



BRANZ Appraised

Appraisal No. 929 [2023]

A-LIGN VERTICAL® SHIPLAP WEATHERBOARD CAVITY SOLUTION

Appraisal No. 929 [2023]

This Appraisal replaces BRANZ
Appraisal No. 929 [2017]



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 The A-lign Vertical® Shiplap Weatherboard Cavity Solution is a cavity-based shiplap weatherboard external wall cladding solution for residential and light commercial type buildings where domestic construction techniques are used.
- 1.2 The solution consists of vertically fixed Claymark Group Ltd Partnership shiplap timber weatherboards, ventilated cavity battens, flashings and accessories and is finished with a minimum of two coats of 100% premium acrylic house paint.
- 1.3 The solution incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall frame with a nominal 20 mm minimum drained cavity.

Scope

- 2.1 The A-lign Vertical® Shiplap Weatherboard Cavity Solution has been appraised as an external vertically-fixed wall cladding solution for buildings within the following scope:
 - constructed with timber framing in accordance with the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
 - constructed with steel framing subject to specific engineering design with building height and floor plan area scope limitations in accordance with NASH Building Envelope Solutions; and,
 - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2 or NASH Building Envelope Solutions; and,
 - situated in NZS 3604 or NASH Standard Part 2 Wind Zones up to, and including, Extra High.
- 2.2 The A-lign Vertical® Shiplap Weatherboard Cavity Solution has also been appraised as an external vertically fixed wall cladding solution for buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area; and,
 - constructed with timber and steel framing subject to specific engineering design; and,
 - situated in specific design wind pressures up to a maximum design differential ultimate limit state [ULS] of 2.5 kPa.
- 2.3 The A-lign Vertical® Shiplap Weatherboard Cavity Solution must only be installed vertically on vertical, flat surfaces.
- 2.4 The A-lign Vertical® Shiplap Weatherboard Cavity Solution has been appraised for use with aluminium and timber window and door joinery that is installed with vertical jambs and horizontal heads and sills. *[Note: The Appraisal of A-lign Vertical® Shiplap Weatherboard Cavity Solution relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone or wind pressure and the timber joinery profiles meeting the requirements of NZS 3610.]*



Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, A-lign Vertical® Shiplap Weatherboard Cavity Solution, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. A-lign Vertical® Shiplap Weatherboard Cavity Solution meets the requirement for loads arising from self-weight, wind and impact [i.e. B1.3.3 (a), (h) and (j)]. See Paragraphs 9.1–9.5.

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years and B2.3.2. A-lign Vertical® Shiplap Weatherboard Cavity Solution meets these requirements. See Paragraph 10.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. A-lign Vertical® Shiplap Weatherboard Cavity Solution meets this requirement. See Paragraphs 14.1–14.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. A-lign Vertical® Shiplap Weatherboard Cavity Solution meets this requirement.

Technical Specification

4.1 Solution components and accessories supplied by Claymark Group Ltd Partnership are as follows:

A-lign Vertical® Shiplap Weatherboards

- A-lign Vertical® shiplap weatherboards are manufactured from New Zealand radiata pine. They are finger-jointed in accordance with the requirements of AS 5069 and treated to Hazard Class H3.1. The weatherboards are supplied factory coated with a two coat system of a premium timber primer and undercoat on the front and back face and top and bottom edges, and are beige in colour.
- A-lign Vertical® shiplap weatherboards are 18 mm thick with a square or bevelled profile and are available ex 100, 150 and 200 mm wide. They are supplied in 5.4, 6.1 and 7.2 m lengths [by arrangement].
- A-lign® dual purpose internal and external corner weatherboards are 18 mm thick with 74 and 42 mm returns. They are supplied in 5.4, 6.1 and 7.2 m lengths [by arrangement].

Cavity Battens

- A-lign® horizontal cavity battens – 45 mm wide by 19 mm thick, clear grade, finger-jointed radiata pine treated to Hazard Class H3.1. The top and bottom edge is bevelled with a 15° slope. The front face is castellated with 13 mm wide x 4.5 mm deep rebates at 52 mm centres and also has three grooves machined into it to provide guidance on the fixing position for the batten and weatherboard.
- A-lign® flashing battens – 45 mm by 14 mm thick, clear grade, finger jointed radiata pine treated to Hazard Class H3.1. Flashing battens are designed for use behind internal and external corner flashings only.

