

SINGLE CARPORT

6.125M X 2.85m
10 STEP CONSTRUCTION GUIDE FOR
FREESTANDING CARPORTS IN
CYCLONIC AREAS C&D

LYSAGHT



Carport Construction

Step by step guide for the perfect carport project

Building a carport using LYSAGHT® steel products offers clear advantages for both the builder and homeowner alike. Construction is made easier with dimensionally accurate and quality components joined using custom made connectors.

For the homeowner, long term enjoyment is assured with the prepainted, corrosion resistant materials.

As with all building materials there are some particular things you should keep in mind to ensure you get the full benefits of using LYSAGHT® steel building products.

Step 1 - component check

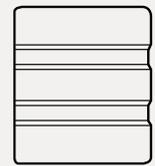
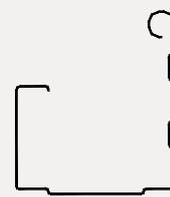
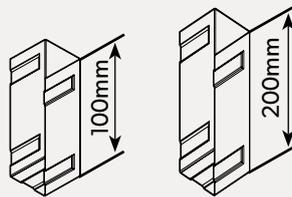
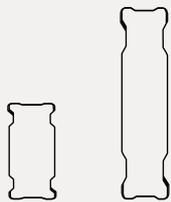
Find a level area in your front or back yard and place all of the delivered components so they are identifiable. Extra fasteners are included in addition to actual quantities required to build the carport.

Check the following components off against the bill of materials from the BlueScope Lysaght delivery receipt.

FIRMLOK® F100 beam (x 6) (F100) FIRMLOK® brackets 100mm (x 10) (CONB100)
FIRMLOK® F200 beam (x 2) (F200) FIRMLOK® brackets 200mm (x 4) (CONB200)

Slotted Gutter (x 1) (GSS)

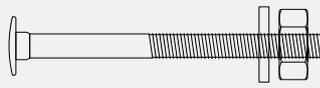
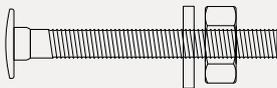
Gutter stop-ends (x 2) (GSSE)



Cuphead Bolt M8 x 60mm (FBC60)

Cuphead bolt M10 x 100mm (FBC10010)

Metal Tek® 14-10 x 150mm (FT150M)



Metal Tek® 12-14 x 50 with EPDM washer (FT50M)

Metal Tek® 12-14 x 20 (FT20M)

Rivet (FP72)

Wafer head (FWH22N))

Metal Tek 12-14 x 50 (FT50-WCA with EPDM and cyclonic washer)

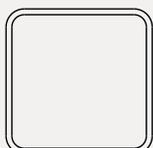


Steel post (x 4) (PS90)

Barge capping 0.55mm (x 3) (BC1)

SPANDEK® 0.42mm x (4 sheets) (RS3)

Gutter fascia strap (GSTRAP)



Silicone (x 1) (SILIC)



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Step 2 - what tools & materials do you need?

| | | | |
|----------------------|----------------------------|-------------------------------|--------------------------------------|
| Step ladder | Spirit or laser level | PVC downpipe elbow | Adjustable stands (props) and clamps |
| Hack saw | Rivet gun | Silicone gun & clear silicone | Adjustable spanner |
| Tape measure | Post hole digger or shovel | String line/ stakes | Bags of concrete |
| Pliers and tin snips | PVC downpipe & strap | Ratchet wrench | Drill & adaptors |
| Angle grinder | Electrical lead | Safety equipment (PPE) | Saw horses and planks |

Step 3 - before you start!

It is recommended that all Lysaght Carports are assembled and installed under the supervision and direction of a person with some level of building experience.

Safety is of utmost importance at all times. Always make sure that even basic construction tasks are done utilising safe building practices.

It is very important to read both the installation instructions and the supplied construction drawing. They should both be referred to in preparation for the installation and at every step during the construction process.

Every dimension, hole location and level should be double checked for good measure before cutting, fixing, screwing or bolting to any structural component.

Your carport is designed to resist wind uplift and the footing size is based on the wind classification. If in doubt, go to the Lysaght website (www.lysaght.com) and use the wind classification system to check the design wind speed or seek expert advice to ensure correct wind classification is selected.

If you do not have the necessary tools or know-how, please contact your local Lysaght branch for guidance.

Step 4 - marking out the carport position

Use in-ground stakes and tie up string lines to position the steel post locations referring to the construction drawing. Check diagonals are equal for a square shape.

