for <del>torch</del> torch on	<input checked="" type="radio"/> Carried out <input type="radio"/> Supervised
Ventilation system (for example, subfloor or cavity) <input checked="" type="radio"/>	Sub floor ventilation, ventilation on mono pitch roof	<input checked="" type="radio"/> Carried out <input type="radio"/> Supervised
Wall cladding or wall cladding system <input checked="" type="radio"/>	Treated ply on cavity system, with red wood cladding overlay	<input checked="" type="radio"/> Carried out <input type="radio"/> Supervised
Waterproofing <input type="radio"/>	<del>_____</del>	<input type="radio"/> Carried out <input type="radio"/> Supervised
Other <input type="radio"/>	<del>_____</del>	<input type="radio"/> Carried out <input type="radio"/> Supervised

**ISSUED BY**

Name and contact details of the licensed building practitioner who is licensed to carry out or supervise restricted building work.

Name: Ben Kusabs      LBP number: BP 130832

Class(es) licensed in: Carpentry

Plumbers, Gasfitters and Drainlayers registration number (if applicable): \_\_\_\_\_

Mailing address (if different from below):

Street address/Registered office: 89 Puruaha Road

Suburb: Te Horo      Town/City: Otaki

PO Box/Private Bag:      Postcode: 5581

Phone number:      Mobile: 027 549 5483

After hours:      Fax:

Email address: Ben@Blackpine.Construction      Website:

**DECLARATION**

I Ben Kusabs carried out or supervised the restricted building work recorded on this form.

Signature: [Signature]      Date: 27/5/21



# Combined Certificate of Compliance and Electrical Safety Certificate

Unique ID:

Note: If you are using this form to provide only an Electrical Safety Certificate, then only complete sections 1, 3 and 5

## 1. Customer Information

Customer Name: Shane & Jill O'brien  
 Customer Phone / Email: 0274850316  
 Location of Installation: 7 Tutere street, Waikanae Beach

BC150134  
 Received by \_\_\_\_\_  
 Kapiti Coast District Council  
 10/05/22  
 via Front counter

## 2. Certifier Information

Certifier Name: Myles Raue Registration / Practising Licence Number: E263365  
 Organisation: Raue Electrical Telephone Number: 0224081304  
 Email: raueelectrical@gmail.com

Name and Registration Number of person(s) involved in work and supervised by certifier: N/A

## 3. Details of work to which certificate applies

The work is:  an entire installation  a specific part of an installation  
 The work is:  High Risk  General  Low Risk (Certificate of Compliance not required)

Indicate the number of each item installed or altered:

Number of lighting outlets: 73  
 Number of socket outlets: 31  
 Number of ranges: 1  
 Number of water heaters: 1

General Description of Work

New build where all wiring and fittings have been installed by myself as of 28/08/19. Two Phase meterboard installed in garage with 25mm 3C+E Neutral screen cable sub main to distribution board located in main house.

Tick (✓) if work includes:

- Mains
- MEN switchboard closest to point of supply
- Main Earthing System
- Electric Lines

Period within / Date on which the work was done: 08/01/18 - 28/08/19

The work is safe to be connected to:  230/400V MEN System  Other (specify) high risk CoC has already been issued with ROI for mains work completed

## 4. Certificate of Compliance

I am satisfied that the work to which this Certificate of Compliance applies has been done lawfully and safely and the information in this certificate is correct. The work:

- complies with Part 1 of AS/NZ 3000  complies with Part 2 of AS/NZ 3000
- complies with the following standard(s): \_\_\_\_\_
- has been installed in accordance with a certified design (attach or reference\*)
- has an earthing system that is correctly rated
- contains fittings which are safe to connect to a power supply
- relies on supplier's Declaration of Conformity (attach or reference\*)
- relies on manufacturer's instructions (attach or reference\*)
- has been satisfactorily tested in accordance with Electricity (Safety) Regulations 2010
- is safe to connect

Test Results:

	Electrical Worker	Inspector
Polarity (independent earth):	Pass	
Insulation resistance:	Pass	
Earth continuity:	Pass	
Bonding:	Pass	
Other (specify):		

Electronic reference: \_\_\_\_\_

Certifier's Signature: MR

Date: 28/08/19

\* If it is impractical to attach a copy of any relevant certified design, manufacturer's instruction or supplier declaration of conformity, provide a reference to where the documents can be found, in a readily accessible format, through electronic means.

## 5. Electrical Safety Certificate

Date on which the connection was done: 23/05/19

I am satisfied that the work to which this Electrical Safety Certificate applies is connected to a power supply and is safe to use

Name: Myles Raue

Registration / Practising License Number: E263365

Signature of Connector: MR

Date: 28/08/19

BC150134  
Received by  
Kapiti Coast District Council  
10/05/22  
via Front counter



# STATEMENT DRAINAGE WORK INSTALLED

## Construction Review

Send or deliver this form to: Kapiti Coast District Council,  
175 Rimu Road, Paraparaumu 5032; Private Bag 60601, Paraparaumu 5254  
For enquiries, phone 04 296 4700 (Toll Free: 0800 486 486)

TO BE COMPLETED BY THE INSTALLER	
Issued by:	David Brokenshire
Registration number:	# 12156
Tick applicable	
<input type="checkbox"/>	In respect of: Stormwater Drains installed in accordance with E1 AS1 as shown on the approved plans or as per the attached amended plan.
<input type="checkbox"/>	In respect of: Private Sewer Drains installed in accordance with G13 AS2 or AS/NZS 3500 .2.2 as shown on the approved plans or as per the attached amended plan.
Installed at:	7 Tutere Street Waikanae Beach
Building Consent No:	150134
As a certified drainlayer, currently holding an annual practicing license, I certify that I, or personnel under my control, have carried out the installation of the above system and I believe on reasonable grounds that the installation complies with the New Zealand Building Code.	
Name: David Brokenshire	Signature:
Address: 499 Tremaine Ave Palmerston North	Date: 28 MAY 2021
Phone: (06) 353 6082	Fax:
Mobil:	Email: office@brokenshireplumbing.co.nz

**Note:** Fully dimensioned as built drain plan to be supplied. (scale 1:100)  
Drains may be laid and backfilled without inspection provided that the drain is left under test with a min of 1.0 m head and the inspection at the lateral left exposed.

### Kāpiti Coast District Council Office Use Only

Statement author authenticated and current registration verified. Verification and Registration checked through public register on [www.pgdb.co.nz](http://www.pgdb.co.nz).