Accessories

- A-lign® boxed corners – 102 x 102 x 18 mm pre-made boxed corners, supplied in 5.4 m lengths.
- A-lign® scribes – 18 and 36 mm wide scribes with arised edges, supplied in 5.4 m lengths.
- A-lign® facing boards – 18 mm thick boards in widths of 42, 66, 90, 116, 138 and 185 mm. The facing boards are supplied in 5.4 m lengths.
- A-lign® weatherhead and sill mould – 42 x 30 mm, supplied in 5.4 m lengths.
- A-lign® eaves mould – 42 x 18 mm, supplied in 5.4 m lengths.
- A-lign® bevelled soffit eaves mould – 42 x 18 mm, supplied in 5.4 m lengths.

[Note: All timber accessories are manufactured from finger-jointed New Zealand radiata pine treated to Hazard Class H3.1. The accessories are supplied factory coated with two coats of premium timber primer and undercoat on the front and back face and top and bottom edges, and are beige in colour.]



- 4.2 Accessories used with the A-lign Vertical® Shiplap Weatherboard Cavity Solution are:
- **Flashings supplied by Quickflash** – including external corner flashing, internal corner flashing, horizontal inter-storey joint flashing, sill flashing, window and door head flashing, balustrade and parapet saddle flashing and balustrade and parapet cap flashings. The flashings are available in galvanised steel, aluminium or stainless steel and are supplied in 3 m lengths. Refer to NZS 3604, Section 4 and NZBC Acceptable Solution E2/AS1, Table 20 for durability requirements.
 - **Cavity vent strip supplied by Quickflash** – galvanised steel, aluminium or stainless steel, punched with 5 mm diameter holes or slots complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3. Available in 3 m lengths.
 - **A-Lign® End Seal** – a solvent-based zinc naphthenate treatment for the cut ends of A-lign® weatherboards and accessories. A-lign® End Seal is supplied in aerosol spray cans.
- 4.3 Accessories used with the A-lign Vertical® Shiplap Weatherboard Cavity Solution, which are supplied by the building contractor are:
- **Flexible wall underlay** – building paper complying with NZBC Acceptable Solution E2/AS1, Table 23, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall underlays.
 - **Flexible wall underlay support** – polypropylene strap, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the flexible building underlay in place and preventing bulging of the bulk insulation into the drainage cavity. *[Note: Mesh and wire galvanising must comply with AS/NZS 4534.]*
 - **Rigid wall underlay** – plywood or fibre cement sheet complying with NZBC Acceptable Solution E2/AS1, Table 23, or rigid sheathing covered by a valid BRANZ Appraisal for use as rigid air barrier systems.
 - **Flexible sill and jamb flashing tape** – flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
 - **Window and door trim cavity air seal** – air seals complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6, or self-expanding, moisture cure polyurethane foam air seals covered by a valid BRANZ Appraisal suitable for use around window, door and other wall penetration openings.
 - **Aluminium joinery head flashings** – as supplied by the joinery manufacturer or contractor.
 - **Flexible sealant** – sealant complying with NZBC Acceptable Solution E2/AS1, or sealant covered by a valid BRANZ Appraisal for use as a weather sealing sealant for exterior use.
 - **Thermal break [steel frame]** – expanded polystyrene [EPS] 10 mm thick, or a thermal break with a minimum R-value of 0.25 m²C/W in accordance with the requirements of NZBC Acceptable Solution E3/AS1, Paragraph 1.1.4 d].
 - **A-lign® structural cavity batten fixings [timber frame]** – 60 x 2.8 mm hot-dip galvanised or stainless steel ring shank jolt head hand-driven nails or 64 x 2.8 mm stainless steel ring shank gun-driven nails.
 - **A-lign® structural cavity batten fixings [steel frame]** – AS 3566 Corrosion Class 4 hot-dip galvanised self-drilling screws with an outside thread diameter of 4.7 mm minimum in NZS 3604 Exposure Zones B and C and Grade 316 stainless steel self-drilling screws with an outside thread diameter of 4.7 mm minimum in NZS 3604 Corrosion Zone D. The screw length must allow a 10 mm minimum penetration through the steel frame.
 - **A-lign® shiplap weatherboard fixings [timber frame with A-lign® structural cavity battens]** – 60 x 2.8 mm hot-dip galvanised or stainless steel ring shank jolt head nails for NZS 3604 Wind Zones up to, and including, Very High, or 75 x 3.15 mm hot-dip galvanised or stainless steel ring shank jolt head nails for NZS 3604 Wind Zone Extra High, and specific design wind pressures up to, and including, design differential 2.5 kPa ULS.
 - **A-lign® shiplap weatherboard fixings [steel frame]** – AS 3566 Corrosion Class 4 hot-dip galvanised self-drilling screws with an outside thread diameter of 4.7 mm minimum in NZS 3604 Exposure Zones B and C and Grade 316 stainless steel self-drilling screws with an outside thread diameter of 4.7 mm minimum in NZS 3604 Corrosion Zone D. The screw length must allow a 10 mm minimum penetration through the steel frame.



