

Construction Guide

Skillion (Flat Roof) Patio Skillion Awning



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1. Disclaimer

IMPORTANT DISCLAIMER ABOUT THIS CONSTRUCTION **GUIDE**

IMPORTANT NOTE: This document is to be used in conjunction with the plans, drawings and specifications generated by the software CcBuilder for your specific job.

Date of Issue 30th May 2009

This guide is Version 001 issued on 30th May 2009. Lysaght Building Solutions Pty Ltd (LBS), may make changes to this guide in their sole discretion. You should check you are using the most up-to-date version of this guide before you start construction. Up to date construction guides are available by phoning 1800 80 81 82.

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Use of Genuine Materials

Structures in this guide should only be built or constructed using those recommended genuine Lysaght products or approved third party products. Except as otherwise provide in these terms, any warranties only apply to you (if at all) if you use the recommended genuine LYSAGHT products or approved third party products and method of construction, recommended in this guide.

Check Delivery

It is important that you check all materials delivered to site against your bill of materials before you use them in your building or construction to ensure all components have arrived, are of the appropriate quality and are ready for installation.

Limitation of Liability

By using this guide, you accept the risks and responsibility and LBS will not be under or incur any liability to you (except to the extent which liability may not be lawfully excluded or limited) for, all losses, damages, costs and other consequences resulting directly or indirectly from using this guide, (including, without limitation, consequential loss or damage such as loss and profit or anticipated profit, loss of use damage to goodwill and loss due to delay) To the maximum extent permitted by law, LBS liability (whether arising under statute, contract, tort (including negligence), equity or otherwise) to any persons whatsoever in respect of anything done or not done, arising directly or indirectly, by any such person in reliance, whether in whole or in part, on this guide, is limited, at LBS's option, to:

- (a) in the case of goods, the repair of the goods, the replacement of the goods or paying for the cost of repair or replacement of the goods; or
- (b) in the case of services, the resupply of services or paying for the cost of resupplying the services

Warning

Failure to display the 'No foot traffic' safety sign on the roof will void your warranty.

2. General notes to be read before using this guide

This guide has been prepared for a range of designs using LYSAGHT products.

The information in this guide is suitable for use only in areas N1 (W28) - N3 (W41), and where a tropical cyclone is **unlikely** to occur as defined in Australian Standard AS4055 Wind Loads on Housing.

Lysaght Living Collection® kits have been designed as a complete unit.

All construction and connection details shall be made in accordance with the relevant standard connection detail drawings contained in this Guide and as generated by CcBuilder for your specific job.

For all structures in this guide the following notes apply

- These designs use LYSAGHT FLATDEK®, SPANDEK®, TRIMDEK® roof profiles and FIRMLOK® beams.
- The design allows for the structure to be attached on 1 side or freestanding.
- The design is for attachment to timber framed structures only.
- The design allows for attachment to metal or timber fascia only.
- Skillion designs incorporate gutter to all sides.
- Post height must not exceed 2700mm from ground level.
- The roof structure is designed for NO FOOT TRAFFIC.

Before you commence construction:

- (a) We recommended you obtain professional advice to ensure your particular needs are adequately met.
- (b) You should check with your local government authority to see if any form of prior permission or approval is required. It is your responsibility to obtain all necessary approvals.
- (c) If you want to build or construct any attached structure such as those covered by this Guide, you should seek advice from a suitably qualified engineer to verify the capacity of your existing structure to withstand any additional load arising from the attached structure. You should also check with your local government authority to determine any specific requirements for the attachment to your existing structures.
- (d) You should check with your local workplace health and safety authority to see what safety measures you need to put in place prior to and during construction. It is the responsibility of the installer/ erector to ensure all local safe work practices are adhered to and the safety of the whole site is maintained at all times.

Maintenance guide

To ensure maximum lifespan of your structure, consult the maintenance guide for information regarding maintenance, handling, storage and any other technical assistance you may require.

The maintenance guide is available from the following web site www.lysaght.com

3. Glossary of terms

ATTACHMENT GUTTER

The gutter which is attached to the existing structure via Z brackets and rafter attachment brackets.

CONCRETE FOOTING The concrete base to the post which anchors the structure against wind uplift.

CORE DRILLED FOOTING

When an existing concrete slab does not meet engineering requirements, a core is drilled through the slab to allow a concrete footing to be poured under the slab and around a post.

FRONT GUTTER

Attaches to the projection gutters and carries water to the downpipe.

