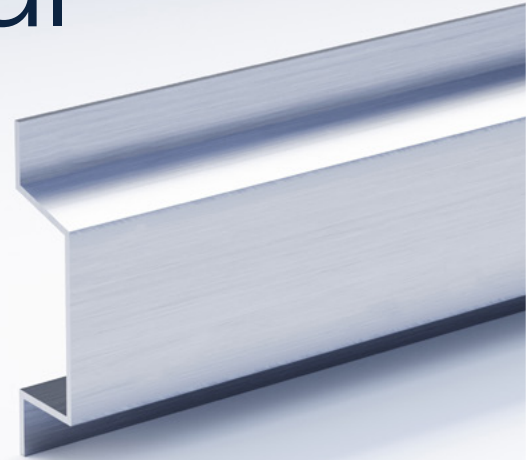


Tophat Structural Cavity Batten

Product Technical Statement



Vulcan Tophat Structural Cavity Batten is a purpose-designed extruded aluminium profile used to form a nominal 20 mm drained and ventilated cavity behind exterior wall cladding systems. It also provides a structural fixing surface for the cladding, combining cavity formation and cladding support within a single profile.

Manufactured from durable 6060-T5 aluminium alloy, it may be installed vertically for horizontal cladding or horizontally for vertical cladding and is primarily designed for use with Vulcan UltraClad systems, while also being suitable for compatible cladding products where appropriate fixing requirements are specified. The batten must be installed as part of a complete wall assembly, together with compatible wall underlay or rigid air barrier, framing, flashings, fixings and exterior cladding.

1. Product description and features

Vulcan Tophat Structural Cavity Batten is an extruded aluminium profile designed to form a nominal 20 mm drained and ventilated cavity while providing a structural fixing surface for exterior wall cladding. The profile incorporates two fixing lips to support secure attachment to the building structure and a 15-degree sloping top surface to assist moisture drainage.

This batten may be installed either vertically for horizontal cladding or horizontally for vertical cladding. It is primarily designed for use with Vulcan UltraClad® systems but may also be used with other compatible cladding products where suitable fixing requirements are specified by the cladding manufacturer.

Manufactured from durable 6060-T5 aluminium alloy and weighs approximately 0.47kg/metre. The profile is lightweight, corrosion-resistant, non-combustible, and 100% recyclable. It is available in mill-finish or powder-coated in a range of colours to suit project and cladding requirements.

2. Drawings and dimensions

The drawings included in this statement illustrate the general profile form, nominal dimensions, and intended installation arrangement of the Vulcan Tophat Structural Cavity Batten.

The standard profile forms a nominal 20 mm cavity and has an overall width of approximately 77.1 mm. It includes a 45 mm top face, 15 mm fixing lips on each side, and a nominal thickness of 1.6mm. One side of the profile is formed at a 15-degree angle to promote drainage.

The drawings are indicative only and must be read together with the project-specific cladding details, fixing requirements, framing design, wall underlay or rigid air barrier details, and relevant installation instructions. Final detailing and installation remain the responsibility of the project designer, builder, and installer for the specific site and building conditions.