Name:			
Signature:		Date:	

# STATEMENT PIPED SERVICES AND PLUMBING STACKS



## Construction Review

Send or deliver this form to: Kapiti Coast District Council,  
175 Rimu Road, Paraparaumu 5032  
Private Bag 60601, Paraparaumu 5254  
For enquiries, phone 04 296 4700 (Toll Free: 0800 486 486)

TO BE COMPLETED BY THE INSTALLER	
Issued by:	Rhys Van Bunnik
Registration number:	# 22126
In respect of Piped Services installed in accordance with G12/AS1 as shown on the approved plans or as per the attached amended plan and Sanitary Plumbing Stacks installed in accordance with G13/AS1 or AS/NZS 3500.2.2	
Installed at:	
Building Consent No:	150134
As a certified plumber, currently holding an annual practicing license, certify that I, or personnel under my control, have carried out the installation of the above system and I believe on reasonable grounds that the installation complies with the New Zealand Building Code. Both hot and cold systems have been pressure tested for a period of 15 minutes at a pressure of 1500 kPa.	
Name:	Rhys Van Bunnik
Signature:	
Address:	52 Martyn St Palmerston North
Date:	28 MAY 2021
Phone:	0278055472
Fax:	—
Mobile:	—
Email:	rhys@preferredplumbing.co.nz

Kāpiti Coast District Council Office Use Only	
Statement author authenticated and current registration verified. Verification and Registration checked through public register on www.pgdb.co.nz.	
Date:	<input type="text"/>
Name:	<input type="text"/>
Signature:	<input type="text"/>



## Residential Warranty and Maintenance Requirements

SUPPLY DATE: APRIL 2019

PROPERTY OWNER	Shane O'Brien - Aline Group
SITE ADDRESS	7 Tutere Street, Waikanae Beach, Waikanae 5036, New Zealand
SITE ENVIRONMENT	Very Severe
BUILDING TYPE	Residential
ROLLFORMER	Metalcraft Palmerston North

WARRANTY THAT PRODUCT:	ROOFING	WALL CLADDING	GUTTERS/DOWNPipes	FASCIA	FLASHINGS
Paint will not flake, peel or excessively fade	-	-	10 Years	-	-
Will not perforate through corrosion	-	-	10 Years	-	-

The product manufactured from **COLORSTEEL® Maxx®** is subject to normal wear and tear, which may include uniform fading, chalking and dirt collection. Minor white corrosion, which may appear at unwashed tension bands or cut edges, is a natural weathering phenomenon of **COLORSTEEL® Maxx®** and does not constitute a failure of the coating system. Testing to determine coating performance will be in accordance with the methods described in Australian Standard AS1580.

This warranty is issued by New Zealand Steel Limited and is subject to the following terms and conditions:

(Note: all New Zealand Steel literature referred to in this warranty is that which is current at the time of installation and is available from the rollformer or [www.colorsteel.co.nz](http://www.colorsteel.co.nz))

- The maintenance programme specified on the reverse **BEING STRICTLY ADHERED TO and documented.**
- The warranty periods stated above start from the date the material is supplied to site.
- The installed pitch of the roof is equal to or greater than 3°, or the minimum recommended for the profile, whichever is greater.
- The product is only used in the environments and applications as recommended in the *Environmental Categories and Product Maintenance Recommendations* brochure (or on-line *Guidelines for Use*).
- The product is designed, formed, stored, handled and installed in accordance with recommendations given in *Specifiers and Builders Guide* (on-line *Guidelines for Use*), *Information Bulletins* and *NZ Metal Roof and Wall Cladding Code of Practice*.
- This warranty covers the **COLORSTEEL® Maxx®** material only and no accessories supplied which include, without limitation, fasteners, soft edge and building wrap.
- All warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed in law. In particular, where the product is supplied for the purpose of business, the guarantees contained in the Consumer Guarantees Act 1993 do not apply.
- Failure of the material or the coating partially or wholly due to one or more of the following causes is not covered by this warranty:
  - Use of the product within 50m of breaking surf on the East Coast or 100m of breaking surf on the West Coast.
  - Physical damage during or after installation, including scratching, contact with other metal items, incorrect installation of external objects such as air-conditioning units, PV/Solar energy systems, and failure to remove swarf.
  - Contact with soil, ash, fertilizer, moisture retaining substances, or sunscreen.

- Contact with or runoff from lead or copper and other dissimilar metals, chemical agents, green or wet timber or treated timber.
- Water entrapment or ponding for any reason.
- Mechanical damage, chemical attack, corrosion or other damage sustained during transport, handling, storage, installation or subsequent to installation.
- Attack from chemical or other agents, fumes, solids or liquids other than direct rain or run-off falling onto the product under warranty.
- Application of post paint treatments or systems.
- Failure to install, use and maintain the product in accordance with NZ Steel's guidelines and applicable industry standards.
- Underside corrosion as a result of high humidity, condensation or pollution generated within a building.
- Failure to replace corroded fasteners, or use of incorrect fasteners.
- Corrosion arising from lapped areas of end-lapped sheets.
- The product having been inappropriately stored prior to installation.
- Causes beyond the control of New Zealand Steel or the roofing manufacturer, including earthquakes, fires, cyclones, tornadoes, storms, hurricanes, lightning, hail, volcanic activity and other similar extreme "Acts of God".
- Actions by other persons.

If **COLORSTEEL® Maxx®** pre-painted steel has failed to perform as warranted, then a claim, in writing, specifying in what respect the **COLORSTEEL® Maxx®** has failed to perform, must be made within the applicable warranty period, to New Zealand Steel who will at its sole option repair or replace (including labour) the affected material or provide a refund equal to the cash value based on New Zealand Steel's estimate of the cost of the then current New Zealand Steel equivalent product. All claims must be accompanied by this original warranty document. A new warranty will be issued to cover the balance of the original warranty offer for both the paint coating and perforation protection where repair or replacement is made, this period is not extended in case of replacement. Neither the roofing manufacturer named below nor New Zealand Steel will be liable for any consequential loss or damage except as may be required under any mandatory statutory provisions. Nothing in this warranty is intended to exclude or limit any rights consumers may have under the Consumer Guarantees Act 1993.

New Zealand Steel and/or the roofing manufacturer reserve the right to inspect a building prior to issuing of the warranty and/or to inspect and conduct tests as necessary at any time after a claim is made under this warranty and accordingly have access to the property.



For more information call 0800 697 833, visit [www.colorsteel.co.nz](http://www.colorsteel.co.nz), mail us at Private Bag 92121, Auckland 1142, or email us at [info@colorsteel.co.nz](mailto:info@colorsteel.co.nz)



## PRODUCT USAGES

Gutters/downpipes with a 125 Box Gutter profile

- Paint will not flake, peel or excessively fade for 10 years
- Will not perforate through corrosion for 10 years

Coil References: V440996: Ebony, 0.55mm

## SIGNATURES

Installed by Supply Only.

This Warranty is issued by (the manufacturer): Metalcraft Palmerston North

Signed:



Position:

Admin

Date:

17.9.19

## MAINTENANCE PROGRAMME

All roofing and cladding products are subject to the cumulative effects of weather, dust and other deposits. Normal rain-washing will remove accumulated atmospheric contaminants from roofs. Gutters must be regularly inspected to remove debris, which may cause ponding.

ENVIRONMENT	MODERATE ISO CATEGORY 3	SEVERE ISO CATEGORY 4	VERY SEVERE ISO CATEGORY 5
Roof	Rain washing	Rain washing	Rain washing
Wall Cladding	Manual washing every year	Manual washing every 6 months	Manual washing every 3 months
Gutters, fascias and unwashed or high risk areas	Manual washing every 6 months	Manual washing every 3 months	Manual washing every month

Environment zones are described in detail in the *Environmental Categories and Product Maintenance Recommendations* brochure. If your building is within 1000 metres of the sea or in an area with a corrosive environment you should check these Categories.

