PITCHED PORTAL FRAME INCLUDING GABLE, HIP & DUTCH

CONSTRUCTION GUIDE

LYSAGHT living

Colorbond®

TABLE OF CONTENTS

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 October 2017

Lysaght 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 visiting www.lysaghtliving.com.au.

Conditions of Use

By using this guide, you acknowledge and agree that your use is subject to the terms and conditions in this guide. Lysaght, its agents, officers, employees, subcontractors or consultants makes no representations, either expressed or implied, as to the suitability of the information and data in this guide for your particular purposes. It is your responsibility to ensure the design you use, the products you have purchased, your site and structural limitations and your building and construction capabilities are appropriate for your needs.

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 provided 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 Lysaght 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 of profit or anticipated profit, loss of use damage to goodwill and loss due to delay) to the maximum extent permitted by law, Lysaght 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 Lysaght'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 re-supply of services or paying for the cost of resupplying the services.

Warning

The roof sheeting and supporting structure have been designed as "No Foot Traffic" structures. Roof sheeting and structural members should not be walked on during or after construction. Signs stating "No Foot Traffic" should be installed on the roof in accordance with this document and any local workplace health and safety legislation. Any defect or damage caused by unsuitable roof traffic is excluded from your warranty.

2. GENERAL NOTES TO BE READ BEFORE USING THIS GUIDE

Pitched Roof Construction Guide with Dutch, Hip End and Open Gable Options

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 with wind classification N1 (W28) -N3 (W41), or where a tropical cyclone is unlikely to occur as defined in Australian Standard AS 4055 Wind Loads on Housing.

LYSAGHT LIVING® 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.

For all structures in this guide the following notes apply:

- These designs use LYSAGHT FLATDEK®, CUSTOM ORB®, and FIRMLOK® beams.
- The design allows for the structure to be attached on 1, 2 or 3 sides or freestanding.
- The design is for attachment to timber framed structures only.
- The design allows for attachment to metal or timber fascia only.
- Post height must not exceed 3000mm from ground level or top of slab.
- The sheeting 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 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 brochure for information regarding maintenance, handling, storage and any other technical assistance you may require.

The LYSAGHT LIVING® Maintenance & Structural Performance Warranty brochure is available at www.lysaghtliving.com.au.

Product Descriptions

All descriptions, specifications, illustrations, drawings, data, dimensions and weights contained this catalogue, all technical literature and websites containing information from LYSAGHT® are approximations only.

They are intended by LYSAGHT® to be a general description for information and identification purposes and do not create a sale by description. LYSAGHT® reserves the right at any time to:

(a) supply Goods with such minor modifications from its drawings and specifications as it sees fit; and

(b) alter specifications shown in its promotional literature to reflect changes made after the date of such publication.

3. GLOSSARY OF TERMS

ATTACHMENT BRACKET

Bracket that allows attachment to existing structures. Can be attached to brickwork, fascia or timber wall.

THROUGH FASCIA RAFTER ATTACHMENT BRACKET

These brackets support the new structure and support the side and end beams/rails. They protrude through the existing fascia and are fixed to the existing rafter or frames.

SIDE AND END RAILS (BEAMS)

Perimeter beam/rails that are supported by posts at front, through fascia brackets at rear and side.

CORNER CONNECTOR

Connects side and end rail beams.

POST CONNECTOR (BASE)

The post is attached to the connector which is attached to a concrete slab with a screw anchor.

POST

The design uses 90 steel posts, for fitment to the rails (beams).

CONCRETE FOOTING

Concrete in the ground which supports the post.

GUTTER

Fits to a FIRMLOK® beam/rail and carries water to the downpipe.

GUTTER OUTLET

Sometimes referred to as the "drop", allows the water to drain into the downpipe.

APEX BRACKET

Used at the top of a gable end and intermediate frame and connects the rafters together at the top of the roof (apex).

RAFTER

Spans between the apex bracket at the top of the structure and a beam/rail connector. This beam supports the purlins.

RAFTER CONNECTOR

Attaches to a rail (beam) front and rear, and supports a rafter.

RAFTER STRENGTHENING

Used to make the house rafter stronger to take the additional wind loads from the new attached awning.

DUTCH HIP RAFTER CONNECTOR

Used to support hip rafter on a Dutch Gable End.

HIP RAFTER/PURLIN CONNECTOR

Attaches to the hip rafter to support the purlins.

BEAM TO BEAM TO HIP RAFTER

Connects side and end perimeter rails to the incoming hip rafter for Dutch Gable and Hip Ends.

COLLAR TIE

A horizontal member connected to the rafters to form a frame at the Dutch Gable End.

PURLIN

Runs at 90 degrees to the rafters and supports the roof sheets. They are attached between frames and hips.

ROOF SHEETS

Are fixed to the perimeter beam/rail and purlins.

LIGHT PANEL

Replaces steel roofing where extra light is required.

DOWNPIPE

Carries water away from the gutter and is usually fitted to a post and then connected directly into a storm water system.

CORE DRILLED FOOTING

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

INTERNAL APEX FLASHING

A custom flashing fitted under the apex and between the ridge purlins to allow for downlights, etc.

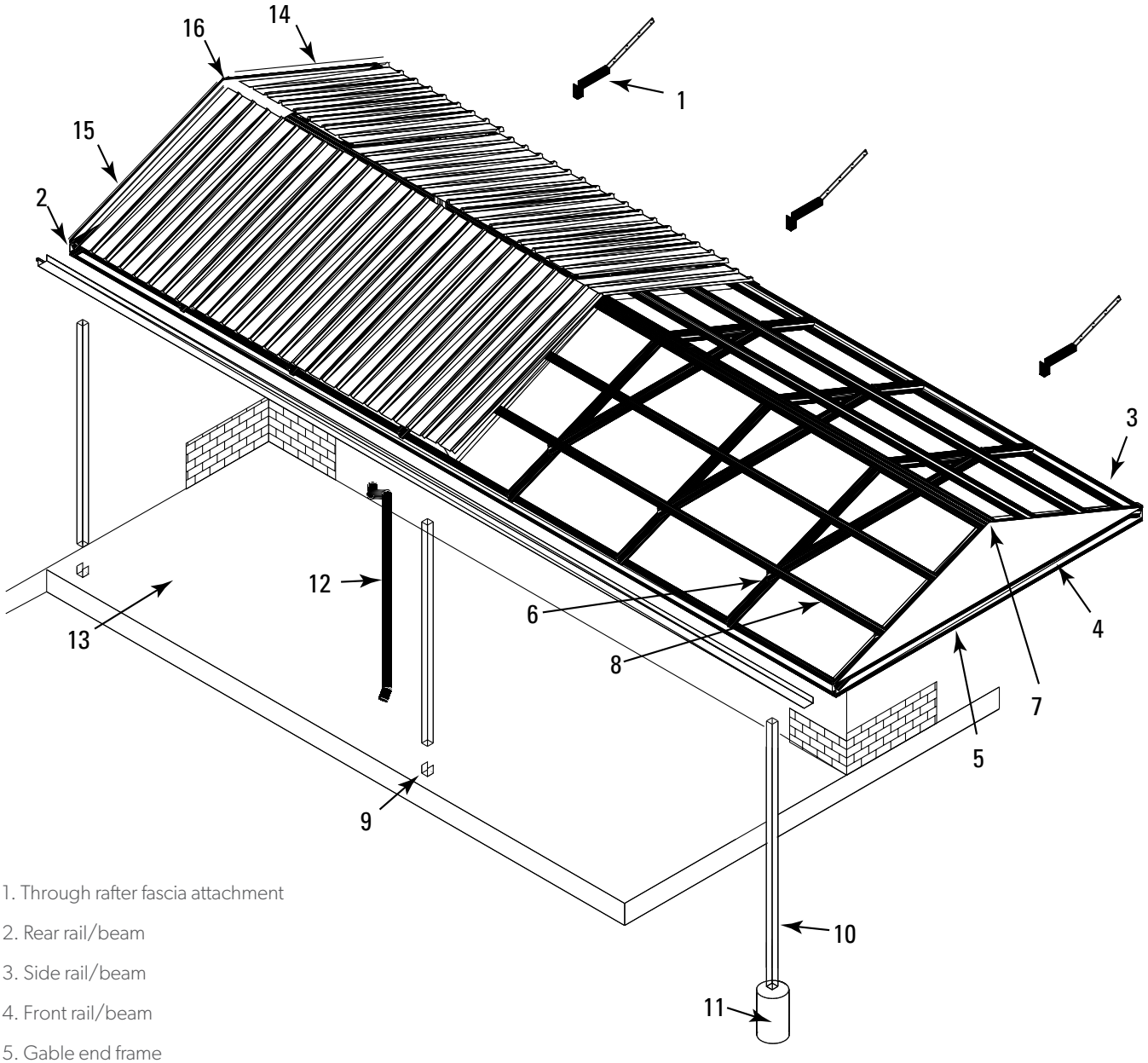
RIDGE CAPPING

Fixes to the ridge or hip of structure and waterproofs the roof sheets where they meet.

BARGE CAPPING

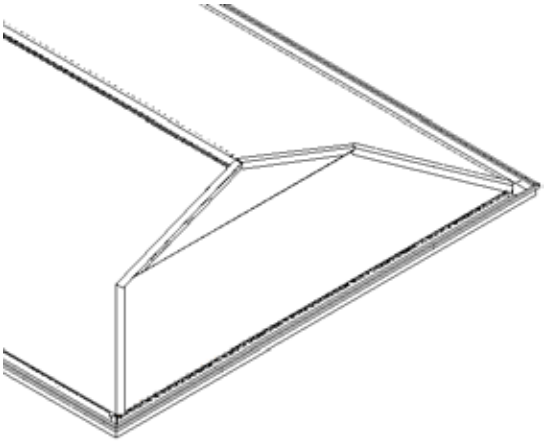
Fixes to the gable end rafters where the roof sheets start.

4. COMPONENT ASSEMBLY DIAGRAM - GABLE END



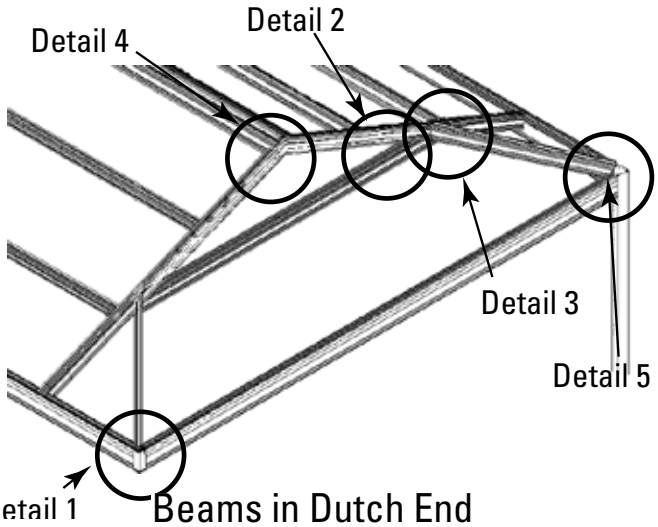
1. Through rafter fascia attachment
2. Rear rail/beam
3. Side rail/beam
4. Front rail/beam
5. Gable end frame
6. Intermediate frame
7. Ridge purlin
8. Mid purlin
9. Bottom internal connector for slab
10. Post
11. Concrete footing
12. Downpipe
13. Concrete slab
14. Roof sheeting
15. Barge capping
16. Ridge capping
17. Rafter strengthening
18. Core drilled footing

