



## CERTIFICATE OF COMPLIANCE

Date: July 16, 2021

Certificate no. FAC-955 Rev. 3

### ACE LOK CONCEALED FIXED ROOF PANEL

**ITEM CERTIFIED** Design data and information given in document no. FA-AG-955 Rev. July 16, 2021

### **BASIS OF CERTIFICATION**

The following documents were referred to in making this certification:

CTS Report No. TS1186	Concentrated Load Testing, Serviceability and Static Simulated Wind Load Strength Testing of Ace Lok Roof Cladding
AS1562.1:2018	Design and installation of sheet roof and wall cladding
AS1397:2011	Continuous hot-dip metallic coated steel sheet and strip – Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS2728:2013	Prefinished/prepainted sheet metal products for interior/exterior building applications. Performance requirements
AS4040.0:1992 (R2016)	Methods of testing sheet roof and wall cladding. Introduction, list of methods and general requirements
AS4040.1:1992 (R2016)	Methods of testing sheet roof and wall cladding. Resistance to concentrated loads
AS4040.2:1992 (R2016)	Methods of testing sheet roof and wall cladding. Resistance to wind pressures for non-cyclonic regions)
NCC2019	National Construction Code 2019 (Volumes 1, 2 and 3)
AS4100:1998 (R2016)	Steel structures
AS/NZS4600:2018	Cold-formed steel structures
AS4055:2012	Wind loads for housing
AS/NZS1170.1:2002 (R2016)	Structural design actions. Permanent, imposed and other actions
AS/NZS1170.2:2011 (R2016)	Structural design actions. Wind loads

### **CERTIFICATION**

I certify that the design data and information in document number FA-AG-955 comply with the requirements of the Codes and Standards listed above.

  
Milton Fernandes - FIEAust CPEng NER APEC Engineer IntPE(Aus) RPEQ4112 PE0000457  
Principal Engineer  
milton@fernandes.net.au  
0411 760 565





 ENGINEERS AUSTRALIA	<b>Milton J. Fernandes</b> RPEQ, FIEAust CPEng Chartered Professional Engineer Membership No. 920595 Engineers Australia
 REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND	<b>Registered Professional Engineer of Queensland RPEQ 4112</b>

M.J.F. 14/7/2021.



PREPARED FOR ACE GUTTERS PTY LTD BY:



**Fernandes & Associates Pty Ltd**  
Consulting Engineers  
[www.fernandes.net.au](http://www.fernandes.net.au)

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## IMPORTANT NOTES

This manual has been prepared for Ace Lok roof cladding manufactured and distributed by Ace Gutters Pty Ltd.

Ace Lok panels are manufactured from quality high tensile steel with Aluzinc and DURAKOTE® finishes under strictly controlled conditions.

## DISCLAIMER

The design capacity tables presented in this report have been obtained from results of tests carried out by the Cyclone Testing Station at James Cook University, Townsville, Qld, Australia. It is intended to be an aid for building professionals and designers and is only valid for concealed fixed roof cladding and clips manufactured and/or distributed by Ace Gutters Pty Ltd. This document is not a substitute for professional advice - please seek professional advice regarding the use of this product.



## INTRODUCTION

This manual has been provided for building designers and specifiers who wish to use Ace Lok roof cladding in non-cyclonic regions of Australia. The design capacity tables for the panels in this report have been prepared from results of wind pressure tests carried out by the Cyclone Testing Station (CTS) at James Cook University (JCU).

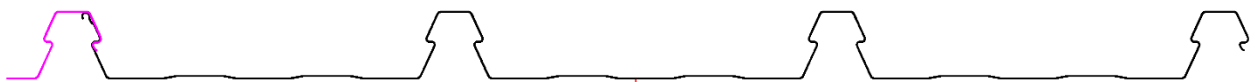
## ACE LOK SPECIFICATIONS

Ace Lok is a concealed clip fixed roof cladding system that is available with 40mm high ribs. The properties of the panels are given in Table 1.