Regular washing of COLORSTEEL® Maxx® products increases the durability by reducing attack from airborne salts and pollutants. COLORSTEEL® Maxx® surfaces should be manually washed with water and a sponge or a soft nylon-bristled brush. For large areas it may be appropriate to use water blasting at pressures up to 20 MPa. Regular inspection for, and removal of lichen should be carried out as per Information Bulletin - *Removal of Lichen*.

Note: high risk areas include areas around flues, chimneys and extractor vents, under television aerials and trees and sites prone to mould, lichen, bird droppings or debris. External objects such as walkways and platforms, air conditioning units, solar hot water and solar photovoltaic systems, all have the potential to create areas on the roof that are sheltered from the rain (unwashed areas) and, as such, additional maintenance of the roof areas affected is required as highlighted in the above table.

COLORSTEEL® and COLORSTEEL® Maxx® are registered trademarks of New Zealand Steel Limited.



For more information call 0800 697 833, visit [www.colorsteel.co.nz](http://www.colorsteel.co.nz),  
mail us at Private Bag 92121, Auckland 1142, or email us at [info@colorsteel.co.nz](mailto:info@colorsteel.co.nz)



**BURNE Aluminium (2003) Ltd**  
21 Manchester Street Phone (06) 323-6630  
Feilding 4702

29 March 2018

Colspect Construction Ltd  
P O Box 205  
Feilding 4740

**Producer Statement**

**Project: O'Brien House – 7 Tutere Street, Waikanae**

We certify that the products supplied by our company for this project, meet or exceed the requirements of the New Zealand Building Code, NZS 4211:2008 Performance of Windows and NZS 4223.3:2016 Glazing in Buildings.

More specifically, we have manufactured the Aluminium and windows and doors for this project in accordance with the design and manufacturing specifications provided by Fletcher Aluminium, a division of Fletcher Building Products Limited, and those required by NZS 4223.3:2016.

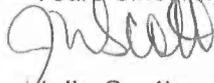
Window and door units manufactured to these specifications have been tested to, and comply with, the wind pressure rating, deflection, weather performance and glazing requirements of the above New Zealand Standards. The application of Pascal rating stickers on the window and door units is further confirmation that the window and door units have been manufactured to the prescribed specifications and comply with NZS 4211.

The products supplied by our company for this project, can be expected to have a serviceable life of not less than 15 years in accordance with section B2 of the New Zealand Building Code. This relates specifically to the structural elements of the windows and doors.

Our warranties are as follows. Five years for workmanship and fifteen years on 25 micron black anodized aluminium joinery and ten years on double glazed units.

Over time, even with regular maintenance, decorative elements and non-structural fittings such as handles, fasteners, door rollers, mohairs and other similar components may require replacement as they wear out. This process does not contravene the Durability Requirements of section B2 of the New Zealand Building Code or this Producer Statement.

Yours Sincerely



Julie Scott  
For Manager



Your Home is fitted with quality Fletcher Window & Door Systems product.

5 YEAR WARRANTY

1. The Fletcher Window and Door Systems manufacturer warrants for a period of 5 years from [the date of supply] that:

(a) the aluminium joinery used in the manufacture of the Product are finished in accordance with AAMA 2603-05 Performance Standard for Exterior Architectural Aluminium Joinery, and also in accordance with WNZ SFA 3503-03:2005 Aluminium and Aluminium Alloys - anodised coatings for architectural applications; and also in accordance with WNZ SFA 3503-03:2005

Aluminium and Aluminium Alloys - anodised coatings for architectural applications;

(b) the doors and windows of the Product comply with NZS 4211:2007 Performance of Windows, and NZS 4223 Code of Practice for Glazing in Buildings; and

(c) As required under NZS 4211 the product or products specified will remain watertight.

2. If the Product does not perform as warranted, the manufacturer will make good the Product by, at its option, (i) replacing or repairing the affected Product, (ii) supplying equivalent Product, (iii) paying the cost of replacing the affected Product, or (iv) refunding the cost of the affected Product, subject to the following terms:

(a) that the window manufacturer is advised of and given an opportunity to inspect any fault;

(b) that any claims under this warranty need to be made in writing to the window manufacturer within 7 days of the fault first becoming apparent;

(c) that this warranty is not transferable and only applies to the original purchaser, unless the window manufacturer agrees otherwise in writing;

(d) that this warranty only applies:

(i) where the Product has been maintained in accordance with the maintenance procedure specified;

(ii) to a defect in the workmanship or a defect that is directly attributable to a defect in the material of the Product; and

(iii) where the purchaser has paid in full for the supply (and installation if applicable) of the window joinery;

(e) that the warranty does not apply to any:

(i) glass or glazing materials used in the joinery;

(ii) defects due to any cause beyond the manufacturer's control including, without limitation, defects in the structure to which the joinery has been affixed;

(iii) materials, hardware or components not manufactured by the window manufacturer;

(iv) weather tightness - where the contract is one of manufacture and supply only, the junction between joinery and cladding systems is the responsibility of the builder;

(v) that the window manufacturer will not be liable for any consequential, indirect or special damage or loss including, without limitation, any loss of profits;

(vi) that the warranty does not apply to any fault caused by incorrect installation by anyone other than the window manufacturer or its authorised agents, and/or any installation otherwise than in accordance with the installation guide current at the time of supply.

3. This warranty is given by the manufacturer of Fletcher Window and Door Systems; an Allus NZ Ltd franchisee.

Customer Copy

FRANCHISEE: Birnie Aluminium (2003) Ltd

CUSTOMER NAME & ADDRESS:

Calspec Construction
Palmerston North

ADDRESS FOR BUILDING SITE RECEIVING SUPPLY:

7 Tutere Street
Waikanae

DATE OF THIS WARRANTY: March 2018

Job Number: 30056

Supplied by: [checked] Supplier & Installer

Please Note: This warranty is subject to correct installation as outlined in our Installation Details Manual. This document is available on request to you or your builder.

This is in addition to, not substitution, and neither warranty will affect any rights the purchaser may have under the Consumer Guarantees Act 1994 or the Building Act 2004.

COLOUR OF JOINERY: Black - 25 micron

Finished: [checked] Unfinished: [ ]

SIGNED (Manufacturer):

SIGNED (Franchisee):

Handwritten signature: In Seel

BIRNIE ALUMINIUM LTD, 27 WYVONETER STREET, PALMERSTON NORTH, TEL: 06-328-2555

WINDOW ASSOCIATION OF NEW ZEALAND

Vistalite.co.nz
0800 847 8254

Makers of



## Care and maintenance of anodised joinery

Anodised Aluminium Joinery is not only attractive, but also offers a durable and tough wearing finish. Some deterioration of the anodic oxide coating occurs but mainly as a result of grime deposition and subsequent attack by moisture, particularly when it is contaminated with sulphur compounds. Regular cleaning is essential if the finish of anodised aluminium is to be preserved over a long period.

### CLEANING

The anodised aluminium should be washed down with warm water and a suitable wetting agent or mild soap solution, in a similar manner to washing a car. Fine brushes may be used to loosen attached dirt/grime - the use of anything stiffer or more abrasive may result in damage to the surface. Acid or alkali cleaners should not be used, as these will damage anodic films and may discolor coloured joinery. Where greasy deposits or hard to remove grime is present, cleaning of the anodising may be by means of a soft cloth dipped in white spirit, turpentine, kerosene, or a liquid scourer (for example "Jif"® - a Lever Rexona household product available from supermarkets) followed by wiping with a dry rag. Make sure none of these solvents come into contact with other parts of the window.