FIRMLOK® beams and SPANDEK® sheeting lengths are reliant upon these measures being 100% accurate.

Check depth and width of the footing according to the construction drawing and remove soil.

Mark and cut posts to length and prepare the bottom of the posts as per the construction drawing with intersecting fixings and add the connectors to the top of the posts.

Ensure the footings holes are aligned and the final intended locations of posts correct in accordance with the construction drawing. Slopes of the ground will need to be taken into consideration to ensure holes are dug to appropriate depth and posts are subsequently aligned in terms of height.

Once the digging is complete, simply place bricks/pavers squarely in the bottom of each hole so the posts can be positioned on solid ground.

Place the posts in the holes and clamp off in position and brace with a fall towards the end at which the gutter system will be positioned. The fall needs to be a minimum 35mm for every 1m in length.

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Step 5 - laying out the beams

Using the drawing, lay the beams close to the point where they will be assembled.

Intermediate purlin

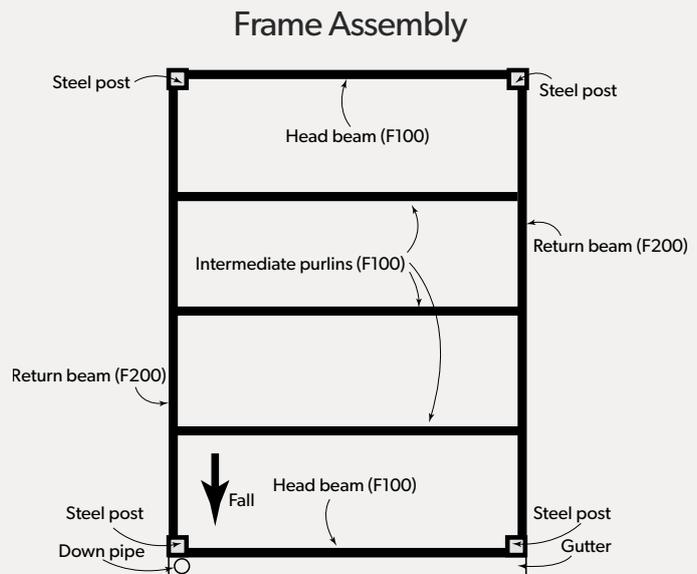
You will have three FIRMLOK® F100 beams that are longer – these are your intermediate purlins.

Head beams

You will have two FIRMLOK® F100 beams that are shorter in length – these are your head beams.

Return beams

You will have two FIRMLOK® F200 beams – these are your return beams.



Step 6 - assembling the beam and posts

Head and return beams - connection to posts

Place the head beams on adjustable stands (props) and level the front and rear head beams at the correct height, also ensuring you have the correct fall. The FIRMLOK® beam ends sits inside the connectors as shown. Fix the connectors to the post with bolts and Tek® screws.

Intermediate purlin - connection to return beams

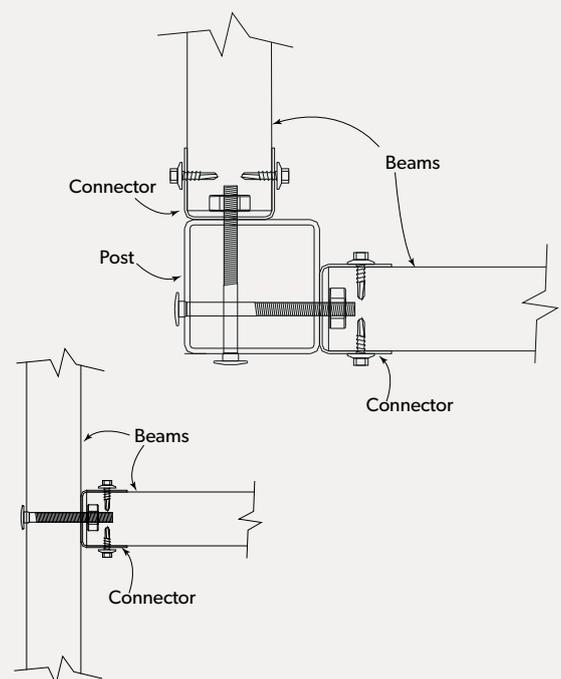
The universal beam connectors are fixed to the return beams using the appropriate fasteners at points 1/3 of the length of the return beams. The FIRMLOK® beams sit inside the connectors. Note that the connectors for the intermediate purlins should be fixed to the return beams before they are lifted up to the posts.

