



## BRANZ Appraised

Appraisal No. 926 [2016]

## QUICK BATTEN TRAY 450™ ROOFING SYSTEM



Appraisal No. 926 [2016]

### BRANZ Appraisals

Technical Assessments of  
products for building and  
construction.



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## Product

- 1.1 The Quick Batten Tray 450™ System is an interlocking roof cladding that resembles the look of traditional tray roofing. The Quick Batten Tray 450™ and matching flashings are available in pre-painted aluminium-zinc-magnesium [combinations] coated steel and pre-painted aluminium.

## Scope

- 2.1 The Quick Batten Tray 450™ System has been appraised as a roof cladding system for buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1, with regards to floor plan area and building height; and,
  - constructed with timber roof framing complying with the NZBC; and,
  - where the roof slope is 3° or greater; and,
  - situated in NZS 3604 Wind Zones up to and including Very High, see Paragraphs 7.8 and 16.1.

## Building Regulations

### New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, the Quick Batten Tray 450™ System 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 B1 STRUCTURE:** Performance B1.3.1, B1.3.2 and B1.3.4. The Quick Batten Tray 450™ System meets the requirements for load arising from self-weight, gravity loads, snow, wind, impact and creep [i.e. B1.3.3 (a), (b), (g), (h), (j), and (q)]. See Paragraphs 8.1-8.3.

**Clause B2 DURABILITY:** Performance B2.3.1 (b), 15 years and B2.3.2. The Quick Batten Tray 450™ System meets these requirements. See Paragraphs 9.1 - 9.5.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.1 and E2.3.2. The Quick Batten Tray 450™ System meet these requirements. See Paragraphs 13.1 and 13.2.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. The Quick Batten Tray 450™ System meets this requirement and will not present a health hazard to people.



## Technical Specification

- 4.1 The Quick Batten Tray 450™ System is an interlocking roof cladding that resembles the look of traditional tray roofing. The tray profile is 485 mm wide with a span cover of 450 mm. The Quick Batten Tray 450™ System is completed with pre-manufactured flashings, end caps and fixing clips. The Quick Batten Tray 450™ System is manufactured from either pre-painted aluminium-zinc-magnesium [combinations] coated steel or pre-painted aluminium.
- 4.2 System components and accessories for the Quick Batten Tray 450™ System, which are supplied by Architectural Roof and Façade Innovations Limited are:

### Quick Batten Tray 450™; Hip, Ridge and End Caps and Flashings

- manufactured from 0.55 mm thick Grade G300 steel with either AZ150, AZ200 or AM240 coating class in accordance with AS 1397 and pre-painted in accordance with AS/NZS 2728; or,
- manufactured from 1.0 mm thick pre-painted aluminium.
- The Quick Batten Tray 450™ components are supplied in lengths to suit the building design. Contact Architectural Roof and Façade Innovations Limited for more information.

### Accessories

- **Quick Batten Tray 450™ Concealed Clips** - concealed fixing clips 53 mm wide manufactured from 1.0 mm thick galvanised steel.
  - **Clip fixings** - 8 gauge x 50 mm long Grade 304 stainless steel timber screws.
  - **Woven mesh** - structured woven mesh to provide an additional separation layer.
- 4.3 Accessories used with the Quick Batten Tray 450™ System, which are supplied by the building contractor, are:
- **Roof underlay** - roof underlay complying with NZBC Acceptable Solution E2/AS1 Table 23 or a roof underlay covered by a valid BRANZ Appraisal.
  - **Roof battens** - nominal 50 x 50 mm timber battens.
  - **Roof battens fixings** - 10 gauge x 80 mm long self-drilling screw.
  - **Timber spacers** - nominal 50 x 10 mm timber spacer.
  - **Timber spacer fixings** - 40 x 2.5 mm flat head hot-dipped galvanised nails to temporarily fix the spacers.

## Handling and Storage

- 5.1 Handling and storage of all materials supplied by Architectural Roof and Façade Innovations Limited or the building contractor, whether on or off site, are under the control of the installer. The Quick Batten Tray 450™ System components and accessories must be transported and handled with care to avoid damaging the pre-finished surfaces. Long term storage of roof trays and accessories must be under dry, ventilated cover. For short term storage on site, roof trays must be stored flat, and off the ground. Care must be taken to avoid damage to painted surfaces. Materials must be handled and stored in accordance with the relevant manufacturer's instructions.
- 5.2 Other accessories must be stored so they are kept clean, dry and undamaged.

## Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Quick Batten Tray 450™ System. The Technical Literature must be read in conjunction with this Appraisal. All aspect of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.