*Note: All Solvents must be kept from contact with the vinyl glazing gasket materials, as most solvents damage glazing gaskets (the "rubber" seal around the glass).*

It is essential to rinse thoroughly after cleaning, with copious applications of clean water particularly where drains are present, and then dry the glass to avoid any marks developing. Regular washing of your anodised joinery will ensure a long lasting product. In general the following programme is recommended:

Rural: Every six months

Urban: Every three months

Industrial And Marine Environments:

(within 1 km of the sea): Six monthly warm water detergent wash, as well as monthly cold water washing.

## Care and maintenance of powdercoated joinery

Your windows are factory pre-finished in long-lasting electrostatically applied powdercoating. A combination of painstaking preparation, careful workmanship, and the latest technology have come together to bring you your powdercoated windows and doors. Powdercoating is one of the most durable colour coatings available and with very little effort on your part, it will provide you with many years of excellent service. We want you to get the full long-term benefit of choosing low maintenance powdercoated windows. So we have prepared this information pack for you that details the few simple things you need to do to get maximum satisfaction from your investment.

### REGULAR WASHING - THE KEY TO LOOKING SMART

To maintain the good looks of your powdercoated aluminium windows, each window and door unit needs regular washing all over - not just the parts that are sheltered from the rain. Unless you are close to the seaside or are in a similar harsh environment, such as near an industrial area, washing down your windows about every three months should be sufficient. Simply use a good quality, soft bristled, window washing brush as sold by general hardware stores. Some brushes have in-built detergent dispensers and connect directly to the garden tap. These brushes make it really easy to rinse off the detergent bubbles - which is a very important part of the care process.

If you choose to wash the windows by hand in the traditional way, simply use a diluted solution of mild liquid dishwash mixed the same way you would use to wash your dishes. Be sure to rinse off the window with a gentle spray from the garden hose, and dry the glass to avoid any marks developing.

### WARNING

Never use any other kind of solvent cleaner as it could damage the powdercoating or cause it to deteriorate and age rapidly. Common solvents such as petrol, acetates, dilute thinners and Methyl Ethyl Ketone (MEK) are very damaging to powdercoat and must never come into contact with it. Highly acidic, alkaline, common household solvent or alcohol-based cleaners are not recommended either. These comments apply equally to the other components that make up the window or door - we recommend you do not use any solvents other than water.



## LICENSED BUILDING PRACTITIONERS

### Form 6A Memorandum from Licensed Building Practitioner: Record of building work Section 88, Building Act 2004

#### THE BUILDING

Street address: 7 Tutere St

Suburb: Waikanae Beach

Town / City: Kapiti

Postcode: 5036

#### THE PROJECT

Building consent number: 14009 / 150134

#### THE OWNER(S)

Name(s): Shane O'Brien

Mailing Address: 320 Kimbolton Road

Suburb: Feilding

PO Box / Private Bag:

Town / City: Feilding

Postcode:

Phone Number: 0274850316

Email:

BC150134  
Received by  
Kapiti Coast District Council  
10/05/22  
via Front counter

Work that is restricted building work	Description	Carried out/Supervised
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#### PRIMARY STRUCTURE

Roof	123 m2 Main Roof and Deck 50.4m2 Garage 2.5mm bituFLAME PLURA AD bitumen self adhesive base sheet 4mm bituFLAME Black Mineral Cap Sheet	Carried out and supervised
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#### EXTERNAL MOISTURE MANAGEMENT SYSTEM

Roof cladding or roof cladding system	123 m2 Main Roof and Deck 50.4m2 Garage 2.5mm bituFLAME PLURA AD bitumen self adhesive base sheet 4mm bituFLAME Black Mineral Cap Sheet	Carried out and supervised
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**ISSUED BY**

Name: Michael Gabbitas

LBP number: BP118348

Class(es) licensed in: Roofing

Plumbers, gasfitters and drainlayers registration number (if applicable):

Mailing Address: PO BOX 229

Street Address: 262 Te Moana Rd, Waikanae, Kapiti, 5036

Suburb:

Town/City: Paraparaumu

PO Box/Private bag:

Postcode: 5254

Phone number: 0274465679

Mobile: 0274465679

After hours: 0274465679

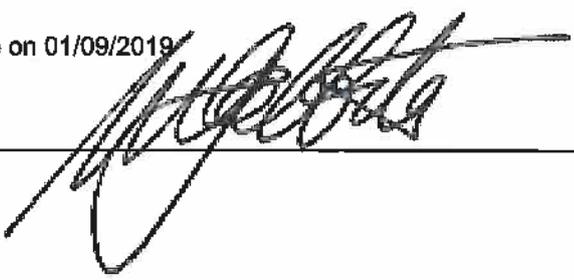
Fax: na

Email: scleroofing@gmail.com

Website: <https://scleroofing.com>Register link: <https://lbp.ewr.govt.nz/PublicRegister/View.aspx?lbpid=BP118348>**DECLARATION**

I, Michael Gabbitas LBP carried out and supervised the restricted building work recorded on this form.

Declaration made on 01/09/2019

Signature: \_\_\_\_\_  


## bituFLAME® Membrane Product Warranty

Building Address	7 Tutere Street Waihaine Beach	Warranty Certificate Number	287/2019
Building Name		Warranty Period	20 Years
Membrane Main Use	Roof Area - 2 layer		
Total Sqm/Lm Installed	173 sqm	Installation Date	28/03/2018
Approved Applicator	Scie Construction Ltd		
Applicator Warranty Workmanship Period	5 Years	Applicator Cert Number	010/2017