5. COMPONENT ASSEMBLY DIAGRAM - DUTCH GABLE END

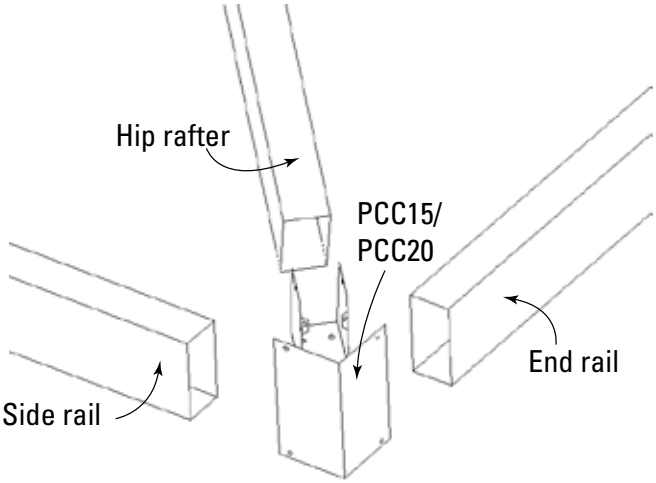


Dutch End

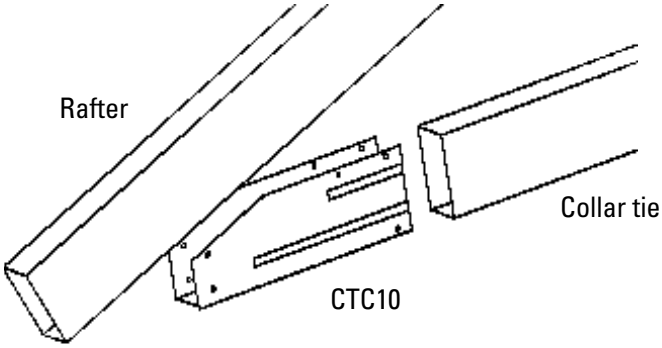
Beams in Dutch End



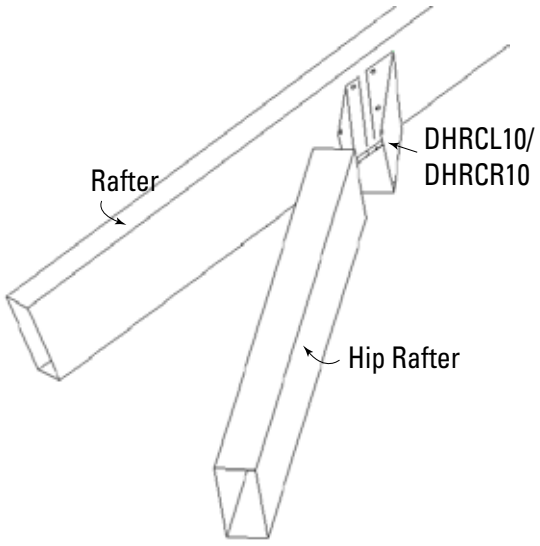
Beams in Dutch End



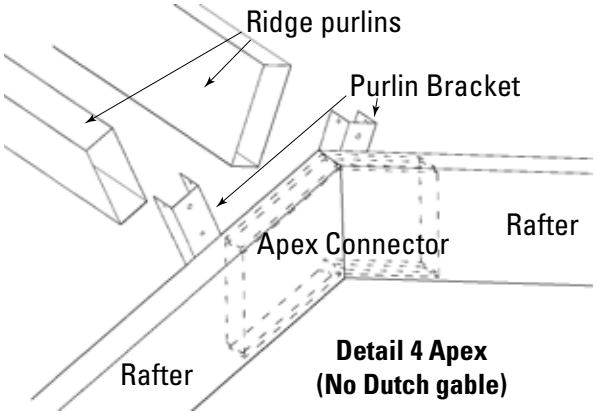
Detail 1



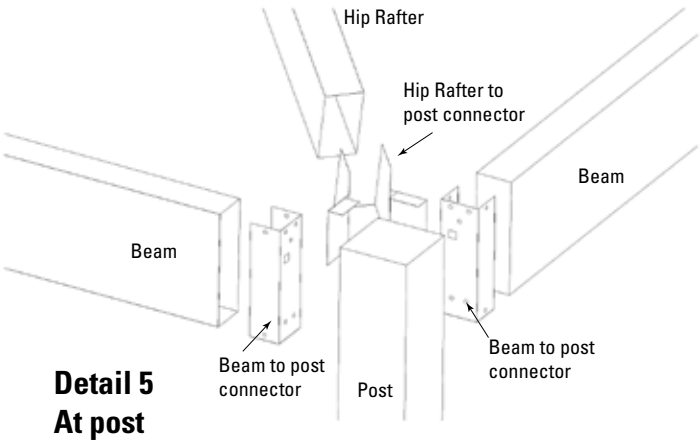
Detail 2



Detail 3 Top Hip rafter

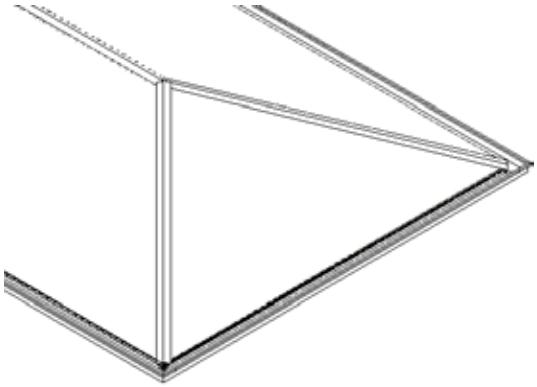


Detail 4 Apex (No Dutch gable)

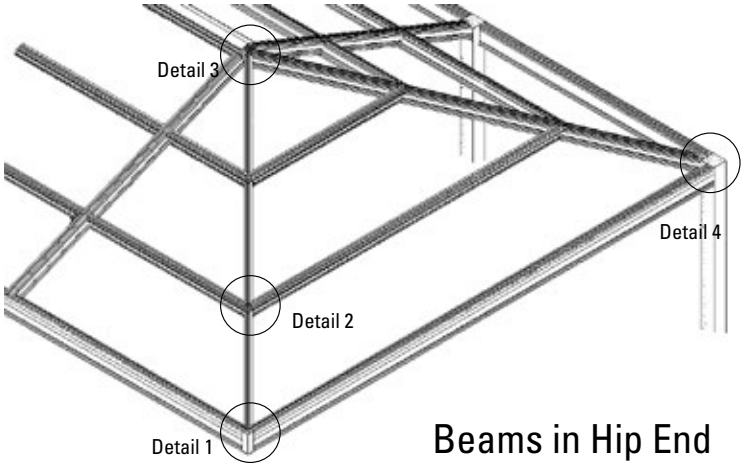


Detail 5 At post

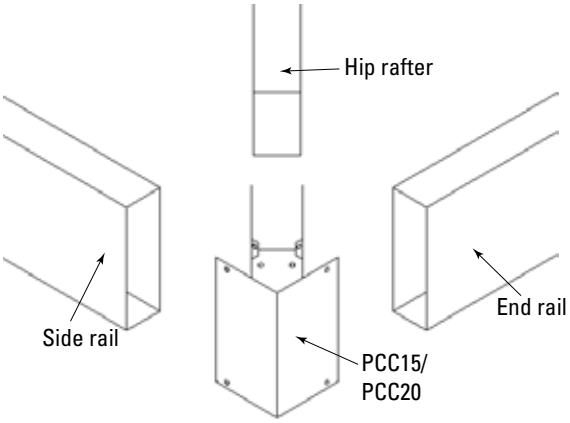
6. COMPONENT ASSEMBLY DIAGRAM - HIP END



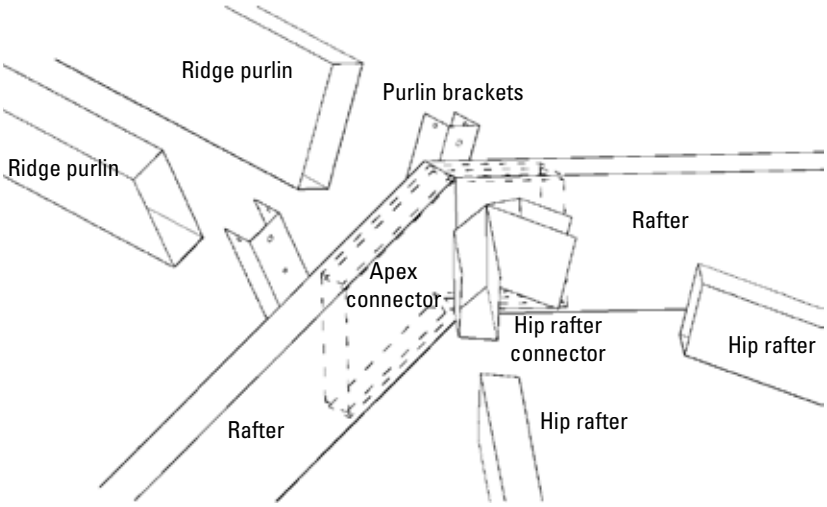
Hip End



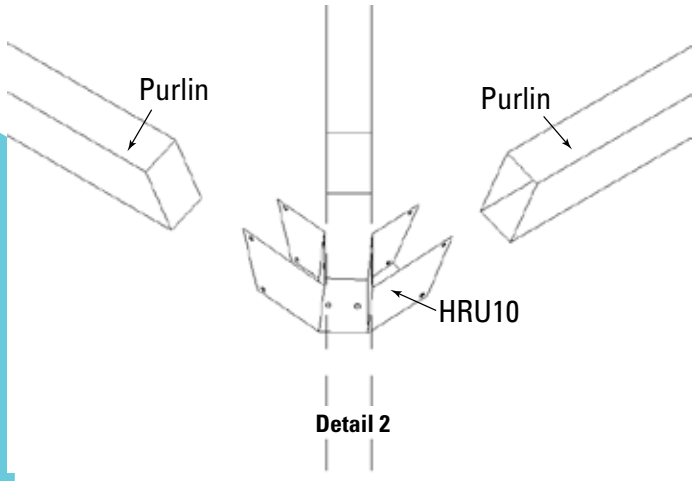
Beams in Hip End



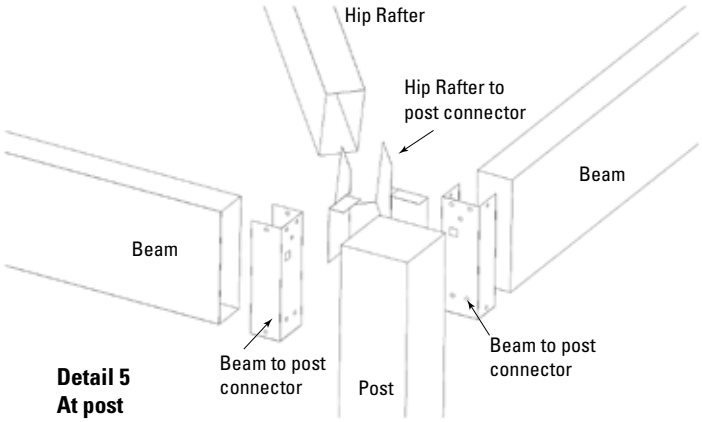
Detail 1



Detail 3 Apex Hip End



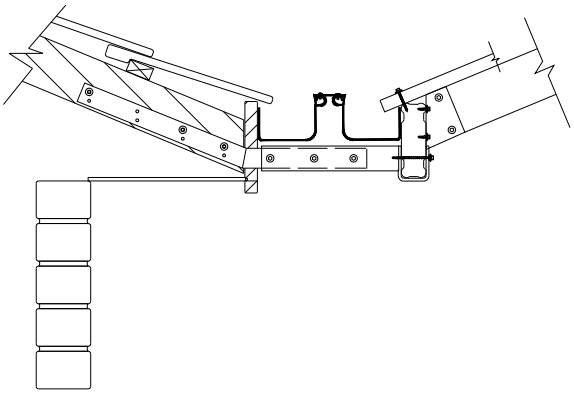
Detail 2



Detail 5
At post

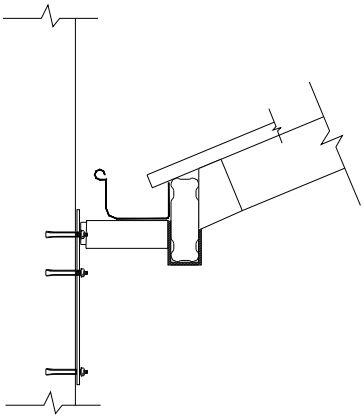
Detail 4 Bottom hip at post

7. TYPES OF ATTACHMENT BRACKETS



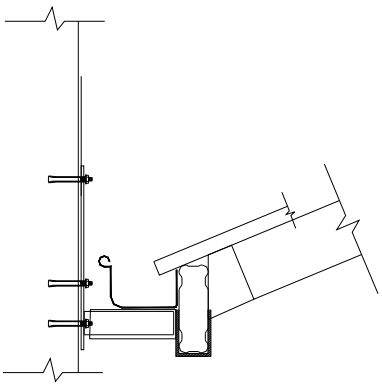
Gutter Offset (PTFQ1)

More commonly used through fascia attachment bracket for timber and steel fascia.



Offset Masonary Wall Bracket Down (POW1D1A)

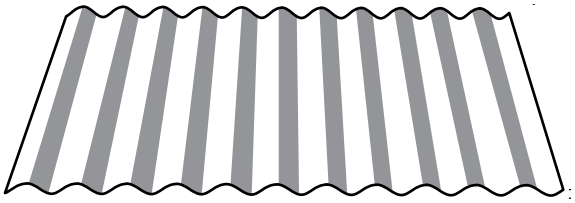
For attaching to brick or masonry walls, where attachment above beam is not possible.



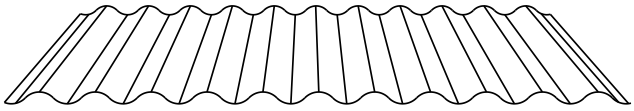
Offset Masonary Wall Bracket Up (POW1D2A)

For attaching to brick or masonry walls, where attachment below beam is not possible.

