

## CERTIFICATE – COMPONENT FIXINGS FOR SOFFITS

Project: Standard Certification  
Fixings for Cladding Board  
Components to Soffits

Project No: 20319  
Date: July 2020  
Engineer: P. Nguyen

For: Knotwood Pty Ltd

### SCOPE

Magryn & Associates have been engaged to undertake structural calculations and specify fixings to install Components of Knotwood Aluminium Cladding Boards to various soffit substrates in various regions of Australia. This is to specify and certify the structural adequacy of the fixings and comply with the current relevant Australian Standards.

### GENERAL

Knotwood Cladding is an interlocking, aluminium cladding system and is available in 200mm (KWDC200), 150mm (KWDC150) and 100mm (KWDC100) wide boards. The components are Bottom Joiners (KWCBJ), Flashing Bases (KWCFB), Top Clips (KWCFCTC), Internal/External Female Corners (KWCIIEFC), Internal/External Male Corners (KWCIEMC), Window/Door Top Flashings (KWCTF), Top Joiners (KWCTJ) and Cladding Starter Pieces (KWDCST). The cladding boards and components are manufactured from 6060-T5 Aluminium alloy.

This certification is for the soffit fixings and the 'Clip-in' connections of the components only; the structural adequacy of the Aluminium cladding boards, Aluminium components and soffit substrates has not been checked by Magryn & Associates.

Design loads considered are self-weight and wind suction for Regions A, B and C in Australia. The fixings have been designed to be installed to steel stud, timber stud, concrete and masonry soffits.

The structural calculations are based on information and drawings provided by Knotwood Pty Ltd.

## DESIGN STANDARDS

Calculations have been undertaken in accordance with the following Australian Standards and conditions.

### **Australian Standards:**

- AS/NZS 1170.0-2002 Structural design actions Part 0: General principals
- AS/NZS 1170.1-2002 Structural design actions Part 1: Permanent, imposed and other actions
- AS/NZS 1170.2-2011 Structural design actions Part 2: Wind actions
- AS 1664.1-1997 Aluminium structures

### **Conditions:**

- Wind average recurrence interval of 500 years
- Terrain Category 2
- Building height  $\leq$  20m
- Shielding and Topographic Multiplier  $M_s$  and  $M_t$  taken as 1.0
- Local pressure factor  $K_l$  taken as 2.0

## RESULT

All fixing anchors are to be stainless steel. Alternatively, hot dipped galvanised steel fixings can be used in combination with a neoprene washer to isolate the fixing anchor from the aluminium.

Fixing anchors are to be installed in one row to each component at maximum centres detailed below, and with one fixing at each end of each component.

All fixing anchors are to be installed in accordance with manufacturer's specifications.

Fixings for the following Cladding Components are included in this Certification.

- Internal/External Female Corner KWCIEFC
- Internal/External Male Corner KWCIEMC
- Bottom Joiner KWCBJ
- Top Joiner KWCTJ
- Flashing Base KWCFB
- Top Clip KWCFTC
- Cladding Starter Piece KWDCST
- Window/Door Top Flashing KWCTF

**Fixing into steel stud soffit:**

	<b>Wind Region A</b>	<b>Wind Region B</b>	<b>Wind Region C</b>
<b>Steel stud 0.55BMT</b>	Buildex <b>M6-11 Hex Head RoofZips</b> Screws at 1900mm centres	Buildex <b>M6-11 Hex Head RoofZips</b> Screws at 1200mm centres	Buildex <b>M6-11 Hex Head RoofZips</b> Screws at 800mm centres
<b>Steel stud 0.75BMT</b>	Buildex <b>M6-11 Hex Head RoofZips</b> Screws at 1900mm centres	Buildex <b>M6-11 Hex Head RoofZips</b> Screws at 1200mm centres	Buildex <b>M6-11 Hex Head RoofZips</b> Screws at 800mm centres
<b>Steel stud 1.20BMT</b>	Buildex <b>M6-11 Hex Head RoofZips</b> Screws at 1900mm centres	Buildex <b>M6-11 Hex Head RoofZips</b> Screws at 1200mm centres	Buildex <b>M6-11 Hex Head RoofZips</b> Screws at 800mm centres

**Fixing into timber stud soffit:**

	<b>Wind Region A</b>	<b>Wind Region B</b>	<b>Wind Region C</b>
<b>Timber stud Pine F7</b>	Buildex <b>10-16 Designer Head Zips Full Thread</b> Screws at 1900mm centres	Buildex <b>10-16 Designer Head Zips Full Thread</b> Screws at 1200mm centres	Buildex <b>10-16 Designer Head Zips Full Thread</b> Screws at 800mm centres
<b>Timber stud Hardwood F17</b>	Buildex <b>10-16 Designer Head Zips Full Thread</b> Screws at 1900mm centres	Buildex <b>10-16 Designer Head Zips Full Thread</b> Screws at 1200mm centres	Buildex <b>10-16 Designer Head Zips Full Thread</b> Screws at 800mm centres

- Nominal embedment depth to timber to be 30mm.
- Fixing to be central in timber stud.

**Fixing into concrete soffit:**

	<b>Wind Region A</b>	<b>Wind Region B</b>	<b>Wind Region C</b>
<b>Concrete ≥ Grade N25</b>	Hilti <b>HUS3-P 6</b> Screw Anchors at 1900mm centres	Hilti <b>HUS3-P 6</b> Screw Anchors at 1200mm centres	Hilti <b>HUS3-P 6</b> Screw Anchors at 800mm centres

- Nominal embedment depth to be 50mm.
- Minimum thickness of concrete to be 100mm.
- Minimum distance from the concrete edge to be 50mm.

**Fixing into masonry soffit:**

	<b>Wind Region A</b>	<b>Wind Region B</b>	<b>Wind Region C</b>
<b>Solid clay brick</b>	Hilti <b>HRD 10</b> Frame Anchors at 1450mm centres	Hilti <b>HRD 10</b> Frame Anchors at 900mm centres	Hilti <b>HRD 10</b> Frame Anchors at 600mm centres
<b>Perforated clay brick</b>	Hilti <b>HRD 10</b> Frame Anchors at 1050mm centres	Hilti <b>HRD 10</b> Frame Anchors at 650mm centres	Hilti <b>HRD 10</b> Frame Anchors at 450mm centres
<b>Hollow concrete block</b>	Hilti <b>HRD 10</b> Frame Anchors at 850mm centres	Hilti <b>HRD 10</b> Frame Anchors at 550mm centres	Hilti <b>HRD 10</b> Frame Anchors at 350mm centres

- Nominal embedment depth to be 50mm.
- Minimum edge distances to be 100mm from the masonry soffit edge, 40mm from vertical masonry mortar joints, and 20mm from horizontal masonry mortar joints.

**For Magryn & Associates Pty Ltd**



Peter Nguyen  
P. Eng.

Attachments: - Structural Calculations SC20319