**TABLE 1. ACE LOK PROPERTIES**

Product	Base metal thickness (BMT) (mm)	Cladding application	Rib height (mm)	Rib centres (mm)	Cover (mm)	Min. roof pitch	Weight (kg/m <sup>2</sup> )	
							ALUZINC	DURAKOTE®
Ace Lok	0.42	Roof and Wall	40	233.3	700	1°	4.72	4.75
	0.48						5.38	5.42

**FIGURE 1. ACE LOK PROFILE**



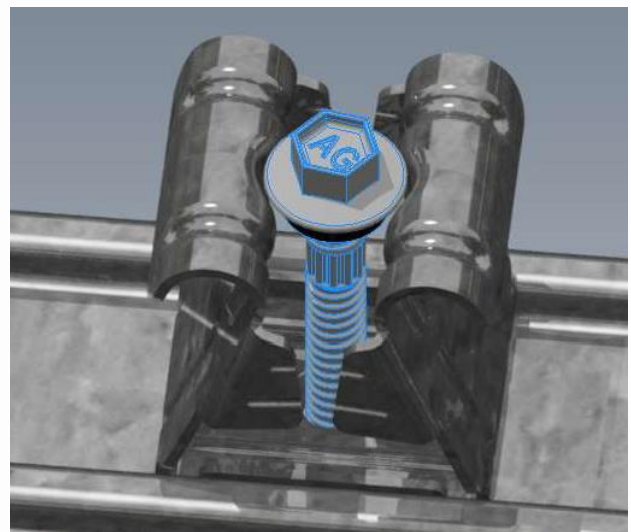
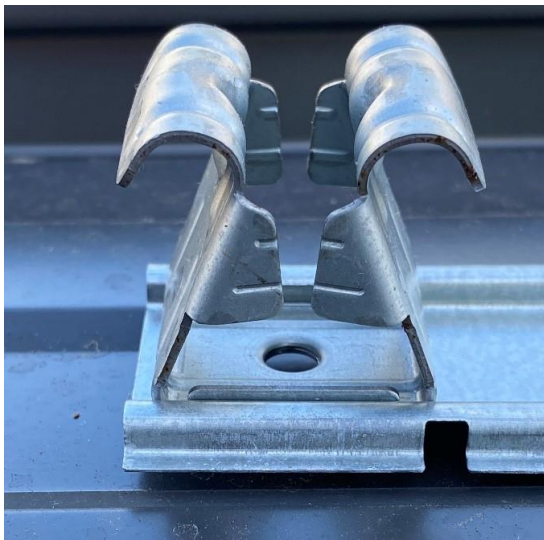
Ace Lok details: Rib height – 40mm; Rib centres – 233.3mm; Cover – 700mm



FIGURE 2. ACE LOK CLIP



FIGURE 3. ACE LOK CLIP – FIXING TO SUPPORTS



Note: Clip is attached to support using 3 screws through holes between clips

## MATERIAL

Ace Lok is manufactured from G550 high tensile steel (complying with AS1397:2011) with a minimum yield stress of 550MPa and coating mass of 125g/m<sup>2</sup>. Ace Lok is available in an Aluzinc finish or in a variety of pre-painted DURAKOTE® colour coatings complying with AS/NZS2728:2013. It is available in thicknesses of 0.42 or 0.48 base metal thickness (BMT).



## FASTENERS

Ace Lok can be fixed to steel or timber supports using concealed fixed clips. Each clip is fixed to the support using 3 self-drilling screws. The recommended fasteners are given in the Table 2 below.

**TABLE 2. RECOMMENDED FASTENERS**

Fixing to	Steel supports, 0.55mm to 1.0mm BMT	Steel supports, 1.0mm to 3.0mm BMT	Timber hardwood/softwood supports
<b>Recommended fastener</b>	12-11x40mm Hex Head self-drilling screws or Roof Zips® M6-11x25mm	12-11x40mm Hex Head self-drilling screws or equivalent	12-11x40mm Hex Head self-drilling screws or equivalent