## Design Information

### General

- 7.1 The Quick Batten Tray 450™ System is an interlocking roof cladding that resembles the look of traditional tray roofing. The system includes matching flashings and concealed fixing clips.
- 7.2 The Quick Batten Tray 450™ System is available in a variety of pre-painted metal products from different manufacturers. It is the designer's responsibility to select pre-painted metal products suitable for the relevant NZS 3604 Exposure Zone and the durability performance expected by the owner. Refer to Architectural Roof and Façade Innovations Limited for information on the pre-painted metal products.
- 7.3 Roof design must take into account any requirements for areas subject to regular snowfalls in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 1.3.
- 7.4 The collection of potable water has not been assessed and is outside the scope of this Appraisal. Contact Architectural Roof and Façade Innovations Limited for further information.

### Roof Ventilation

- 7.5 Roof ventilation is provided through a space created between the roof underlay and the underside of the battens by the installation of a 10 mm timber spacer which is fixed over the roof underlay to the truss top chord or rafter. Additional ventilation is provided by a woven mesh, which is installed over the battens prior to fixing the roofing.

### Roof Framing

- 7.6 Timber framing must comply with NZS 3604 for buildings or part of buildings within the scope limitations of NZS 3604. Buildings or part of buildings outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and AS/NZS 1170.
- 7.7 Timber roof framing, battens and spacers must be treated as required by NZBC Acceptable Solution B2/AS1 for the building design application.
- 7.8 Roof framing [trusses or rafters] must be at maximum 900 mm centres. Roof battens must be installed at maximum 450 mm centres where the roof is situated in all NZS 3604 Wind Zones up to and including Very High and the roof slope is 10° or greater. Where the roof is situated in all NZS 3604 Wind Zones High and Very High and the roof slope is less than 10°, additional roof battens must be installed at maximum 225 mm within 1.2 m of the roof edge.

## Structure

### Mass

- 8.1 The approximate mass of the Quick Batten Tray 450™ System when installed is 5.75 kg/m<sup>2</sup> for steel roof cladding, and 3.60 kg/m<sup>2</sup> for aluminium roof cladding. A light roof is defined in NZS 3604 as a roof with a roofing material [cladding and any sarking] having a mass not exceeding 20 kg/m<sup>2</sup>.

### Snow

- 8.2 Quick Batten Tray 450™ System is suitable for use in areas where buildings are designed for 1 kPa snow loading. Refer to Architectural Roof and Façade Innovations Limited for installation details for snow-prone areas.

### Wind Zones

- 8.3 When fixed in accordance with the manufacturer's instructions and this Appraisal, the Quick Batten Tray 450™ System is suitable for use in all NZS 3604 Wind Zones, up to, and including Very High. See Paragraph 16.1.



## Durability

### Serviceable Life

- 9.1 The Quick Batten Tray 450™ System is expected to have a serviceable life of at least 15 years provided the system is maintained in accordance with this Appraisal and the Technical Literature.
- 9.2 The pre-painted material options of the Quick Batten Tray 450™ System meet the intended durability performance of NZBC Acceptable Solution E2/AS1 Table 20. For pre-painted aluminium-zinc coated steel, it is the designer's responsibility to select either Type 4 or Type 6 depending on the NZS 3604 Exposure Zone.
- 9.3 For actual durability performance of the pre-painted roofing, refer to Architectural Roof and Façade Innovations Limited.
- 9.4 On exposure to the environment, the paint coating will gradually lose gloss and coloured coatings may slowly fade. A faster reduction in appearance and a reduction in serviceable life can be anticipated in severe industrial, geothermal, and marine exposures.
- 9.5 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres, and contamination from agricultural chemicals or fertilisers can convert mildly corrosive atmosphere into aggressive environments for fasteners. The fixing of the Quick Batten Tray 450™ System 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

- 10.1 Regular maintenance is essential for Quick Batten Tray 450™ System installations to continue to meet the NZBC durability performance provision and to maximise their serviceable life.
- 10.2 Annual inspections should be made to ensure that all aspects of the roofing system remain in a weatherproof condition. When carrying out maintenance on the roof, all loads, including walking, must be applied to the upper part of the profiles, where they are supported by the battens.
- 10.3 The Quick Batten Tray 450™ System should be washed down regularly with fresh water in all areas not washed by rain, such as those areas sheltered by the eaves or overhang of a higher roof. This is particularly important in areas near the sea or near areas of industrial pollution.

## Control of External Fire Spread

- 11.1 Fire rated roof construction using the Quick Batten Tray 450™ System has not been assessed and is outside the scope of this Appraisal.

## Prevention of Fire Occurring

- 12.1 Separation or protection must be provided to the Quick Batten Tray 450™ System from heat sources such as flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 to C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

## External Moisture

- 13.1 The Quick Batten Tray 450™ System, when installed in accordance with this Appraisal, will shed precipitated moisture and therefore meet the performance requirements of NZBC Clause E2.3.1. They will also prevent the penetration of water that could cause undue dampness, or damage to building elements, therefore meeting the performance requirements of NZBC Clause E2.3.2.