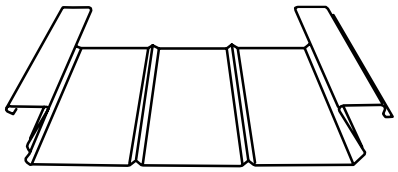
8. COMPONENTS



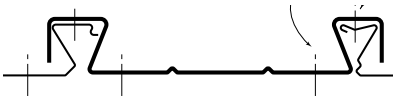
CUSTOM ORB® Roofing (RS6)



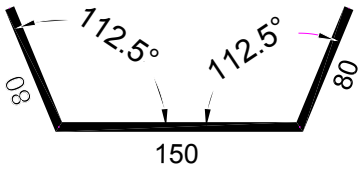
Polycarbonate Roofing
For CUSTOM ORB® (RPC6)



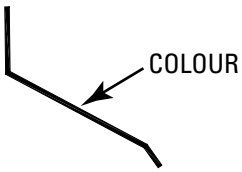
FLATDEK® Roof Sheet
(RS5)



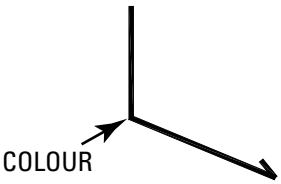
Fibreglass Light Panel
for FLATDEK® (RFG5)



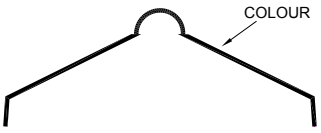
Internal Apex Flashing
(DLFLA)



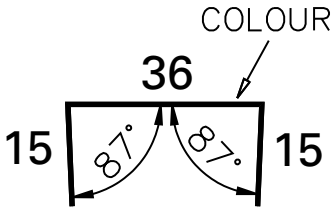
Top Dutch Flashing
(RA752)



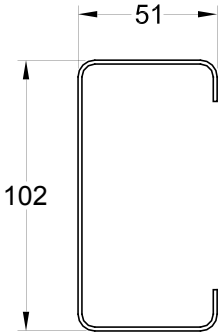
Bottom Dutch Flashing
(RA751)



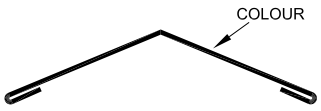
Ridge Capping for CUSTOM
ORB® (CRIDGE)



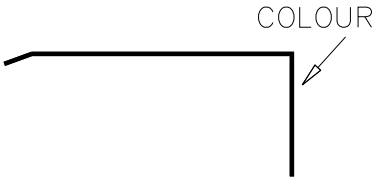
Gutter To Gutter Flashing
(FLG5)



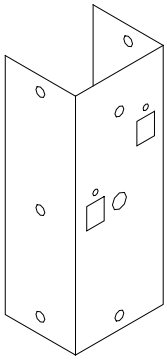
Rafter Strengthener
(CHS102)



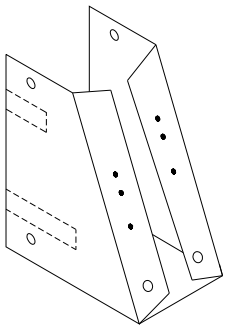
Ridge Capping for FLATDEK®
(RTRIDGE)



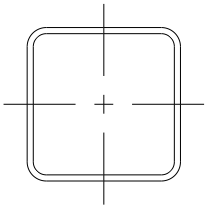
Barge Capping (GB/GB3)



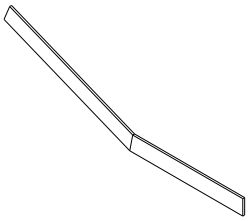
Beam Connector (CONB100C,
CONB150C, CONB200C)



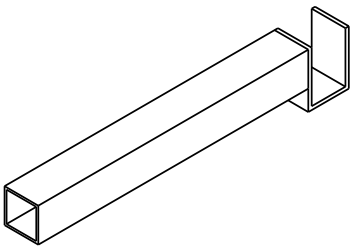
Rafter/Side Rail Connector
(RRC15P/20P)



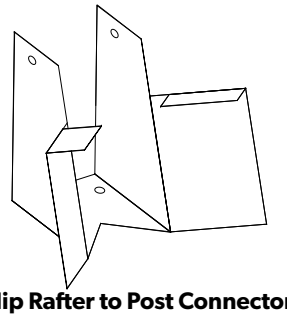
Steel Post
(PS75/90)



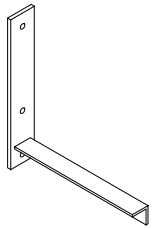
Rafter Bracket (UCE) Through Fascia



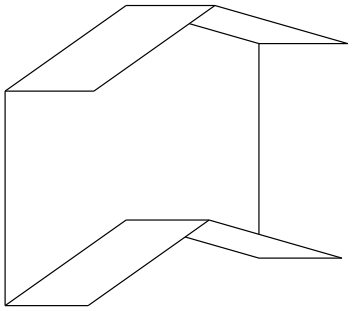
Beam/Rail Support (UCF/UCH)



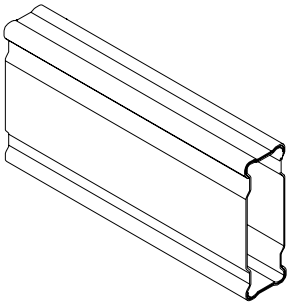
Hip Rafter to Post Connector (H100P90)



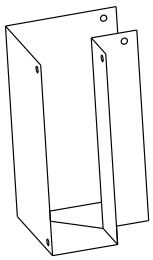
Offset Masonry Wall Bracket (UCL)



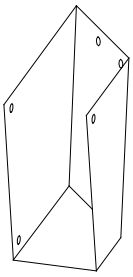
Apex 15P/20P Apex Connector



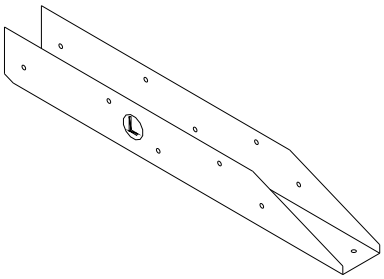
FIRMLOK® Beam (BS100/BS150/BS200)



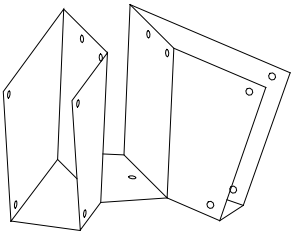
Beam/Rail Corner Connector (HCC15/HCC20)



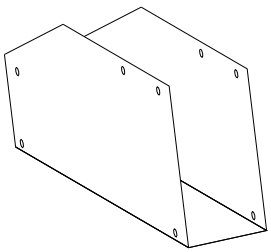
Purlin/Hip Rafter Connector (HRU10L, HRU10R)



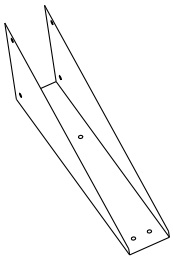
GRBC15/20 Rafter/Rail Connector



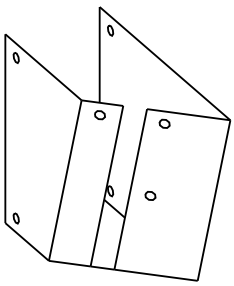
Purlin/Hip Rafter Connector (HRU10)



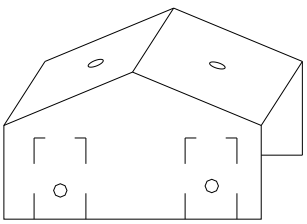
Collar Tie to Rafter Connector (CTC10)



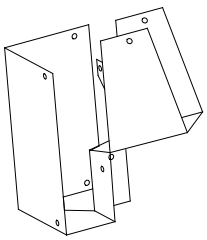
Rafter/Rail Connector (GRBC10)



Dutch Gable Hip Rafter Connector (DHRRCR10/DHRCL10)

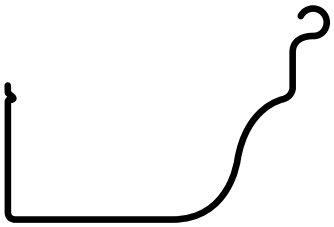


Gable Post Top Connector (CON100G)

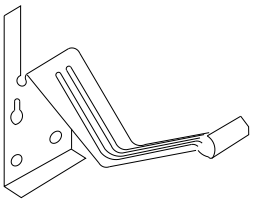


Side and End Rail Hip Rafter Connector (PCC15/PCC20)

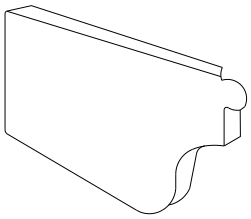
8. COMPONENTS (CONT.)



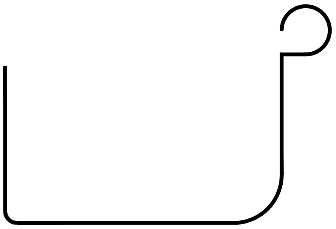
OGEE® Gutter
(GOG)



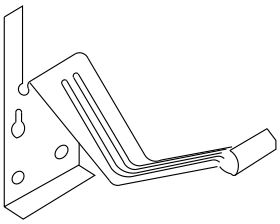
OGEE® Gutter Bracket
(OGIGPB)



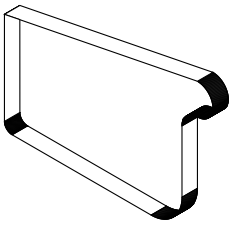
OGEE® Gutter Stop Ends
(OGSEL, OGSER)



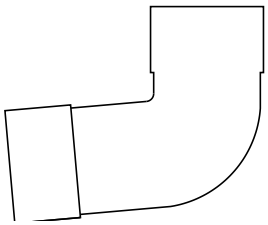
Quad Gutter
(GQA)



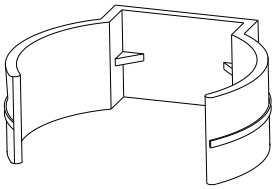
Quad Gutter Bracket
(QIGPB)



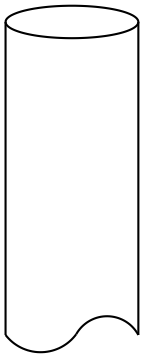
Quad Gutter Stop Ends
(QSEL, QSER)



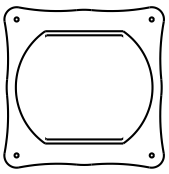
PVC Elbow (EL6590/
EL8090)

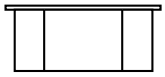


Downpipe Strap
(DP65S/DP80S)

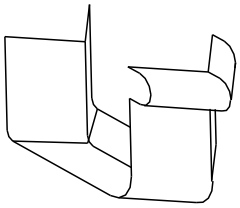


PVC Downpipe
(DP65/DP80)

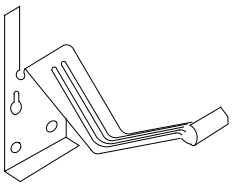




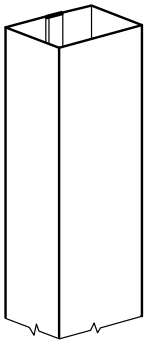
PVC Outlet
(OL65/OL80)



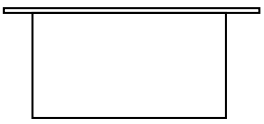
PRECAST QUAD GUTTER CORNER
(QEC)



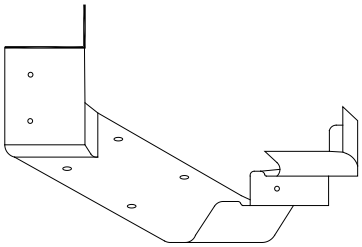
GUTTER BRACKET (GSTB)



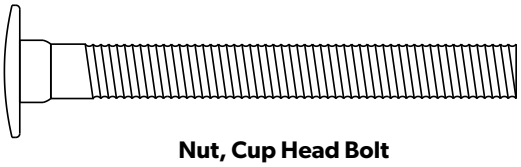
Steel Downpipe
(DPS7550)



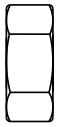
Metal Outlet
(OL7550)

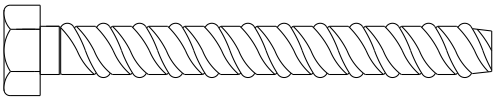


PRECAST OGEE® Gutter Corner
(OGEC)

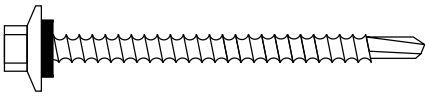


Nut, Cup Head Bolt
and Washer
(FBC60/FBC70/FBC90)

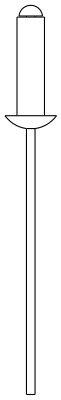




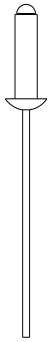
Screw Anchor
(SA1008G)



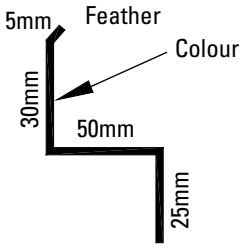
Metal Tek®
(FT65MR/FT75MR/FT45MR)



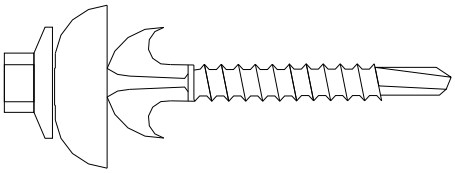
4.0mm Rivet
(FR64)



