BULLNOSED VERANDAH

CONSTRUCTION GUIDE USING CUSTOM BLUE ORB®

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LYSAGHT
EST 1857
FOR OVER 150 YEARS

CONSTRUCTION OF A BULLNOSED VERANDAH WITH CUSTOM BLUE ORB®

Constructing a bullnose verandah using LYSAGHT CUSTOM BLUE ORB® is a sound economic and insightful lifestyle decision. Add thousands of dollars to the value of your home with a project that can be erected in a day. Spacious outdoor living is the goal, improved quality of life is the bonus.

CUSTOM BLUE ORB® is the famous LYSAGHT® Australian corrugated profile ideal for traditional or contemporary design which can be curved to suit virtually any verandah. Strong, lightweight and economical, it can be fixed quickly and easily.

This construction guide is applicable for wind classifications up to and including N3.

MATERIAL SPECIFICATIONS

Next generation ZINCALUME® aluminium/zinc/magnesium alloy coated steel complies with AS 1397:2011 G550, AM125 (550 MPa minimum yield stress, 125g/m^2 minimum coating mass). CUSTOM BLUE ORB® is G300 (300 MPa). Minimum coating mass is AM125 (125g/m^2).

COLORBOND® is pre-painted steel for exterior roofing and walling. The painting complies with AS/NZS 2728:2013 and the steel base is an aluminium/zinc alloy-coated steel complying with AS 1397:2011.

The material thickness is 0.60mm BMT.

Minimum yield strength for FIRMLOK® is G550 (550 MPa) and for CUSTOM BLUE ORB® is G300 (300 MPa). Minimum coating mass is AM100 (100g/m^2).

FIRMLOK® LIGHT STRUCTURAL BEAMS

Lysaght's innovative structural beam, FIRMLOK®, provides the framework to design a range of stunning verandahs and patios. The beam is lightweight, uniform, does not warp or split, and does not require painting.

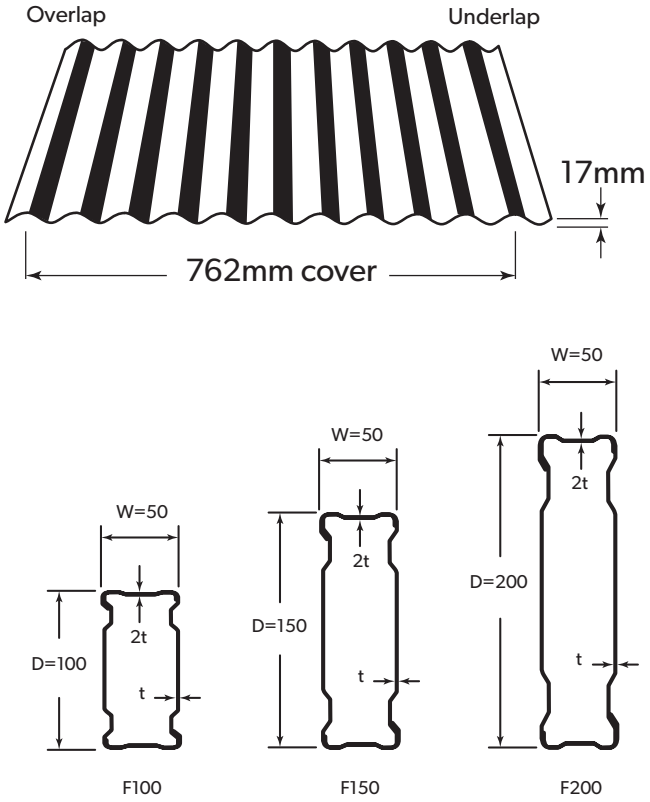
Formed of two interlocking C-sections, FIRMLOK® beams are easily fixed with standard self-drilling screws.

The strength and beauty of coated steel also delivers a structure that requires minimal maintenance, so enjoying your new addition becomes your only priority. The structural superiority of FIRMLOK® is illustrated by its maximum spanning capabilities, which under some conditions, is over 8.5m.

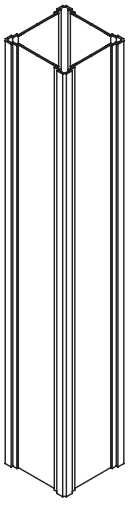
FIRMLOK® beams and components are available in ZINCALUME® coated steel and finished in six popular high-gloss COLORBOND® pre-painted steel colours.

