THE REDWOOD GUYS- SHIPLAP REDWOOD WEATHERBOARD CAVITY SYSTEM INSTALLATION SPECIFICATION

WWW.THEREDWOODGUYS.CO.NZ

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TEL 021 8 22 223

Web: Theredwoodguys.co.nz

Email: TheRedwoodguys@gmail.com

TIMBER SHIPLAP REDWOOD WEATHERBOARD CAVITY SYSTEM

1.0 General Information

1.1 Introduction

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

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

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

1.2 BRANZ Appraisal

1.3 The Redwood Guys Vertical Shiplap Weatherboards

The Redwood Guys vertical shiplap weatherboards are manufactured from New Zealand sustainable growth Redwood.

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

1.4 Cavity Battens

The Timber Cavity System uses 18mm Cavibat polypropylene cavity battens to separate the weatherboards from the wall frame and form the cavity. The Cavibat batten is installed horizontally over dwangs/nogs to provide support for the weatherboards at fixings points. Timber battens can be installed horizontally across the studs and the weatherboards are fixed into the batten only.

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1.5 Accessories

Accessories supplied by The Redwood Guys for use with the Timber Cavity System include:

- The Redwood Guys external corner mouldings – HP40 (40 x 40 mm) and HP42 (42 x 42 mm) and the The Redwood Guys ‘Smarter Corner’ series, profiled external corner moulds.
- The Redwood Guys internal corner mould – HP41 (18.5 x 18.5 mm), through to HP110 (39 x 39

1. profiles and the The Redwood Guys ‘Smart Corner’ series.

- The Redwood Guys cover battens – 18 mm thick boards in widths of 69mm (HP201) and 90 mm (HP202).
- The Redwood Guys eaves moulding – HP 32 (40 x 27 mm), HP 33 (26 x 15mm) and HP7 (30 x 18

1. bevelled profile.

- Batten cavity battens – 45/70 x 20, 45/70 x 40 or 45/70 x 45 mm thick Radiata pine batten treated to minimum Hazard Class H3.1. The top and bottom edges are bevelled with a slope. The front and back face of the batten is grooved with 20 mm wide x 5 mm deep rebates at 100 mm centres. The grooves are offset on each face.

- Batten cavity batten fixings (for 40 mm x 45 mm thick battens when fixed to studs only) – 12 gauge x 65 mm long Grade 304 stainless steel screws. Extend the screw length by 10 mm if using 45 mm x 45 mm).

- The Redwood Guys shiplap weatherboard fixings (for Batten and Cavibat battens fixed to dwangs) – (oil stain finish) - silicon bronze, Grade 316 stainless steel annular grooved Crown Head, Rose Head or Flat Head nails. The nail shank must be minimum 3.25 mm diameter and the length must allow minimum 30 mm penetration of the wall frame.

- The Redwood Guys shiplap weatherboard fixings (for Batten and Cavibat battens fixed to dwangs) – (paint finish) - Grade 316 stainless steel annular grooved Jolt Head nails. The nail shank must be minimum 3.25 mm diameter and the length must allow minimum 35 mm penetration of the wall frame.

- The Redwood Guys shiplap weatherboard fixings (for 40 or 45 mm Batten battens fixed to studs only) – (oil stain finish) - silicon bronze, Grade 316 stainless steel annular grooved Crown Head, Rose Head or Flat Head nails. The nail shank must be minimum 3.25 mm diameter and the length must allow minimum 30 mm penetration (oil stain finish), or minimum 35mm penetration (paint finish) of the Batten cavity batten.

- clinch nails – 40 x 2.0 mm or 50 x 2.0 mm Grade 316 stainless steel annular grooved nails with an off-set flat head.

- cover batten fixings – 50 x 2.8 mm silicon bronze, Grade 316 stainless steel annular grooved Crown Head, Rose Head or Flat Head nails for stain finish or Grade 316 stainless steel annular grooved Jolt Head nails for paint finish.
- aluminium flashings – widths to suit specified corners.

1.6 Handling and Storage

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

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

2.0 Design Information

2.1 Design Responsibility

The Specifier for the project must ensure that the details in this literature are suitable for the intended application and that additional detailing is provided for specific design or any areas that fall outside the scope and specifications of this literature.

2.2 Scope

This specification covers the use of the Timber Cavity System as an external vertically fixed wall cladding system for buildings within the following scope:

- the scope limitations of NZBC Acceptable System E2/AS1, Paragraph 1.1; and,

- constructed with timber framing complying with the NZBC; and,

- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- situated in NZS 3604 Wind Zones up to, and including Extra High.

Redwood or painted weatherboards fixed with annular grooved Jolt Head nails are limited to use in NZ 3604 Wind Zones up to, and including Medium where studs are at 600 mm centres maximum, and NZS 3604 Wind Zones High and Very High where studs are at 400 mm centres maximum.

