

SM:/GA7142.002

December 2007

**TO WHOM IT MAY CONCERN**

**SHEEHY &  
PARTNERS**  
PTY LIMITED  
CONSULTING ENGINEERS  
STRUCTURAL AND CIVIL

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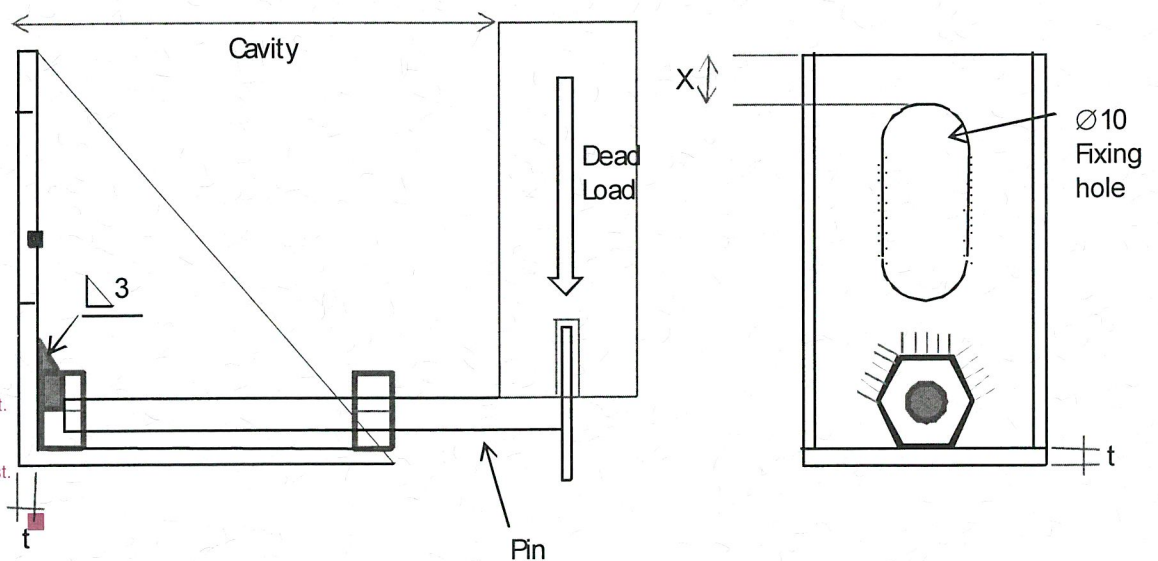
**STONECLIP.COM "SHELF ANGLE"**

This is to certify that Sheehy & Partners have checked the design of the mechanical fixing known as "Shelf Angle". The Shelf Angle parameters and design capacities are summarised below. The limit state loading on the fixings to connect the Shelf Angle to the substrate are also provided on the following pages.

**DESIGN ASSUMPTIONS**

The design has been based on the following:

- Shelf Angle samples provided to this office.
- All components of the clip have been designed in accordance with AS 4673:2001- "Cold-Formed Stainless Steel Structures", other relevant codes, and in accordance with widely accepted engineering principles.
- The load factor applied to Panel Dead Loads is 1.35 in accordance with AS1170.0:2002 "Structural Design Actions".
- Shelf Angles are designed to carry vertical loading only. The angles do not provide lateral resistance (loading perpendicular to the panel, such as wind loading).

**SHELF ANGLE GEOMETRY****DIRECTORS:**

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### SHELF ANGLE DESIGN CAPACITY TABLES

The following tables are for Shelf Angles carrying vertical loading only (no allowance for wind loading). Each Angle is fixed with one fixing only through the top of the slotted hole in the back plate. Fixings are to be selected in accordance with fixing manufacturer's documentation.

Table 1.1 – Vertical Load Capacity – Shelf Angle “SB1” with M8 Pin

Load testing to determine capacity to be undertaken in 2008

Table 1.2 – Vertical Load Capacity – Shelf Angle “SB2” with M8 pin (x=20 mm, t=3.0 mm)

Cavity #) [mm]	Max Vertical Load per Bracket [kg]	Fixing loading	
		Shear *) [kN]	Tension *) [kN]
50	26.0	0.35	0.70
40	31.8	0.43	0.72
35	35.8	0.48	0.72

Table 1.3 – Vertical Load Capacity – Shelf Angle “SB2-30” with M8 pin (x=30 mm, t=3.0 mm)

Cavity #) [mm]	Max Vertical Load per Bracket [kg]	Fixing loading	
		Shear *) [kN]	Tension *) [kN]
50	33.5	0.45	0.91
40	47.7	0.64	1.07
35	53.7	0.73	1.09

Table 1.4 – Vertical Load Capacity – Shelf Angle “SB3” with M10 pin (x=20 mm, t=3.0 mm)

Cavity #) [mm]	Max Vertical Load per Bracket [kg]	Fixing loading	
		Shear *) [kN]	Tension *) [kN]
75	35.7	0.48	1.01
65	40.8	0.55	1.02
55	47.6	0.64	1.03

Table 1.5 – Vertical Load Capacity – Shelf Angle “SB3-5” with M10 pin (x=30 mm, t=5.0 mm)

Cavity #) [mm]	Max Vertical Load per Bracket [kg]	Fixing loading	
		Shear *) [kN]	Tension *) [kN]
75	56.8	0.77	1.61
65	98.9	1.34	2.47
55	198.6	2.68	4.30

Table 1.6 – Vertical Load Capacity – Shelf Angle “SB4” with M10 pin (x=20 mm, t=3.0 mm)

Cavity #) [mm]	Max Vertical Load per Bracket [kg]	Fixing loading	
		Shear *) [kN]	Tension *) [kN]
120	28.1	0.38	0.82
100	39.1	0.53	0.97
80	48.4	0.65	0.98

Table 1.7 – Vertical Load Capacity – Shelf Angle “SB4-12” with M12 pin (x=30 mm, t=5.0 mm)

Cavity #) [mm]	Max Vertical Load per Bracket [kg]	Fixing loading	
		Shear *) [kN]	Tension *) [kN]
120	47.4	0.64	1.39
100	81.9	1.11	2.03
80	201.6	2.72	4.08

\*) Limit State Load

#) “Cavity” is the distance between the substrate and the inside face of the panel.

**CERTIFICATION**

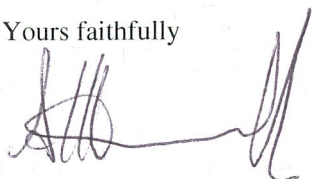
If the Shelf Angle installation is completed in accordance with the above design, the StoneClip.com specifications and sound building practice, the “Shelf Angle” mechanical fixing is considered to be structurally adequate.

This certificate does not cover the strength of the stone panel or the transfer of load from the Stone Panel to the “Shelf Angle”.

The certificate does not cover the fixing or the substrate to which the angle is attached. Proprietary fixings to the substrate are to be selected based on the strength limit state loading given in the above tables and based on the design capacities provided by the manufacturer of the fixing.

The undersigned is a Registered Practising Engineer in Queensland (RPEQ No. 8023)

Yours faithfully



S McDonald

for and on behalf of

**SHEEHY & PARTNERS PTY LTD**

Consulting Engineers