TOOLS FOR THE JOB

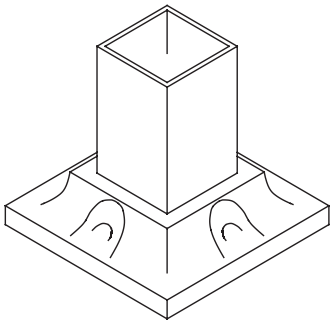
- Screw gun and hex. head screw sockets
- Masonry drills 5mm and 8mm
- Concreting tools
- String line
- Tin snips
- Fine-toothed, metal-cutting power saw or hacksaw,
- Spirit level and water or dumpy level
- Straight edge



The unique profile of FIRMLOK® is attractive and functional



Fluted posts add class to a stunning verandah.



Attractive Colonial Post feet.

GENERAL ARRANGEMENT

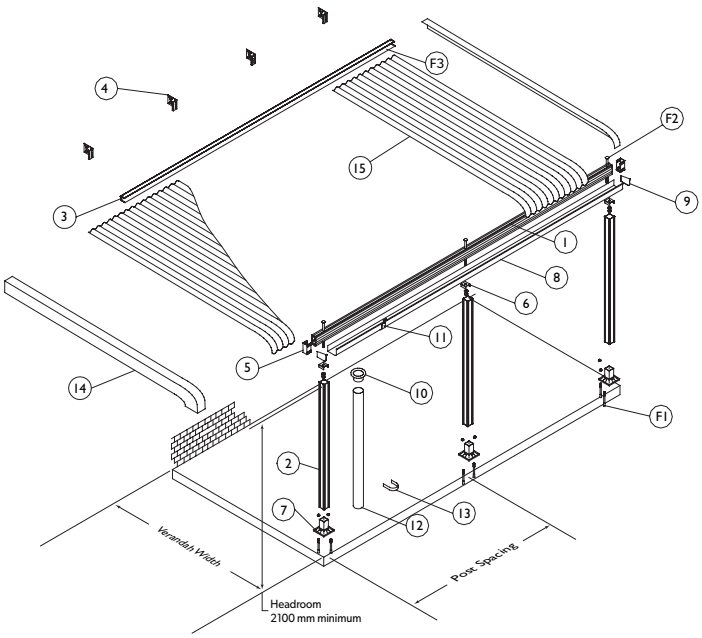
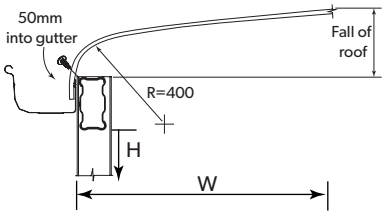


Table 1:

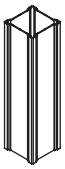
Spans (up to N3).

Verandah Width (W) (mm)	FIRMLOK® Beam (mm)	Post Spacing (mm)	Fall of Roof (including curve) (mm)
up to 1500	F10011	4000	497
up to 1800	F15015	6750	550
up to 2100	F20020	9000	550
up to 2400	For all widths.	For all widths.	576