This specification also covers the use of the Timber Cavity System as an external vertically fixed wall cladding system (stain finish only) for weathertightness and structural wind loading for buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- constructed with timber framing complying with the NZBC; and,

- situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 2.5 kPa.

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

The Redwood Guys recommends that professional design advice is sought in these circumstances.

2.3 Building Regulations

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

Clause B1 Structure Clause B2 Durability

Clause E2 External Moisture

Clause F2 Hazardous Building Materials

2.4 Ground Clearances

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

The Redwood Guys weatherboards must overhang the bottom plate on a concrete slab by a minimum of 50 mm as required by NZBC Acceptable Solution E2/AS1, Table 18.

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

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

2.5 Structure & Framing

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

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

provisions of NZS 3604. Use of timber framing must be in accordance with framing manufacturer's specifications.

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

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

2.6 Framing Tolerances

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

Framing tolerances must comply with the requirements of NZS 3604:2011.

2.7 Cavity Closure Strip

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

2.8 Wall Underlay

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

All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped for wind zones up to and including Very High, and rigid underlays for buildings in the Extra High wind zone and specifically designed buildings up to 2.5 kPa design differential ULS wind pressure. Unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table

1. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid underlays are used, the weatherboard fixing lengths must be increased by a minimum of the thickness of the underlay.

2.9 Inter-storey Junctions

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

2.10 The Redwood Guys Vertical Shiplap Weatherboards

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

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

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

External corners shall be weatherproofed by the use of corrosion resistant corner flashings and corner facings, e.g. profiles HP 40, HP 42 or cover battens HP 201 and HP 202.

Internal corners shall be weatherproofed by the use of corrosion resistant internal corner flashings along with internal mouldings, e.g. profiles HP 41 and HP 110.

3.0 Installation Information

3.1 System Installation

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

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

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

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

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

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

Batten Cavity Battens to Dwangs

Batten cavity battens must be installed horizontally over the building underlay to the wall framing (dwangs) at maximum 480 mm centres. The battens must be installed with the top edge sloping away from the wall underlay towards the back of the weatherboards. The cavity battens must be fixed in place with 40 x 2.5 mm flat head hot-dipped galvanised nails or 50 x 2.8 mm hot-dipped galvanised gun nails (for 20 mm thick battens), or 60 x 2.8 mm flat head hot-dipped galvanised nails or 60 x 2.8 mm hot-dipped galvanised gun nails (for 40 or 45 mm thick battens) to temporarily fix the battens in place prior to installation of the cladding.

40 or 45mm thick Batten Cavity Battens to Studs

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

Cavibat Cavity Battens

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

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3.1.1 Aluminium Joinery Installation

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

3.1.2 The Redwood Guys Vertical Shiplap Redwood Weatherboard Installation

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

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

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

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

The Redwood Guys shiplap weatherboards must be pre-drilled on a slight up-slope, with a hole slightly smaller than that of the nail. Fix each weatherboard with one nail per board at every cavity batten. Fixing must be carried out using silicon bronze or Grade 316 stainless steel annular grooved Crown Head, Rose Head or Flat Head nails. The nail shank must be minimum 3.25 mm diameter and the length must allow minimum 30 mm penetration of the wall frame (for Batten and Cavibat battens fixed to dwangs) and minimum 30 mm penetration of the batten (for 40 mm or 45 mm Batten battens fixed to studs only).

Note: For Redwood One, Redwood Line or painted weatherboards, use Grade 316 Stainless Steel annular grooved Jolt Head nails and allow minimum 35mm penetration of the wall frame (for Batten and Cavibat battens fixed to dwangs) and minimum 35 mm penetration of the batten (for 40 mm or 45 mm Batten battens fixed to studs only). Punch nails 2mm below the weatherboard surface, prime nail holes and fill prior to sanding and finishing.

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

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

3.1.3 Boxed Corners, Cover Battens and Mouldings

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

3.1.4 Finishing

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

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

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

To ensure a top quality paint finish:

1. Envelope prime all cut ends and bare timber surfaces twice with a premium oil based primer.

1. Punch nail holes and prime promptly after punching with a premium oil based primer.

1. Fill holes with a suitable filler, allow to dry and sand area smooth.

1. Apply one coat of a premium oil based primer to sanded area and allow to dry before sanding lightly.

1. Ensure surface is free from dirt prior to painting top coats. Wash or lightly sand areas where dirt/film build up has occurred.

1. Apply two coats of premium high quality 100% acrylic to surface allowing adequate time for drying between coats.

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

Refer to Section 4.0 for maintenance requirements.

4.0 Maintenance

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

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

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

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

5.0 Health & Safety

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

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