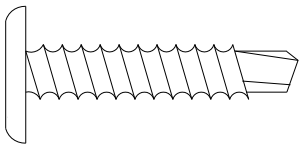
3.2mm Rivet
(FR72)



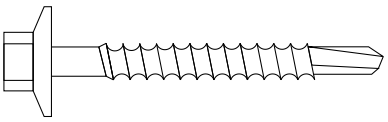
Masonry Wall
Flashing (FLG7)



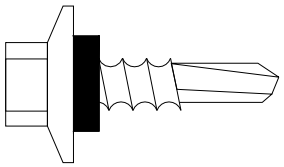
Winged Tek®
(FT50MP/FT65MP



Metal Tek® (FWH22)

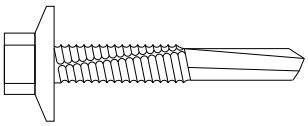


Metal Tek®
(FT45M)

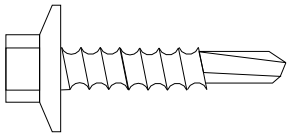


Metal Tek®
(FT20MN)

Silicone (SILIC)

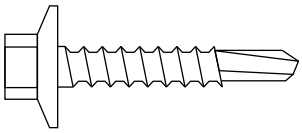


Metal Tek®
(FT32MS)

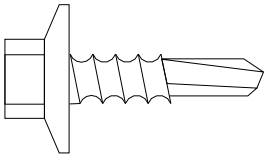


Metal Tek®
(FT16M)

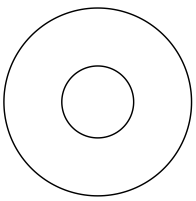
Roof Sign



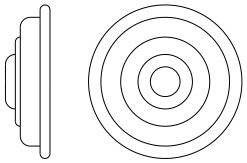
Metal Tek®
(FT30MS)



Metal Tek® with Washer (FT20M)



Metal Washer
(WASH8)



Washer for Fibreglass
(WG/FG)

9. GETTING STARTED

Please read the following instructions carefully before starting the project.

You Will Need:

Ladder

Plank

Saw Horses

Stands

Spirit Level

Drill and Drill Bits

Angle Grinder

Electric Lead

Gloves and Safety Glasses

Pop Rivet Gun

Assortment of Hand Tools

Socket Set

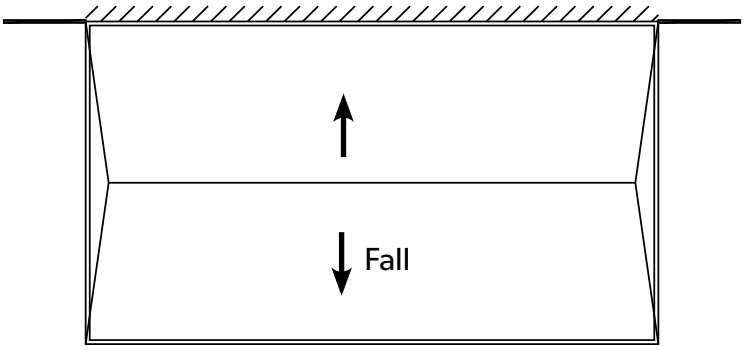
Site Preparation

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

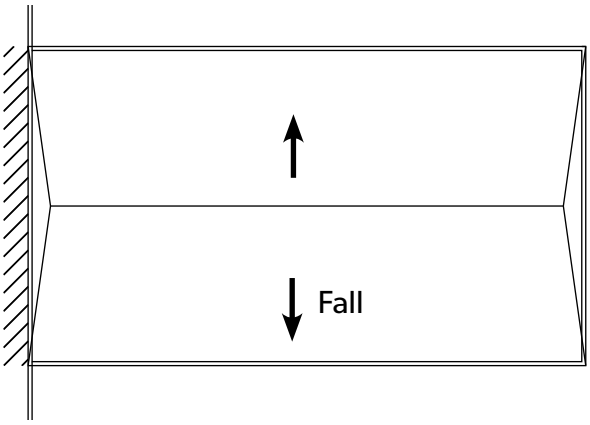
Clear work area of obstacles and debris.

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

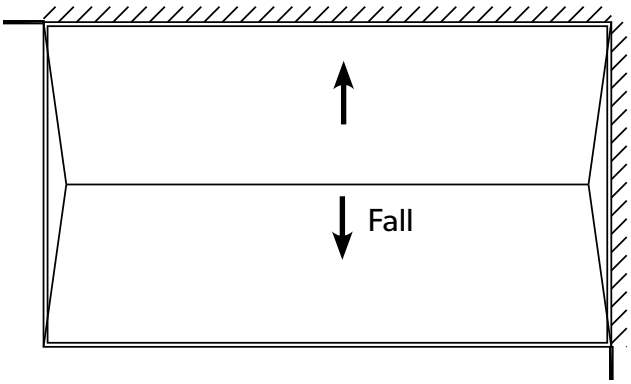
If there is a discrepancy between what you have received and the Bill of Materials, please contact the store where purchased immediately and prior to commencement of work.



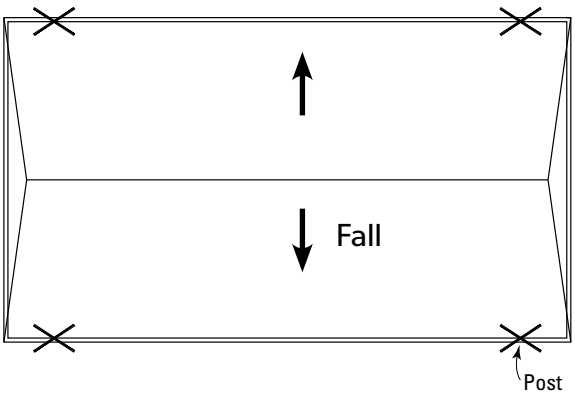
Structure 1: Attached at Long Side



Structure 2: Attached at Short Side



Structure 3: Attached at Two Sides



Structure 4: Freestanding

10. ATTACHMENT BRACKETS

Through Fascia Brackets

Using a marker, mark the start and finishing points of the project on your existing fascia (remember the measurements are from outside of beam to outside of beam) and transpose these points to the ground/slab for later use when positioning posts.

There are 2 sections to these attachments. The steel bracket that attaches to the rafter through the fascia, while the second stage is fixed over this bracket to support the beam.

Using a gloved hand, push back the first row of roof tiles or unscrew the roof sheet, to expose the rafters/frame at the back of the fascia.

Position the bracket on the side face of the rafter/frame no greater than 1200 centres and make as plumb as possible allowing for obstructions like: Multigrip/triplegrip/gangnail plate.

To fit the bracket, you make a slot in the fascia or eave for the bracket to slide into.

To do this, use a drill slightly bigger than the thickness of the bracket and drill out the fascia/eave in a vertical line, so the bracket will slip in beside the rafter.

The bracket is designed for a 22.5 degrees pitch, and it is paramount that the horizontal blade of the bracket is level as it supports your perimeter beams.

Fix off the first and last bracket making sure they are level with each other, but do not rely on the existing fascia for leveling.

String a line between them, fix evenly spaced no greater than 1200 centers and where possible attach to the middle of the rafter/frame to prevent splitting of the member.

When using the offset bracket, it is designed to have both the new and existing gutters line up at the top. To achieve this, fix the bracket within 5mm on the underside of the house gutter.

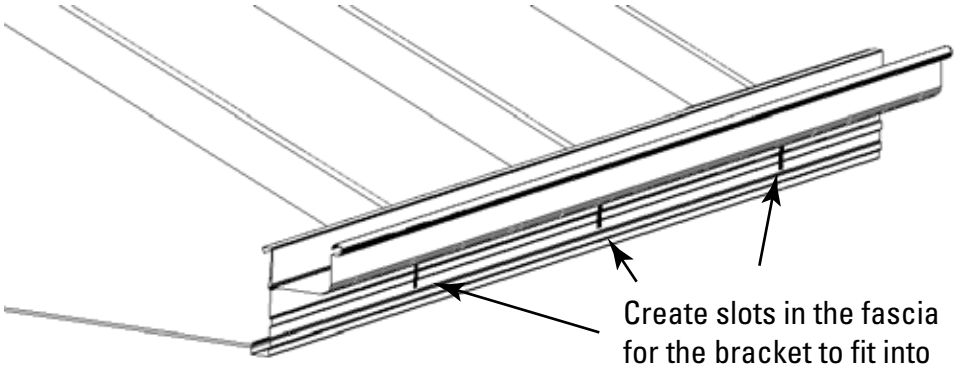
Also, make sure the bracket is plumb, otherwise you will end up with a twist in the bracket when finished.

Rafter Strengthening

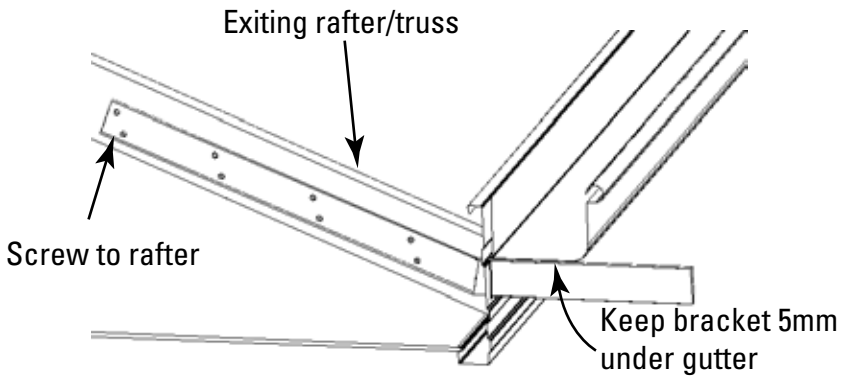
Rafter brackets are used to attach the carport or verandah structure to the existing house. In most instances existing houses are not designed to withstand the imposed loads from the new structure. Hence strengthening of the existing structure is often required.

Refer to the certified drawings to determine the length and number of extension channels to be used in conjunction with the rafter brackets, to achieve strengthening of the existing house rafters.

The capacity of the existing house to withstand the additional loads arising from the carport or verandah must be verified by a suitably qualified engineer as additional work may be necessary to achieve a satisfactory outcome.

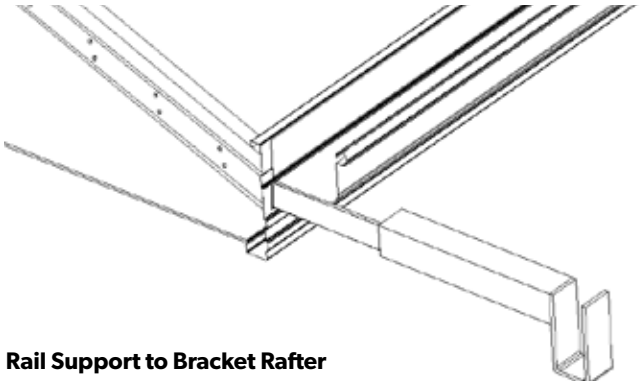


Existing Fascia with New Slots



After Bracket Has Been Inserted Through Fascia

The 2nd stage of the bracket fits over the rafter bracket and supports the rail as in the drawing.



Rail Support to Bracket Rafter

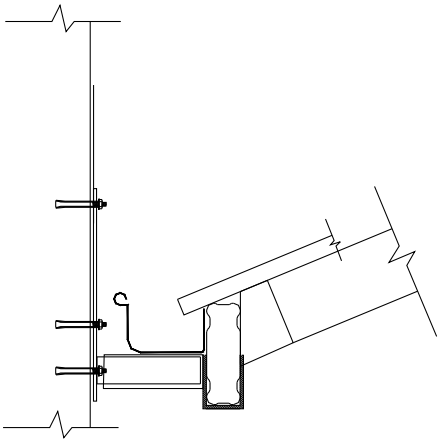
Wall Attachment Bracket

There are several different brackets to allow attachment to a wall as shown in the drawings.

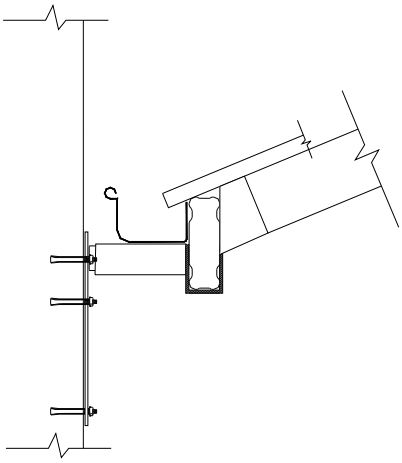
The on-site conditions will determine which bracket is used and this will have selected at time of ordering.

Bracket comes in 2 sections: 1 which directly attaches to the wall with the other section sliding over the first.

Refer to the drawings for correct fixing methods.