GUTTER STIFFENER

Fits inside attachment gutter at rear, and sometimes projection gutters (and front gutters if a headbeam is not used).

HEADBEAM

Using FIRMLOK® beams, the headbeam supports the roof sheet on the projection end of the structure and is used when an eave (overhang) is required.

LIGHT PANEL

As it is a similar profile as the steel roofing, it can be fitted between the metal roof sheets to provide a source of light where required.

POST CONNECTOR (BASE)

An internal connector that attaches the post to the concrete slab with a screw anchor.

PROJECTION GUTTER

Side gutters which run with the roof fall.

RAFTER ATTACHMENT

They are screwed to the existing rafter/truss and provide a fixing point for the Z brackets to attach to.

STRUCTURAL GUTTER

If no headbeam is chosen, the front gutter will be called a structural gutter as it will house a stiffener to support the roof sheets.

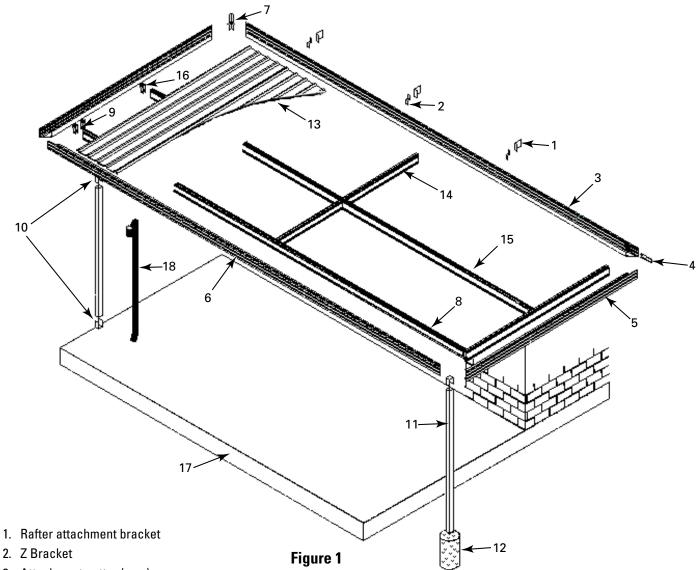
TEK®

A self drilling screw for metal used to join components together.

Z BRACKET

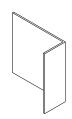
Connects the gutter to the existing rafter/truss attachment bracket.

4. Component Assembly Diagram

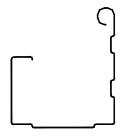


- 3. Attachment gutter (rear)
- 4. Gutter stiffener
- 5. Projection gutter (side)
- 6. Front gutter (or Structural gutter where no headbeam)
- 7. Gutter corner
- 8. Headbeam (if no structural gutter)
- 9. Beam connector
- 10. Post corner/bracket
- 11. Post
- 12. Footing
- 13. Roof sheeting
- 14. Rafter
- 15. Purlin
- 16. Purlin connector
- 17. Concrete slab
- 18. Downpipe

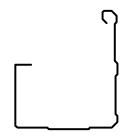
5. Components



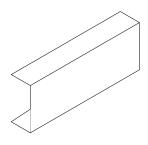
Rafter Attachment Bracket (CON110)



Sheerline Gutter (GS)



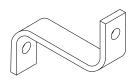
Fitfast Gutter (GSQ/GSSQ)



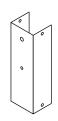
Gutter Stiffener (STUD19)



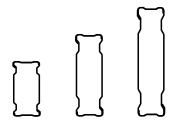
Gutter Corner (EXG)



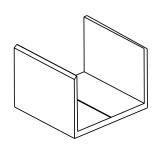
Steel Z Bracket (ZGS)



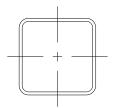
Beam Connector (CONB100/150/200)



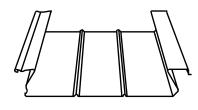
Firmlok Beams (BS100/150/200)



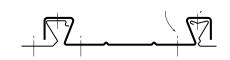
Aluminium Post Bottom Connector (CON50/60/75/90)



Aluminum Post (PA50/75/90) Steel Post (PS50/60/75/90)



FLATDEK Roof Sheet (RS5)



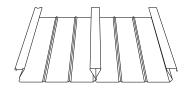
FLATDEK Fibreglass Light Panel (RFG5)