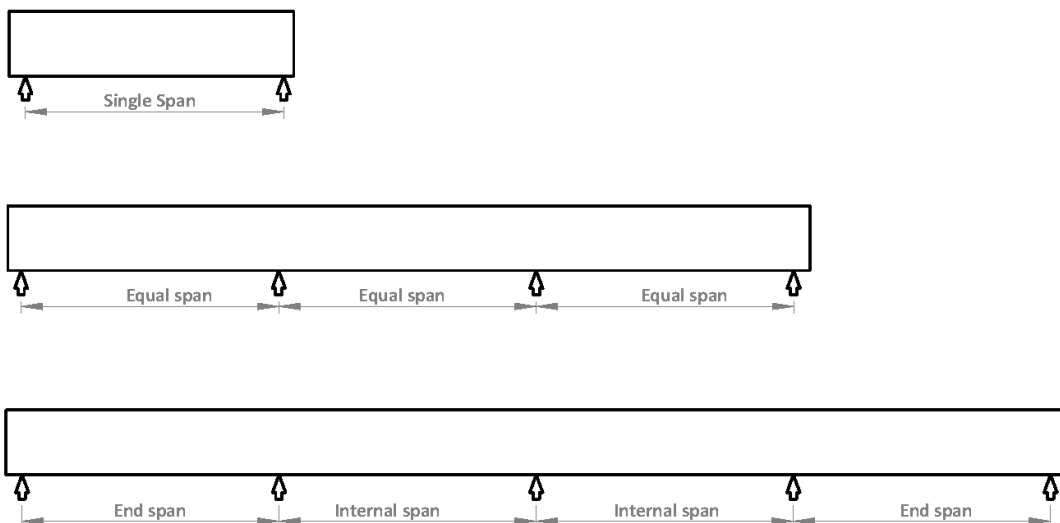
## INSTALLATION OF ACE LOK

Details on installing Ace Lok are given in the Ace Lok Installation Guide. Visit [www.acegutters.com.au](http://www.acegutters.com.au) or contact Ace Gutters Pty Ltd to get a copy of the guide.

## LIMIT STATE DESIGN CAPACITY TABLES

Limit state design wind pressures (for uplift) are given in the tables below. Span types in the tables are as shown in Figure 4.

**FIGURE 4. SPAN TYPES IN CAPACITY TABLES**





**TABLE 3. ACE LOK SERVICEABILITY LIMIT STATE DESIGN WIND CAPACITY (UPLIFT) (kPa)**

BMT (mm)	Span type	Span (mm)							
		900	1200	1500	1800	2100	2400	2700	3000
0.42	Single	-	-	-	-	0.61	-	-	-
	Equal	1.64	1.49	1.35	1.24	1.04	0.87	0.69	0.55
	Internal	1.80	1.63	1.48	1.36	1.14	0.95	0.76	0.60
	End	1.44	1.31	1.19	1.09	0.92	0.77	0.61	0.48
0.48	Single	-	-	-	-	-	-	0.52	-
	Equal	2.41	2.16	1.90	1.59	1.41	1.19	0.98	0.71
	Internal	2.64	2.37	2.08	1.74	1.55	1.31	1.08	0.78
	End	2.12	1.90	1.67	1.40	1.24	1.05	0.86	0.62

**TABLE 4. ACE LOK ULTIMATE STRENGTH LIMIT STATE DESIGN WIND CAPACITY (UPLIFT) (kPa)**

BMT (mm)	Span type	Span (mm)							
		900	1200	1500	1800	2100	2400	2700	3000
0.42	Single	-	-	-	-	1.59	-	-	-
	Equal	2.81	2.42	2.09	1.74	1.63	1.51	1.38	1.26
	Internal	3.08	2.65	2.29	1.91	1.79	1.66	1.51	1.38
	End	2.47	2.13	1.84	1.53	1.43	1.33	1.21	1.11
0.48	Single	-	-	-	-	-	-	1.42	-
	Equal	3.97	3.10	2.41	2.07	1.84	1.62	1.39	1.16
	Internal	4.36	3.40	2.64	2.27	2.02	1.78	1.52	1.27
	End	3.49	2.73	2.12	1.82	1.62	1.43	1.22	1.02