FIGURE 1: Vulcan Tophat Structural Cavity Batten profile and dimensions

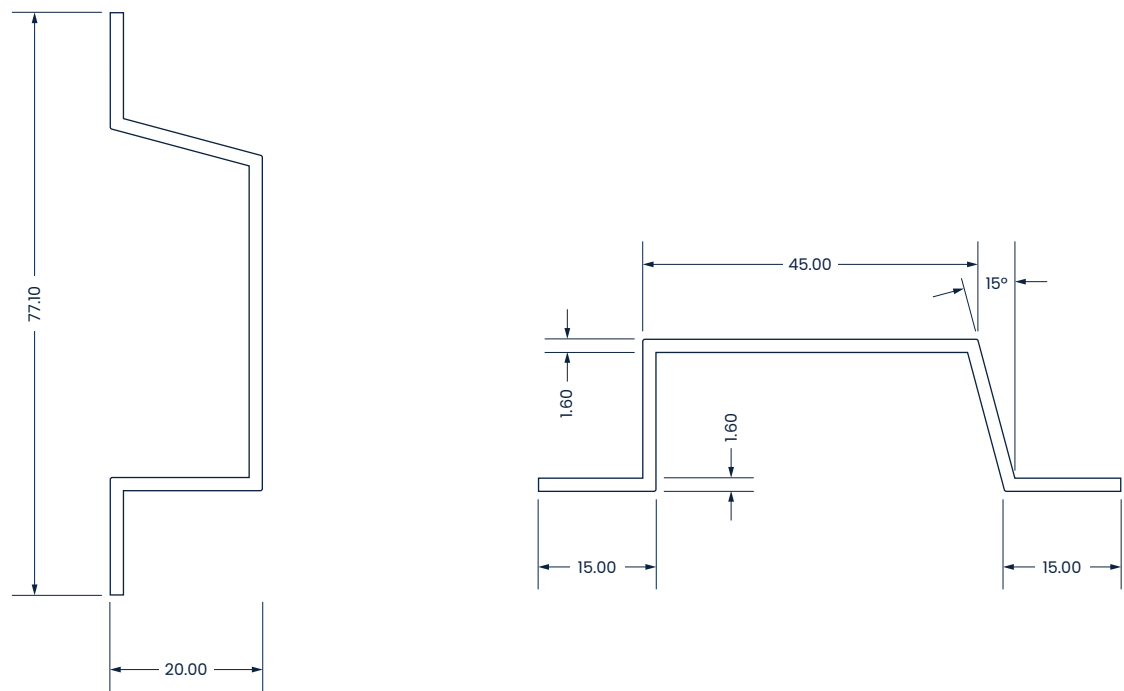
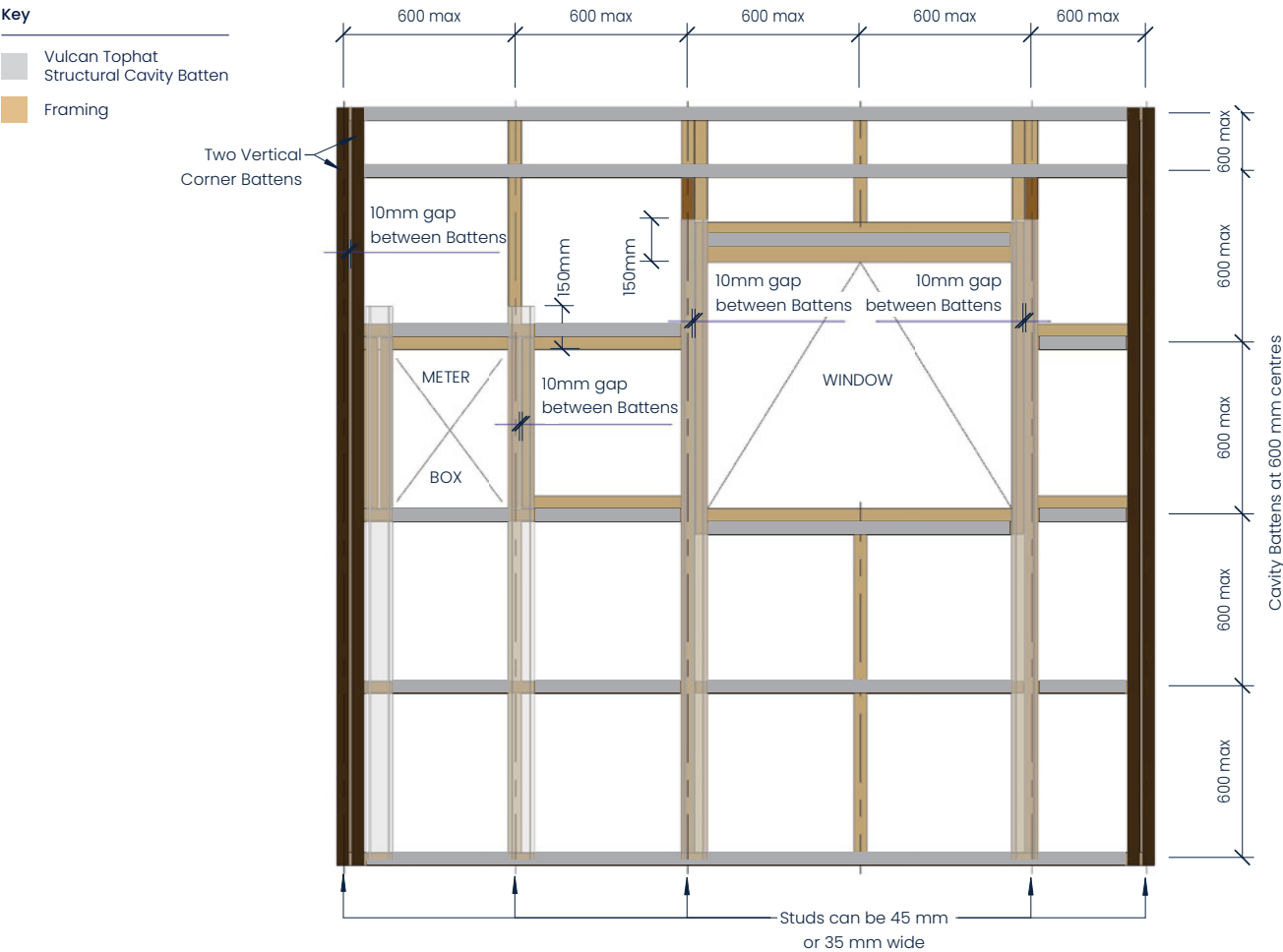