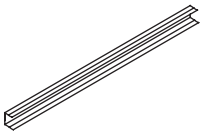


COMPONENTS

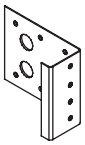
1
FIRMLOK® beam



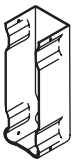
2
Post



3
Receiver Channel

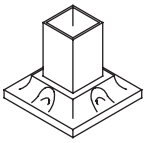


4
140 Universal Bracket

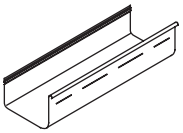


5
FIRMLOK® End Cap

6
Post Top Insert



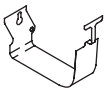
7
Post Foot



8
Gutter

9
Gutter End Stop

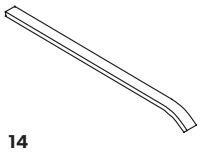
10
Gutter Spout Outlet



11
Gutter Bracket

12
Downpipe

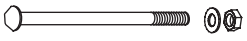
13
Downpipe Strap



14
Curved Barge Capping

15 Roof Sheeting CUSTOM BLUE ORB® 0.6 mm BMT (Curved)

F1 M8 x 75mm Screw anchors



F2 M8 Cuphead Bolt

F3 Bulb-Tite® Rivets 5.2mm
F4 Self drilling screws various sizes

ENGINEERING NOTES

1. The tables for post spacing are for a verandah which is blocked on 1 side for wind.
2. Where the awning is attached to an 'L' shape of a house (internal corner) the wind is blocked on 2 sides. For 2 sides blocked, the post spacing shall be reduced to 86% of the values in the table above.
3. This verandah system has been engineered to comply with the relevant Australian Standards, providing the spanning capacities and connection details are as outlined in this document.
4. The connection and beam capacities are based on limit state design and testing at LYSAGHT® Technology and they conform with AS/NZS 4600:2005.
5. Design information is taken from AS 1170.1:2011 Dead and Live Loads, AS 1170.2:2011 Wind Loads, NASH Standard - Residential and Low-rise steel framing: Part 1 Design Criteria, AS 4055:2012 Wind Loads for Housing.
6. Recommended roof pitch for this system is 2 degrees.
7. Footings and slabs as detailed in this document shall be into a firm natural soil base, with a minimum skin friction of 15 MPa and a class A or S site. Minimum concrete strength 20 MPa, 50mm minimum cover for post, 30mm clear cover required for mesh in slab. Damp proof membrane to be used with slab. Control joint required for slab lengths greater than 5,500mm, a minimum 300mm from post.
8. The structure to which the verandah is attached must be capable of withstanding the additional loads being imposed.
9. Verandah being attached to a brick wall must have solid bricks.
10. Roof sheeting is to have no foot traffic. Signs showing "No foot traffic" to be visible and permanently attached to the inside of the beam.
11. Gutter capacity assumption is one 65mm diameter downpipe for every 20m^2 of roof area for rainfall intensity of 150mm/hour.
12. All screw fasteners to be 10-16x16 self-drilling hex head screws Class 3, unless otherwise noted. Pre-drill aluminium post, when using 10 gauge screws, or alternatively use 12-14x30 self-drilling hex head screws.
13. All concrete workmanship and materials shall be in accordance with AS 3600:2010 Concrete Structures.
14. For FIRMLOK® connection to fascia, the beam must be positively fixed back to the main structure.
15. This system has been designed as a complete system, and only genuine parts from Lysaght shall be used.
16. The fall of the roof is for sheet with a radius of 400mm.

CONSTRUCTION INSTRUCTIONS

STEP 1: GETTING STARTED

Determine the width of your verandah from the Table 1 Spans with reference to Table 2 to determine maximum verandah width for the wind category in your area and choose the FIRMLOK® beam to suit your preferred post spacing.

STEP 2: POUR A SLAB

Pour an appropriate concrete slab floor. Allow a minimum of 1:100 fall away from the house and ensure the finished floor level is at least one brick course below the weepholes in the wall.

STEP 3: ATTACHMENT TO DWELLING

Choose how you wish to attach the verandah to the house. There are two options:

– Attached to fascia (Figure 1)

– Attached to brickwork (Figure 2)

The required Head Room should determine your choice of attachment.

The Span Table on page 2 gives minimum recommended falls for the various verandah widths.

STEP 4: CHOOSE YOUR REINFORCING

Choose an appropriate reinforcing method for the attachment point:

Fascia-to-rafter Connection (Figure 1):

this is the best option for most slab-on-ground homes. Lift back the first row of roof tiles to gain access to the eave space and screw fix a 140 Universal Bracket to each truss rafter. Keep the front section of the bracket hard against the inside of the fascia.

Brickwork Connection (Figure 2):

A minimum of five brick courses are required above the connection to provide adequate structural integrity. This connection may be suitable if you have a raised floor house or 2700mm high ceilings with no eaves.

STEP 5: REINFORCE THE ATTACHMENT POINT

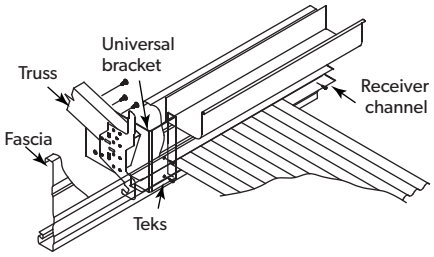
Place a bead of silicone sealant behind the receiver channel to enhance the waterproofing capabilities of your structure at the top edge of the receiver channel.