- A-lign® boxed corner fixings – 50 x 2.8 mm hot-dip galvanised or stainless steel ring shank jolt head nails.
- A-lign® scriber fixings – 60 x 2.8 mm hot-dip galvanised or stainless steel ring shank jolt head nails.

[Note: Hot-dip galvanising must comply with AS/NZS 4680 and stainless steel fixings must be Grade 316.]

Paint System Specification

- 4.4 Paint systems are not supplied by Claymark Group Ltd Partnership and have not been assessed by BRANZ and are therefore outside the scope of this Appraisal.
- 4.5 All exposed faces, including top edges at sills and all bottom edges of A-lign® weatherboards and accessories must be finished with at least two coats of an exterior grade latex acrylic paint complying with any of Parts 7, 8, 9 or 10 of AS 3730. *[Note: For A-lign® shiplap weatherboards, Claymark Group Ltd Partnership recommends using paint with a colour which has a light reflectance value [LRV] of greater than or equal to 45%.]*

Handling and Storage

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

Technical Literature

- 6.1 This Appraisal must be read in conjunction with:
- A-lign Technical Manual Vertical® Shiplap Weatherboard, J004000, April 2022.
- 6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Framing

Timber Treatment

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

Timber Framing

- 7.2 Timber framing must comply with NZS 3604 for buildings or parts of buildings within the scope limitations of NZS 3604. Buildings or parts of buildings outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and AS/NZS 1170. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604. In all cases, studs must be at maximum 600 mm centres with dwangs fitted flush between the studs at maximum 480 mm centres.
- 7.3 Additional framing may be required at soffits, internal and external corners and window and door openings for the support and fixing of cavity battens and the A-lign Vertical® Shiplap Weatherboard Cavity Solution.
- 7.4 Timber wall framing behind where weatherboards are joined over a cavity batten must be nominal 50 mm thickness [i.e. 45 mm minimum finished thickness].



- 7.5 Timber wall framing and A-lign Vertical® Shiplap Weatherboard Cavity Solution cavity battens must have a maximum moisture content of 20% at the time of the cladding application.
- 7.6 Timber wall framing and A-lign Vertical® Shiplap Weatherboard Cavity Solution cavity battens must have a maximum moisture content of 18% before the weatherboards are painted.

Steel Framing

- 7.7 Steel framing must be to a specific design meeting the requirements of NASH Standard Part Two.
- 7.8 The minimum framing specification is 'C' section studs and dwangs of overall section size of 75 mm web and 32 mm flange. Steel thickness must be minimum 0.8 mm.
- 7.9 In all cases, studs must be at maximum 600 mm centres, with dwangs fitted flush between the studs at maximum 480 mm centres.