1. **WATERPROOFING SYSTEMS (NZ) LIMITED** ("the Supplier") warrants that this product is free from manufacturing defects for a period of twenty (20) years from the date of purchase when installed as a double layer system. The Supplier further warrants that the products have been properly manufactured and are fit for the purpose for which they are intended provided the products are stored, handled and used strictly in accordance with the Supplier's specifications, instructions and directions as outlined in the Supplier's Product Manual and the relevant NZBC regulations and documents.
2. Subject to the conditions of this warranty, if the Supplier's product fails to perform when applied strictly in accordance with the Supplier's instructions within the warranty period, and liability on the part of the Supplier is established, the Supplier shall, at its sole discretion, refund the original purchase cost of the membrane or supply replacement material, or undertake the necessary repairs, pro-rated to the proportion of the warranty period remaining.
3. The Supplier is required to attend to the repair (via themselves or through an appointed installer), refund or replacement of the products in accordance with Clause 2 above PROVIDED that any failure of the specified system does not arise from:
  - 3.1 Damage caused by hailstorms, tornadoes and wind gales in excess of 90kph, damage caused by Acts of God, or damage from man made causes.
  - 3.2 Inadequate or incorrect site preparation including the use of the Supplier's product on surfaces which are not structurally sound, subject to sharp movement or deterioration of the substrate including, but not limited to, any excessive expansion or contraction of the substrate, or damage caused by movement, settlement, distortion or cracking of walls or foundation of the building, or failure of flashings or any part of the building structure.
  - 3.3 Improper adjustment, collaboration or installation of the supplier's product, or use of accessories including consumables, other products or hardware, which were not manufactured or supplied by the supplier.
  - 3.4 Defects in, failure of, or improper installation, construction or design of any roof/deck structure or roof/deck substrate.
  - 3.5 Any contamination or moisture entering the roofing system through walls, substrate, rooftop hardware or equipment, or any part of the building structure or from moisture, air or gases both internally or externally.
  - 3.6 Any modifications of the supplier's product, which was not authorised by the Supplier in writing.
  - 3.7 Negligent, misuse, improper or unapproved use of the membrane, failure to adhere to the directions for application and use of the supplier's product.
  - 3.8 Any mechanical damage caused by users of the building.
  - 3.9 Failure due to exposure of the membrane to harmful chemicals, temperatures, mechanical abuse by machinery/equipment or people.
  - 3.10 Chemical attack, exposure to ionised radiation, or damage from any hazardous substance or damage caused by use of any products not manufactured by the Supplier.
  - 3.11 Roofs installed over cold storage or freezer compartments shall not be covered under this warranty.
  - 3.12 Inadequate and improper maintenance including but not limited to cleaning, removal of debris or keeping outlets clear (refer CLAUSE 4).
  - 3.13 Any expansion of the building or tie in to the membrane which does not have the approval of the Company prior to such work being carried out including any building movement, settlement or movement of other materials, flashings, terminations or other dissimilar substrates or improper construction not in accordance with the manufacturer's specifications.
  - 3.14 Any new installations over the membrane including improper installation of other services, electrical or mechanical.
  - 3.15 Where the membrane has not been installed by a Waterproofing Systems (NZ) Ltd approved installer or where an applicator is unable to provide LBP certification for external waterproofing.
  - 3.16 Storage, handling or treatment of membrane or accessories other than in accordance with the Supplier's recommendations.
  - 3.17 Other waterproofing or building materials causing undue stress on the membrane or reaction with the membrane system.
  - 3.18 Repairs performed or material furnished by others, or subsequent damage by others.

- 3.19 Any technical or installation advice from an outside party not approved by the Supplier.
4. The following maintenance procedures and guidelines must be complied with to keep the warranty in full force and effect;
- 4.1 The roof must be properly maintained as per our membrane care and maintenance instructions and kept clean and free from debris and ponding water. Proof of annual maintenance must be provided to the Supplier on request.
  - 4.2 In the event that the roof membrane is exposed to any acids, solvents or other chemicals, the Supplier must be notified immediately to undertake a resistance and or compatibility analysis.
  - 4.3 Should there be evidence of more than casual foot traffic on the membrane, protective walkways that are approved by the Supplier shall be installed.
  - 4.4 Site inspections shall be undertaken by an approved applicator as per Care and Maintenance recommendations, from the date of installation of the membrane. In the case of sand-finished membranes, a further application of the bituminous aluminium UV protection coat may be required as a result of wear and tear on the membrane. For granule finished membranes, the application of additional granules may be required wherever the original factory application of granules has worn through due to roof traffic, weathering or any other event. This maintenance shall be undertaken at the Customer's expense to maintain the warranty period. Failure to complete and comply with the requirements of these site inspection(s) will render this warranty null and void.
  - 4.5 All flashings, metal work, drains, skylights, equipment curbs and supports and any other rooftop accessories functioning in conjunction with the membrane shall be maintained at all times.
  - 4.6 Repair or replace any flashing material that has deteriorated, disbonded or in any other way fails to perform as a flashing material.
  - 4.7 Any signs of surface cracking, alligatoring, blistering, and delamination of end or side laps, disbonding or any other signs of deterioration shall be corrected upon discovery to ensure continuous effect of this warranty.
5. The Supplier issues this warranty on the condition that the Suppliers installation QC processes (substrate readiness check sheets and QC Sheets) have been faithfully implemented and the QC sheets are completed for each roof area or stage of installation, AND that these QC sheets have been jointly signed off by the Agent/Contractor, AND that the application of the Suppliers product/s comply with its published specifications.
6. The Supplier's obligations under this warranty do not extend to, and the Customer of their Agent expressly waives any and all claims relating to consumables, accessories or flashings used in association with the membrane that are not supplied by the Supplier.
7. This warranty covers the membrane only as supplied by the Supplier and does not cover any issues relating to the workmanship of the installer nor consumables including accessories supplied with the Supplier's product unless the Supplier authorises the use of these consumables and accessories with their product.
8. Where it is a bituFLAME/tileJAK combined system, the tileJAK component will be covered under a **10 year warranty**.
9. This warranty is issued on the basis that no change in the site conditions occurs during the life of the warranty that will adversely affect the performance of the membrane system.
10. Any proposed repairs to the membrane must be notified to the Company in writing prior to being carried out and are only implemented in full accordance with the Supplier's recommendations.
11. Notification of any defect causing a loss of water-tightness must be submitted to the Supplier within fourteen (14) days of discovery of any such defect, failure to do so will deem the warranty to be waived by the customer. The issued Warranty Certificate Number shall be referred to in all correspondence.
12. The Supplier shall not be liable for, and this warranty does not cover, failure due to consequential, accidental or intentional damage, improper voltage, fire, misuse, abuse, neglect, alteration by or negligence of the Buyer, incorrect or incomplete installation by the Buyer, acts of God, vermin or foreign matter entering the Supplier's product.
13. Otherwise than as set out herein the Supplier shall not be liable for any other claims or damages, including but not limited to, claims for faulty design, negligent or misleading advice, damages arising from loss on use of the Supplier's products, any indirect, special or consequential damages relating to membrane, membrane application or other failure, workmanship and installation, or injury to any person, corporation or other entity.
14. The Supplier's obligations under this warranty shall be void and of no effect if the terms of payment and all other conditions contained or implied on the contract for the purchase of materials are not complied with. The validity of this warranty is enforceable on the condition that full payment has been received by the Supplier for the materials supplied.
15. The Supplier's obligations under this warranty shall be void and of no effect if the Supplier is not given notice in writing of any alleged failure or fault within fourteen (14) days of discovery of such alleged failure, fault or deterioration. Time being of the essence.
16. The warranty is in addition to, and not in substitution for any rights which the consumer may have in terms of the Consumers Guarantees Act 1993.
17. The benefit of this warranty is not assignable without prior written consent of the director of the Supplier.