With the framework now in place, double check every dimension against the construction drawing provided and check the diagonals for good measure.

See step 9 for determining the final width of the structure to see if the sheeting width measured in Step 9 is bigger than the drawing width.

There is tolerance in each of the head beam connectors in case you need to make the structure slightly wider.

With the measurements checked you can now fix through the beam connectors to complete frame assembly.



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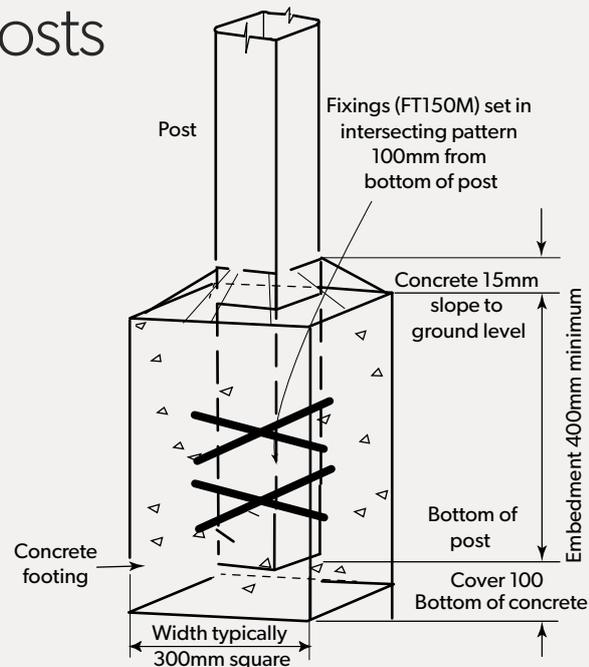
Step 7 - concrete the posts

Mix the concrete as per manufacturers instructions and pour into holes, ensuring posts are plumb in both directions.

The concrete should be finished slightly raised at the post, ensuring water runs away from the post.

Leave overnight or until concrete has fully cured and posts are firmly fixed in place.

The props can now be removed.



Step 8 - gutter installation

Proceed to attach both ends of the gutter with end stops using the specified fixings. Silicon seal to ensure a waterproof finish.

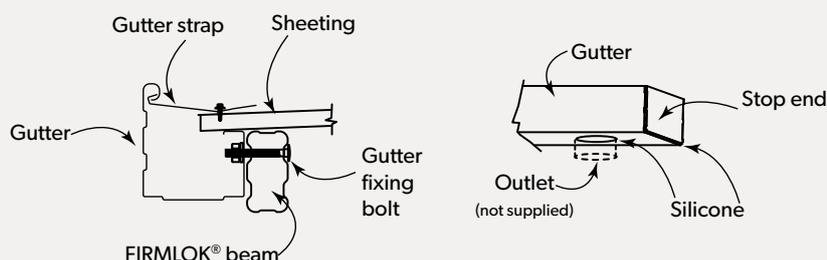
Measure the hole at the lower end of the gutter to suit the size of the downpipe nozzle. Install by using specified fixings and seal with silicone.

Make certain the hole lines up with the post where the down-pipe will go.

Fix the gutter to the head beam with appropriate bolts evenly spaced as specified on the construction drawing. Fix the top end of the gutter at least 5mm below the top of the beam. Make certain the fall of at least 12mm is to the intended position of the downpipe.

Please note that you will be required to provide a suitable nozzle and downpipe and fix this according to the manufacturer's instructions.

Complete installation of the gutter by attaching the provided gutter straps with the specified fixings at the correct spacings according to the construction drawing.



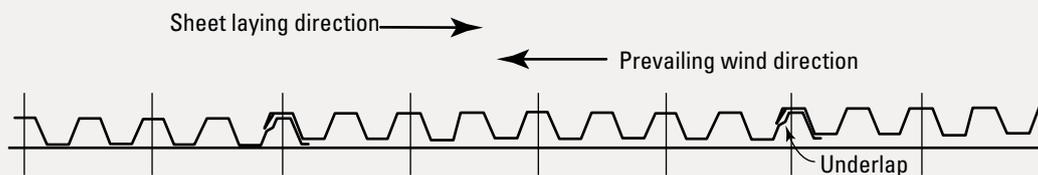
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Step 9 - roof sheeting

Lay the SPANDEK® roof sheeting from one side of the structure to the other on the ground and measure the overall width. Check this against the width on the drawing.

The diagram below indicates the correct laying direction and details the lapping necessary to ensure correct installation of roofing material.