Rail Support to Wall-Up



Rail Support to Wall-Down

11. FITTING OF POSTS AND BEAMS

You Will Need:

Beams-Rails

Corner Connectors

Gutter Brackets

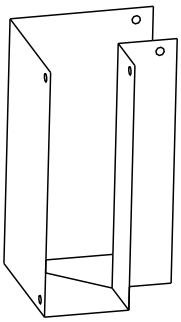
Fixings

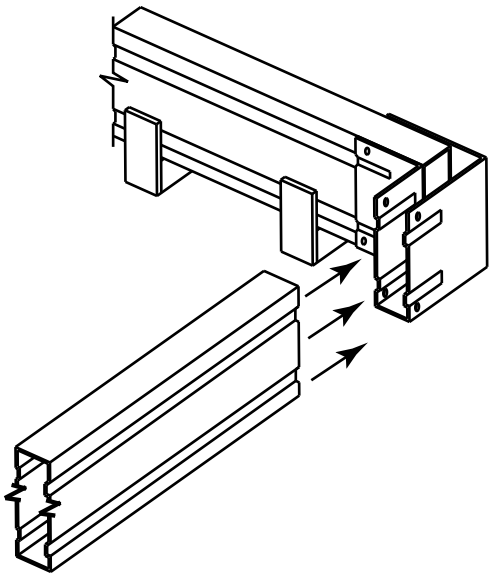
Post

Screw Anchor

Fixings

Footings





Corner Rail Connection

Determine the post position and mark on ground.

From the Certified drawing, check depth and width of footing, dig and remove soil.

Refer to the Plan for length of post, add depth of footing, deduct 100mm and cut to length.

Prepare bottom of post as per Certified drawing.

Attach brackets for beams to sides of post.

Place posts in holes and clamp in plumb position.

Fixing Off the Posts

With posts in position and clamped, identify beams and cut to required length less 5mm and remove the plastic from the ends; place beam in the brackets on sides of posts and fit one Tek® each end to hold the beams in place.

For attached side fit corner brackets to the beam and lift beam carefully onto the rafter attachment brackets, fit sides rails to post and corner brackets.

Square the Project

Note: For plumb use a builders square to position all brackets.

With all the beams/posts in position you can now square the frame.

If your project is open on three sides you will be able to square the frame by measuring the diagonals.

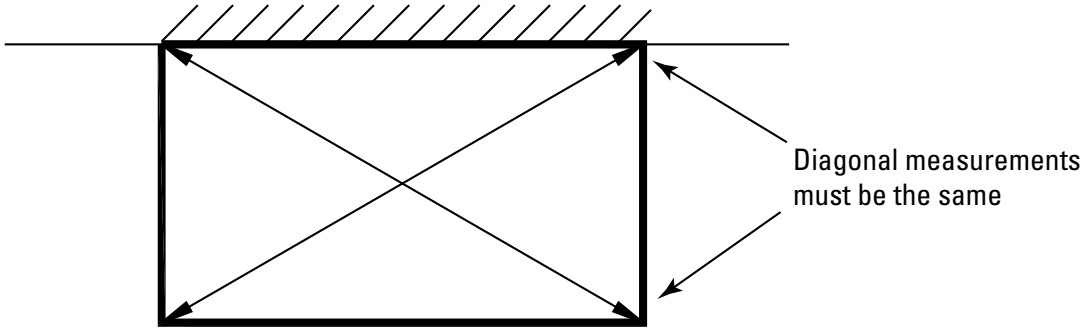
Diagonal measurements must be the same.

Square and plumb posts and temporarily brace in position.

Mix concrete as per manufacturer's instructions and pour into holes while checking for plumb.

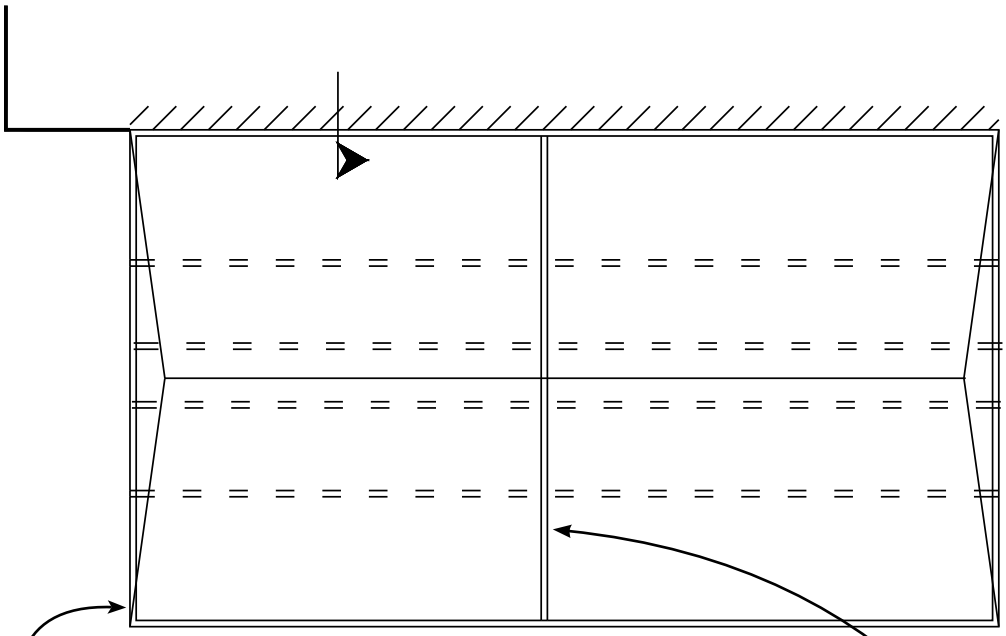
When concrete has set, fit off the remaining Teks® to beams as per drawings.

Fit gutter brackets at 1200 centers to beam with fall to outlet (downpipe) 1mm per metre and remove remaining plastic from beams with a Stanley knife cutting along the exposed edge of the beam.

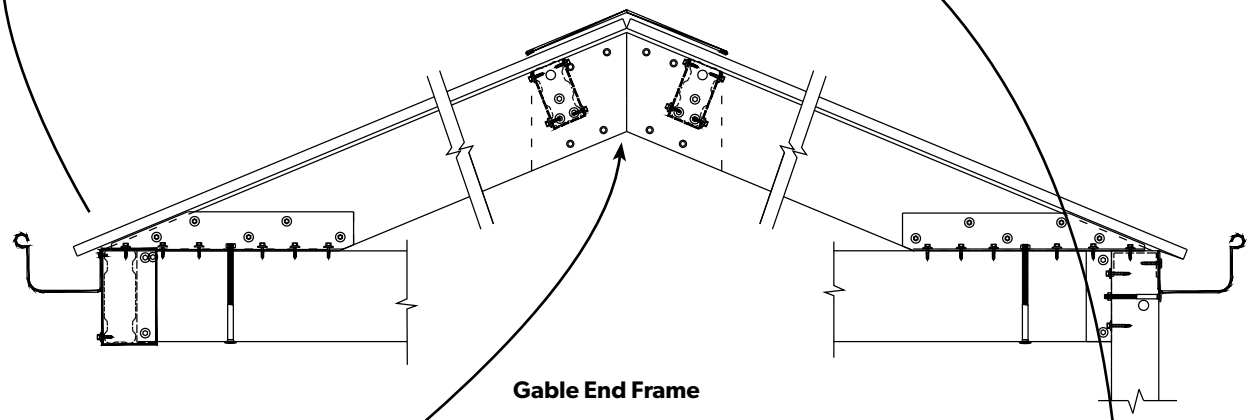


Structure Plan

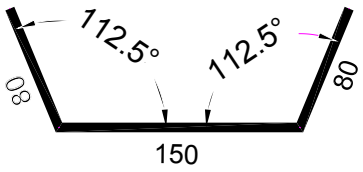
12. ROOF STRUCTURE - GABLE END



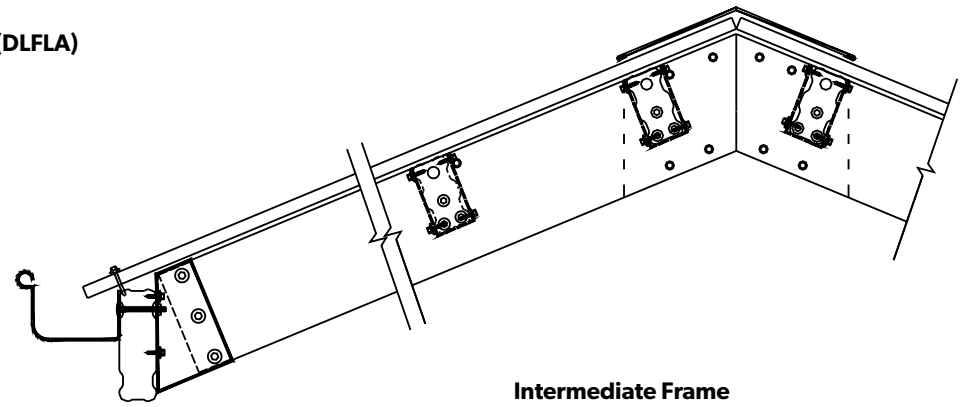
Structure Plan



Gable End Frame



Internal Apex Flashing (DLFLA)



Intermediate Frame

13. GABLE END FRAMES (NOT HIP OR DUTCH GABLE)

You Will Need:

Rafters

Rafter Connectors

Apex Brackets

Purlin Connectors

Fixings

Note: Rails are the side and end beams.

Note: For Gable End frame, only use connectors that are one sided.

At this point, the side and end rails will be in position.

To connect the Gable End rafter to the end rail, attach the front rafter to side rail connector to both end rails as per the drawing. Cut a rafter to the required length as shown on the plan.

On the ground feed the rafters over the apex bracket until the top edges of the rafters are just touching.

Clamp and fix off square.

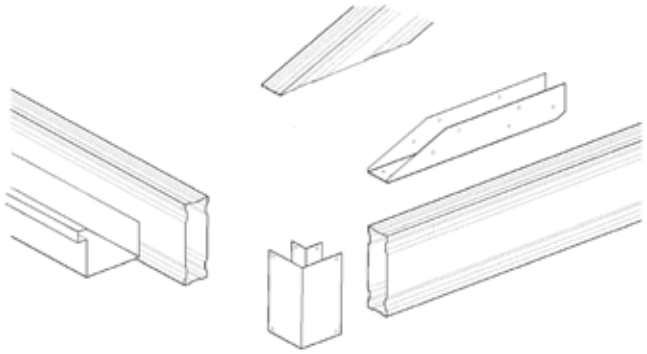
Measure and fit the purlin connectors as per drawings.

Lift the completed end Gable frame onto the structure and house the rafter into the side rail to rafter connector and fix off.

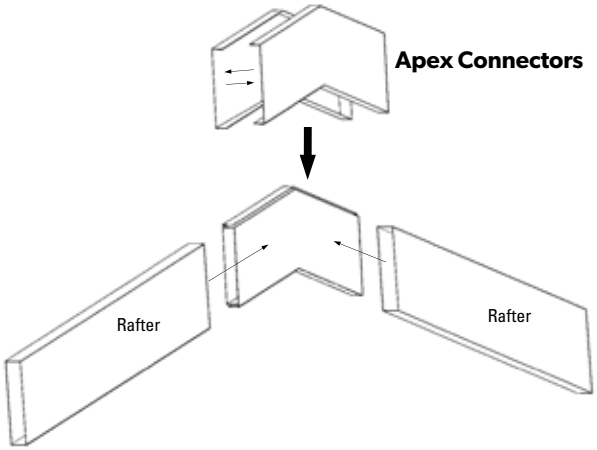
Note: Frames, once in the side rail connector can sit unaided, but be sure to apply a brace as soon as practical.

The software calculates the length of rafters in the frames and details this on the plan drawing.

Note: The Gable End rafter is shorter than the intermediate rafter. This is due to the Gable End rafter attachment bracket being longer.



Exploded View of Gable Frame



Apex Connection

14. INTERMEDIATE FRAMES

You Will Need:

Rafters

Apex Bracket

Purlin Connectors

Rail-Rafter Connector

Post-Rafter Connector

Note: Prepare frames on the ground.

From the BOM, select 2 intermediate rafters, 2 rafter rail connectors and 1 apex bracket.

Feed the rafters into the bracket until the top edges of the rafters are just touching and fix off as per drawing.

Measure and fit the purlin connectors as per drawings.

Fit the post/rafter connector to inside of posts as per drawing. For attached side rail measure along rail and position rail/rafter connector as per drawings.

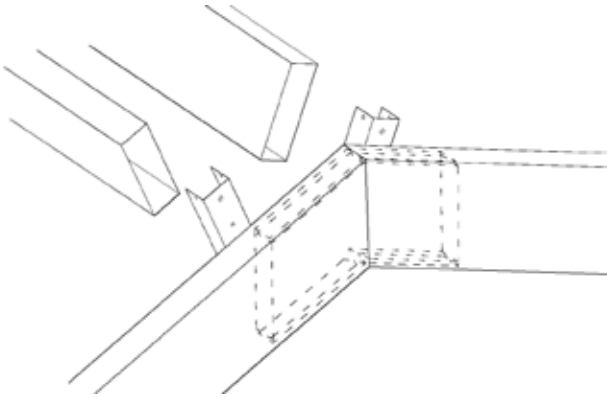
Cut the intermediate rafter to length (found on the plan drawing). Check internal measurement of beam/rail is equal to frame as diagram.