General

- 8.1 When A-lign Vertical® Shiplap Weatherboard Cavity Solution is used for specifically designed buildings up to 2.5 kPa design differential ULS wind pressure, only the weathertightness aspects of the cladding and maximum framing centres are within the scope of this Appraisal. All other aspects of the building need to be specifically designed and are outside the scope of this Appraisal.
- 8.2 Punchings in the cavity vent strip must provide a minimum ventilation opening area of 1,000 mm² per lineal metre of wall in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3 b].
- 8.3 The ground clearance to finished floor levels as set out in NZS 3604 must be adhered to at all times. At ground level, paved surfaces, such as footpaths, must be kept clear of the bottom edge of the cladding solution by a minimum of 100 mm, and unpaved surfaces by 175 mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Table 18.
- 8.4 At balcony, deck or roof/wall junctions, the bottom edge of A-lign Vertical® Shiplap Weatherboard Cavity Solution must be kept above the top surface of any adjacent roof flashing by a minimum of 35 mm in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.
- 8.5 All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped for Wind Zones up to, and including, Very High, and rigid underlays for buildings in the Extra High Wind Zone and specifically designed buildings up to 2.5 kPa design differential ULS wind pressure. Unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid underlays are used, the cavity batten and weatherboard fixing lengths must be increased by a minimum of the thickness of the underlay.
- 8.6 Where the solution abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the NZBC. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

Inter-storey Junctions

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

Structure

Mass

- 9.1 The mass of A-lign Vertical® Shiplap Weatherboard Cavity Solution is approximately 15 kg/m² at equilibrium moisture content. The solution is therefore considered a lightweight cladding in terms of NZS 3604.

Impact Resistance

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

Wind Zones

- 9.3 A-lign Vertical® Shiplap Weatherboard Cavity Solution is suitable for use in all Wind Zones of NZS 3604 up to, and including, Extra High where buildings are designed to meet the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 1.1, or up to 2.5 kPa design differential ULS wind pressure where buildings are specifically designed.
- 9.4 When used on timber-framed buildings situated in NZS 3604 Wind Zones up to, and including, Very High, the A-lign® shiplap weatherboards must be fixed to the structural cavity battens with 60 x 2.8 mm hot-dip galvanised or stainless steel ring shank jolt head nails. When used on timber-framed buildings situated in NZS 3604 Wind Zone Extra High and specific design wind pressures up to, and including, design differential 2.5 kPa ULS, the A-lign® shiplap weatherboards must be fixed to the structural cavity battens with 75 x 3.15 mm hot-dip galvanised or stainless steel ring shank jolt head nails.
- 9.5 When used on steel-framed buildings situated in NZS 3604 Wind Zones up to, and including, Extra High, and specific design wind pressures up to, and including, design differential 2.5 kPa ULS, the A-lign® shiplap weatherboards must be fixed with AS 3566 Corrosion Class 4 hot-dip galvanised or Grade 316 stainless steel self-drilling screws with an outside thread diameter of 4.7 mm minimum. The screw length must allow a 10 mm minimum penetration through the steel frame.

Durability

- 10.1 The A-lign Vertical® Shiplap Weatherboard Cavity Solution meets the performance requirements of NZBC Clause B2.3.1 [b], 15 years for the A-lign® weatherboards and flashings, and the performance requirements of NZBC Clause B2.3.1 [c], 5 years for the exterior paint system.

Serviceable Life

- 10.2 A-lign Vertical® Shiplap Weatherboard Cavity Solution installations are expected to have a serviceable life of at least 50 years provided the solution is maintained in accordance with this Appraisal and the A-lign® weatherboards and fixings are continuously protected by a weathertight coating and remain dry in service. For the A-lign Vertical® Shiplap Weatherboard Cavity Solution to achieve a serviceable life of 50 years, it must be painted as soon as practicable following weatherboard and trim installation.
- 10.3 Coastal locations can be very corrosive to fasteners, especially locations within distances of up to 500 m from the sea including harbours, or 100 m from tidal estuaries and sheltered inlets, and otherwise as shown in NZS 3604, Figure 4.2. These coastal locations are defined in NZS 3604 as Zone D. To achieve an extended serviceable life in Zone C and Zone D, A-lign® cavity battens and A-lign® weatherboards must be fixed with stainless steel or protected hot-dip galvanised steel fasteners. Fasteners outside Zone C and Zone D may be hot-dip galvanised steel.
- 10.4 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres and contamination from agricultural chemicals or fertilisers can convert mildly corrosive atmospheres into aggressive environments for fasteners. The fixing of A-lign® cavity battens and A-lign® weatherboards in areas subject to microclimatic conditions requires specific design in accordance with NZS 3604, Paragraph 4.2.4, and is outside the scope of this Appraisal.