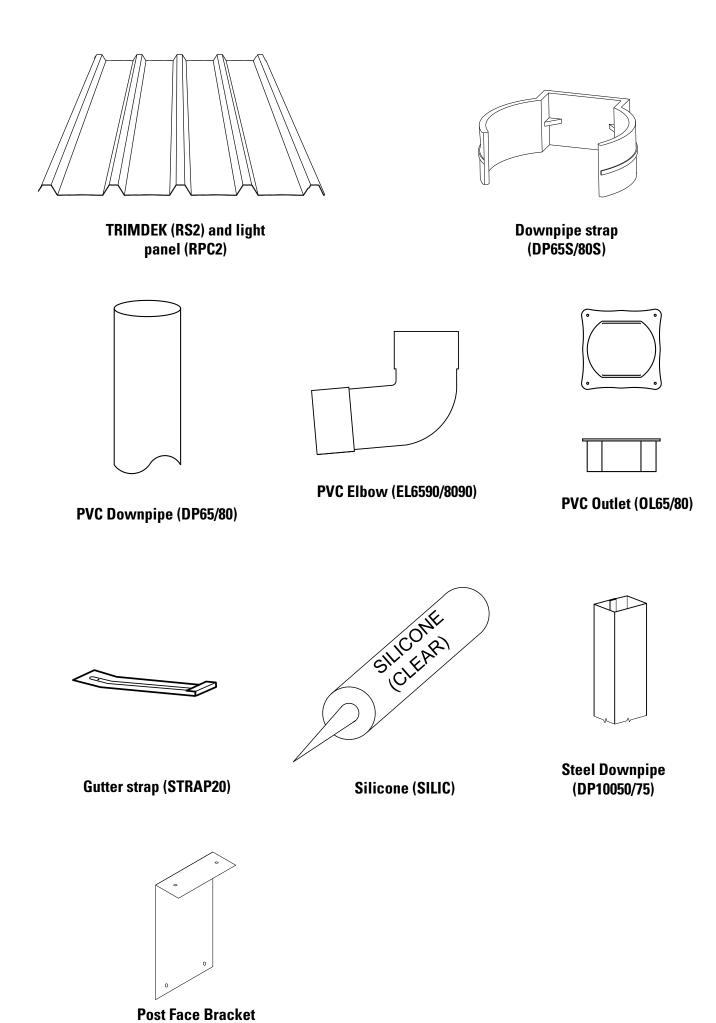
Spandek Roof Sheet (RS3)



Fibreglass Lightpanel (RFG3)

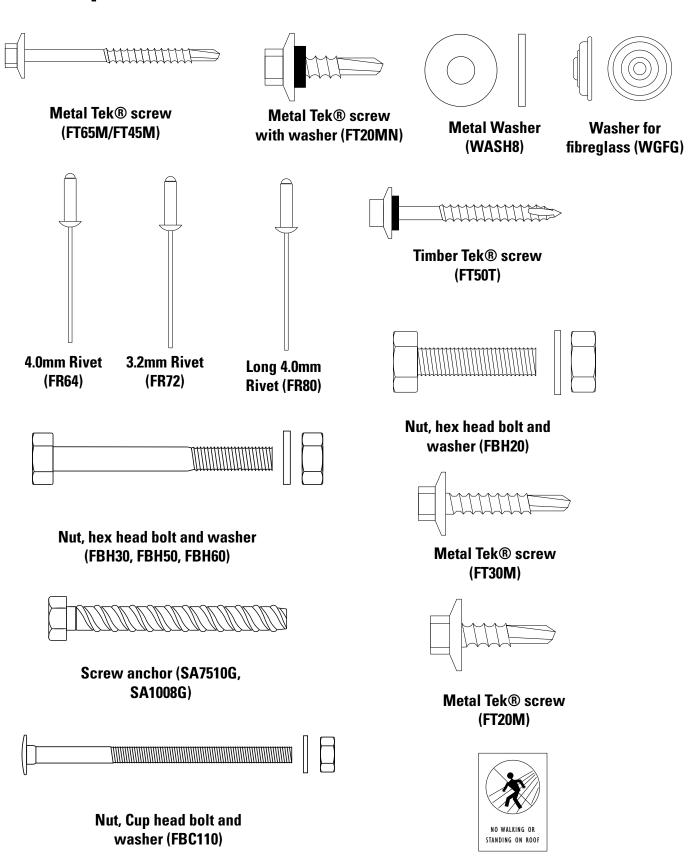


FLATDEK II (Qld only- RF5Q)



(PBP75/90)

5. Components



6. Construction guide

Please read the following instructions carefully before starting the project.