FIGURE 2: Vulcan Tophat Structural Cavity Batten installed horizontally for vertical wall cladding



3. Scope

3.1 TIMBER FRAMING

Vulcan Tophat Structural Cavity Batten can be used on timber-framed buildings within the following scope:

- Timber framing designed and constructed in accordance with NZS 3604, where the building or relevant building element falls within the scope of that Standard;
- Buildings or building elements outside the scope of NZS 3604, where the framing is subject to specific engineering design in accordance with NZS 3603 or AS 1720.1;
- Exterior wall cladding systems incorporating a drained and ventilated cavity, including Vulcan UltraClad® systems and other compatible proprietary cladding systems where suitable fixing requirements are provided by the cladding manufacturer;
- Studs spaced at a maximum of 600 mm centres, with nogs installed flush between the studs at a maximum of 800 mm centres; and
- Batten layouts and fixing arrangements designed to satisfy the applicable wind actions and structural requirements for the project.

3.2 STEEL FRAMING

Vulcan Tophat Structural Cavity Batten may be used on steel-framed buildings within the following scope:

- Light steel framing designed and constructed in accordance with NASH Standard Part Two, where the building or relevant building element falls within the scope of the NASH Standards;
- Buildings or building elements outside the scope of the NASH Standard, where the framing is subject to specific engineering design in accordance with AS/NZS 4600;
- Exterior wall cladding systems incorporating a drained and ventilated cavity, including Vulcan UltraClad® systems and other compatible proprietary cladding systems where suitable fixing requirements are provided by the cladding manufacturer;
- Steel framing with a minimum thickness of 0.75 mm;
- Studs spaced at a maximum of 600 mm centres, with nogs installed flush between the studs at a maximum of 800 mm centres; and
- Batten layouts and fixing arrangements designed to satisfy the applicable wind actions and structural requirements for the project.

4. NZBC Compliance

Vulcan Tophat Structural Cavity Batten forms part of the external wall cladding system and contributes to compliance with the NZBC, particularly:

Clause B1 Structure: The structural capacity of the batten has been assessed by calculation and numerical modelling, taking account of the aluminium material properties, section geometry, support spacing and applicable wind actions. The calculations were completed using current relevant New Zealand Standards applied in conjunction with the latest academic research. Results were validated by numerical modelling simulations.