Maintenance

- 11.1 Regular maintenance is essential to ensure the performance requirements of the NZBC are continually met and to ensure the maximum serviceability of the solution.
- 11.2 Regular cleaning [at least annually] of the paint coating is required to remove grime, dirt and organic growth and to maximise the life and appearance of the coating. Grime may be removed by brushing with a soft brush, warm water and detergent. Paint systems must be recoated at approximately 7–10 yearly intervals in accordance with the paint manufacturer's instructions.
- 11.3 Annual inspections must be made to ensure that all aspects of the cladding solution, including the paint coating solution, flashings and any sealed joints remain in a weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress must be repaired immediately. Sealant and paint coatings must be repaired in accordance with the relevant manufacturer's instructions.
- 11.4 Minimum ground clearances as set out in this Appraisal and the Technical Literature must be maintained at all times during the life of the solution. *[Note: Failure to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of the A-lign Vertical® Shiplap Weatherboard Cavity Solution.]*

Control of External Fire Spread

Vertical Fire Spread

- 12.1 This Appraisal only covers buildings 10 m or less in height. NZBC Functional Requirement C3.2 identifies that external vertical fire spread to upper floors only needs be considered for buildings with a building height greater than 10 m. Control of external vertical fire spread is therefore outside the scope of this Appraisal.

Horizontal Fire Spread

- 12.2 The A-lign Vertical® Shiplap Weatherboards have not been assessed for a peak heat release or total heat released rating and therefore cannot be used within 1 m of the relevant boundary or on Risk Group SI Buildings.
- 12.3 Refer to NZBC Acceptable Solutions C/AS1 and C/AS2 and Verification Method C/VM2 for fire resistance rating and control of external fire spread requirements for external walls.

Prevention of Fire Occurring

- 13.1 Separation or protection must be provided to the A-lign Vertical® Shiplap Weatherboard Cavity Solution from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

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



Internal Moisture

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

Water Vapour

- 15.2 The A-lign Vertical® Shiplap Weatherboard Cavity Solution is not a barrier to the passage of water vapour, and when installed in accordance with this Appraisal will not create a risk of moisture damage resulting from condensation. Refer to Paragraphs 15.3 and 15.4 for specific requirements for steel-framed buildings.
- 15.3 Where the A-lign Vertical® Shiplap Weatherboard Cavity Solution is installed over a steel frame, expanded polystyrene (EPS) 10 mm thick or a thermal break with a minimum R-value of 0.25 m²C/W must be installed over each steel member to provide the thermal break in accordance with the requirements of the NZBC Acceptable Solution E3/AS1, Paragraph 1.1.4 d).
- 15.4 The wall underlay, cavity battens and the rest of the A-lign Vertical® Shiplap Weatherboard Cavity Solution is installed over the top of the thermal break in accordance with the Technical Literature and this Appraisal.

Installation Information

Installation Skill Level Requirement

- 16.1 All design and building work must be carried out in accordance with the A-lign Vertical® Shiplap Weatherboard Cavity Solution Technical Literature and this Appraisal by competent and experienced tradespersons conversant with the A-lign Vertical® Shiplap Weatherboard Cavity Solution. Where the work involves Restricted Building Work (RBW), this must be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

A-lign Vertical® Shiplap Weatherboard Cavity Solution Installation

Wall Underlay and Flexible Sill and Jamb Tape Installation

- 17.1 The selected wall underlay and flexible sill and jamb tape system must be installed by the building contractor in accordance with the underlay and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the A-lign Vertical® Shiplap Weatherboard Cavity Solution. Flexible wall underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75 mm minimum at horizontal joints and 150 mm minimum over studs at vertical joints. Generic rigid 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.
- 17.2 Where studs are at greater than 450 mm centres and a flexible wall underlay is being used, a wall underlay support must be installed over the underlay at maximum 300 mm centres horizontally.

A-lign® Horizontal Cavity Batten Installation (Timber Frame)

- 17.3 The A-lign® horizontal cavity battens must be installed horizontally over the wall 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 60 x 2.8 mm hot-dip galvanised nails or stainless steel ring shank jolt head hand-driven nails or 64 x 2.8 mm stainless steel ring shank gun-driven nails. The nail fixings must be at 300 mm centres and staggered 10 mm either side of the batten centre line. Refer to BRANZ Bulletin No. 673 for further information.