Suggested tools

Ladders

Plank

Saw horses

Adjustable stands

Spirit level

Electric drill (battery operated) and drill bits

Angle grinder

Electric lead

Personal safety equipment

Pop rivet gun

Socket set

String line

Assortment of hand tools

Site preparation

Firstly prepare the work area for the construction so it is safe and easy to work in.

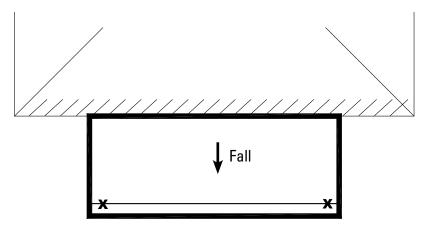
Clear work area of obstacles and debris.

Unpack the kit and crosscheck all the components against the Bill of Materials. This should be done adjacent to the work area.

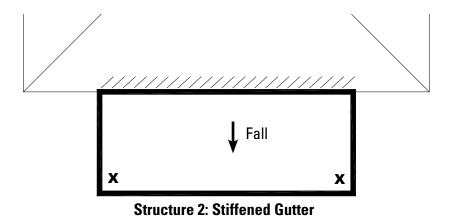
If there is a discrepancy between what you have received and the Bill of Materials, please contact the store where purchased immediately and prior to commencement of work.

Skillion structures

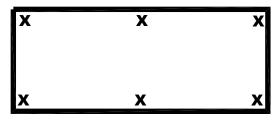
- 1. Roof is supported on the outer edge with a head beam and has an eave overhang.
- 2. Roof is supported on the outer edge with a gutter which is strengthened by a stiffener stud.
- 3. Roof is supported by a freestanding structure.



Structure 1: Head Beam

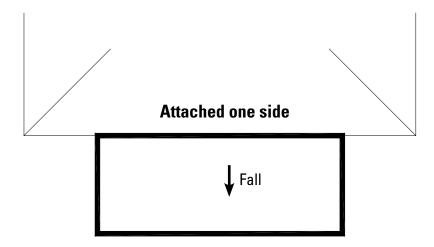






Structure 3: Freestanding

7. Starting your project



Structure 4: Attached one side

7.1 Attached one side

Using a marker, mark the start and finishing points of the structure on your existing fascia. Remember the measurements are from outside of gutter bracket to outside of gutter bracket. Transfer these points to the ground/slab for later use when positioning posts.

7.2 Freestanding

Skillion structures are measured outside gutter to outside gutter. To determine beam lengths, cut gutters to plan size (refer to gutter section) as this will determine overall size.

Cut headbeams to length (front/rear) and where required fit connectors for return beams as per your engineering drawings. (See Figure 2 for guidance.)

Lift headbeams onto stands at required height.

Place a temporary brace between the beams to hold them in position.

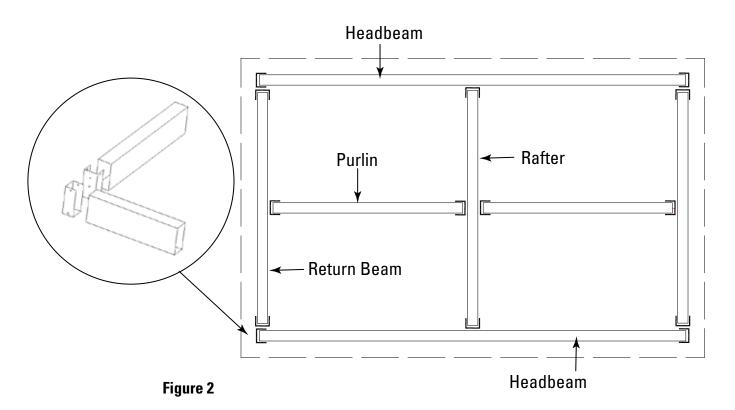
Cut and fit return beams, rafters and purlins where required as per engineering drawing, square the structure using bracing.

Prepare the gutters. (Refer to gutter section - Section 8, 9 or 10) See Cc Builder 1000 series drawings for details of top post connection.

Prepare post base. (Refer to footings section - Section 12a & 12b)

Cut posts to required length and fit posts as per post detail. (Figure 8, 9 & 10). Refer to 1000 Series drawings for details.

Complete structure.



8. Attaching the gutter

8.1 YOU WILL NEED:

GUTTER

GUTTER STIFFENER (Attached structures only)

GUTTER CORNERS

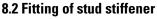
FIXINGS

The design has gutter on all sides.

On supports, cut a 45 degree angle to one end of the gutter and fit a gutter corner as per drawing (Figure 3).