Carefully lift frame into connector, temporarily prop and fix off as per drawings.

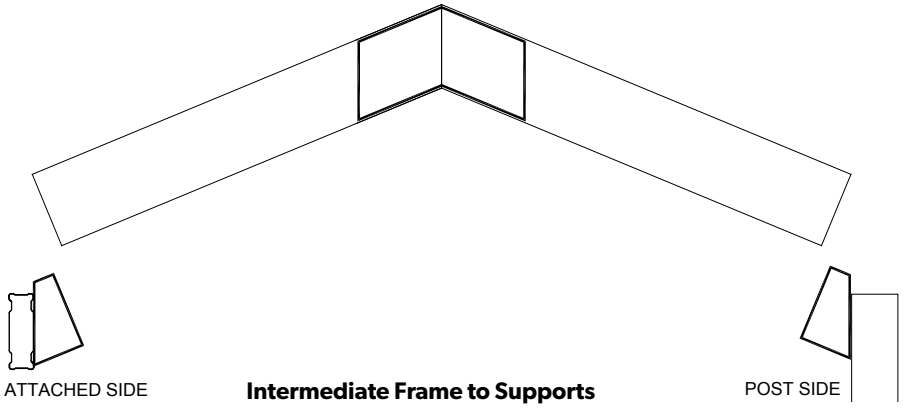
Temporarily fit ridge purlins from end frame to intermediate frame for bracing while completing frames.

The software calculates the beams in frames and details this on the plan drawing.

Note: The Gable End rafter is shorter than the intermediate rafter. This is due to the Gable End rafter attachment bracket being longer.



Apex Connection



Intermediate Frame to Supports

15. PURLIN CONNECTORS

Purlins are what the roof sheets fix to and are attached at 90 degrees to the rafters. They are spaced to the spanning capabilities of the roof sheet being attached. (See roof fixing drawing).

At this point, the ridge purlins should be in position to help support the structure. If not, plumb Gable End and intermediate frames and measure the distance between the frames.

Cut and fix ridge purlins to this measurement and fix into the purlin connectors.

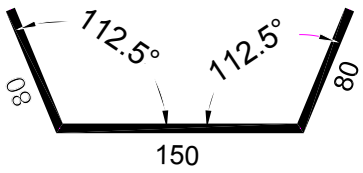
Measuring halfway up the rafter or to the required span of the roof sheet, attach the purlin bracket as shown in the drawings.

Repeat for other end.

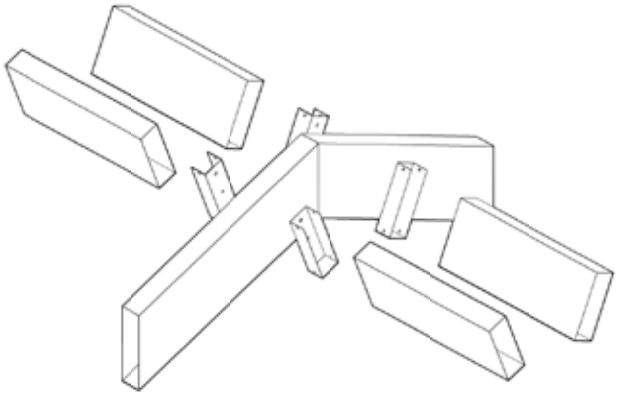
When ridge purlins are complete, measure distance between rafters and cut internal apex flashing to length required.

If holes required for lighting, cut them prior to fitting flashing.

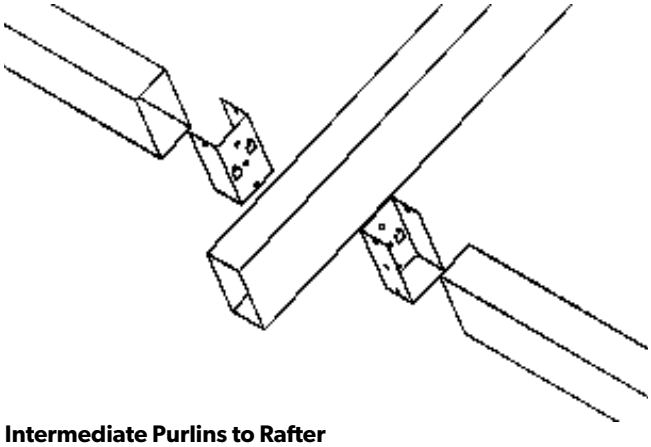
Drop flashing into space between ridge purlins and Tek® to inside face of ridge purlins. Insert any electrical cables or fittings, etc. prior to fitting roof sheets.



Internal Apex Flashing (DLFLA)



Apex Purlins to Rafter



Intermediate Purlins to Rafter

16. HIP END

Basically, constructing a pitched structure with a Hip End or Dutch Gable End, has the same principals, with the exception of a few components.

The construction method for the rails is the same as pitched Gable End except for the corner connections as shown on previous page.

To accurately measure the side rail, temporarily fit the corner connector onto both ends of the selected rail.

Measure the distance from end-to-end with the connectors in place. Remove the connectors from the rail and measure the distance again. Take the difference in these two measurements and deduct from the overall length on the plan. Cut the rail to this length and fit corner connectors.

When fitting the connector to the side rail, house the rail up tight into the connector and fix off as per drawing.

The opposite rail will be the same length.

To attach the end rail, cut the rail to the required length and house into the corner connector. The end rail will now abut the side rail in the connector. Apply to other end of job if applicable. Fix off as per drawing.

Reading from the plan: The end frames will be built first and are set back a distance of 50% of the width from the end rail.

E.g. width of structure 6000mm, set back for the first frame would be 3000mm.

Working from the dimensions on the plan drawing, cut rafters to length and house onto the apex bracket.

Fit hip brackets to apex as per drawings.

For attached side fix side rail/rafter connectors to side rails, for freestanding fit post/rafter connector and carefully lift completed frame into connector and fix off.

Cut hip rafters to plan and fit into corner connector and hip apex brackets.

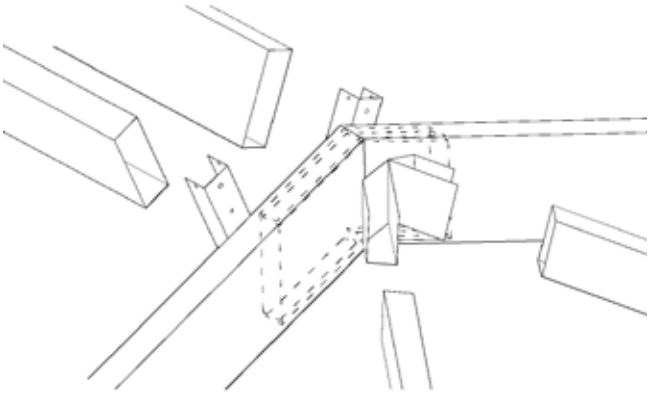
Fix off as per drawing and repeat for both sides.

If a purlin is required, fit a hip rafter/purlin connector onto the hip rafter at the required position. (See roof fixing drawings).

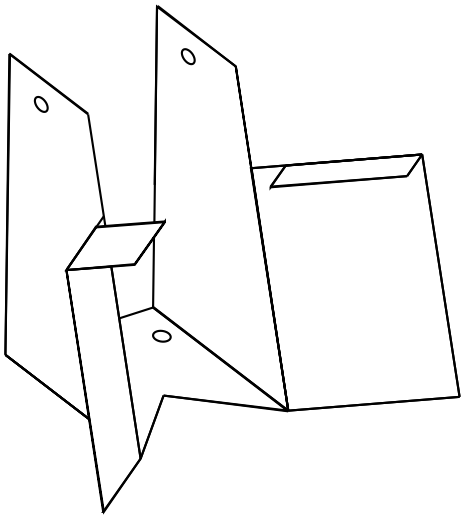
Note: Usually, a purlin will only be required on the Hip End where there are purlins in the main roof structure. (CUSTOM ORB®)

Fit purlin connector to both faces of the main frame to correspond with the hip rafter purlin connector.

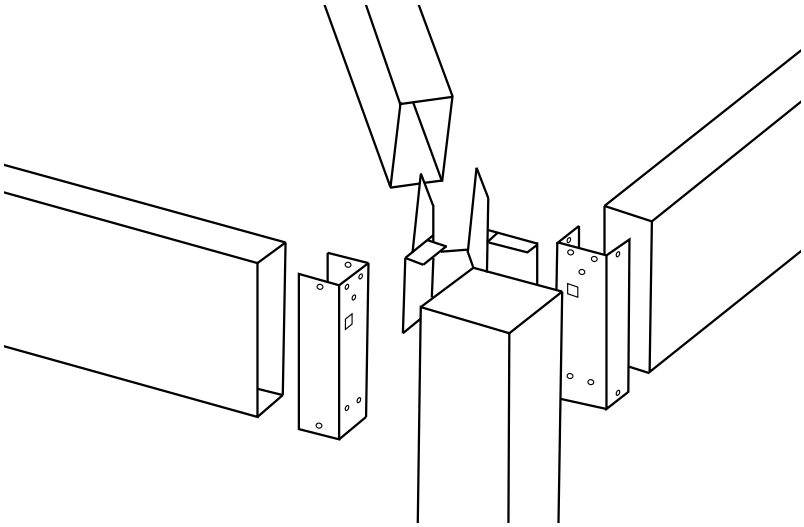
Fit intermediate rafters and purlins as previously described.