A-lign® Horizontal Cavity Batten Installation (Steel Frame)

- 17.4 The A-lign® horizontal cavity battens must be installed horizontally over the wall underlay and thermal break 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 AS 3566 Corrosion Class 4 hot-dip galvanised or Grade 316 stainless steel self-drilling screw with an outside thread diameter of 4.7 mm minimum and a length allowing a 10 mm minimum penetration through the frame.

A-lign Vertical® Shiplap Weatherboard Cavity Solution Installation

- 17.5 A-lign® shiplap weatherboards may be cut on-site by power or hand saw. Holes and cut-outs may be formed by using a hole saw.
- 17.6 A-lign® shiplap weatherboards must be dry prior to installation. Before the weatherboards are installed, cut ends must be sealed with A-lign® End Seal.
- 17.7 Before the weatherboards are installed, the corner detail must be prepared to suit the selected option, e.g. A-lign® dual purpose internal and external weatherboard or external box corner. The necessary flashings must be installed before commencing weatherboard fixing and the Quickflash cavity closure must be installed continuously around the bottom of all cavities.
- 17.8 A-lign® shiplap weatherboards must be installed starting at the corner of the wall section being clad. The first weatherboard must be installed plumb to assist with the installation of subsequent weatherboards. The weatherboards must overhang the bottom plate by a minimum of 50 mm. The weatherboards should be installed with the lap facing away from the prevailing winds.
- 17.9 A-lign® shiplap weatherboards must be overlapped a minimum of 25 mm with an expansion gap of 2 mm at the overlap.
- 17.10 For timber-framed buildings, fix each weatherboard with one nail per board at every cavity batten. Fixing must be carried out using 60 x 2.8 mm or 75 x 3.15 mm hot-dip galvanised or stainless steel ring shank jolt head nails depending on the Wind Zone and Exposure Zone – see Paragraphs 9.4 and 10.3. The fixing must be located 42 mm in from the edge of the overlapping weatherboard and a minimum of 32 mm from the end of the board. The fixings must be punched a maximum of 2 mm below the surface of the board. Start fixing the boards at the middle of their length and work towards the ends. Pre-drill all fixings within 50 mm of the end of the board.
- 17.11 For steel-framed buildings, fix each weatherboard with one screw per board at every cavity batten. Fixing must be carried out using AS 3566 Corrosion Class 4 hot-dip galvanised or Grade 316 stainless steel self-drilling screws, depending on the Exposure Zone – see Paragraphs 9.5 and 10.3. The fixing must be located 42 mm in from the weatherboard lap and a minimum of 32 mm from the end of the board. The fixings must be countersunk a maximum of 2 mm below the surface of the board. Start fixing the boards at the middle of their length and work towards the ends. Pre-drill all fixings within 50 mm of the end of the board.
- 17.12 Fix weatherboards in full lengths where possible. Where joints are unavoidable, scarf the weatherboard at 45° over a cavity batten and fix with one fixing through the overlapping board.

Aluminium Joinery Installation

- 17.13 Aluminium joinery and associated head flashings must be installed by the building contractor in accordance with the Technical Literature. A 7.5–10 mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed after the joinery has been secured in place.
- 17.14 After installing the window and door joinery, A-lign® facing boards, planted sills and scribes may be installed in accordance with the Technical Literature to provide additional weatherproofing for the joinery/weatherboard junction.
- 17.15 To assist with finishing and ease of maintenance, a 10 mm gap is to be left between the bottom edge of the weatherboard and the aluminium joinery head flashing.

Finishing

- 17.16 To prevent swelling of the weatherboard around the punched fixing, the fixing must be filled immediately, or alternatively the weatherboard and the head of the fixing must be primed with a premium timber primer.
- 17.17 The paint coating manufacturer's instructions must be followed at all times for the application of the paint finish. A-lign® shiplap weatherboards must be painted as soon as practicable following fixing and must be clean and dry before commencing. If A-lign® shiplap weatherboards are exposed to the weather for more than 6 weeks, Claymark Group Ltd Partnership must be contacted for advice. Allow the recommended drying time between coats and follow the temperature limitations for application.