You must lay the first sheet at the opposite side of the prevailing wind direction to ensure lapping is protected from conditions.

Fix each sheet in place as you move along the structure as stipulated in the construction drawing provided.

Start each new sheet in this fashion until the whole structure is covered. Be careful not to over-tighten the screws as this will crush the ribs and spread the sheet wider.

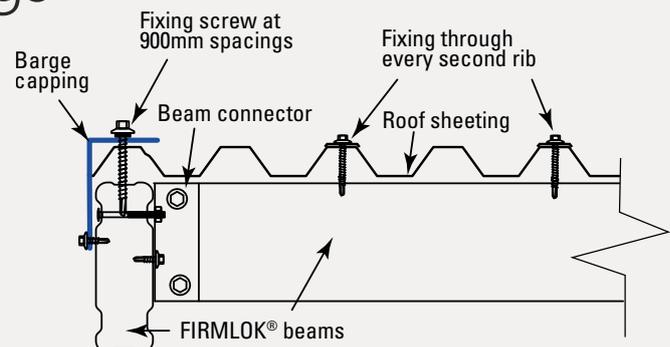
For better weather-tightness at the top end of the sheets, the pans can be turned up using a spanner. Be careful not to tear the sheets.

Step 10 - barge cappings

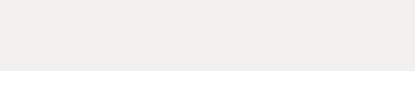
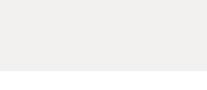
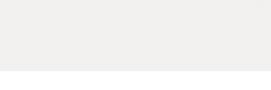
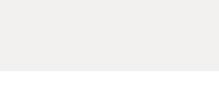
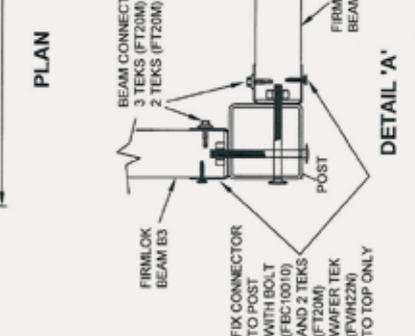