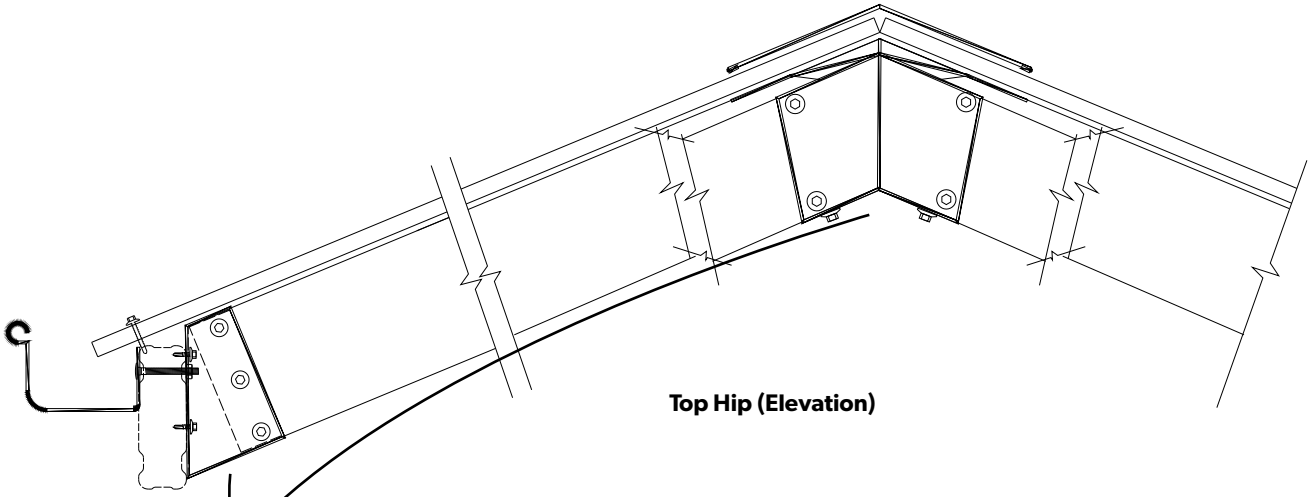
Purlins to Hip End Apex Connection



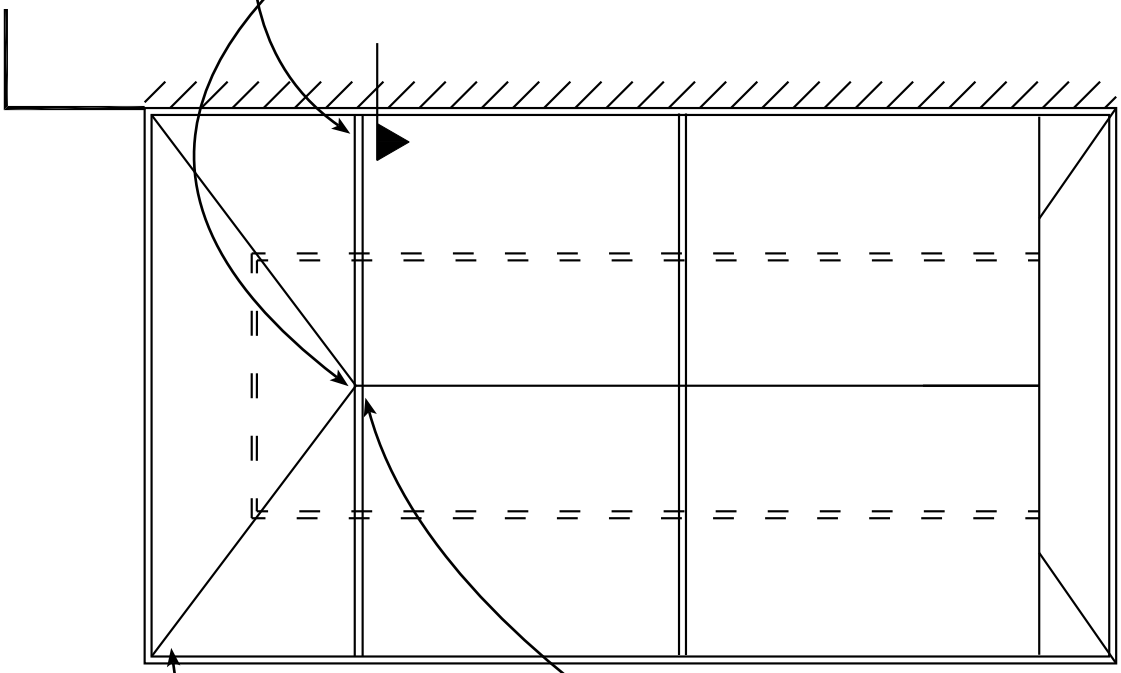
Hip Rafter to Post Connector



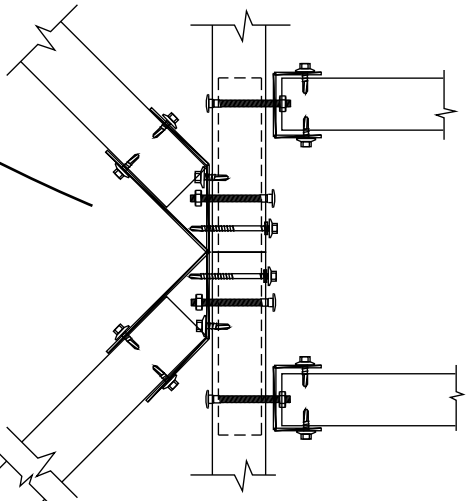
Hip End Corner Detail



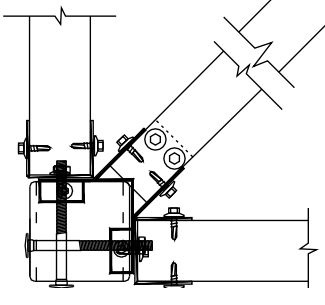
Top Hip (Elevation)



Structure (Plan)



Top Hip Apex (Plan)



Bottom Hip (Plan)

17. DUTCH GABLE END

A pitched structure with a Dutch Gable End is constructed basically the same as a pitched Gable End with the exception of the corner connectors.

For the purposes of this description, it is assumed the attachment brackets are in place which is covered earlier in this guide.

To accurately measure the side rail, temporarily fit the corner connector onto both ends of the selected rail.

Measure the distance from end to end with the connectors in place. Remove the connectors from the rail and measure the distance again. Take the difference in these two measurements and deduct from the overall length on the plan. Cut the rail to this length and fit corner connectors.

When fitting the connector to the side rail, house the rail up tight into the connector and fix off as per drawing.

The opposite rail will be the same length.

With the corner connector fitted to the rail, lift the rail into position either onto the attachment brackets or stands if freestanding.

To attach the end rail, cut the rail to the required length and house into the corner connector. The end rail will now abut the side rail in the connector. Apply to other end of job if applicable. Fix off as per drawing.

Reading from the plan. The end frames will be built first and are set back a distance of 20% of the width from the end rail.

E.G. width of structure 6000mm, set back for the first frame would be 1200mm from the end rail.

The Dutch Gable End frame is constructed same as gable end frame, but with a collar tie. The collar tie is set .6 of the height down from the apex.

To fit the hip rafter, fix the hip rafter bracket to the Dutch Gable End frame. These come in lefts and rights and can be determined on site.

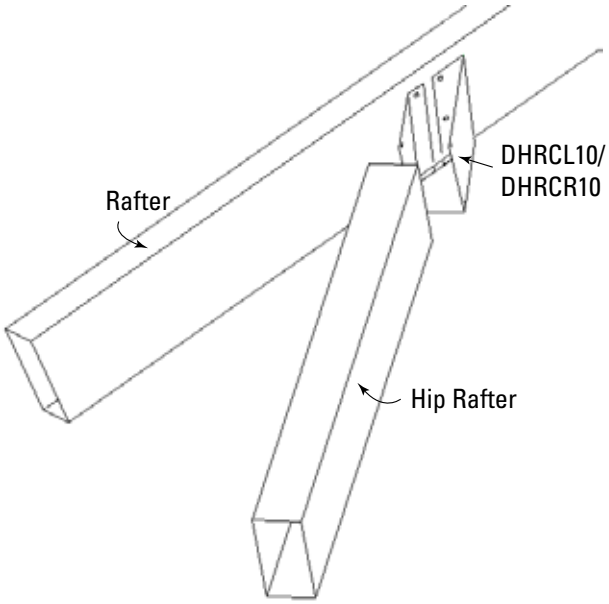
Fix the top of the bracket level with the bottom of the collar tie on the on the Dutch Gable End frame. Apply both sides.

Cut the selected hip rafter and fit into corner and hip rafter bracket. Fix off as per drawing.

If a purlin is required in front of the Dutch Gable due to roof sheet spans, fit purlin/hip rafter connector to the hip rafter, midspan to accommodate the purlin. These come in lefts and rights and can be determined on site.

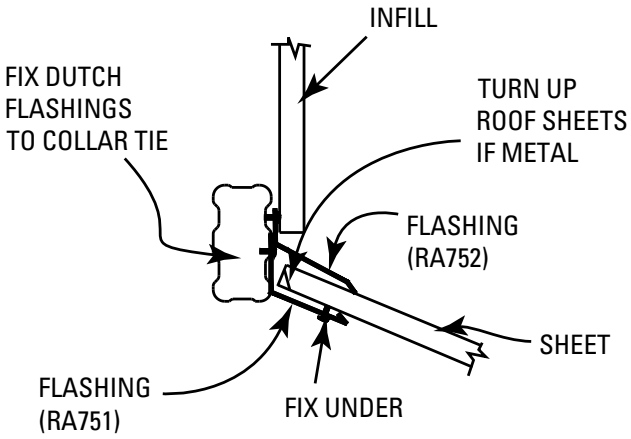
Fit remaining purlins as previously described.

To support the roof sheet below the Dutch Gable, a support flashing is fixed, level with the bottom edge of the collar tie with an apron flashing over the top of the roof sheets once in place. See Pitched Structures Flashing details for example.

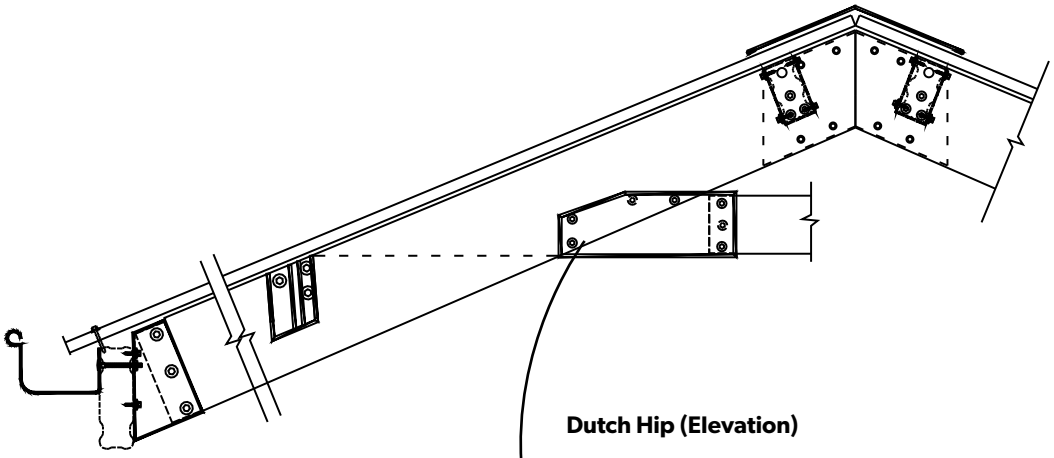


Detail 3

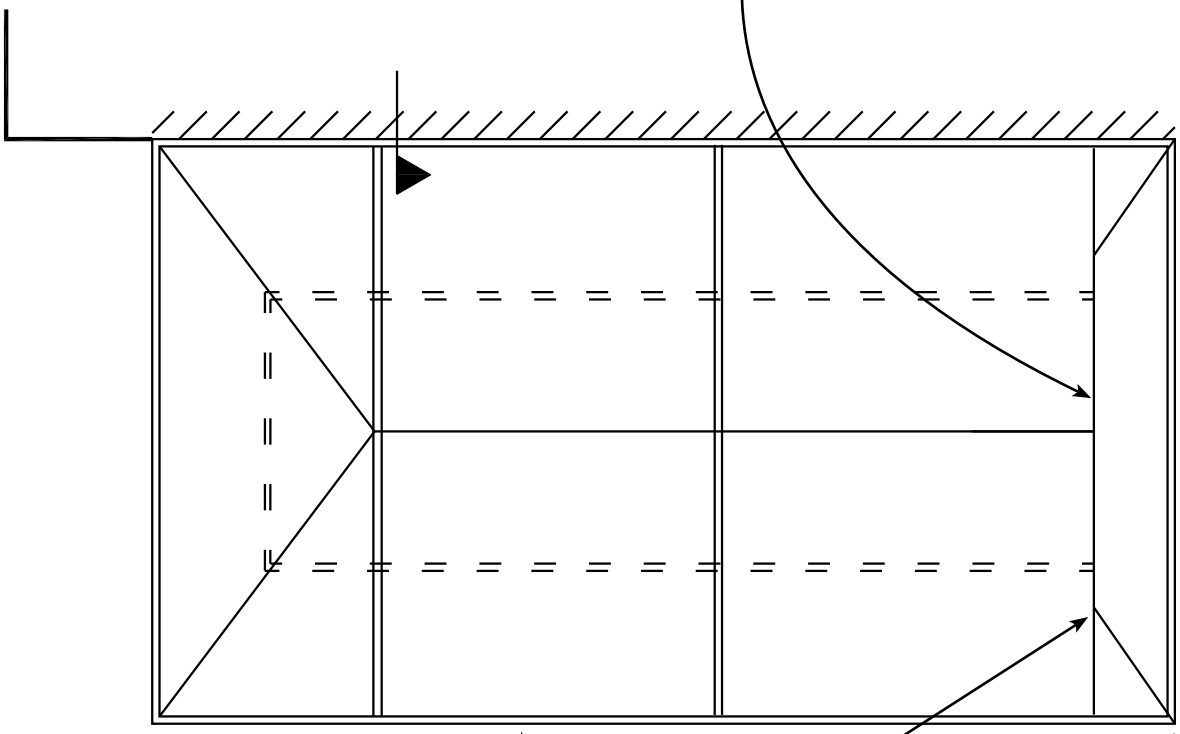
Top Hip to Dutch Gable End Rafter



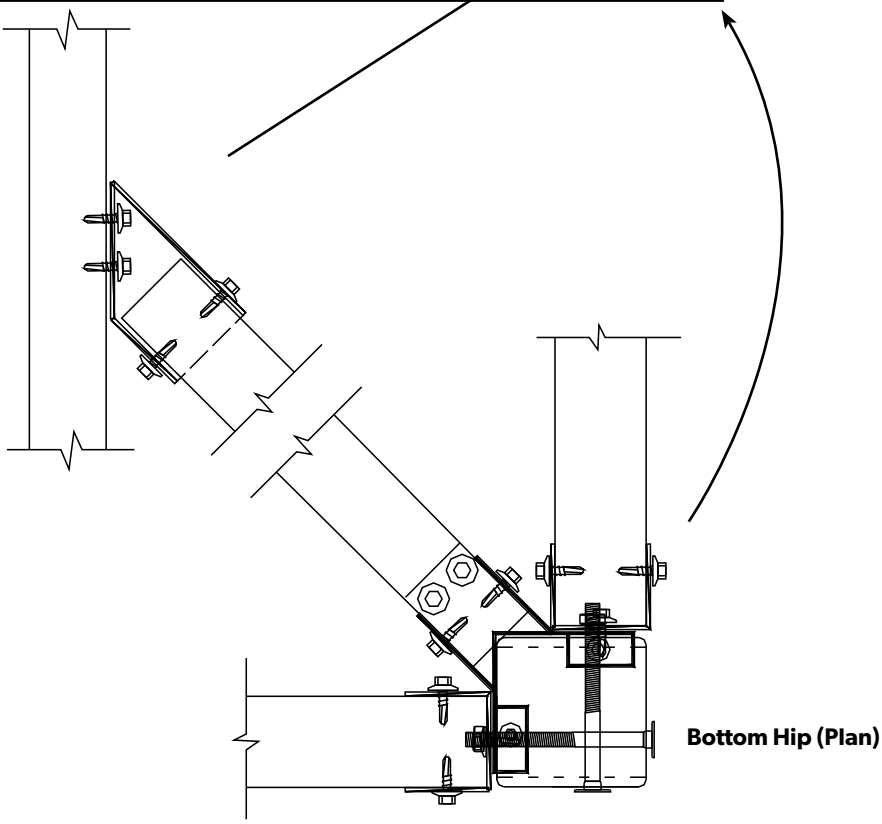
Elevation at Dutch Hip End



Dutch Hip (Elevation)



Top Hip (Plan)



Bottom Hip (Plan)

18. FITTING GUTTERS

You Will Need:

Gutters

Downpipe Outlet

Fixings

The gutter is fitted to the perimeter beams/rails with gutter brackets.