The strength of the battens was found to be superior to most types of commonly used battens, meeting and exceeding the minimum requirements of Acceptable Solution E2/AS1 for all wind zones. For buildings outside the scope of E2/AS1 and E2/VM1, the structural adequacy of the battens was confirmed through specific design.

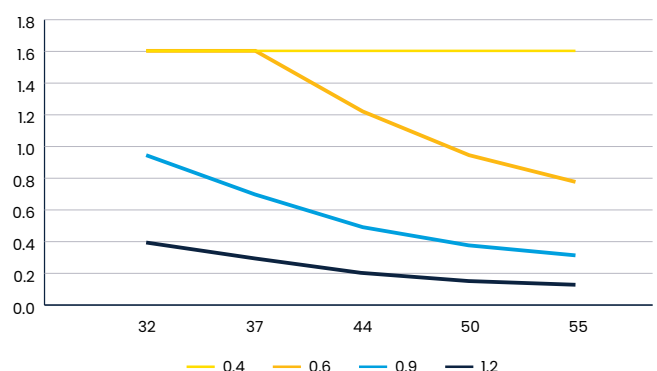
Figure 3 presents the maximum Ultimate Limit State (ULS) wind pressure for battens fixed to a supporting structure that provides support at maximum 600 mm centres over a minimum of two batten spans (Figure 3). This table can be used for specific designs, including for buildings exceeding 10 m in height.

When installed in accordance with the specified fixing and spacing requirements, the batten is suitable for use within the scope of NZBC Acceptable Solution E2/AS1 across all applicable wind zones. Applications outside the scope of E2/AS1 or E2/VM1 must be subject to specific engineering design.

FIGURE 3: ULS wind pressure for battens supported by the main structural framing at max. 600c/c

Batten Spacing (mm)	Max ULS wind pressure (kPa)
300	10.00
600	5.35
900	3.60

FIGURE 4: Graph shows max. spacing of battens (m, vertical axis) against design wind speed (m/s, horizontal axis) for different batten spans



4. NZBC Compliance (continued)

Clause B2 Durability: Performance B2.3.1 (b) 15 years and B2.3.2.

Vulcan Tophat Structural Cavity Batten is manufactured from 6060-T5 aluminium alloy and is intended to satisfy the minimum 15-year durability requirement applicable to cladding-related battens under NZBC Acceptable Solution B2/AS1. Compliance is demonstrated as an Alternative Solution and is subject to correct detailing, compatible materials, suitable fixings, appropriate environmental exposure, proper installation, and ongoing maintenance.

Clause C3 Fire affecting areas beyond the fire source:

Performance C3.4(a), C3.7(a). This batten is manufactured from aluminium, which is a non-combustible metal material. When used as part of a complete external wall cladding system, the product may contribute to the fire performance of the overall wall assembly, subject to the design and compliance requirements applicable to the specific building and cladding system.

The overall fire performance of the external wall system remains dependent on the complete wall assembly, including cladding material, cavity construction, insulation, wall underlay or rigid air barrier, framing, fixings, and junction details.

Clause E2 External moisture: Performance E2.3.2. This forms a nominal 20 mm drained and ventilated cavity behind the exterior wall cladding. Its 15-degree sloping top surface is designed to assist drainage and the management of moisture within the cavity.

When installed as part of a complete and correctly detailed exterior wall cladding system, including compatible wall underlay or rigid air barrier where applicable, flashings, fixings and cladding profiles, the batten may contribute to the overall wall cladding system satisfying the performance requirements of NZBC Clause E2 External Moisture, including E2.3.2.

Clause F2 Hazardous Building Materials: This batten is manufactured from aluminium and is not expected to present a hazard to building users when handled, installed, and maintained in accordance with normal construction practice.

Cut edges, drilled holes, and site-modified sections should be handled carefully to avoid sharp edges. Appropriate personal protective equipment should be used during cutting, drilling, handling, and installation.

5. Installation

Vulcan Tophat Structural Cavity Batten must be installed by a competent installer in accordance with the project-specific design, applicable connection details and the requirements of the relevant exterior wall cladding system.