Checking the measurement on your plan, measure from the outerrmost edge of the fitted gutter corner along to the desired length and mark. Using the gutter corner bracket, align the corner of the bracket over the mark and remark the gutter allowing for the bracket. If 6000mm is the plan length, then this will be from outside of gutter corner bracket to outside of gutter corner bracket at the other end.

Remove the plastic covering from gutter before attaching the gutter corner and fixing with silicone and rivets.



(attached structures only)

You need to fit a gutter stiffener to the gutter to be attached. If not fitting a headbeam, fit stiffener to front gutter.

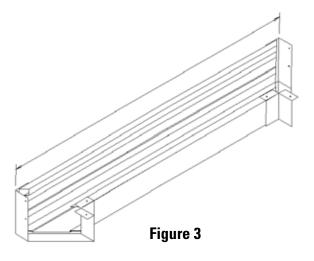
Measure the internal of the gutter from corner to corner and cut stiffener to size. Subtract 2mm for clearance.

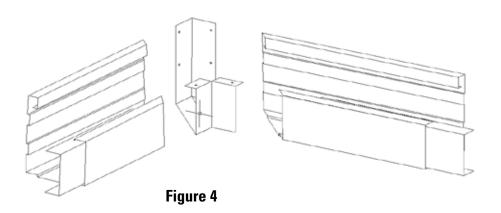
Fit stud stiffener into gutters using 4mm rivets at 600mm spacing's. At corners, fix off using nut and bolt to one side and a rivet to other as per drawing. (Figure 4)

You should also fit a gutter stiffener to the front gutter if you are not using a headbeam.

Note:

Fit stiffener into gutter before fitting gutter corner.





9. Fitting attachment brackets to rafters

Note: For timber rafters/trusses only

9.1 You will need

RAFTER ATACHMENT BRACKETS

Z BRACKETS

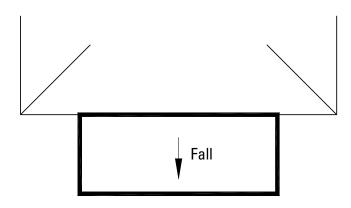
FIXINGS

Position the prepared gutter with attached corner brackets to the existing fascia, 20mm below existing gutter.

Make sure the gutter is completely level and using Teks, temporarily screw the gutter to the fascia. This will allow the rafter / truss attachment brackets to be set in the correct position. These Teks will be removed later.

Wearing gloves, push up the bottom row of roof tiles or unscrew the roof sheets to allow access to the existing rafter/truss. Fit the rafter attachment brackets with the large face sitting up against the rafter/truss tail and the small face hard up against the back of the existing fascia. The bracket can sit on top of the eave sheet, but do not apply downward pressure as this will bow your soffit sheets.

Connect the brackets to the truss using timber Teks at 1200 spacing's for 600mm spaced rafters or 900 spacing's for 450mm spaced rafters. Note: Drill holes in timber rafter with a 6mm drill bit to avoid splitting the rafter if necessary, starting from the corners. For connection details, refer to CcBuilder engineering drawings.

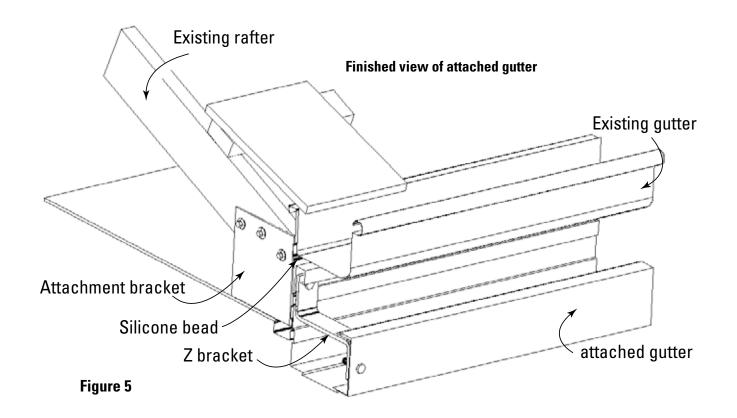


To attach the Z brackets, place the Z bracket inside the gutter with the long leg upwards against the inside edge, in line with the rafter attachment bracket. (Figure 5)

Mark where the Z brackets are to go, drill a 10mm hole through the back edge of the gutter, fascia and attachment bracket and fit a nut and bolt.

Fit a nut and bolt to the front face of the gutter, through the Z bracket.