Fix receiver channel after positioning it as high as the gutter will allow, as shown in Figure 1. Plumb up from your slab edge taking into account the 27mm minimum additional width of the post foot as shown in Figure 3.

NO FOOT TRAFFIC APPLICATIONS

Figure 1

140 UNIVERSAL BRACKETS at 600mm spacing (maximum)
Three self-drilling screws into trusses or house rafters
Timber truss:
Type 17 drill point, #10–12 x 30
Steel truss:
Self drilling screws, #12–14 x 20



RECEIVER CHANNEL
Self-drilling hex. head screws through fascia into Universal 140 bracket
Timber fascia
2 self drilling screws #12-14x45 at 600mm spacing - pre-drill hole in timber
Steel fascia
2 self drillinghex. head screws #12–14 x 20 at each support bracket

Figure 2

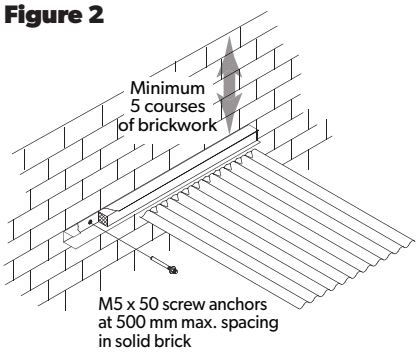


Figure 3

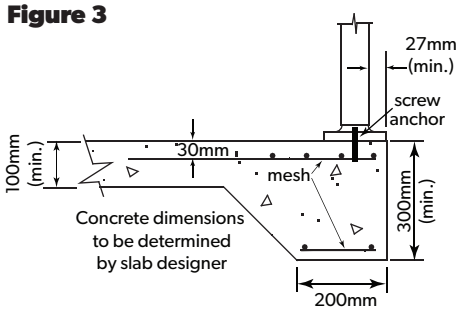


Table 2:

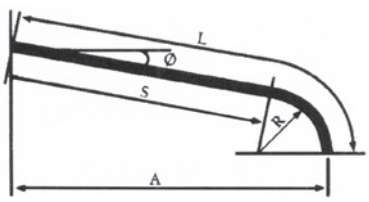
Maximum Verandah Width (mm) for various wind speeds.

Material thickness (BMT) mm	Curvature Radius (R) mm	Wind Speed		
		N1 (W28)	N2 (W33)	N3 (W41)
0.60	400, 450	2480	2100	1700
	600	2520	2140	1750
	900	2620	2250	1860

NOTE: Verandah widths are calculated for angle $\phi = 10°$. Other angles between 5°-15° have a negligible effect on permissible width.

1. The spans for verandah width within Table 2 are for verandahs with 1 side blocked.
2. The spans have to be reduced to 70% for verandahs which have 2 sides blocked.
3. Sheeting spans are for a 'no foot traffic' roof.
4. Wind speed notation is from the BCA with the Permissible Wind Speed in brackets (mm/sec).

Table 2 shows the maximum permissible width for CUSTOM BLUE ORB® verandahs.



$$L = S + \text{arc} = \frac{A - R(1 - \sin\phi)}{\cos\phi} + \frac{R\pi(90 - \phi)}{180}$$

(angle ϕ in degrees)

STEP 6: INSTALL POST FEET

Measure the verandah width out from the house and mark. Once again remember to add 27mm (minimum)from the outside edge of the slab for the post foot. Using a straight edge or chalk line, extend the outside line of the post foot the full length of the slab parallel to the house. Recheck the squareness of your slab and mark the corner position for your first post foot. Mark and drill holes for two screw anchors (Figure 4). Repeat the process for the opposite end.

Measure the centreline dimension between the two end posts and divide by the number of post spacings. This will give you the centreline position of each post. Mark the centreline positions along your line and then bolt the post feet.

STEP 7: FINISH POSTS

From a corner of the verandah, measure from the bottom of the receiver channel to the slab and mark this point on the slab. Using a level, determine the level height difference between the marked point on the slab and the shoulder of the post foot (see Figure 4).

Subtract the fall of the roof (refer Table 1: Note this table is for 400mm radius only) to determine the post height and add the height difference. (See formula below.)

Do this for each post foot and note the measurement. The height of the post can then be determined using the following calculation for Option 1 and 2:

Height from receiver channel to slab	**–**	**Post foot difference**	**–**	**Beam Height**	**–**	**Roof fall of roof**	**=**	**HEIGHT OF POST TO UNDERSIDE OF BEAM**

There are two options for finishing the post-to-beam connection (see Figure 5).