On a support, mitre cut gutters to the required length and fit cast gutter corners using rivets.

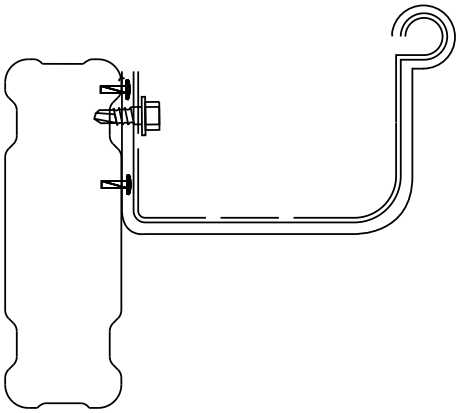
Place downpipe outlet on bottom side of gutter in required position and mark internally around base.

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

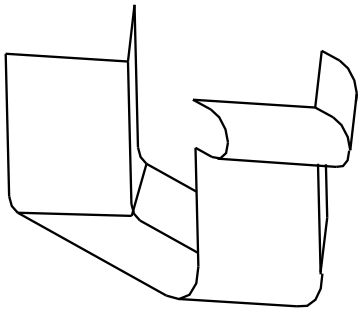
Attach outlet to bottom edge of gutter where required.

Silicone seal stop ends and outlets prior to fitting on the structure, remove remainder of plastic and lift into position. Lift gutters into position on rails/beams and fit into gutter brackets.

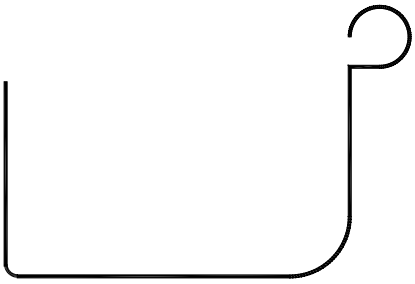
Bend the end of the bracket over the outside edge of the bracket.



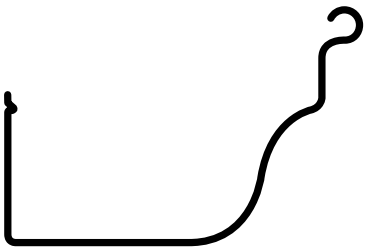
Gutter to Rail (Section)



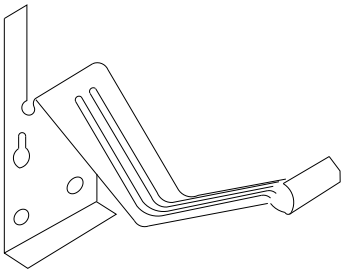
Gutter Corner Bracket



QUAD GUTTER (SECTION)



Ogee Gutter (Section)



Internal Gutter Bracket

19. FITTING FLATDEK® ROOF SHEETS

You Will Need:

Roof Sheet

Light Panel

Fixings Roof Sheet

Fixings Light Panel

Flashings

Note: Please read the relative drawings for fixing of roof sheets and ensure Internal Apex flashing is fitted prior to fitting of roof sheets.

Ready for Roof

Place and fix off remainder of purlins .

Seal off remaining gutters and fit flashing to junction of house and structure gutters.

Roof

The roof sheets are precut to fit the structure with the exception of end options and end cut sheets.

If your project has 3 sides open, start either end.

Lay the sheets towards where the weather comes from.

Start with the sheet just in from the edge of the Gable End. Check there is approx 40mm overhang in the gutter.

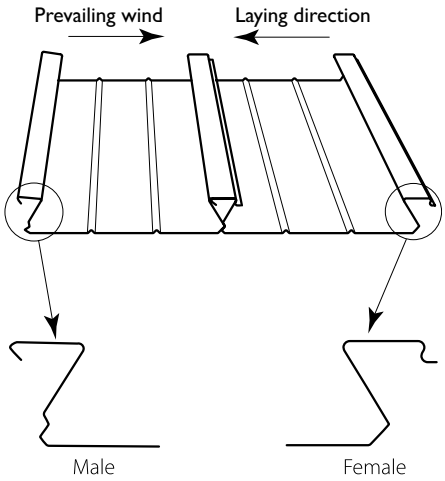
Position ladders so you can work safely and quickly.

Infill Panels for Gable and Dutch Gable

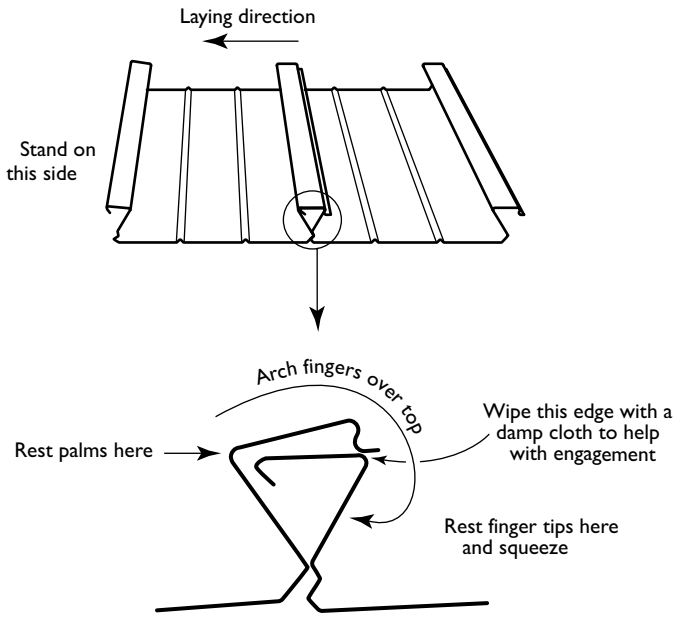
Depending on the infill chosen, will depend on what is supplied for fixing the infill to the structure.

Rule of thumb is to fix the infill to the frame prior to installing flashings with the exception of Dutch Gable End as the topside apron flashing for the roof in front of the Dutch Gable will be in place first prior to attaching the infill.

Attaching the infills are relative straight forward and covered off in the supplied drawings.



FLATDEK® Ribs



Interlocking Ribs

20. FITTING FLATDEK® LIGHT PANELS

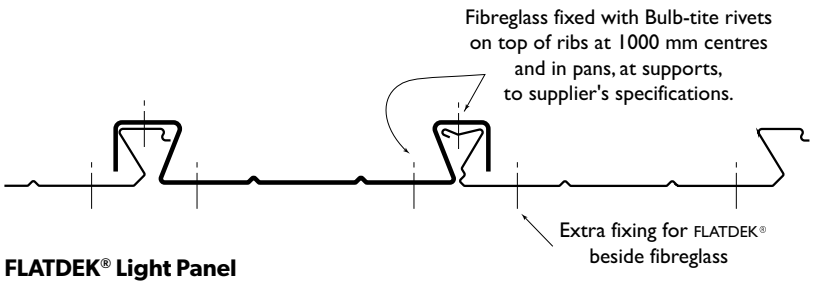
A light panel must be fitted at least 2 steel sheets in from any side and must have 2 steel sheets separating them.

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.



FLATDEK® Light Panel

21. FITTING CUSTOM ORB® ROOF SHEETS

CUSTOM ORB® Sheet Overlap

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 corrugation of the sheet into the gutter return lip.

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

Note: Ensure internal apex flashing is fitted prior to fitting of roof sheets.

22. FITTING CUSTOM ORB® LIGHT PANELS

Lap translucent sheet
over steel sheet on both sides

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 minimum two (2) corrugations.

Because of its greater thermal expansion, translucent cladding should be fixed using oversized holes and sealing washers recommended by the cladding manufacturer. When used with concealed fixed claddings, ensure the fasteners do not penetrate the steel cladding. There are translucent products available that easily accommodate this. Don't exceed the maximum support spacing specified by the translucent cladding manufacturer.

23. FITTING OF FLASHINGS

You Will Need:

4 Barge Capping

1 Ridge Capping

Fixings

23A. BARGE CAPPING

Barge capping is fitted where the roofing meets the gable end and will require preparation prior to fitting.

Using a non-permanent marker and a level, mark a plumb line down each end of the apex.

Using a sliding bevel, obtain the angle by adjusting the bevel against the vertical mark and the roof pitch.

The capping has a 110mm face and a 220mm return.

Working from the gutter end of the capping with the 110mm side facing out, mark the plumb line. Using tin snips, cut up the face and continue the cut right across the flashing.

Working from the gutter end, sit barge cap on gable. The gutter "end stop" will prevent the capping from fitting correctly. Mark where the capping strikes the end stop and remove with tin snips.

Re-fit capping to check for fit.

At the apex, mark where the flashing and the apex meet.

Remove the capping and mark the plumb line on the face of the capping. Cut up the face and continue across top of flashings.

To allow the two sides to join, a tag for fixings is to be provided on the opposite capping as in the engineering drawings. Repeat for remaining sides and fix to roof sheets with pop rivets at 600mm centres.

23B. RIDGE CAPPING

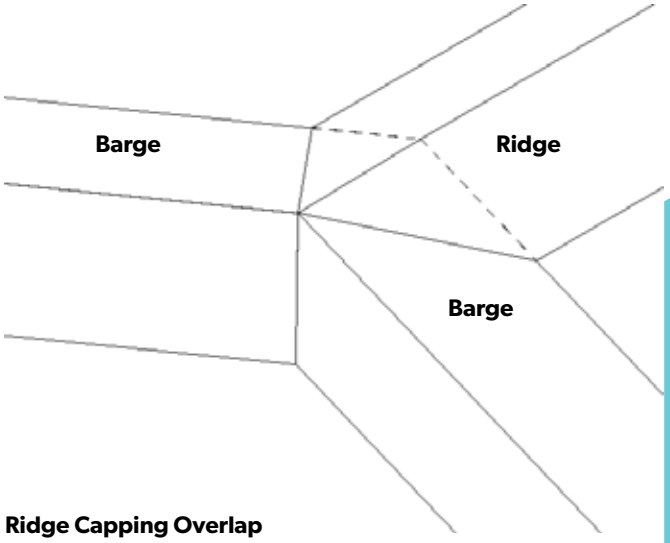
With barge caps fixed in position, measure the ridge length.

On the ridge flashing mark two 45 degree lines back from the centre of the flashing and cut with tin snips to outer edge.

On the other end, apply the same. Snip 10mm off each end of the flashing and carefully lift in place. If flashing came in two pieces, apply same allowing for a join in the middle of the roof.

Working from one end of the roof, position the capping 5mm from end of the barge capping. If one piece, check position of capping at ends, if two pieces, repeat same. Starting half a sheet in, fix off ridge capping using pop rivets at 600mm spacings into the nord of the sheet along the ridge purlin line.

Check for straightness every meter and return to ends. To fix off at Gable Ends, use a non permanent marker to mark the perimeter of the ridge capping over the barge cap. Apply a bead of silicone 10mm in from this line and rivet off. Repeat for other end.



Ridge Capping Overlap

24. PREPARE DOWNPIPE

You Will Need:

Downpipe

Outlet

Downpipe Strap

Rivets

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

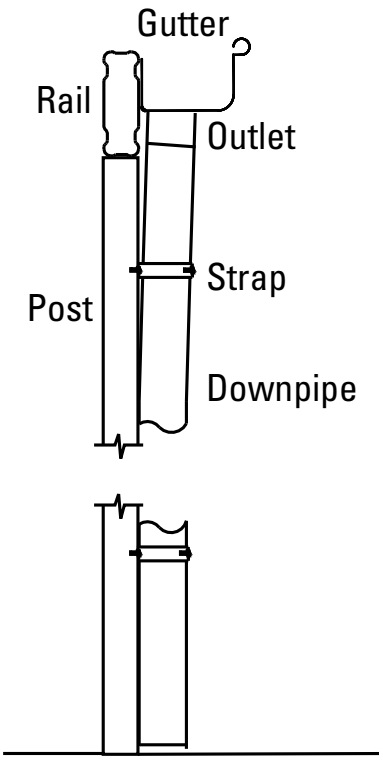
Drill a pilot hole in bottom of gutter and then remove with snips. This can be done when preparing front gutter.

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. (Example shown for overhang only.)

Fix off as per CcBuilder drawings.



Downpipe (Elevation)

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 gutters, with all foreign material hosed completely out of all gutters.This is generally done using a hose and broom.

Fit 'No Foot Traffic' safety sign to two prominent positions on the inside of the beams on diagonally opposite corners.

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