You can now remove the small Teks® from the gutter that held it in place.

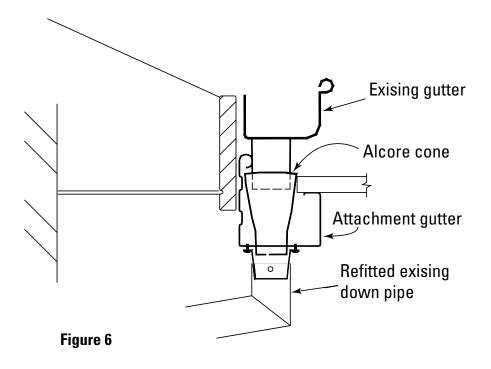


10. Obstructions along existing house fascia

If there is an obstruction along a fascia, like a down pipe preventing you from attaching the gutter, remove the down pipe to expose a drop/outlet.

Use ALCORE and make a cone approximately 100 mm deep to fit over the drop. This will then sit in the new gutter when fitted.

Fit a new outlet to the new gutter directly under the existing as per the detail and re-fit the original down pipe under the new gutter at a later stage. (Figure 6)



11. Fitting the front gutter

YOU WILL NEED:

GUTTER

STUD STIFFENER

FIXINGS

At this point, 3 gutters will be standing with gutter corners attached.

Square structure by checking diagonals and adjusting the projection gutters in or out until diagonals are the same.

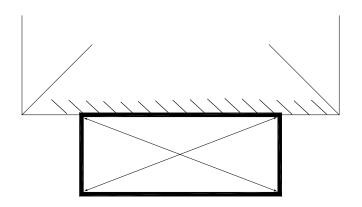
Re-measure rear gutter length, and cut both ends of gutter at 45 degrees, fit downpipe drop/outlet in desired position.

If a headbeam is not chosen, fit gutter stiffener and fix off with rivets and nut and bolt, as per drawing.

Prepare stands for gutter to sit on, lift gutter into alignment and slide one corner in at a time, back into gutter corners and fix off.

Repeat same for other end.

Temporarily brace structure, fix off gutter corners and check square and brace.



12. Fitting a headbeam

YOU WILL NEED:

BEAM

BEAM CONNECTORS

FIXINGS

Fit beam connectors CONB100/150/200 in required plumb position on both gutters as per engineering drawings.

For easy fitting of beam into connectors, measure from outside to outside of beam connectors, mark beam and deduct 10mm and cut. This will allow the beam to be fitted into the connectors with ease.

With the horizontal seam of the beam to the top and facing out lift the beam into the connectors, square off the connectors to beam and support while fixing off with Teks[®].

13. Fitting return beam - rafter - purlin

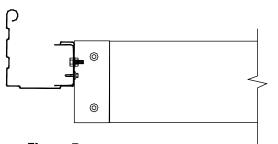


Figure 7a

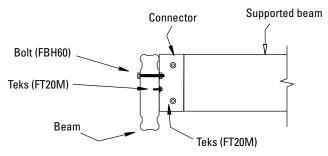


Figure 7b

YOU WILL NEED:

BEAMS

BEAM CONNECTORS

FIXINGS

If the roof span requires a purlin, a return beam and/or, a rafter will need to be installed.

Note:

A return beam-purlin-rafter can be of a smaller dimension to the headbeam, due to engineering calculations.

Fix connectors to beams as per drawings (Figure 7a) where a stiffened gutter supports the purlin.

Fix connections per drawing (Figure 7b) where the purlin fits into a return beam. This is the typical connection where a purlin attaches to a rafter. See the CcBuilder drawings for the details of beam to beam and beam to rafter connections.

14. Fitting of post (no headbeam)

Check CcBuilder Plan for post positions

YOU WILL NEED:

POSTS

TEKS

NUTS AND BOLTS

BOTTOM POST CONNECTORS

RIVET

The posts are bolted to the back of the structural gutter using 1 nut and bolt per post. For 75/90mm posts, use 2 nuts and bolts per post, to be attached as per drawing.

Note

This gutter will be fitted with gutter stiffener (STUD19) as per fixing details on drawings.

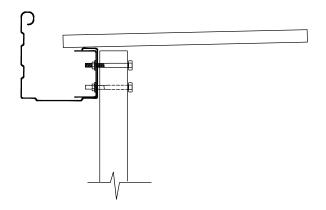


Figure 8

15. Fitting of post (behind headbeam)

Check CcBuilder Plan for post positions and details for maximum span between posts.