For Option 2, subtract the beam height from the post length. In Option 2, the beams sits on the post. (Figure 8). If necessary, the head beam may need to be lowered to allow for the straight section at the end of the curve.

Cut the posts with a hacksaw or fine-toothed metal cutting power saw. Fit the post over the post foot and screw together.

STEP 8: FIX BEAMS

Mark and cut the fascia beam length to equal the overall dimension to the outside of the corner posts.

Mark the centreline position of each post on the top and bottom of the fascia beam and fit the end caps. Drill a 12mm hole top and 9mm bottom at your marks. The length of the bolt should equal the beam depth plus 15mm minimum.

Using an M8 cuphead bolt connect the post top inserts.

Lift the beam onto the posts and fix the post inserts with Tek screws. (Figure 8)

STEP 9: FIT GUTTERS

Screw fix your chosen gutter brackets to the face of the fascia beam at not less than 1000mm centres. Be sure to allow a minimum 1:500 fall for your gutter. Position downpipes at posts.

STEP 10: INSTALL ROOF SHEETS

Insert a closed-cell foam strip into the receiver channel and hold in place using some silicon sealant.

Using pliers or the like carefully turn up the ends of each valley on the sheet end being inserted into the receiver channel (Figure 7).

Starting from the direction of the prevailing wind, install and fix the roof sheets. CUSTOM ORB® should be screw fixed at every second ridge at the gutter end with #12-14x35 Hi-Grip Tek® screws with EPDM seal. Rivet using 5.2 mm Aluminium Bulb-tite® blind rivets with EPDM seal, at every second valley at the receiver channel end.

STEP 11: FINISH THE JOB

Pop rivet barge capping at 600mm centres.

Remove temporary bracing and clean any swarf from roof. Fix the 'No Foot Traffic' sign to the inside of the beam.

Invite some friends around, fire up the BBQ, and toast to your new outdoor space.

Figure 4

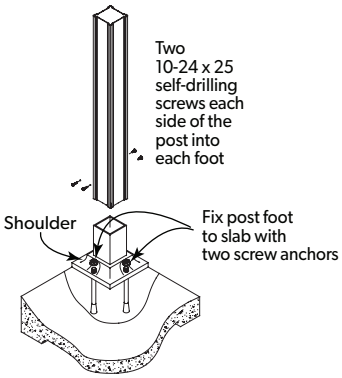


Figure 5

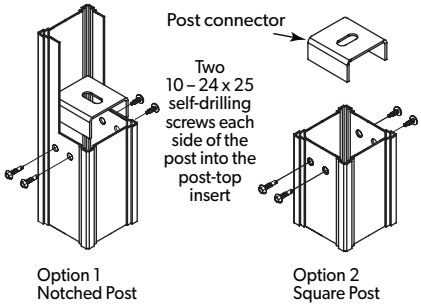


Figure 7

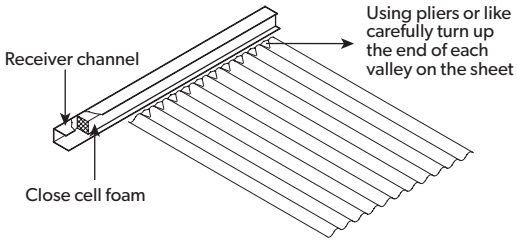
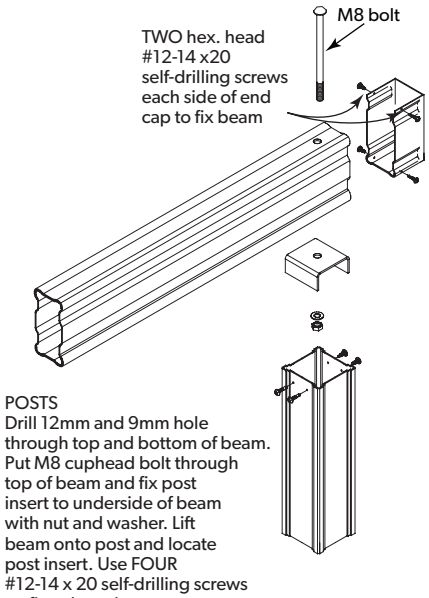


Figure 8



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