The batten must be installed over the flexible or rigid wall underlay and fixed directly to the supporting wall framing. For vertical installation, battens shall be aligned with the wall framing and installed at centres corresponding to the framing layout. For horizontal installation, battens shall be fixed to framing or nogs at a maximum of 600 mm centres and installed with the 15-degree bevelled top surface sloping downward to promote drainage.

Standard fixing detail to timber framing comprises 2/12g 65 mm long type 17 stainless screws, 1 for each lip of the batten section. Standard fixing detail to steel framing comprises 4/12g self-drilling stainless screws with 10 to 12 TPI thread, 2 for each lip of the batten section.

Fixings must be corrosion-resistant, compatible with the supporting substrate, and suitable for the project exposure conditions. Where aluminium is in contact with treated timber, cement-based materials or dissimilar metals, suitable separation or isolation measures must be provided where required to reduce the risk of material incompatibility or galvanic corrosion.

Battens must be installed straight, securely fixed, and free from distortion. Site cutting, drilling, and other modifications must be carried out carefully so that the structural capacity, drainage function, and durability of the profile are not compromised.

Where the work constitutes Restricted Building Work (RBW), installation must be carried out by, or under the supervision of, an appropriately licensed building practitioner.

6. Maintenance

Vulcan Tophat Structural Cavity Batten is intended to require minimal maintenance when correctly installed as part of a complete exterior wall cladding system. Ongoing performance depends on the cladding system, cavity, and associated drainage paths remaining in serviceable condition.

The building owner or maintenance contractor should inspect the exterior wall cladding system at least annually and after significant weather events, where appropriate. Inspections should include cladding surfaces, flashings, penetrations, junctions, and accessible cavity drainage locations to identify any damage, blockage, corrosion, loose fixings, or deterioration.

Any accumulated debris, corrosion, damaged fixings, displaced components, or defects in adjacent cladding and flashing details should be addressed promptly. Maintenance of the overall wall cladding system must be carried out in accordance with the cladding manufacturer's recommendations, project-specific maintenance requirements and good building maintenance practice.

7. Handling and storage

Vulcan Tophat Structural Cavity Batten must be delivered, handled, and stored in a manner that prevents damage, distortion, and contamination. Battens should be received dry and undamaged. Any damaged material should be rejected or assessed before use. Packs must be stored on a firm, level surface clear of the ground, in a well-ventilated area and fully protected from weather, moisture and physical damage.

Care must be taken to avoid bending, twisting, or otherwise distorting the profiles during handling and storage. Battens must also be protected from contact with potentially damaging substances, including cement-based materials.

Where aluminium may come into contact with dissimilar metals, treated timber or cement-based materials, suitable compatible separation or isolation materials should be used where necessary to reduce the risk of adverse material interaction or corrosion. Accessories should be stored and used within the maximum storage periods recommended by their manufacturers.

8. Health and safety

Normal construction safety procedures must be followed when handling, cutting, drilling, and installing Vulcan Tophat Structural Cavity Batten. Appropriate personal protective equipment, including gloves and eye protection, should be used as required.

Care must be taken to avoid injury from sharp edges, swarf, burrs, and site-cut material. Any burrs or sharp edges created during cutting or drilling should be removed or made safe before installation.

References

- Vulcan Ultraclad® Vertical Cavity Cladding System Product Technical Statement
- NZ Metal Roof and Wall Cladding Code of Practice (NZ MRM COP)
- NZBC B1/AS1 Structure
- NZBC B2/AS1 Durability
- NZBC E2/AS1 External Moisture
- NZBC C/VM2 Fire Safety
- AS/NZS1170.2 Structural design actions – Wind Actions
- NZS 3603 Timber Structures Standard
- NZS 3604 Timber-Framed Buildings
- NASH Standard Part Two: 2019 Light Steel Framed Buildings
- NASH Building Envelope Solutions: 2019
- New Zealand Building Code (NZBC)
- Acceptable Solutions, Verification Methods and handbooks