## Construction Moisture

- 13.2 The Quick Batten Tray 450™ System allow excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet the performance requirements of NZBC Clause E2.3.6. This is achieved by ensuring the construction moisture levels are no higher than 18% when the roof trays are laid and before the ceiling is closed-in, as well as providing an adequate level of roof space ventilation.



### Internal Moisture

- 14.1 Adequate roof space ventilation is necessary to ensure roof space internal moisture levels and temperatures are controlled. Roof space ventilation requirements are given in the Technical Literature.
- 14.2 Ideally, air should be allowed to flow from the bottom to the top of the roof. In skillion-type roofs, a clear, uninterrupted, ventilated air gap of at least 25 mm must be present between the underside of the roof underlay and the thermal insulation.
- 14.3 Architectural Roof and Façade Innovations Limited should be consulted for further advice and information on roof ventilation and moisture control, especially when the roof design is unusual.

## Installation Information

### Installation Skill Level Requirements

- 15.1 Installation must be carried out in accordance with the Architectural Roof and Façade Innovations Limited Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant Licence Class.

### System Installation

- 16.1 The roof underlay must be installed in accordance with NZBC Acceptable Solution E2/AS1 or the roof underlay manufacturer's instructions.
- 16.2 Timber spacers, 10 mm thick, are fixed over the roof underlay to the roof framing. The timber spacers are temporarily fixed in place with 40 x 2.5 mm hot-dipped galvanised flat head nails.
- 16.3 Roof battens must be fixed through the timber spacers to the roof framing. The battens are fixed with one 10 gauge x 80 mm long self-drilling screw at each framing member. The screw head must be driven flush with the top face of the batten. Roof battens must be installed at maximum 450 mm centres where the roof is situated in all NZS 3604 Wind Zones up to and including Very High and the roof slope is 10° or greater. Where the roof is situated in all NZS 3604 Wind Zones High and Very High and the roof slope is less than 10°, additional roof battens must be installed at maximum 225 mm within 1.2 m of the roof edge.
- 16.4 The woven mesh is installed over the battens and is stapled to temporary fix in place.
- 16.5 Quick Batten Tray 450™ is fixed to all battens over the woven mesh using the fixing clips and two 8 gauge x 50 mm long Grade 304 stainless steel timber screws. Flashings, hips, ridges, barges and end caps are fixed in accordance with the Technical Literature.
- 16.6 While working on the roof, loads [e.g. walking on the roof] must be applied to the upper part of the profile, where they are supported by the battens.

### Finishing

- 16.7 The Quick Batten Tray 450™ System is pre-finished and does not require painting at the completion of installation. The roof must be left clean of rubbish on completion of the installation. The roofing must be protected from other construction and finishing work carried out on, or near the roof. Touch up of scratches and the like must be completed in accordance with the instructions of Architectural Roof and Façade Innovations Limited.

### Inspections

- 16.8 The Technical Literature must be referred to during all inspections of the Quick Batten Tray 450™ System installations.

### Health and Safety

- 17.1 Safe use and handling procedures for Quick Batten Tray 450™ System are available by contacting Architectural Roof and Façade Innovations Limited.



## Basis of Appraisal

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

### Tests

- 18.1 Wind face load testing to simulate wind pressures on the Quick Batten Tray 450™ System was carried out by BRANZ. BRANZ determined the 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 framed roofs.

### Other Investigations

- 19.1 Weathertightness, structural and durability opinions have been provided by BRANZ technical experts.
- 19.2 Site visits have been carried out by BRANZ to assess the practicability of installation and to examine completed installations.
- 19.3 The manufacturer's Technical Literature has been examined by BRANZ and found to be satisfactory.

### Quality

- 20.1 The manufacture of Quick Batten Tray 450™ System has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 20.2 The quality of materials, components and accessories supplied by Architectural Roof and Façade Innovations Limited is the responsibility of Architectural Roof and Façade Innovations Limited.
- 20.3 Quality of installation on site of components and accessories supplied by Architectural Roof and Façade Innovations Limited is the responsibility of the building contractor and installer.
- 20.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the roof framing and the Quick Batten Tray 450™ System in accordance with Architectural Roof and Façade Innovations Limited.
- 20.5 Building owners are responsible for the maintenance of the Quick Batten Tray 450™ System in accordance with the instructions of Architectural Roof and Façade Innovations Limited.

## Sources of Information

- AS 1397: 2011 Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium.
- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2728: 2013 Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements.
- NZS 3603: 1993 Timber structures standard.
- 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 (including Amendment 6, 14 February 2014).
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations.



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23 August 2016

QUICK BATTEN TRAY 450™  
ROOFING SYSTEM



In the opinion of BRANZ, the **Quick Batten Tray 450™ Roofing System** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

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

### Conditions of Appraisal

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

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For BRANZ

**Chelydra Percy**

Chief Executive

Date of Issue:

23 August 2016