18. In the event of a warranty claim lodged, all parties must allow the Supplier;
  - 18.1 Access at all times to inspect the membrane before any repairs are carried out to document, photograph and report any issues to the manufacturer for comment.
  - 18.2 Adequate notification and access to the Supplier to be able to attend any repair work themselves or to be present on and before any repair work commences.
  - 18.3 The Supplier shall not be liable or required to carry out movement, removal, or replacement of any such items such as plant, railings, ladders, other roofing products or any other items, including any of the costs incurred to do so by another party.
19. Should a claim be made and be subsequently not proven, then any costs incurred by the Company, including those incurred in investigating the claim and re-instating the membrane, shall be the responsibility of the Customer. Responsibility lies with the persons enforcing the warranty on behalf of the Customer to prove beyond reasonable doubt any loss of watertightness is due to the lack of performance of the membrane. Any claimed fault with the membrane must be inspected, assessed and tested with the approval and to the satisfaction of the Company.
20. MODIFICATIONS TO WARRANTY: No changes or modifications of any terms or conditions of this warranty are allowed unless authorized by written agreement and signed by the director of the Supplier.
21. In no circumstance will any other warranty be honoured by the Supplier except this numbered, approved and as an original document produced by the Supplier. All other warranty claims are hereby excluded.
22. DISCLAIMER: There are no warranties beyond this expressed warranty as stated above. All other warranties, representations or conditions, expressed or implied, are disclaimed and excluded, including warranties, representations or conditions of merchantability or fitness for a particular purpose arising by statute or otherwise by law or from a course of dealing or usage of trade. The supplier excludes and in no event shall have any liability for lost profits or any other indirect, special, incidental, punitive, exemplary, or consequential damages, arising out of or otherwise connected to failure of the products or flooring system of which they are part, nor misuse of the products or flooring system, regardless of any strict liability, active or passive negligence of Schluter systems, and regardless of the legal theory (contract or tort or extra-contractual or other), nor from acts of war, terrorism, faulty and negligent penetration of the system, fires, explosions, acts of god, intentional acts of destruction or any losses due to structural failure or other causes unrelated to the products or delays, or any other incidental or consequential damages. This warranty is given in lieu of any other warranty expressed or implied. The remedies contained herein are the only remedies available for breach of this warranty.
23. Failure to comply with any of the covenants, conditions and agreements contained in this warranty shall render the warranty null and void and of no further effect.

Waterproofing Systems (NZ) Ltd Office Use

QC Forms Provided	No	Warranty issued by John Stallard 	Date of Approval	30/08/2019
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## bituFLAME Waterproofing Membrane

Roof & Deck Care & Maintenance			
	Action	Frequency	Comments
Routine maintenance	Roof Cleaning	Annually	Remove all debris, leaves, dirt from drains, gutters etc. Ensure all water outlets are clear and any overhanging vegetation is cut back.
		Annually	Lightly broom surface with soft bristled brush, remove any loose granules, wash down using a light detergent with a moss and mould inhibitor as recommended by the supplier of cleaning agents.
	Roof Inspections	Year 1 Year 5 Year 10 Year 15	Ensure an approved WPS applicator inspects the roof membrane as per the record of maintenance schedule below. Check for any other maintenance required such as membrane damage, surface scuffing and lap degradation.
	Deck Cleaning	Annually	Remove all debris, leaves, dirt from drains, gutters etc. Ensure all water outlets are clear and any overhanging vegetation is cut back.
		Annually	Lightly broom surface with soft bristled brush, wash down using a light detergent with a moss and mould inhibitor as recommended by the supplier of cleaning agents.
	Deck Inspections	Year 1 Year 5 Year 10 Year 15	Where tileJAKS, timber raft and monkey toe systems have been installed over the bituFLAME membrane, ensure these are checked for damage to the membrane and cleaned beneath these systems.
	New fittings installed on completed roof membrane	As product is installed	Any new work by other trades (installation of mechanical services or similar) should not be carried out on the unprotected membrane. Rigid protection boards should be used to protect the membrane where the roof is used for temporary storage of items, to be installed into the roof membrane. Provide WPS with an inspection report to file for each of the items installed on the roof membrane.
	Remedial repairs at the installation of new services	When required	All original workmanship warranty repair work must be conducted by the installing applicator, using only Waterproofing Systems' compatible materials. If the original installing applicator is not available, the repair work must be conducted by a LPB certified and licenced Waterproofing Systems applicator.
	Re-coating	Every 7 Years	Where the bituminous aluminium UV protection or chip finish shows signs of wearing or scuffing, as per Recommendations area below, we recommend contacting specialist maintenance company for this work

Record of Maintenance				
Year	Date	Applicator	Comments	Signed
1				
5				
10				
15				

Recommendations
<p>It is recommended that a LPB certified and licenced Waterproofing Systems applicator conducts any workmanship repair work or details any new penetrations using Waterproofing Systems membrane products and systems.</p> <p>It is worth considering engaging a specialist maintenance company to conduct the routine cleaning as per the warranty conditions to ensure your roof is kept in good condition and meets the warranty conditions.</p>

## CONTRACTOR WORKMANSHIP GUARANTEE

ISSUED BY: Scie Construction Ltd, PO Box 229 Paraparaumu  
Ph: 0274 465679 / 0800FLATROOF (0800 352876)  
TO: Shane O'Brien, 7 Tuture St Waikanae Beach  
DESCRIPTION: Torchon membrane to Main House, Deck and separate Garage  
IN RESPECT OF BUILDING CONSENT APPLICATION NO: 140009  
GUARANTEE PERIOD: 5 Years Workmanship  
GUARANTEE DATE: 28.03.2018 + 5 years  
IN RESPECT OF: Installation of WPS BituFLAME Waterproofing Membrane  
PRODUCT DESCRIPTION: WPS BituFLAME self adhesive 2.5mm underlay membrane to and  
4.0mm Black Mineral Cap Sheet  
PRODUCT SUPPLIER / AGENT: Waterproofing Systems (NZ) Ltd  
4 Malvern Rd, Onehunga, Auckland 1061  
Phone: 09 579 1460

Scie Construction Ltd, as approved applicators of WPS membrane systems hereby submit that the above membrane/s has/have been installed all according to the manufacturer's instructions regarding preparation and installation procedures.

### TERMS AND CONDITIONS.

1. Liability under this guarantee which shall commence from the date of completion of specified waterproofing works shall be conditional upon;
  - a) Any water penetration being reported to Scie Construction Ltd in writing immediately upon discovery.
  - b) Facilities being afforded to Scie Construction Ltd or approved WPS applicator without delay to inspect the defects and carry out the necessary repairs covered by this guarantee. Any such repairs are to be carried out by Scie Construction Ltd or an approved WPS Applicator.
  - c) Full payment for the contract works of which the specified waterproofing is part of, having been made in accordance with the terms and conditions of the contract/sub contract.
2. This Guarantee shall not apply should the specified waterproofing works have been affected by any act or omission of parties other than Scie Construction Ltd or by uses of the premises or perils for which such works were not designed. (e.g. careless backfilling, causing puncture of the membrane)
3. The Guarantee excludes damage to the tanking from extreme natural phenomena such a direct lightning strike, tornado/ waterspout, cyclone/hurricane, volcanic eruption or earthquake.
4. The Guarantee does not cover the cost of removing any surface or covering, other than the waterproofing membranes.
5. Any cost to Scie Construction Ltd under claim on this workmanship warranty is not to exceed the contract value of the work.
6. Any defects made good under the Guarantee by means of replacement of waterproofing membranes may be treated as if they formed part of the original waterproofing works to the intent that the cover provided by the Guarantee shall apply hereto for the unexpired balance of the term of the Guarantee.
7. This Guarantee does not cover or provide for the reimbursement or payment for incidental or consequential damage to the specified building or its contents thereof.
8. Scie Construction Ltd. shall not be liable for any damage to the said membrane system caused by damage to the waterproofing membrane by following trades, settlement of the structure, distortion or failure of the substrate, walls or foundations of the building, nor failure of any flashing or metal work due to expansion/contraction (unless forming part of the roof contract and fitted by Scie Construction Ltd.).
9. The Guarantee shall be void in the event that after the membrane system is completed, any addition or penetration shall be installed thereon, unless Scie Construction Ltd shall first be notified of such proposed installation and shall give written approval to the making of the necessary application with respect thereto and the materials to be used to join such proposed installation to the membrane and the method of application of such materials and structures.