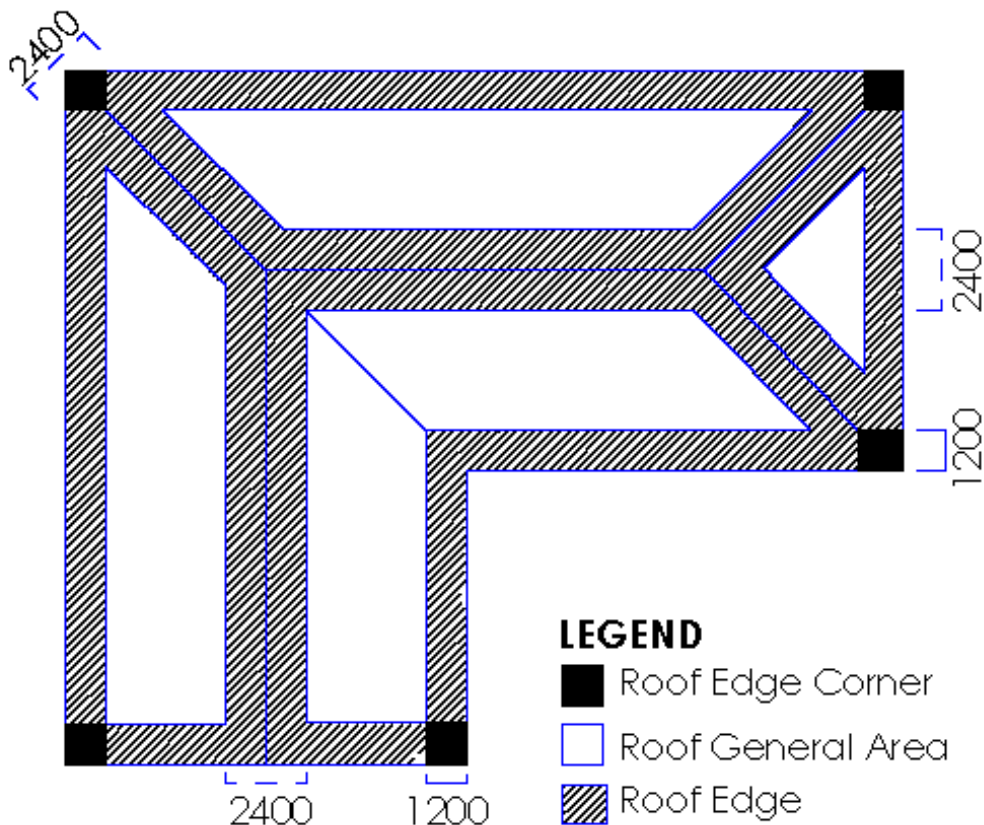
## SPANS FOR HOUSES

Maximum spans for houses are given in the table 5 below. In AS4055, houses have the following geometric limitations:

- Distance from ground level to the underside of eaves does not exceed 6.0m.
- Distance from ground level to the highest point of the roof (excluding chimneys) does not exceed 8.5m.
- Width, including roofed verandas (excluding eaves) does not exceed 16.0m.
- Length does not exceed 5 times the width.
- Roof pitch does not exceed 35°.

For houses which do not conform to the above geometric limits, calculate the wind pressures on the roof using AS/NZS1170.2 and use tables 3 and 4 to calculate the roof spans.

FIGURE 5. PRESSURE ZONES ON HOUSING ROOF (PLAN VIEW)







**TABLE 5. MAXIMUM SPANS FOR HOUSE ROOF (mm)**

BMT (mm)	Position on roof	AS 4055 wind classification			Maximum un-stiffened overhang (mm)
		N1	N2	N3	
0.42	Roof general area	3000	3000	2750	150
	Roof edge (end span)	2610	1610	-	
	Roof edge (internal span)	3000	2250	1160	
	Roof edge corner	1530	-	-	
0.48	Roof general area	3000	3000	2740	200
	Roof edge (end span)	2660	1920	1210	
	Roof edge (internal span)	3000	2460	1470	
	Roof edge corner	1800	1310	-	

Note: Maximum spans are based on wind uplift pressures only – check spans for foot traffic

## REFERENCES

- CTS Report No. TS1186 Concentrated Load Testing, Serviceability and Static Simulated Wind Load Strength Testing of Ace Lok Roof Cladding
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- AS1397:2011 Continuous hot-dip metallic coated steel sheet and strip – Coatings of zinc and zinc alloyed with aluminium and magnesium
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- AS4040.2:1992 (R2016) Methods of testing sheet roof and wall cladding. Resistance to wind pressures for non-cyclonic regions)
- NCC2019 National Construction Code 2019 (Volumes 1, 2 and 3)
- AS4100:1998 (R2016) Steel structures



AS/NZS4600:2018	Cold-formed steel structures
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