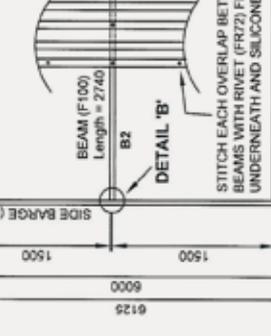
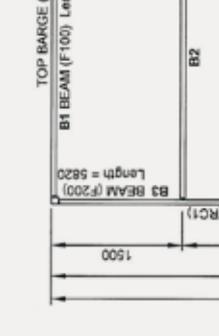
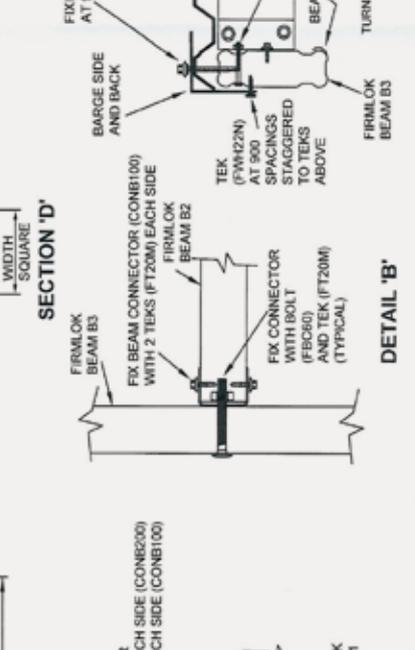
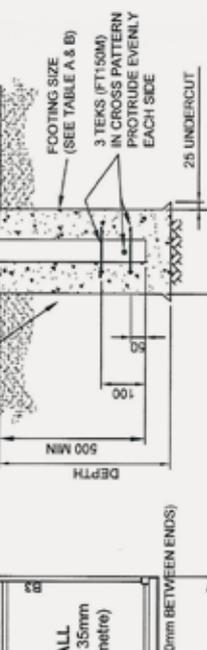
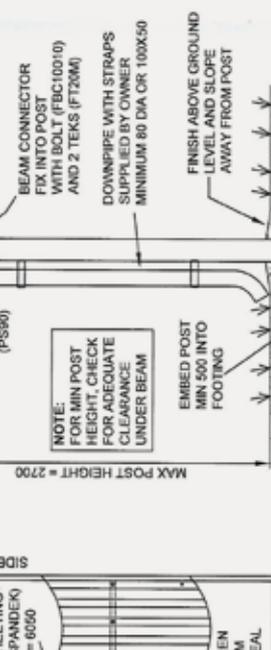
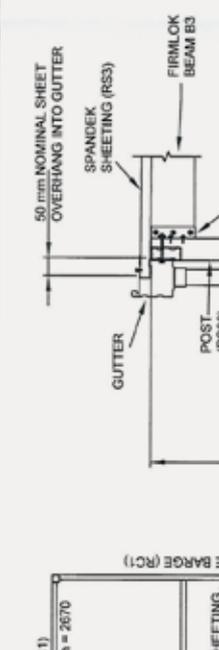
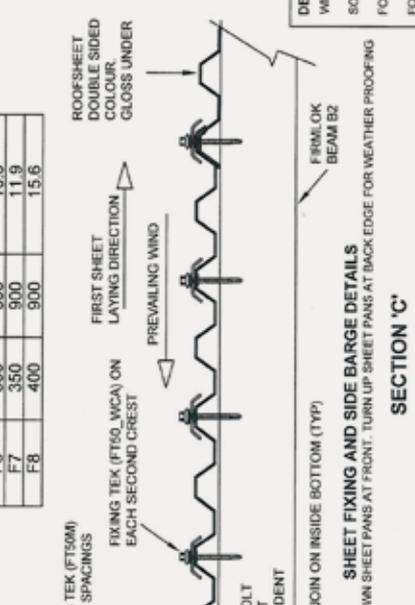
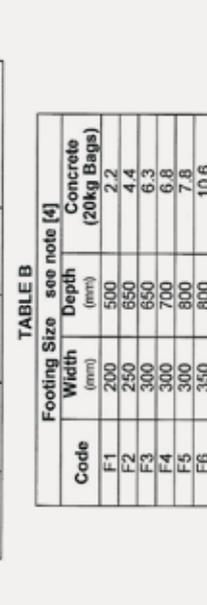
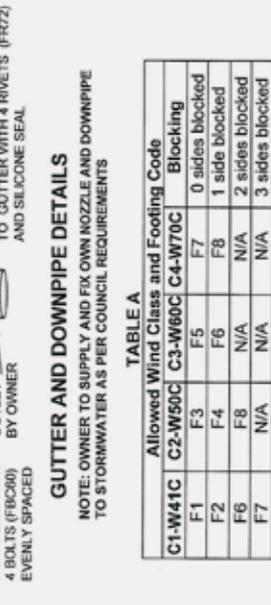
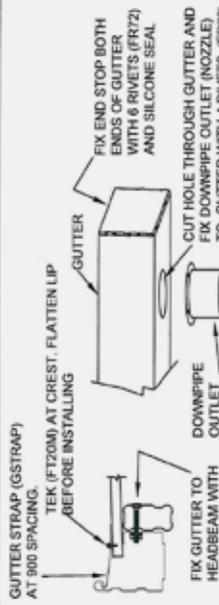
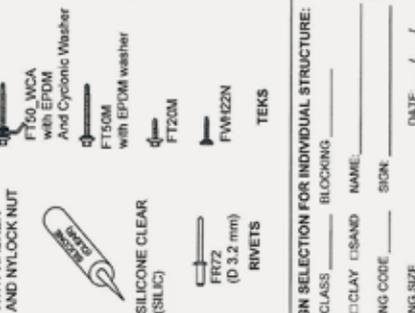
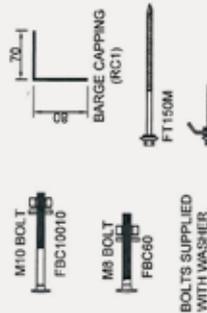
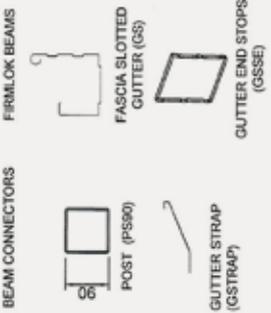
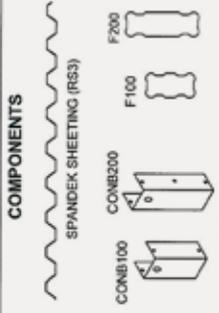
As a final step, install barge capping material on the remaining 3 sides of the carport.

The side capping should be attached first – utilising the specified fixings in the construction drawing at the appropriate spacings.