Inspection

- 17.18 The Technical Literature must be referred to during the inspection of A-lign Vertical® Shiplap Weatherboard Cavity Solution installations.

Health and Safety

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

Basis of Appraisal

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

Tests

- 19.1 The following testing has been completed by BRANZ:
- BRANZ expert opinion on NZBC Clause E2 code compliance for of the A-lign Vertical® Shiplap Weatherboard Cavity Solution was based on testing and evaluation of all details within the scope and as stated within this Appraisal. The A-lign Vertical® Shiplap Weatherboard Cavity Solution details were tested to the version of E2/VM1 as contained within NZBC Clause E2, Amendment 5, August 2011. In addition to the weathertightness test, the details contained within the Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the solution will meet the performance levels of NZBC Acceptable Solution E2/AS1 for cavity-based weatherboard claddings.
 - Wind face load and fastener pull through testing for the A-lign Vertical® Shiplap Weatherboard Cavity Solution. BRANZ determined design wind suction pressures, and by comparing these pressures with the NZS 3604 design wind speeds and AS/NZS 1170 pressure coefficients, the fixing requirements were determined for timber and steel-framed walls.

Other Investigations

- 20.1 Structural and durability opinions have been provided by BRANZ technical experts.
- 20.2 The performance of and testing of shiplap weatherboard wall cladding products in New Zealand has been considered, including the structural and weathertightness performance, durability, and non-hazardous nature.
- 20.3 Site inspections have been carried out by BRANZ to assess the practicability of installation and to examine completed installations.
- 20.4 The Technical Literature for the A-lign Vertical® Shiplap Weatherboard Cavity Solution has been examined by BRANZ and found to be satisfactory.



Quality

- 21.1 The manufacture of A-lign® shiplap weatherboards has been examined by BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 21.2 The quality of materials, components and accessories supplied by Claymark Group Ltd Partnership is the responsibility of Claymark Group Ltd Partnership. The quality control system for the finger jointing of A-lign® weatherboards and accessories has been assessed and registered as meeting the requirements of AS 5069 byASUREQuality Ltd.
- 21.3 The quality control system for the timber treatment of A-lign® weatherboards, cavity battens and accessories has been assessed and registered as meeting the timber treatment Quality Assurance Programme byASUREQuality Ltd.
- 21.4 Quality of installation on-site of components and accessories supplied by Claymark Group Ltd Partnership and the building contractor is the responsibility of the installer.
- 21.5 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing solutions and joinery, building underlays, flashing tapes, air seals and the A-lign Vertical® Shiplap Weatherboard Cavity Solution in accordance with the instructions of Claymark Group Ltd Partnership.
- 21.6 Building owners are responsible for the maintenance of the A-lign Vertical® Shiplap Weatherboard Cavity Solution in accordance with the instructions of Claymark Group Ltd Partnership.

Sources of Information

- AS 3730 Guide to the properties of paints for buildings.
- AS 5069:2006 Timber – Finger jointing in non-structural products – Product requirements.
- AS/NZS 1170:2002 Structural design actions.
- AS/NZS 4534:2006 Zinc and zinc/aluminium-alloy coatings on steel wire.
- AS/NZS 4680:2006 Hot-dip galvanized [zinc] coatings on fabricated ferrous articles.
- BRANZ Bulletin Number 673, June 2022, Cavity battens.
- NASH Building Envelope Solutions: 2019 Light steel-framed buildings.
- NASH Standards Part Two: 2019 Light steel-framed buildings.
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3603:1993 Timber structures standard.
- NZS 3604:2011 Timber-framed buildings.
- NZS 3617:1979 Specification for profiles of weatherboards, fascia boards and flooring.
- NZS 4211:2008 Specification for performance of windows.
- Ministry of Business, Innovation and Employment Record of amendments – Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



BRANZ Appraised
Appraisal No. 929 [2023]

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08 May 2023

A-LIGN VERTICAL® SHIPLAP
WEATHERBOARD CAVITY
SOLUTION



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

The Appraisal is issued only to **Claymark Group Ltd Partnership**, 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. **Claymark Group Ltd Partnership**:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions;
 - d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Claymark Group Ltd Partnership**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Claymark Group Ltd Partnership** or any third party.

For BRANZ

Claire Falck
Acting Chief Executive

Date of Issue:
08 May 2023