YOU WILL NEED:

POSTS

NUTS AND BOLTS

BOTTOM POST CONNECTORS SLAB ONLY

TEKS

The posts will be bolted to the back of the beam as per drawing. With the headbeam supported by stands/props and fixed to the connectors, string a line across the face of the beam and adjust props to make level.

16. Fitting of checked post

Check CcBuilder Plan for post positions and details for maximum span between posts.

Fit posts into position using clamps. Fit bracket plate to face of post and beam and screw off in position.

Using the holes in the post as a template, drill through the post bracket and once plumb and positioned, fix off as per drawing.

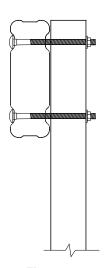


Figure 9

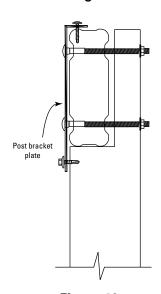


Figure 10

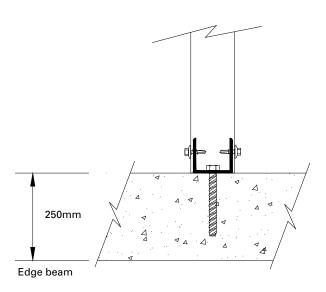


Figure 11

Figure 12a

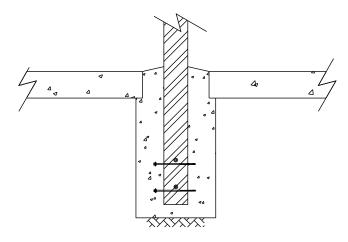


Figure 12b

17. Attaching to a slab

The following method can be used for all post sizes. For correct fixing details, refer to drawing.

Ascertain the position of the posts along the beam, measure from the top of the beam down to concrete slab.

Place the post on supports and cut to length.

Clamp post in correct plumb position. Mark position on slab and mark at top on beam.

Using the internal post connector as a template, mark the holes on the slab and drill holes to the required depth.

Blow the dust out of the hole using either mechanical means or otherwise and attach the connector to the slab using the supplied screw anchor. Place some silicone around the hole for waterproofing.

Place the post over the bottom connector and position at top. Plumb and clamp off ready for fixing. (Figure 11)

Fix top of post as appropriate per previous Sections (14-16).

Fit bolts and tighten with nuts. Attach with fixings at the base.

This type of fixing is for attached structures only. Refer to engineering details for freestanding models.

18. Post into footing

The top attachment is done per the previous section.

Ascertain the position of the post on the beam, plumb down and mark position on ground.

Check depth and width of footing from Engineers detail, and remove soil.

Measure from bottom of hole to under side of beam, deduct 100mm and cut to length.

Prepare bottom of post as per Engineering detail.

Place post in hole, clamp off at top while fitting the bolts and tighten with nuts.

Mix concrete as per manufacturers instructions and pour into holes whilst checking for plumb. (Figure 12a & 12b show optional core drilled hole into existing slab or a new footing)

NOTE: Seal all penetrations, corners and top edge of attached gutters with silicone.

Leave overnight or until cured.

19. Fitting TRIMDEK/SPANDEK roof sheets

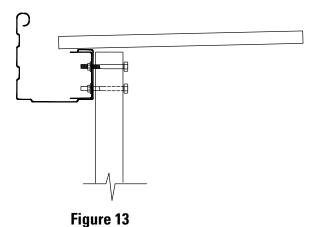
First, set a string line minimum 50mm back from front edge of gutter to keep the roof sheets in line.

Using a pair of pliers, weather the end of the roof sheets that sit against the house by bending up the bottom lip of the sheets. Be careful not to tear the corners.

Align front edge of sheet to the string line. Check that the roof sheet is square, by measuring across to the square projection gutter at both ends of the roof sheet.

For positioning the sheet along the projection gutter (side), fit sheet and screw through the first pan of the sheet into the gutter return lip. (Figure 13)

Sheets should be hard into the rear attachment gutter as possible.



rigule 13

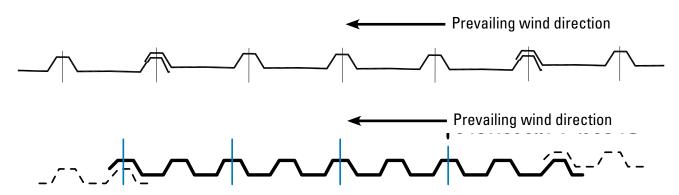


Figure 14

20. Fitting of TRIMDEK/SPANDEK light panels

Fit light panel two (2) steel sheets in from projection gutters and keep a minimum of two (2) steel sheets between panels. Fit light panel over top of steel sheets by two (2) crests. (Figure 15) Refer to engineering drawings for fixing details.