The capping should be attached to the sides of the roof sheeting profile so it sits flush as per diagram.



With the side capping now attached, the top capping should be fixed through the crests on the roof sheeting at the same spacing as specified for the side capping. Silicon seal at overlap of capping.



COMPONENTS

- SPANDEK SHEETING (RS3)
- COMB200
- COMB100
- BEAM CONNECTORS
- FIRMLOK BEAMS
- F200
- F100
- FASCIA SLOTTED GUTTER (GS)
- POST (PS50)
- GUTTER STRAP (GSTRAP)
- GUTTER END STOPS (GSSE)
- M10 BOLT (FBC10010)
- M8 BOLT (FBC60)
- BARGE CAPPING (RC1)
- FT150M
- BOLTS SUPPLIED WITH WASHER AND NYLOCK NUT
- FT150_WCA with EPDM and Cyclic Washer
- FT50M with EPDM washer
- SILICONE CLEAR (SILIC)
- FT20M
- FR72 (Ø 3.2 mm)
- RIVETS
- TEKS
- FWH22N

GUTTER AND DOWNPIPE DETAILS

NOTE: OWNER TO SUPPLY AND FIX OWN NOZZLE AND DOWNPIPE TO STORMWATER AS PER COUNCIL REQUIREMENTS

TABLE A

| Allowed Wind Class and Footing Code | Blocking | | |
|-------------------------------------|----------|---------|---------|
| C1-W41C | C2-W50C | C3-W60C | C4-W70C |
| F1 | F3 | F5 | F7 |
| F2 | F4 | F6 | F8 |
| F6 | F8 | N/A | N/A |
| F7 | N/A | N/A | N/A |

0 sides blocked
1 side blocked
2 sides blocked
3 sides blocked

TABLE B

| Code | Width (mm) | Depth (mm) | Concrete (20kg Bags) |
|------|------------|------------|----------------------|
| F1 | 200 | 500 | 2.2 |
| F2 | 250 | 650 | 4.4 |
| F3 | 300 | 650 | 6.3 |
| F4 | 300 | 700 | 6.8 |
| F5 | 300 | 800 | 7.8 |
| F6 | 350 | 800 | 10.6 |
| F7 | 350 | 900 | 11.9 |
| F8 | 400 | 900 | 15.6 |

DIY KIT SINGLE CARPORT FOR CYCLONIC WIND CATEGORY 'C' AND 'D'

DESIGN SELECTION FOR INDIVIDUAL STRUCTURE:
WIND CLASS _____ BLOCKING _____
SOIL □ CLAY □ SAND NAME: _____
FOOTING CODE _____ SIGN: _____
FOOTING SIZE _____ DATE: ____/____/____

ENGINEERING NOTES:

- This is to certify that the details on this drawing have been checked by me and the structure is capable of withstanding wind loads for wind classification up to cyclonic C4 (W70C) (see table A) as defined in Australian Standard AS4055 'Wind Loads for Housing'. The structure has been designed to the BCA and relevant Australian Standards like AS1170.1 & 2 for loading.
- Table A and B give the wind class and footing size based on the blocking. A side is considered blocked if it is closer than 1000mm to a solid wall greater than 1500mm high like a wall of a house.
- The carport must be built in accordance with all the details on this drawing for it to perform as designed and in warranty. If the soil is sandy the footing depth must be increased by 250mm and 50mm in width. If the soil is otherwise then seek the advice of a Civil Engineer. [5] The concrete should be grade M20 in a compressive strength of 20 MPa and made in accordance with Australian Standard AS3600 Concrete Structures. [6] The teks with cyclic washers and nylocks under the head are for tying the sheeting to the beams. The teks without nylocks are for the beam connectors. [7] The builder needs to determine the wind and soil classification, then select the appropriate footing from Table A & B and date and sign this specification in the place provided.

QUALIFICATIONS:
Member Institution of Engineers, Australia Membership N° 352640
CPEng Chartered Professional Engineer Member of Civil & Structural Colleges
Registered Professional Engineer, Queensland RPEQ No. 76178
Registered Building Practitioner, Victoria RBPV No. EC24807 Civil Engineer
Accredited Building Practitioner, Tasmania AC5469A Civil Structural Engineer

Sign: *P. Barreca*
Date: 19 Dec 2013.

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BlueScope Steel Limited
Research & Technology

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Civil & Structural Engineer
BlueScope Lyaght

LYSAGHT

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