Signed 28.08.2019 Mike Gabbitas. Director. Scie Construction Ltd

# 10 Preliminary & General

## BUILDING DATA

10 Preliminary & General

### BUILDING DATA

Building classification: Accessory  
 Floor live load: 1.5 kPa  
 (to NZS 3604, table 1.2 Basic live loads for floors and stairs)

## MANUFACTURER INSTALLATION REQ

10 Preliminary & General

CONTRACTOR TO COMPILE ON SITE CURRENT MANUFACTURERS TRADE LITERATURE FOR INSTALLATION OF ALL SELECTED PRODUCTS.

# 21 Excavation

## GROUND PREP

### DPM

22 Ground Works 221 Ground

Polyethylene (Polythene) sheet DPM  
 To NZS:3604 7.5.6  
 To BRANZ 462 (2004)

MIN 0.25mm thickness.  
 Sealed Joints.

### FIRM GROUND

22 Ground Works 221 Ground

The base of all excavations are to be Firm Original Ground, to meet NZS 4431, with an ultimate bearing strength > 300kPa. Report any soft spots to the engineer, follow instruction to fix.

### GRANULAR BASE

22 Ground Works 221 Ground

Compacted granular fill to NZS:3604: 7.5.3  
 Lay and Compact Compliant Granular Fill Material in layers 150mm max thickness.

Total Compacted Base thickness: MIN 75mm, MAX 600mm

### SAND BLINDING

22 Ground Works 221 Ground

To NZS:3604: 7.5.6.2  
 Place a sand blinding surface over granular fill to protect the DPM.  
 Min thickness 5mm, Max Thickness 25mm

## 23 FOUNDATIONS

### REINFORCE: FOOT

231 FOUNDATIONS

#### REINFORCING STEEL

Reinforcing to Concrete slab footings.  
 NZS3604, section 7.5, as modified by NZBC B1 2011, section 3.1

Reinforced footing, as per NZS3604, Figure 7.13 b, for 2 storeys.

All Reinforcing Steel: Ductility Class E, in accordance with NZS 4671.

Refer to Details for Sizing and Placement.  
 Refer to SLAB notes

### MESH: DUCTILE E

231 FOUNDATIONS

WELDED REINFORCING MESH  
 As per NZS3604, section 7.5, as modified by NZBC B1 2011, section 3.1.  
 Reinforced footing design, as per NZS3604, Figure 7.13 b, for 2 storeys.

All Reinforcing Steel: Ductility Class E, in accordance with NZS 4671.

Slab Reinforcing Mesh: shall consist of min 2.27 kg/m<sup>2</sup> welded reinforcing mesh sheets, lapped at sheet joints by 225mm, or in accordance with manufacturers requirements Refer to Details for Placement  
 Refer to SLAB notes

# 32 Concrete Work

## CONCRETE TRADE

### 125-CONCRETE-SLAB

32 Concrete Work 32 CONCRETE  
 REINFORCED EXTERNAL CONCRETE SLAB  
 125mm Slab thickness.  
 Refer to NZS 3604.  
 Min 25MPa for Exposure Zone D.

Sawcut shrinkage control, as per NZS 3604 7.5.8.6. Sawcuts @ max 6m CTR. Cuts 25mm depth, completed less than 24hr after slab setting.

# 40 Carpentry

## TIMBER FRAMING

### DPC

40 Carpentry 402A Timber Framing  
 DAMP PROOF COURSE

01. Install between all timber framing and concrete slabs and foundations.  
 02. Install Between timber Post/Piles & Bearer members when less than 800mm above ground.

Supercourse 500  
 To BRANZ 329 (2005)

### HYJOIST [SIZE]

40 Carpentry 402a Timber Framing  
 TIMBER ROOF/FLOOR FRAMING

CHH HyJoist  
 Blocking as required.  
 Size, Spacing: as per Framing Plans.

### LINTEL GARAGE

40 Carpentry 402A Timber Framing  
 TIMBER FRAMING - HySpan Garage lintel

Refer Framing Plan for Size.  
 Lintels Sized to CHH Design IT.  
 Refer CHH Design IT certificate.

90mm thick members may be substituted with built up members sized and nailed in accordance with NZS 3604, 2.4.4.7.

### STUD VARIES

40 Carpentry 402a Timber Framing

TIMBER FRAMING - CHH LASERFRAME  
 Pinus Radiata SGB to NZS 3604 Requirements.  
 Size: REFER PLANS  
 Spacing: 600mm ctrs max.  
 Treatment: H1.2  
 Nogs: Refer cladding Manufacturer Requirements  
 Provide all dwangs nogs and trimmers as required  
 Nogs at max 800 ctrs  
 Refer CHH Design IT certificate.

## ENCLOSURE

### RAB 7MM

40 Carpentry 405 Wrap  
 RIGID AIR BARRIER:  
 Install Ecoply Barrier Air Barrier in accordance with Manufacturers Requirements to meet E2/AS1 Section 9.1.5 and B2 Durability.  
 7mm H3.2 CCA Treated Plywood Barrier.

Install to best trade practice such that any moisture the touches the wall underlay is prevented from any contact with the framing it protects.

### FLEXIBLE FLASHING TAPE

40 Carpentry 405 Wrap Tape  
 WINDOW SEALING SYSTEM  
 ProClima Tescon ExtoSeal SIII Tape Window Sealing System.  
 Flexible Flashing Tape.  
 Install in accordance with BRANZ Appraisal No. 815 [2013] to meet E2/AS1 and B2 Durability.

INSTALL: Flashing Tape Continuous around Entire Opening. 50mm min cover to wall.

## CLADDING

### PLY 12

40 Carpentry 406 Timber Cladding  
 CHH SHADOWCLAD PLYWOOD SHEET CLADDING.  
 Manufacturer Tested to E2/AS1/VM1 & NZS 4284.  
 SHEET CLADDING ON Drained Cavity.  
 Install to Manufacturers Requirements, to E2/VM1 compliance testing.

Species: Pine  
 Treatment: H3.1 LOSP  
 Finish: Pre-primed and Painted.  
 Cavity: Refer Cavity.  
 Fixing: Stainless Steel.  
 Ensure All Cut ends are spot treated with Holdfast Metalex prior to Installation.

### CAVITY: HORIZONTAL

40 Carpentry 406 X  
 Install Drained Cavity to meet Requirements of E2 for Drained and vented cavities.  
 Horizontal Vented and Drained Cavity. Nominal 45mm cavity depth.  
 Structural Castellated Cavity Battens H3.2 Treated.  
 FIXING: 14g x 100 Stainless steel screw.  
 Refer Drawings for cavity details.

Install horizontal Castellated cavity battens to form ventilated and free draining nominal cavity behind cladding. Nominal 45mm cavity thickness.  
 Vertical Battens at all corners.