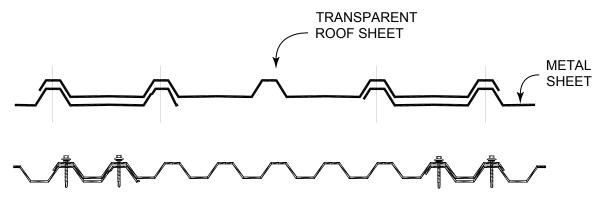
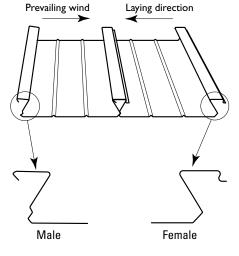
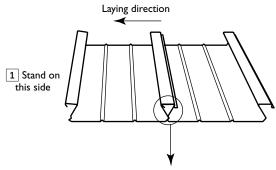


Figure 15





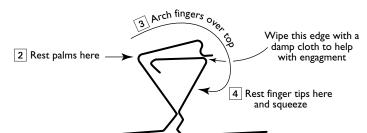


Figure 16

21. Fitting Flatdek

Note: Read the following carefully as it is difficult to seperate sheets.

Slide sheet up under existing gutter.

The wet gutter end of sheet needs to be turned down turn, so water drains correctly into the gutter. The opposite end (house) of the sheet needs turning up. This is called weathering the sheets. Be careful not to tear the sheets.

Remove protective plastic from underside of sheet and fit into position on structure.

Starting from either side of the structure, ensure the side of the sheet is facing the projection gutter. (Figure 16)

Lay first sheet in position and fix off. Grasp the next sheet with 2 gloved hands and position sheet over top of preceding sheet. Using the heel of your hands, perform a rolling motion away from you at the same time applying pressure downwards as per diagram. (Figure 16)

Laying sheets to the string-line, proceed by placing next sheet in position. Front of sheet must be in line with the preceding sheet.

22. Fitting Flatdek light panels

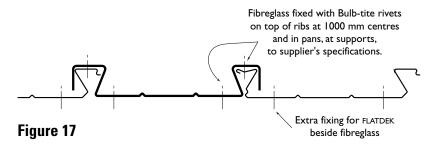
A light panel must be fitted at least 2 steel sheets in from any side and must have 2 steel sheets separating them.

Unlike the steel panels, both sides of a light panel fits over the male and female sides.

Working from a projection side, fit a minimum of 2 steel panels first and fix off.

Lay the light panel in position. Do not fix off. Next to that, place a steel sheet in under the light panel

The light panel should be sitting over the top of 2 steel sheets. Once position is correct, fix off steel sheet first and then light panel as shown below. (Figure 17)

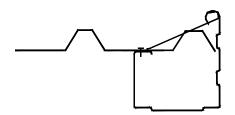


23. Fitting gutter straps

On completion of roof, string line unattached gutters to check for straightness.

Fix off gutter strap using Tek® screws as Figure 19 for side gutter and Figure 20 for front gutter.

@ 900 centres



@ 1200 centres

Figure 19

Figure 20

24. Prepare downpipe position

YOU WILL NEED DOWNPIPE OUTLET DOWNPIPE STRAP DOWNPIPE ELBOW RIVETS

Place downpipe outlet on bottom side of front gutter in required position and mark internally around base.

Drill a pilot hole in bottom of gutter and then remove with snips. This can be done when preparing front gutter.

Rivet outlet to outside bottom edge of gutter where required.

Fix downpipe straps to the post with 1 rivet.

Fit supplied downpipe together using silicone to join connections. (Figure 21 - Example shown for overhang only.) Fix off as per CcBuilder drawings.

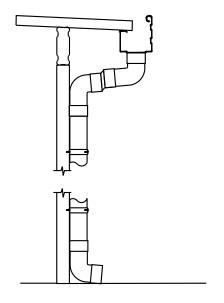


Figure 21

25. Clean up instructions

On completion remove all foreign objects from all the surfaces

e.g. Swarf (drilling debris) packaging, rubber ,etc. Attention should be made to the rear gutter, with all foreign material hosed completely out of all gutters. This is generally done using a hose and broom.

Please download the maintenance guide from:

www.lysaght.com

Congratulations

Your new structure is now ready to use.





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