### PLY:17 [ROOF SUB]

40 Carpentry 401a Timber Roofing  
 ECOPLY PLYWOOD SUBSTRATE TO MEMBRANE-ROOFING.

Install to Plywood manufacturer instructions and Roofing Membrane Manufacturer requirements.

ROOF Thickness: 17mm MIN.  
 Treatment: TREATED H3.2 CCA  
 Grade: C grade Smooth finish suitable for Membrane Install.

1 AID:  
 Staggered Pattern, Right Angle to Supports.  
 Tongue and Groove Edge support.

Fixing:  
 316 STAINLESS STEEL COUNTERSUNK SCREW FIXED with Adhesive.  
 10 Gauge Screws, Min length 3 x thickness of Ply.  
 TAPED JOINTS: to manufacturers requirements.  
 Fixing Ctrs: 150mm at edges, 200mm within the sheet.

All Edges fitted with Fillets min 20x20, or if external corner Min 5mm Radius to edge.

## DECORATIVE FINISHES

### ALUMINIUM PANEL

40 Carpentry 408 Decorative  
 ALUMINIUM PANEL  
 3mm Marine Grade Aluminium Sheet Panel.  
 Powder coat finish: Dulux Duratec

PANEL FIXING  
 Stainless Steel Square Drive Screw.  
 Confirm Fixing Row Setouts with architect.

Check and Confirm all sizes on site.  
 Pre drill all holes.  
 Powdercoat all sides and edges.  
 Panels to lap 35mm over Timber Boards at bases.

### MACROCARPA RAINSCREEN

40 Carpentry 408 Decorative  
 WEATHERGROOVED TIMBER BOARDS  
 Mill certified heart Macrocarpa 20 x 100mm Boards with MIN 6x6mm weathergrooves in accordance ES2.A1 Figure 119.  
 Fixed to cladding as decorative rainscreen.

FIXING: Countersunk sqr drive Stainless Steel Screws 2/60 x 3 @ 600 ctrs

## CEILING

### GIB 13

40 Carpentry 531 Ceiling  
 GIB PLASTERBOARD CEILING DIAPHRAGM  
 13mm Gib. I  
 INSTALLED as per GIB EZYBRACE requirements.  
 Installed and plastered to Level 4 finish ready for application of selected paint finish. Refer 6 FINISHES.  
 Fixed to Gib Rondo battens.

### RONDO 308

40 Carpentry 531 Lining  
 GIB RONDO Metal Batten System 308.  
 Install in accordance with Manufacturers installation instructions.  
 Diaphragm ceiling application.  
 Direct fixed to framing.  
 No clips.

# 43 Metal Window Door

## ALUMINIUM WINDOW DOOR

### ALUMINIUM FLASH

43 Metal Windows & Doors 432  
 WINDOW FLASHINGS: Corrosion Zone D.  
 MATERIAL: in accordance with E2/AS1, 4.3  
 Aluminium: min 1mm thick, 5000 series  
 POWDER COATED to match windows.

### POWDERCOAT: DURATEC

43 Metal Windows & Doors 432  
 DURATEC POWDERCOATING TO ALL EXTERNAL ALUMINIUM WINDOWS AND ASSOCIATED FLASHINGS IN SEA SPRAY CORROSION ZONE.  
 15 Year Warranty.

### DOOR ALUM

43 Metal Windows & Doors 432  
 ALUMINIUM WINDOWS AND DOORS  
 SELECTED PROFILES.  
 MATERIAL: Aluminium  
 Finish: Dulux Duratec Powdercoat to suit Zone D.  
 GLAZING: Single Glaze. Grade A safety glass to NZS4223, part 3.

Install Windows to manufacturers recommendations and WANZ Details. Window manufacturer to supply WANZ support bar as required.

# 45 Roofing

## MEMBRANE ROOFING

### MEMBRANE

45 Roofing 451 MEMBRANES  
 BITUFLAME MEMBRANE ROOFING  
 Install to meet requirements of E2/AS1 for Membrane Roofs and Decks, and BRANZ Appraisal 404 [2008] for bituflame touch-on membrane roofing.

Installation by trained and qualified applicator. refer to drawings for further details.

Substrate: 17mm H3.2 CCA Treated Plywood.  
 WPS Recommendation of 2 layer bituflame touch-on System over plywood substrates.

## RAINWATER DISPOSAL

### DP 100

45 Roofing 455  
 80mm ROUND DOWN PIPE  
 Material to Match Roofing.  
 Provide warranty.

refer to roofing plan for rainwater calculations  
 Install to manufacturers requirements

### GUTTER: 125 BOX

45 Roofing 455  
 RAIN WATER SPOUTING  
 125 Box.  
 Colour to match alum joinery  
 Provide warranty.

Refer to Roofing Plan for Rainwater Calculations.  
 Install to manufacturers requirements

1307 O'Brien Garage 7 Tutere St Waikanae Jill & Shane O'Brien	© COPYRIGHT ASSEMBLY ARCHITECTS LIMITED PO BOX 192 ARROWTOWN 9351 Justin Wright 021 665 363	B 2/4/15 BUILDING CONSENT RFI REVISIONS A 4/11/14 Building Consent - Client Issue
	PROJECT	NOT FOR CONSTRUCTION

ASSEMBLY  
ARCHITECTS  
LIMITED

BC150134  
 Received by  
 Kapiti Coast District Council  
 10/05/22  
 via Front counter

GARAGE - LEGEND	90.01	B
DRAWING	NUMBER	REV

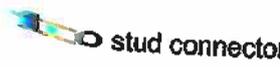
**FORM OF PRODUCER STATEMENT PS3 - CONSTRUCTION**

At project completion, this form shall be completed by the building contractor and supplied to the Engineer.

**ISSUED BY:** Black Pine Construction  
(Building Contractor)

**TO:** Shane O'Brien  
(Owner/Principal)

**IN RESPECT OF:** Nailing off the top of ecko ply on the garage at 75mm centres for top plate  
(Description of Contract Works)



**AT:** 7 Tutere Street, Waikanae  
(Address)

**T/A:** KCDC ..... **BUILDING CONSENT No.:** 140009 / 150  
(Territorial Authority / Building Consent Authority)

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The above Building Contractor has contracted to the above Owner/Principal to carry out and complete certain building works in accordance with the contract, titled

New House Build ..... ("the contract")  
(Title of building contract)

I Benjamin Zack Kusabs ..... a duly authorised representative of the  
(Builder's Authorised Agent)

above building contractor, believe on reasonable grounds that the above building contractor has carried out and completed

All  Part only as specified in the attached particulars

of the building works in accordance with the contract.

  
.....  
(Signature of Authorised Agent on behalf of the Building Contractor)

28/04/2022  
.....  
(Date)

89 Puruaha Road, Te Horo  
.....  
(Address)

*This producer statement is confirmation by the builder(s) that they have carried out the building work in accordance with the drawings, specifications (and site amendments) that are part of the contract / building consent documents.*

*Work covered by this statement should have been supervised and checked by suitably qualified tradespersons.*

*The Engineer requires this producer statement and a copy of the T/A's building consent conditions, to confirm that items of the contract that he has not personally examined, have in fact been built according to the documents, so that the Engineer may issue appropriate documents to the T/A for it to release the Code Compliance Certificate.*



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